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AIRPLANE FLIGHT MANUAL

MODEL PA-28-180

FAA IDENTIFICATION NO. N7775N

SERIAL NO. 28-5223

THIS DOCUMENT MUST BE KEPT IN AIRPLANE AT ALL TIMES.

FAA APPROVED: Original signed by Walter R. Haldeman \*  
 Walter R. Haldeman  
 Chief, Engineering & Manufacturing Branch  
 Southern Region - - - Atlanta, Georgia

DATE: August 3, 1962

\* FAA APPROVED: Gene Dearing For Retype Only.  
 Gene Dearing  
 Aerospace Engineer

DATE: August 12, 1964

Log of Revisions

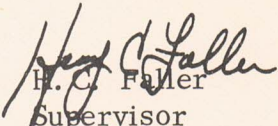
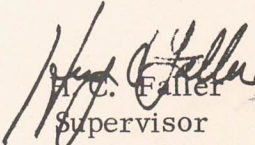
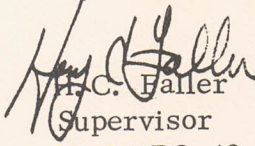
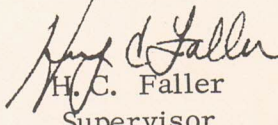
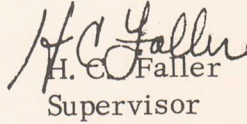
<u>REVISION NO.</u>	<u>PAGE</u>	<u>DESCRIPTION</u>	<u>APPROVED</u>	<u>DATE</u>
1	1	Deleted Propeller Pitch Information. Added Static R.P.M. Information	<i>H. E. Waterman</i> H. E. Waterman Supervisor SO-EMDO-42	5/25/64
2	2	Placards Section: Added Placard No. 5	<i>H. E. Waterman</i> H. E. Waterman Supervisor SO-EMDO-42	7/8/64
3	2	Added to Placard No. 3: "BAGGAGE, MAX. 200 LBS., SEE WEIGHT AND BALANCE DATA FOR BAGGAGE LOADINGS BETWEEN 150 LBS. AND 200 LBS."	<i>H. C. Faller</i> H. C. Faller Supervisor SO-EMDO-43	8/5/64
	1	Added Sensenich M76EMMS		
4	3	Item 5 added to Procedures Section.	<i>H. C. Faller</i> H. C. Faller Supervisor SO-EMDO-43	10/20/64
5	1	Limitations Section: Revised Oil Temperature and Fuel Pressure Range	<i>Robert H. Lesuer</i> H. C. Faller Supervisor, SO-EMDO-43	6/23/65
6	1	Limitation Section: Add note to Engine Limits	<i>H. C. Faller</i> H. C. Faller Supervisor, SO-EMDO-43	1/5/66
7	2	C. G. Range: 1975 lbs. 85.9 In. 95.9 In. 1650 lbs. 84.0 In. 95.9 In. Was 18.50 lbs. 85.1 In. 95.9 In.		
	4	Added Procedures Section And Item 6		
	2	Added Placard No. 6	<i>H. C. Faller</i> H. C. Faller Supervisor SO-EMDO-43	5/20/66

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<u>Revision No.</u>	<u>Page</u>	<u>Description</u>	<u>Approved</u>	<u>Date</u>
8	1	Revised Oil Temperature, Oil Pressure and Fuel Pressure Limitations		
	2,3	Revised Placards No. 3 and No. 5		
	5	Added Page 5		
		Procedures Section - Added Item 7		
	6	Added Page 6	<i>for</i> <i>Herbert T. Herold</i> Henry C. Faller Supervisor SO-EMDO-43	7/15/66
9	1	Limitations Section Add "or 0-360-A4A	<i>Henry C. Faller</i> Henry C. Faller Supervisor SO-EMDO-43	8/2/66
10	2,3	C. G. Range - Placard No. 1 and Placard No. 3 revised to include utility category operations. Added utility category max. wt. and approved maneuvers		
	4	Procedures Section - Added to Item 3 "For Normal Category Operation". Added Placard No. 7.		
	3	Placards Section - Added utility category operation to Item 4.		
	1	Added Utility Category		
	2	Added maximum positive load factor for Utility Category. Added Baggage Capacity.	<i>Henry C. Faller</i> Henry C. Faller Supervisor SO-EMDO-43	12/6/66

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REVISION NO.	PAGE	DESCRIPTION	APPROVED	DATE
11	3	Placards Section: Revised Placard No. 1 to read, "In Full View of the Pilot"	 H. C. Faller Supervisor SO-EMDO-43	5/12/67
12	2	Revised C. G. Range	 H. C. Faller Supervisor SO-EMDO-43	9/25/67
13	3, 4	Revised Placard No. 4 and No. 7 to read: "In full view of the pilot"	 H. C. Faller Supervisor SO-EMDO-43	4/2/68
14	1	Added Aircraft Serial Numbers 1571 and 1573 to Engine and Propeller Limitations	 H. C. Faller Supervisor SO-EMDO-43	6/3/68
15	1	Added Propeller Designations	 H. C. Faller Supervisor SO-EMDO-43	6/24/68

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Piper Model PA-28-180  
Normal and Utility Categories

AIRPLANE FLIGHT MANUAL

1. Limitations Section The following limitations must be observed in the operation of this airplane:
  - Engine Lycoming O-360-A3A or O-360-A4A
  - Engine Limits Maximum permissible RPM for takeoff, 2475. For all other operations, 2700 rpm, 180 hp, (A/C S/N 28-671 to 1760A). For all operations, 2700 rpm, 180 hp, (A/C S/N 28-1571, 1573, 1761 and up).
  - Fuel 91/96 minimum octane aviation fuel.
  - Propeller Sensenich M76 EMM or 76EM8 (S/N 671 to 1760A)  
Sensenich M76 EMMS or 76EM8S5 (S/N 1571, 1573, 1761 & up)  
Maximum diameter 76 inches, minimum diameter 76 inches.  
Static RPM at maximum permissible throttle setting. Not over 2450, not under 2275. 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 671 to S/N 1760A)
    - Oil Temperature: GREEN arc (Normal operating range) 75° F to 245° F; RED line (maximum) 245° F (S/N 1571, 1573, 1761 & up)
    - Oil Pressure: GREEN arc (normal operating range) 60 psi to 90 psi; YELLOW arc (caution range) 25 psi to 60 psi; RED line (minimum) 60 psi; RED line (maximum) 90 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 671 to S/N 1760A)
    - Fuel Pressure: GREEN arc (normal operating range) .5 psi to 8 psi; RED line (minimum) .5 psi; RED line (maximum) 8 psi (S/N 1571, 1573, 1761 and up)
    - Tachometer: GREEN arc (normal operating range) 500 to 2700 rpm; RED line (maximum continuous power) 2700 rpm.

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Airspeed Limits	Never exceed .....	171 mph
	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

Maximum Weight      2400 lbs. - Normal Category; 1950 lbs. - Utility Category.

Baggage Capacity      200 lbs.

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

1. Normal Category

Weight (Pounds)	Forward Limit (In. aft of datum)	Rearward Limit (In. aft of datum)
2400	92.1	94.5
2200	89.2	95.9
1975	85.9	95.9
1650	84.0	95.9

2. Utility Category

Weight (Pounds)	Forward Limit (In. aft of datum)	Rearward Limit (In. aft of datum)
1950	85.8	86.5
1650	84.0	86.5

Straight line variation between points given.

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

- 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

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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 the inside of the baggage compartment door:
 

"MAXIMUM BAGGAGE 125 LBS." (S/N 671 to 1760A)  
(MAXIMUM BAGGAGE MAY BE INCREASED TO 200 LBS. IN ACCORDANCE WITH PIPER SERVICE SPARES LETTER NO. 242)

UTILITY CATEGORY OPERATION - NO BAGGAGE OR AFT PASSENGERS ALLOWED. NORMAL CATEGORY OPERATION - SEE AIRPLANE FLIGHT MANUAL WEIGHT AND BALANCE SECTION FOR BAGGAGE AND AFT PASSENGER LIMITATIONS.
4. In full view of the pilot:
 

"ROUGH AIR OR MANEUVERING SPEED 129 MPH."

"UTILITY CATEGORY OPERATION - NO AFT PASSENGERS ALLOWED."
5. 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."
6. 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) 7. 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
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	67 to 140 mph (58 to 121 knots)
	WHITE arc	Flap Down Range	57 to 115 mph (50 to 100 knots)

2. Procedures Section
1. The stall-warning system is inoperative with the master switch off.
  2. Electric fuel pump must be on for both landing and takeoff.
  3. The PA-28-180 airplane is approved under FAA Regulation CAR 3 which prohibits intentional spins for normal category operation. The following information is noteworthy:
    - a. The stall characteristics of the PA-28-180 are normal with the nose pitching down moderately following the stall, occasionally with a moderate roll which can be corrected by normal use of ailerons and rudder against the roll.
    - b. Prolonged use of full rudder during stall practice may result in a rapid roll followed by a spin and should be avoided. Recovery from an incipient spin may be effected in less than one additional turn by use of opposite rudder followed by full forward control wheel.
    - c. In the event that a fully developed spin is inadvertently experienced, recovery is best made by using full opposite rudder followed by full forward wheel and full opposite aileron. The control positions against the spin should be maintained during the entire recovery, which may require several turns and a substantial loss of altitude if the airplane is loaded heavily with a rearward center of gravity.
  4. Except as noted above, all operating procedures for this airplane are normal.

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Procedures Section  
(Cont'd.)

5. (Electric Pitch Trim Installation Only)

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.

6. (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 Ft. altitude loss.
- e. In approach configuration malfunction, 1 second delay results in 10° bank and 0 Ft. altitude loss.

7. (AutoControl III Installation Only)

I. Limitations:

Pilot off during take off and landing.

II. Procedures:

- a. Normal Operation  
Refers 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

The following performance figures were obtained during FAA Type tests and may be realized under conditions indicated with the airplane and engine in good condition and with average piloting technique. All performance is given for 2400 pounds.

Loss of altitude during stalls varied from 125 to 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	67	69	76	83	94
Flaps Down	57	--	--	--	--

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WEIGHT AND BALANCE DATA  
MODEL PA-28-180 D CHEROKEE

Airplane Serial Number 28 - 5223

Registration Number N7775N

Date NOV 14 1968

AIRPLANE EMPTY WEIGHT

Item	Weight (Lbs)	X C. G. Arm (Inches Aft of Datum)	= Moment (In - lbs)
Standard Empty Weight * <small>xxx actual xxx</small> Computed	1298.0	85.4	110918
Optional Equipment	65.1	98.0	6383
Unusable Fuel (3 Pints)	2.2	103.0	227
Licensed Empty Weight = Total of Above Items	1365.3	86.1	117528

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

AIRPLANE USEFUL LOAD

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

Normal Category: (2400 lbs) - ( 1365.3 lbs) = 1034.7 lbs.

Utility Category: (1950 lbs) - ( 1365.3 lbs) = 584.7 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.

J. M. Lanithers  
Inspection Representative

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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.

SAMPLE LOADING PROBLEM (Normal Category)

	Weight (lbs)	Arm Aft Datum (Inches)	Moment (In - Lbs)
Licensed Empty Weight	1365.3	86.1	117528
Oil (8 quarts)	15	32.5	488
Pilot and Front Passenger	340	85.5	29070
Passengers, Aft * (Rear Seat)	340	118.1	40154
Fuel (50 Gal. Maximum)	300	95.0	28500
Baggage *	39.7	142.8	5669
Total Loaded Airplane	2400	92.3	221409

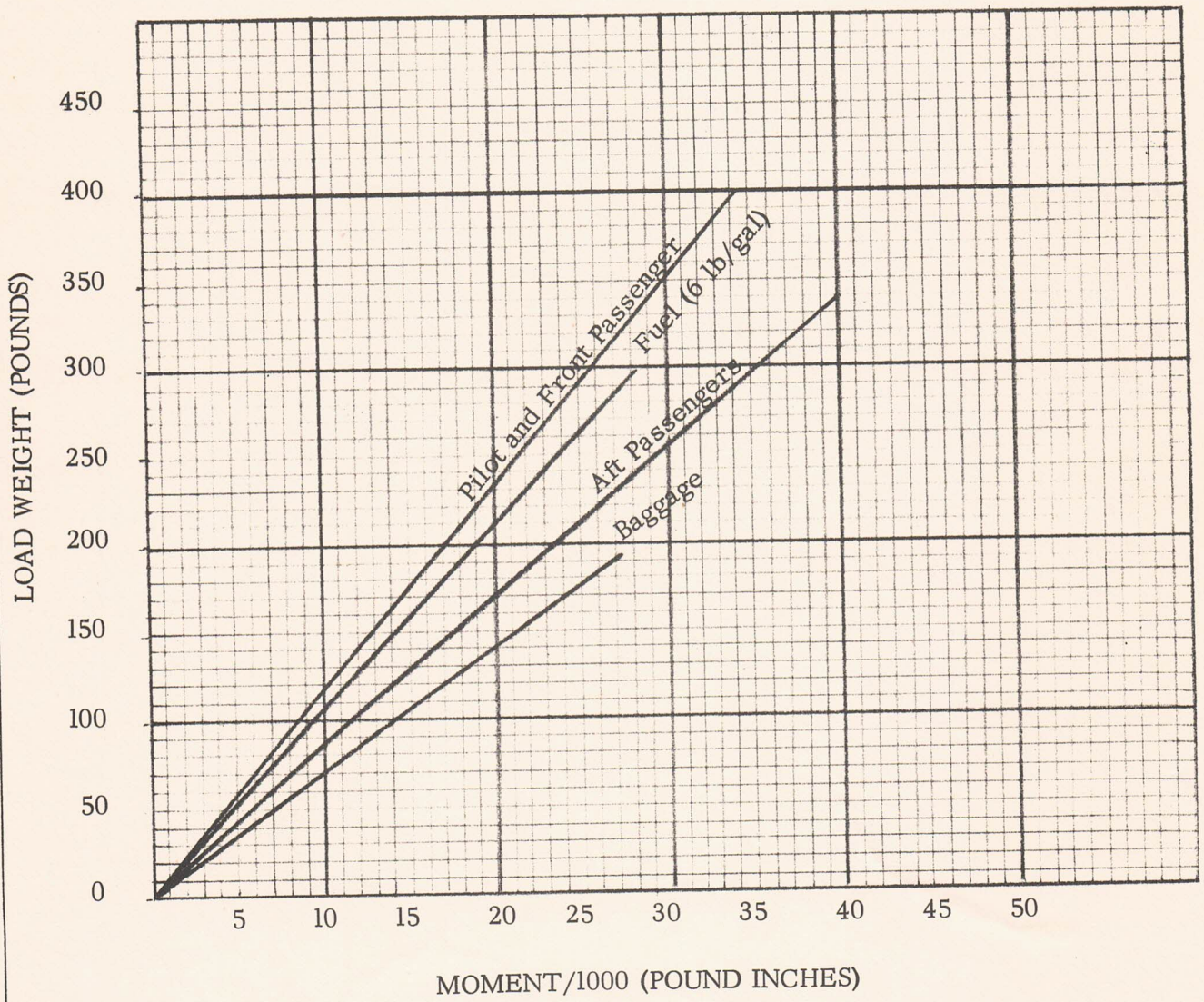
The center of gravity (C. G. ) of this sample loading problem is at 92.3 inches aft of the datum line. Locate this point ( 92.3 ) on the C. G. range and weight graph. Since this point falls within the weight - C. G. envelope, this loading meets the weight and balance requirements.

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.

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LOADING GRAPH



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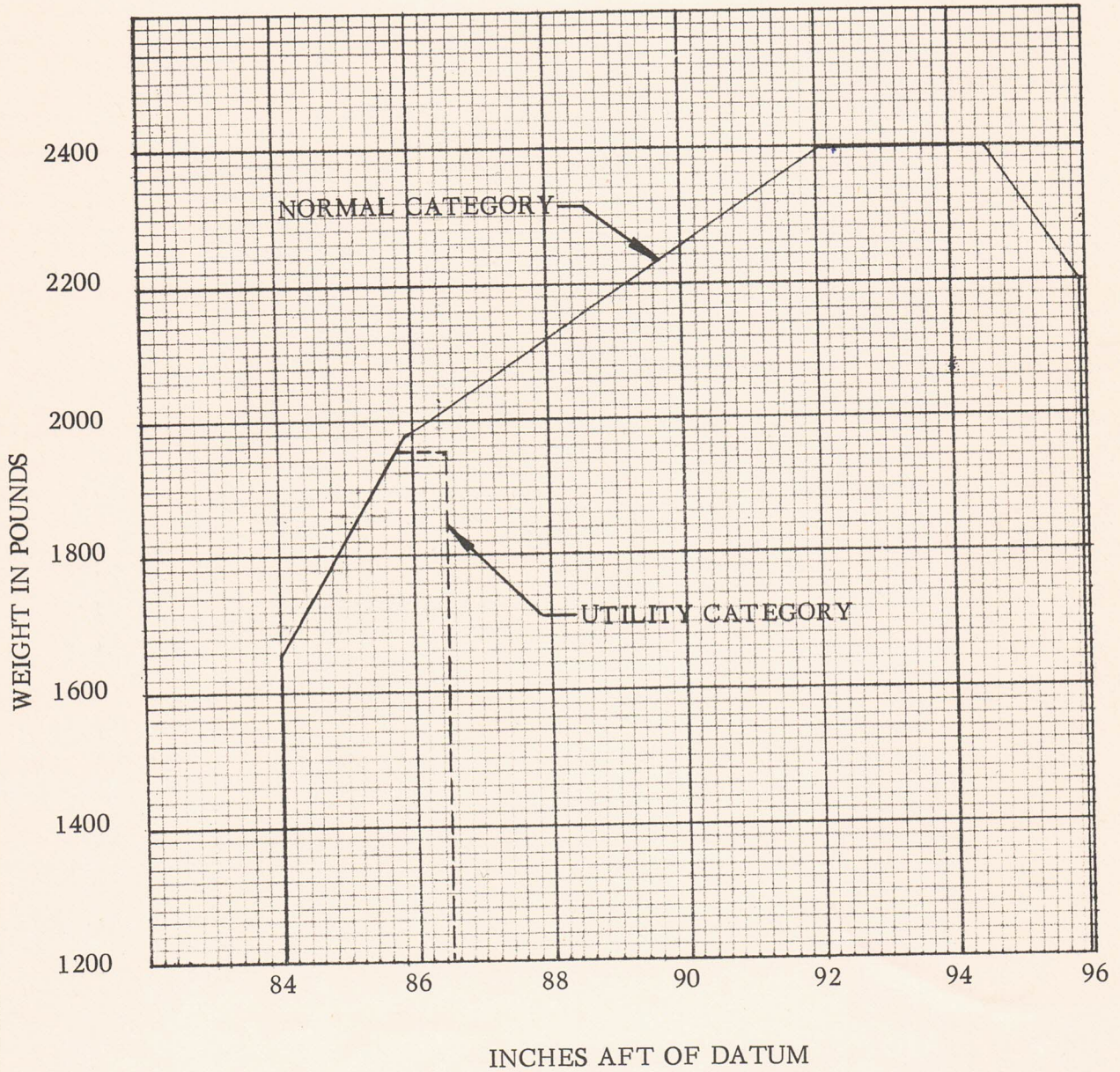
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C. G. RANGE AND WEIGHT



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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.

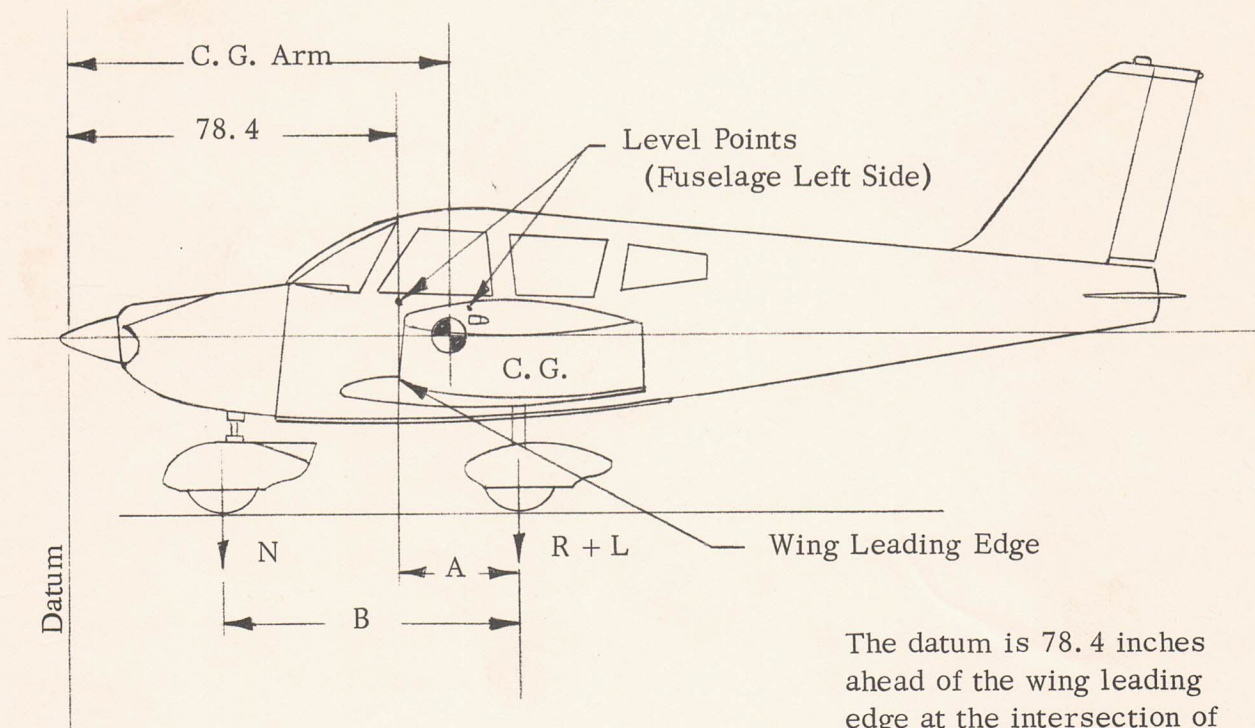
3. WEIGHING - AIRPLANE EMPTY WEIGHT

- a. 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

- a. The following geometry applies to the PA-28-180 D airplane when airplane is level (See Item 2) .



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

A =

B =



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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:

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

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

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			

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WEIGHT AND BALANCE  
STANDARD EQUIPMENT LIST  
MODEL PA-28-180 D

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<u>Engine Accessories</u>			
	Engine - Lycoming Model 0-360-A3A	274.4	26.1	7162
X	Engine - Lycoming Model 0-360-A4A	282.4	26.1	7371
X	Fuel Pump, Electric Auxiliary, Bendix Model 478360	1.8	41.8	75
X	Fuel Pump, Engine Drive, Lycoming Dwg. No. 73297, 74082, 75148 or 75246	1.6	41.3	66
X	Oil Cooler, Piper Dwg, Harrison C-8526250	2.6	18.1	47
X	Filter, Fram Model CA-161 PL or AC No. A48C or Purolator AFP-2	.9	20.1	18
	Alternator, 35 Amp, Chrysler #2098615	12.5	19.0	238
X	Alternator, 60 Amp, Chrysler #2642210 or #2642997	12.5	19.0	238
	Starter-Lycoming 74092 (Delco-Remy 1109511)	* 18.0	19.5	351
X	Starter-Lycoming 76211 (Prestolite MZ4206)	* 18.0	19.5	351
	<u>Propeller and Propeller Accessories</u>			
	Propeller, Sensenich M76EMM or 76EM8	34.5	10.1	348
X	Propeller, Sensenich M76EMMS60 or 76EM8S5-0-60	38.5	8.8	339
X	Spinner and Attachment Plates	4.3	8.0	34

\* Included in Engine Weight.

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Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<u>Landing Gear and Brakes</u>			
	Two Main Wheel Assemblies 6.00-6	32.0	109.6	3507
	(a) Cleveland Aircraft Products Wheel Assembly No. 40-28 Brake Assembly No. 30-18			
	(b) Two Main 4-Ply Rating Tires 6.00-6 with Regular Tubes			
X	Two Main Wheel Assemblies	32.3	109.6	3540
	(a) Cleveland Aircraft Products Wheel Assembly No. 40-86 Brake Assembly No. 30-55			
	(b) Two Main 4-Ply Rating Tires 6.00-6 with Regular Tubes			
X	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			
	<u>Electrical Equipment</u>			
X	Stall Warning Device, Safe Flight Inst. Corporation No. C52207-4	.2	80.2	16
	Voltage Regulator, Delco-Remy #118704	1.5	168.5	253
	Voltage Regulator, Chrysler #2098613	.5	57.8	29
X	Voltage Regulator, Wico Electric #X-16300	.5	57.8	29
	Battery 12V, 25 A. H., Rebat Model S-25	21.5	168.0	3612

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CHECKED		
APPROVED	STANDARD EQUIPMENT LIST	PAGE 10 Section 1

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<u>Instrument</u>			
<u>X</u>	Compass - Piper Drawing 67462	.9	65.7	59
	Airspeed Indicator, Piper Dwg. 63205-2	.6	66.8	40
<u>X</u>	Tachometer, Piper Drawing 62177-3	.7	66.2	46
<u>X</u>	Altimeter, Piper Drawing 67467	1.0	65.9	66
	Engine Cluster, Piper Drawing 65852-2	.8	67.4	54
	Engine Cluster, Piper Drawing 67441-2	.8	67.4	54
<u>X</u>	Engine Cluster, Piper Drawing 95241-4	.8	67.4	54
<u>X</u>	Engine Cluster, Piper Drawing 95241-2	.8	67.4	54
	<u>Miscellaneous</u>			
<u>X</u>	Forward Seat Belts (2)	1.5	86.9	130
<u>X</u>	Aft Seat Belts (2)	1.4	123.0	172
<u>X</u>	Flight Manual	-----	-----	-----
<u>X</u>	Tow Bar	1.3	133.0	173

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

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Weight and Balance Data
CHECKED		Model PA-28-180 D
APPROVED	OPTIONAL EQUIPMENT LIST	PAGE <u>11</u> Section <u>1</u>

OPTIONAL EQUIPMENT LIST  
MODEL PA-28-180 D

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<u>Engine Accessories</u>			
X	Vacuum Pump, Airborne Mechanisms Model No. 10-113A1, 113A5 or 200 cc and Drive	5.0	37.0	185
X	Oil Filter - Lycoming No. 74911 (AC of 81A No. 6437032)	3.3	40.5	134
X	Vacuum Regulator and Filter	2.2	57.0	125
	<u>Electrical Equipment</u>			
X	Rotating Beacon, Grimes #40-0101-7-12 or Grimes #40-0101-15-12	1.5	263.4	395
X	Landing Light, G. E. Model 4509	.5	18.1	9
X	Navigation Light (Rear)(1) Grimes Model 2064 (White)	.2	281.0	56
X	Navigation Lights (2) Grimes Model A1285 (Red and Green)	.4	106.6	43
X	Battery 12V, 35 A. H., Rebat R-33 or R-35 (Weight 27.0 lbs)	5.5 *	168.0	924
X	Cabin Light	.3	104.0	31
X	Cabin Speaker	.8	104.0	83
	Rotating Beacon, Whelen Model WRM L-12	1.6	263.4	421

\* Weight and moment difference between standard and optional equipment.

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Weight and Balance Data Model PA-28-180 D
CHECKED		
APPROVED	OPTIONAL EQUIPMENT LIST	PAGE 12 Section 1

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<u>Electrical Equipment</u> (Cont'd)			
	Auxiliary Power Receptacle, PAC 62355-3	2.7	168.0	454
	External Power Cable, PAC 62355-2	4.6	142.8	657
	Piper Pitch Trim	4.0	158.0	632
X	Heated Pitot Head	.4	100.0	40
	 <u>Instruments</u>			
	Suction Gauge - Piper Drawing 67481	.5	67.2	34
X	Suction Gauge - U.S. Gauge AW1821AFO3	.5	67.2	34
	Suction Gauge - Airborne Mechanisms IG3-4	.5	67.2	34

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Weight and Balance Data
CHECKED		Model PA-28-180 D
APPROVED	OPTIONAL EQUIPMENT LIST	PAGE 13 Section 1

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<u>Instruments</u> (Cont'd)			
	Turn and Bank, Piper Drawing 41711-2	2.2	64.9	143
	Rate of Climb, Garwin #22-201-01-1A	1.0	65.9	66
	Directional Gyro, Garwin (3")	2.4	64.7	155
	Directional Gyro, AIM (3")	3.1	64.0	198
X	Artificial Horizon, Garwin (3")	1.8	64.9	117
	Artificial Horizon, AIM (3")	2.2	64.4	142
X	Air Temperature Gauge, Rochester Manufacturing Co., No. 1592-C2 or NHM-70 (Manning, Maxwell & Moore)	.2	82.6	17
X	Clock, 8-Day, MIL-C-7939	.4	67.4	27
X	Tru-Speed Indicator, PAC 62143-2	Same as Standard Equipment Weight		
X	Pictorial Rate of Turn, Mitchell 52D69	1.3	65.3	85
	Brittain Turn Coordinator TC-100(12)	2.6	64.7	168
	Exhaust Gas Temperature	.7	60.4	42
	Attitude Gyro, R. C. Allen (3")	2.2	65.6	144
X	Directional Gyro, R. C. Allen (3")	3.3	64.8	214
	Manifold Pressure Gauge, PAC 21962	1.1	65.8	72
	Rate of Climb, Standard Precision SP-1403-(1)-PIP	.5	65.9	33
X	Rate of Climb, Karnish #AC-135-3	1.0	65.9	66

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Weight and Balance Data Model PA-28-180 D
CHECKED		
APPROVED	OPTIONAL EQUIPMENT LIST	PAGE 14 Section 1

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<u>AutoPilots</u>			
	AutoControl III			
	Roll Servo, Mitchell #1D363-183R	2.5	122.2	306
	Console, Mitchell #1C338	1.2	65.1	78
	Cables	.7	95.5	67
	Attitude Gyro, Mitchell #52D66 (Garwin)	1.9	64.9	123
	Attitude Gyro, Mitchell #52D66 (AIM)	2.3	64.4	148
	Directional Gyro, Mitchell #52D54P (Garwin)	2.5	64.7	162
	Directional Gyro, Mitchell #52D54P (AIM)	3.2	64.0	205
	Omni Coupler	.9	64.3	58
X	AIRES QUARTZ CHRONOGRAPH (REMOVED 8-27-77)			
X	AutoFlite			
X	Roll Servo, Mitchell #1D363-183R	2.6	122.2	318
X	Gyro Amplifier, Mitchell #1C359	1.8	111.8	201
X	Cables	1.0	95.5	96
X	Panel Unit	.3	67.9	20



PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Weight and Balance Data Model PA-28-180 D
CHECKED		
APPROVED	OPTIONAL EQUIPMENT LIST	PAGE 15 Section 1

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<u>Radio</u>			
	PM-1 Marker Beacon			
	Receiver	1.1	121.3	133
	Panel Unit	.3	68.1	20
	Cable	.3	85.0	26
	Piper Radio Compass PRC-3	4.5	64.4	290
	Piper VHF Transceiver PTR-1	5.0	64.8	324
	Piper Omni Convertor 0-1	2.5	65.3	163
	King KX150B	9.1	61.9	563
X	Omni Receiving Antenna, Narco VRP-37	1.4	203.0	284
X	VHF Antenna, Transmitting VHF-1	.3	157.8	47
	VHF Antenna, Transmitting VHF-2	.3	192.8	58
X	Cable, VHF-1	.4	118.0	47
	Cable, VHF-2	.5	135.0	68
	Low Frequency Antenna	.5	167.0	84
	Loop Antenna (PRC-3)	.3	54.5	16
	Omni Tracker (#1D482)	.5	54.9	27
	Narco Mark 12A			
	Transceiver, Single	6.0	61.9	371
	Transceiver, Dual	12.0	61.9	743
	Modulator-Power Unit, Single	4.0	186.0	744

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Weight and Balance Data
CHECKED		Model PA-28-180 D
APPROVED	OPTIONAL EQUIPMENT LIST	PAGE 16 Section 1

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<u>Radio</u> (Cont'd)			
	Modulator-Power Unit, Dual	8.0	186.0	1488
	Cable, Single	1.7	120.0	204
	Cable, Dual	3.4	120.0	408
	Narco VOA-6 Omni Convertor	1.8	64.4	116
	Narco VOA-5 Omni Convertor	3.1	64.4	200
	Narco VOA-4 Omni Convertor	3.0	64.4	193
	Narco VOA-4 Omni Convertor	3.0	64.4	193
X	Narco ADF-31A, Piper Drawing 67456			
X	Panel Unit	4.8	63.5	305
X	Sensor Unit and Doublers	2.2	162.7	358
X	Sensor Cable	2.3	105.6	243
X	Sense Antenna and Cable	.4	150.0	60
	Bendix ADF-T-12			
	Receiver	3.8	65.8	250
	Audio Amplifier	.8	56.0	45
	Radio Compass	1.7	66.4	113
	Loop Antenna	1.2	160.8	193
	Cable, Antenna	1.5	108.0	162
	Narco VOA-8 Omni Convertor	3.3	64.4	213
	Narco VOA-9 Omni Convertor	3.4	64.4	219

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Weight and Balance Data Model PA-28-180 D
CHECKED		
APPROVED	OPTIONAL EQUIPMENT LIST	PAGE 17 Section 1

		ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
Check if Installed					
		Radio (Cont'd)			
		Narco - UDI-111 DME	8.6	62.6	538
		Narco Mark III	7.5	62.7	470
		Narco UDI-4 DME			
		Receiver	8.5	61.7	524
		Antenna	.3	113.9	34
		Cable, Antenna	.4	100.0	40
<u>X</u>		<u>EBC ELT</u>	<u>1.9</u>	<u>72.2</u>	
		UGR-2 Glide Slope			
		Receiver	2.4	173.8	417
		Cable	2.1	128.0	269
		Antenna	.4	92.4	37
		Cable, Antenna	.5	145.0	73
		Transmitter Selector (Dual VHF Only)	.7	66.3	46
<u>X</u>		Microphone	.5	75.0	38
<u>X</u>		Headset	.5	65.0	33
<u>X</u>		Junction Box	.6	66.3	40
<u>X</u>		<del>BERTEA ML-100, RECEIVER</del>	<del>2.0</del>	<del>66.4</del>	} REMOVED 8-19-74
<u>X</u>		<del>" OLC-20, OMNI-CONV.</del>	<del>1.7</del>	<del>66.4</del>	
<u>X</u>		<del>" ML-200, TRANSCEIVER</del>	<del>3.5</del>	<del>65.8</del>	
<u>X</u>		<del>" ML-200 TRANSCEIVER</del>	<del>3.5</del>	<del>65.8</del>	
<u>X</u>		<del>" OLC 20 - OMNI CONV.</del>	<del>1.7</del>	<del>66.4</del>	
<u>X</u>		<del>NARCO AT50 TRANSPONDER</del>	<del>3.0</del>	<del>63.0</del>	184

REMOVED THIS LINE



PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Weight and Balance Data Model PA-28-180 D
CHECKED		
APPROVED	OPTIONAL EQUIPMENT LIST	PAGE 18 Section 1

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<u>Miscellaneous</u>			
X	Nose Wheel Fairing, Piper Drawing 65348	3.8	34.8	132
X	Main Wheel Fairing, Piper Drawing 65237	7.0	109.6	767
X	Assist Step	1.8	156.0	281
	Toe Brakes (Dual)	10.5	54.6	573
	Toe Brakes (Single)	5.0	54.6	273
	Fire Extinguisher-Stop Fire #A-20	7.5	93.0	698
	Inertia Safety Belt, PAC 65766 (Set of 2)	2.5	111.6	279
X	Assist Strap and Coat Hooks	.2	109.5	22
X	Lighter	.2	67.9	14
	Fire Extinguisher, Kidde Kompact VI (With Brackets)	5.3	85.0	451
	TOTAL OPTIONAL EQUIPMENT	65.1	98.0	6383

EXTERIOR FINISH

Base Color Juneau White

1st Trim Color Beaumont Blue

2nd Trim Color Dakota Black

Registration No. Color Beaumont Blue

Type Finish Lacquer

PIDER CHEROKEE

8-19-74

PA 28-180D

N 7775N

S/N 28-5223

WT & BAL DATA

CHANGE

SPR - 10.4 = 1.4 + LBS ADDED

REMOVED 1.8 + 8.5 = 15.0 LB IN MOMENT

ITEM = Δ.P1 + P.521 = WT YARM WELMOMENT  
(LBS) (INCHES) (LB INCHES)

NEW USEFUL LOAD = 105.1 - 1.4 = 103.7

BERTEA ML-200 3.5 65.8 230.3

BERTEA ML-200 3.5 65.8 230.3

BERTEA OLC-20 1.7 66.4 112.8

BERTEA OLC-20 1.7 66.4 112.8

10.4 686.2

ADDED

EBC ELT MODEL 302B 1.9 72.2 137.2

NARCO COM 11 3.5 62.7 219.4

NARCO COM 10 3.7 62.7 232.0

NARCO NAV 12 3.7 62.7 232.0

NARCO NAV 10 1.9 62.7 119.1

NARCO UGR-3A G/S RCVR 2.3 59.2 136.2

NARCO CPI25 CONTROL PNL 1.2 65.0 78.0

NARCO MBT-R MKR BCN RCVR 1.1 66.6 73.3

NARCO UDI-4 DME 8.5 61.9 526.1

OMNI TRACKER .5 54.9 27.5

DAVCO ADF PREQ COUNTER .3 67.2 20.1

~~XXXXXXXXXX~~

~~XXXXXXXXXX~~

SUCTION GAUGE .5 67.2 33.6

HEATED PITOT HEAD .4 100.0 40.0

29.8 1894.0

(OVER)

DES MOINES FLYING SERVICE

SUPPLEMENT TO AIRCRAFT WEIGHT AND BALANCE REPORT

LIST OF REVISIONS

N7775

SERIAL NO. 28-5223

DATE	NEW EMPTY WT.	NEW E.W.C.G.	NEW USEFUL LOAD	NEW MOMENT	MAX. CONTINUOUS ELECTRICAL LOAD
6-6-69	1366.3	86.0	1033.7	117578.0	N/A
8-28-69	1350.3	85.9	1049.7	115996.0	"
9-9-69	1357.5	85.7	1042.5	116471.9	10.8
6-8-70	1360.2	85.7	1039.8	116471.9	
4-9-71	1372.9	85.6	1027.1	117624.9	
8-19-74	1392.3	85.3	1007.7	118830.5	
3-11-87	1387.44	85.45	1012.56	118560.41	

*Superseded  
3/11/87*

**MAJOR REPAIR AND ALTERATION**  
**(Airframe, Powerplant, Propeller, or Appliance)**

FOR FAA USE ONLY  
OFFICE IDENTIFICATION

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form.

1. AIRCRAFT	MAKE Piper	MODEL Cherokee 180
	SERIAL NO. 28-5223	NATIONALITY AND REGISTRATION MARK N7775N
2. OWNER	NAME (As shown on registration certificate) Garrett, George R. Garrett, Harriett M.	ADDRESS (As shown on registration certificate) 215 Reading Maryland Heights, Mo. 63043

3. FOR FAA USE ONLY

4. UNIT IDENTIFICATION

5. TYPE

UNIT	MAKE	MODEL	SERIAL NO.	5. TYPE	
				REPAIR	ALTERATION
AIRFRAME	♦♦♦♦♦♦♦♦♦♦♦♦♦♦♦♦♦♦♦♦ (As described in item 1 above) ♦♦♦♦♦♦♦♦♦♦♦♦♦♦♦♦♦♦♦♦				X
POWERPLANT					
PROPELLER					
APPLIANCE	TYPE				
	MANUFACTURER				

6. CONFORMITY STATEMENT

A. AGENCY'S NAME AND ADDRESS	B. KIND OF AGENCY	C. CERTIFICATE NO.
Charles T. Lansden 4323 Grundy Dr. Bridgeton, Mo. 63044	<input checked="" type="checkbox"/> U.S. CERTIFICATED MECHANIC	1922038
	<input type="checkbox"/> FOREIGN CERTIFICATED MECHANIC	
	<input type="checkbox"/> CERTIFICATED REPAIR STATION	
	<input type="checkbox"/> MANUFACTURER	

D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

DATE Aug 27, 77	SIGNATURE OF AUTHORIZED INDIVIDUAL <i>Charles T. Lansden</i>
--------------------	---

7. APPROVAL FOR RETURN TO SERVICE

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is  APPROVED  REJECTED

BY	FAA FLT. STANDARDS INSPECTOR	MANUFACTURER	<input checked="" type="checkbox"/> INSPECTION AUTHORIZATION	OTHER (Specify)
	FAA DESIGNEE	REPAIR STATION	CANADIAN DEPARTMENT OF TRANSPORT INSPECTOR OF AIRCRAFT	
DATE OF APPROVAL OR REJECTION Aug 27, 77	CERTIFICATE OR DESIGNATION NO. 1922038	SIGNATURE OF AUTHORIZED INDIVIDUAL <i>Charles T. Lansden</i>		



**MAJOR REPAIR AND ALTERATION**  
**(Airframe, Powerplant, Propeller, or Appliance)**

FOR FAA USE ONLY  
OFFICE IDENTIFICATION

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form.

1. AIRCRAFT	MAKE <b>Piper</b>	MODEL <b>PA-28-180</b>
	SERIAL NO. <b>28-5223</b>	NATIONALITY AND REGISTRATION MARK <b>N7775N</b>
2. OWNER	NAME (As shown on registration certificate) <b>Garrett George R. Garrett Harriett M.</b>	ADDRESS (As shown on registration certificate) <b>215 Reading Maryland Heights, Mo. 63043</b>

3. FOR FAA USE ONLY

4. UNIT IDENTIFICATION

5. TYPE

UNIT	MAKE	MODEL	SERIAL NO.	REPAIR	ALTERATION
AIRFRAME	♦♦♦♦♦♦♦♦♦♦♦♦♦♦♦♦ (As described in item 1 above) ♦♦♦♦♦♦♦♦♦♦♦♦♦♦♦♦				X
POWERPLANT					
PROPELLER					
APPLIANCE	TYPE				
	MANUFACTURER				

6. CONFORMITY STATEMENT

A. AGENCY'S NAME AND ADDRESS <b>C. T. Lansden 4323 Grundy Dr. Bridgeton, Mo. 63044</b>	B. KIND OF AGENCY <input checked="" type="checkbox"/> U.S. CERTIFICATED MECHANIC <input type="checkbox"/> FOREIGN CERTIFICATED MECHANIC <input type="checkbox"/> CERTIFICATED REPAIR STATION <input type="checkbox"/> MANUFACTURER	C. CERTIFICATE NO. <b>1922038</b>
---	--	--------------------------------------

D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

DATE <b>Aug 28, 79</b>	SIGNATURE OF AUTHORIZED INDIVIDUAL <i>C. T. Lansden</i>
---------------------------	--

7. APPROVAL FOR RETURN TO SERVICE

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is  APPROVED  REJECTED

FAA FLT. STANDARDS INSPECTOR	MANUFACTURER	<input checked="" type="checkbox"/> INSPECTION AUTHORIZATION	OTHER (Specify)
FAA DESIGNEE	REPAIR STATION	CANADIAN DEPARTMENT OF TRANSPORT INSPECTOR OF AIRCRAFT	
DATE OF APPROVAL OR REJECTION <b>Aug 28, 79</b>	CERTIFICATE OR DESIGNATION NO. <b>1922038</b>	SIGNATURE OF AUTHORIZED INDIVIDUAL <i>C. T. Lansden</i>	





# TOMLINSON AVIONICS OF MO., INC.

AVIONICS SALES AND SERVICE

Municipal Airport P.O. Box 1458 Cape Girardeau, MO 63701 Phone (314) 334-8599

## SUPPLEMENTAL WEIGHT & BALANCE DATA AND EQUIPMENT LIST

MAKE PIPER

SERIAL NO. 28-5223

MODEL PA-28-180

REG NO. N7775N

PREPARED BY RALPH E. TOMLINSON

DATE 3-11-87

ITEM	DESCRIPTION	WEIGHT	ARM	MOMENT
	REMOVED...			
	NARCO UDI-4 DME	-8.5	61.7	524
	INSTALLED...			
	ARNAV R15B LORAN C	3.1	62.5	193.75
	LORAN C ANTENNA	0.54	111.4	60.16
CATAGORY	USEFUL LOAD	EMPTY WEIGHT	EMPTY WT. C.G.	TOTAL MOMENTS
NORMAL	1012.56	1387.44	85.45	118560.41

**MAJOR REPAIR AND ALTERATION**  
(Airframe, Powerplant, Propeller, or Appliance)

FOR FAA USE ONLY

OFFICE IDENTIFICATION

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form.

1. AIRCRAFT	MAKE PIPER	MODEL PA-28-180
	SERIAL NO. 28-5223	NATIONALITY AND REGISTRATION MARK N7775N
2. OWNER	NAME (As shown on registration certificate) WAYNE FOSTER JEFFREY BOST	ADDRESS (As shown on registration certificate) 609 S. BELL WEST BELLEVILLE, IL 62220

3. FOR FAA USE ONLY

4. UNIT IDENTIFICATION

UNIT	MAKE	MODEL	SERIAL NO.	5. TYPE	
				REPAIR	ALTERATION
AIRFRAME	***** (As described in item 1 above) *****				XX
POWERPLANT					
PROPELLER					
APPLIANCE	TYPE				
	MANUFACTURER				

6. CONFORMITY STATEMENT

A. AGENCY'S NAME AND ADDRESS TOMLINSON AVIONICS OF MO, INC. P.O. BOX 1458, MUNICIPAL AIRPORT CAPE GIRARDEAU, MO 63701	B. KIND OF AGENCY	C. CERTIFICATE NO. 362-51
	U.S. CERTIFICATED MECHANIC	
	FOREIGN CERTIFICATED MECHANIC	
	<input checked="" type="checkbox"/> CERTIFICATED REPAIR STATION	
	MANUFACTURER	

D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

DATE 3-11-87	SIGNATURE OF AUTHORIZED INDIVIDUAL 
-----------------	--

7. APPROVAL FOR RETURN TO SERVICE

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is  APPROVED  REJECTED.

BY	FAA FLT. STANDARDS INSPECTOR	MANUFACTURER	INSPECTION AUTHORIZATION	OTHER (Specify)
	FAA DESIGNEE	REPAIR STATION	CANADIAN DEPARTMENT OF TRANSPORT INSPECTOR OF AIRCRAFT	
DATE OF APPROVAL OR REJECTION 3-11-87	CERTIFICATE OR DESIGNATION NO. 362-51	SIGNATURE OF AUTHORIZED INDIVIDUAL 		