WEIGHT AND BALANCE

FOR

CHEROKEE CRUISER

APPLICABLE TO AIRPLANE SERIAL NUMBERS 28-7425001 THROUGH 28-7625275

WARNING

EXTREME CARE MUST BE EXERCISED TO LIMIT THE USE OF THIS REPORT TO APPLICABLE AIRCRAFT. THIS REPORT REVISED AS INDICATED BELOW OR SUBSEQUENTLY REVISED IS VALID FOR USE WITH THE AIRPLANE IDENTIFIED BELOW WHEN APPROVED BY PIPER AIRCRAFT CORPORATION. SUBSEQUENT REVISIONS SUPPLIED BY PIPER AIRCRAFT CORPORATION MUST BE PROPERLY INSERTED.

MODEL PA-28-140

AIRCRAFT SERIAL NO. _____ REGISTRATION NO. _____

WEIGHT AND BALANCE, REPORT NUMBER VB-546 REVISION _____

PIPER AIRCRAFT CORPORATION
APPROVAL SIGNATURE AND STAMP _____

ISSUED: MAY 14, 1973
REVISED: SEPTEMBER 30, 1977

REPORT: VB-546
MODEL: PA-28-140

INDEX - WEIGHT AND BALANCE

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WEIGHT AND BALANCE LOG OF REVISIONS

Revision	Revised Pages	Description and Revision	Approved Date
1	5-16	Revised Oil Cooler Weight and Moment.	October 22, 1973
	5-18	Revised Voltage Regulator Weight and Moment; Revised Battery Weight and Moment.	
	5-20	Revised Baggage Tie Down Straps Weight and Moment; Revised Toe Brakes Weight and Moment and added dwg. no.	
	5-22	Revised Battery Weight and Moment.	
	5-27	Revised Narco Audio Panel Weight, Arm and Moment; Revised MBT-12-R Marker Beacon Weight, Arm and Moment.	
	5-28	Revised -10, -12 Microphone Weights, Arms and Moments.	
	5-29	Revised Nose Wheel Fairing and Main Wheel Fairing Weights, Arms and Moments; Changed Jump Seat to -4 Install.; Revised Ash Trays Weight and Moment.	
	5-30	Removed Baggage Tie Down Straps; Revised Right and Left Vert, Adj. Front Seat Weights, Arms and Moments; Revised Ground Vent. Blower; Added Corrosive Resistant Kit	V. Jennard
2	Title	Added PAC Approval Form. (NOTE: AIRCRAFT DELIVERED WITH MANUALS PRIOR TO THIS REVISION DO NOT REQUIRE THIS REVISION.)	May 29, 1974
3	5-16	Added Oil Filters and footnote.	June 13, 1974
	5-18	Added Annunciator Lights and footnote.	
	5-20	Revised Inertia Safety Belts weights, moment and part no.	
	5-21	Added Airborne Vacuum Pump (PAC 79399-0); added Low Vacuum Annunciator Light; added Airborne Vacuum Regulator (#2H3-19); added footnotes.	R. Hamlin
	5-23	Added Overhead Red Panel Lights and Instrument Panel Lights.	
	5-24	Added Encoding Altimeter and footnote.	
	5-25	Added Autocontrol IIIB and footnotes; revised nomenclature (Console #1C338).	

WEIGHT AND BALANCE LOG OF REVISIONS (cont)

Revision	Revised Pages	Description and Revision	Approved Date
3 (cont)	5-26	Revised nomenclature (King KX175); added footnote.	
	5-27	Added footnote.	
	5-28	Revised nomenclature (King KMA-20 Audio Panel).	
	5-28a, 5-28b, 5-28c, 5-28d	Added pages (info for ser. nos. 7525001 and up).	
	5-29	Revised Inertia Safety Belts part no.; revised Assist Strap and Coat Hook dwg. no., added Assist Strap.	
4	5-14	Revised Utility Category Aft C.G. Limit.	Nov. 1, 1974
	5-21	Revised Airborne Vacuum Pump Moment.	
	5-28a	Revised King Dual KNI-520 Weight.	
5	5-5	Revised equations.	Jan. 21, 1975
	5-30	Added two Overhead Vent Systems.	
6	5-14	Revised C.G. Range and Weight graph.	May 16, 1975
	5-16	Deleted Chrysler Alternator.	
	5-22	Revised Dwg. No. (Piper Pitch Trim) to -2; added -3; added footnote.	
	5-24	Added Engine Hour Meter and footnote.	
	5-30	Added 79590-0 left Front Seat; added 79590-1 right Front Seat; added 79337-18 Headrest.	
	5-31	Added Stainless Steel Control Cables.	
7	5-22	Revised Rotating Beacon desc.	July 18, 1975
8	5-24	Revised Clock.	Nov. 27, 1975
	5-28	Revised Automatic Locator Transmitter.	
	5-28a	Added KN61 and KN65A DME's.	
9	5-28	Added Automatic Locator Transmitter.	July 19, 1976

WEIGHT AND BALANCE LOG OF REVISIONS (cont)

Revision	Revised Pages	Description and Revision	Approved Date
10	Title	Added Applicable Serial Numbers. (NOTE: AIRCRAFT DELIVERED WITH MANUALS PRIOR TO THIS REVISION DO NOT REQUIRE THIS REVISION.)	Sept. 30, 1977 C.F. Rihl.
11	5-1 5-3 5-4	Revised Weight and Balance info. Added Caution; relocated para. 2.b. to pg. 5-4 Added para. 2.b. from pg. 5-3.	April 16, 1979 Hal Fletcher
12	5-1	Revised Weight and Balance info.	May 22, 1980 Hal Fletcher
13	5-1 5-3, 5-7 5-15 5-16 5-18, 5-21, 5-22 5-24 5-25 5-26 5-28a, 5-28b 5-28c	Revised Weight and Balance info. Revised Weight and Balance Data info. Revised Equipment List. Added Niagara N.D.M 20002A to existing oil cooler description: added ending serial effectivity. Added ending serial number effectivity. Revised Encoding Altimeter Moment: added ending serial number effectivity. Added ending serial number effectivity. Revised King KI 214 ( ) VOR/LOC/GS Ind. Moment. Added ending serial number effectivity. Revised Sense Antenna and Cable #1 Moment; added ending serial number effectivity.	July 13, 1984 Ward Evans

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WEIGHT AND BALANCE

In order to achieve the performance and flying characteristics which are designed into the airplane, it must be flown with the weight and center of gravity (C.G.) position within the approved operating range (envelope). Although the airplane offers flexibility of loading, it cannot be flown with the maximum number of adult passengers, full fuel tanks and maximum baggage. With the flexibility comes responsibility. The pilot must ensure that the airplane is loaded within the loading envelope before he makes a takeoff.

Misloading carries consequences for any aircraft. An overloaded airplane will not take off, climb or cruise as well as a properly loaded one. The heavier the airplane is loaded, the less climb performance it will have.

Center of gravity is a determining factor in flight characteristics. If the C.G. is too far forward in any airplane, it may be difficult to rotate for takeoff or landing. If the C.G. is too far aft the airplane may rotate prematurely on takeoff or tend to pitch up during climb. Longitudinal stability will be reduced. This can lead to inadvertent stalls and even spins, and spin recovery becomes more difficult as the center of gravity moves aft of the approved limit.

A properly loaded airplane, however, will perform as intended. Before the airplane is licensed, it is weighed, and a licensed empty weight and C.G. location is computed (licensed empty weight consists of the standard empty weight of the airplane plus the optional equipment). Using the licensed empty weight and C.G. location the pilot can determine the weight and C.G. position for the loaded airplane by computing the total weight and moment and then determining whether they are within the approved envelope.

The licensed empty weight and C.G. location are recorded in the Weight and Balance Data Form (Page 5-7). The current values should always be used. Whenever new equipment is added or any modification work is done, the mechanic responsible for the work is required to compute a new licensed empty weight and C.G. position and to write these in the Aircraft Log Book and the Weight and Balance Data Form. The owner should make sure that it is done.

A weight and balance calculation is necessary in determining how much fuel or baggage can be boarded so as to keep within allowable limits. Check calculations prior to adding fuel to insure against improper loading.

The following pages are forms used in weighing an airplane in production and in computing licensed empty weight, C.G. position, and useful load. Note that the useful load includes usable fuel, baggage, cargo and passengers. Following this is the method for computing takeoff weight and C.G.

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WEIGHT AND BALANCE DATA

WEIGHING PROCEDURE

At the time of licensing Piper Aircraft Corporation provides each airplane with the licensed empty weight and center of gravity location. This data is on Page 5-7.

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

CAUTION

Whenever the fuel system is completely drained and fuel is replenished it will be necessary to run the engine for a minimum of 3 minutes at 1000 RPM on each tank to insure no air exists in the fuel supply lines.

   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 copilot 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.

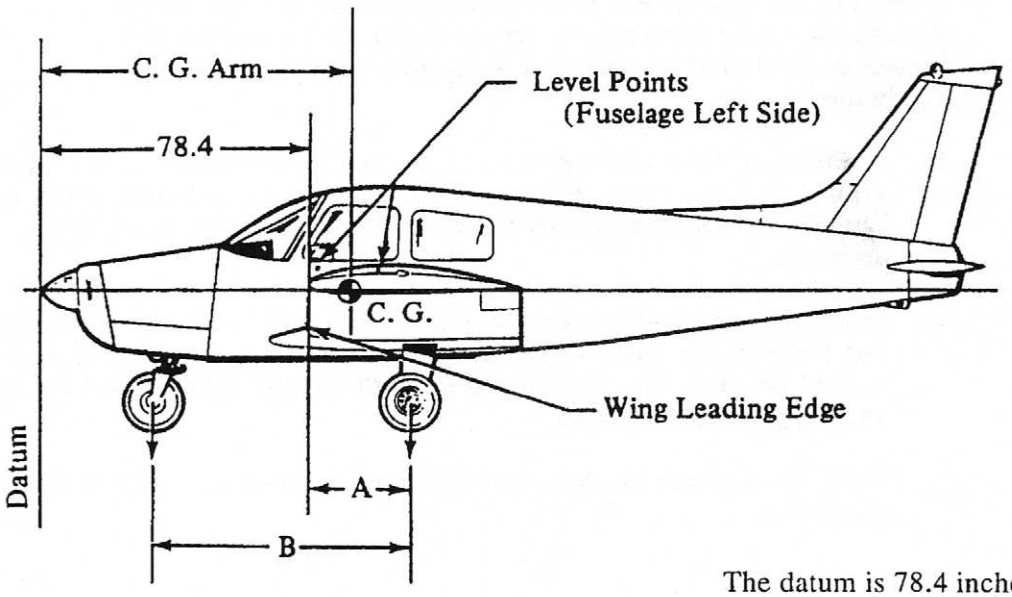
3. WEIGHING - AIRPLANE EMPTY WEIGHT

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-28-140 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 =

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:

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

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

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			

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WEIGHT AND BALANCE DATA

MODEL PA-28-140 CHEROKEE

Airplane Serial Number 28 -

Registration Number

Date

AIRPLANE EMPTY WEIGHT

Item	Weight (Lbs)	X C. G. Arm (Inches Aft of Datum)	= Moment (In-Lbs)
*Empty Weight Actual / Computed			
Unusable Fuel (3 pints)	2.2	103.0	227
Standard Empty Weight			
Optional Equipment			
Licensed Empty Weight			

*Empty weight is defined as dry empty weight (including paint and hydraulic fluid) plus 1.8 lbs 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 LICENSED AT THE FACTORY. REFER TO APPROPRIATE AIRCRAFT RECORD WHEN ALTERATIONS HAVE BEEN MADE.

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 5-14). For baggage allowance, see Page 5-11.

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 5-11.

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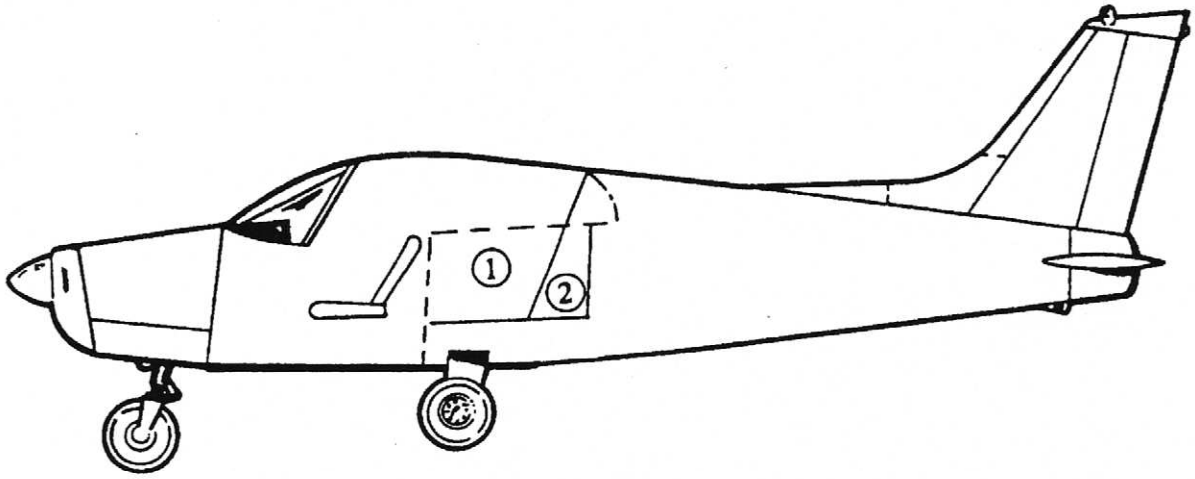
MAXIMUM ALLOWABLE BAGGAGE



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

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

Aircraft are eligible for 100-lb maximum baggage in this area when modified in accordance with Piper drawing 66671.

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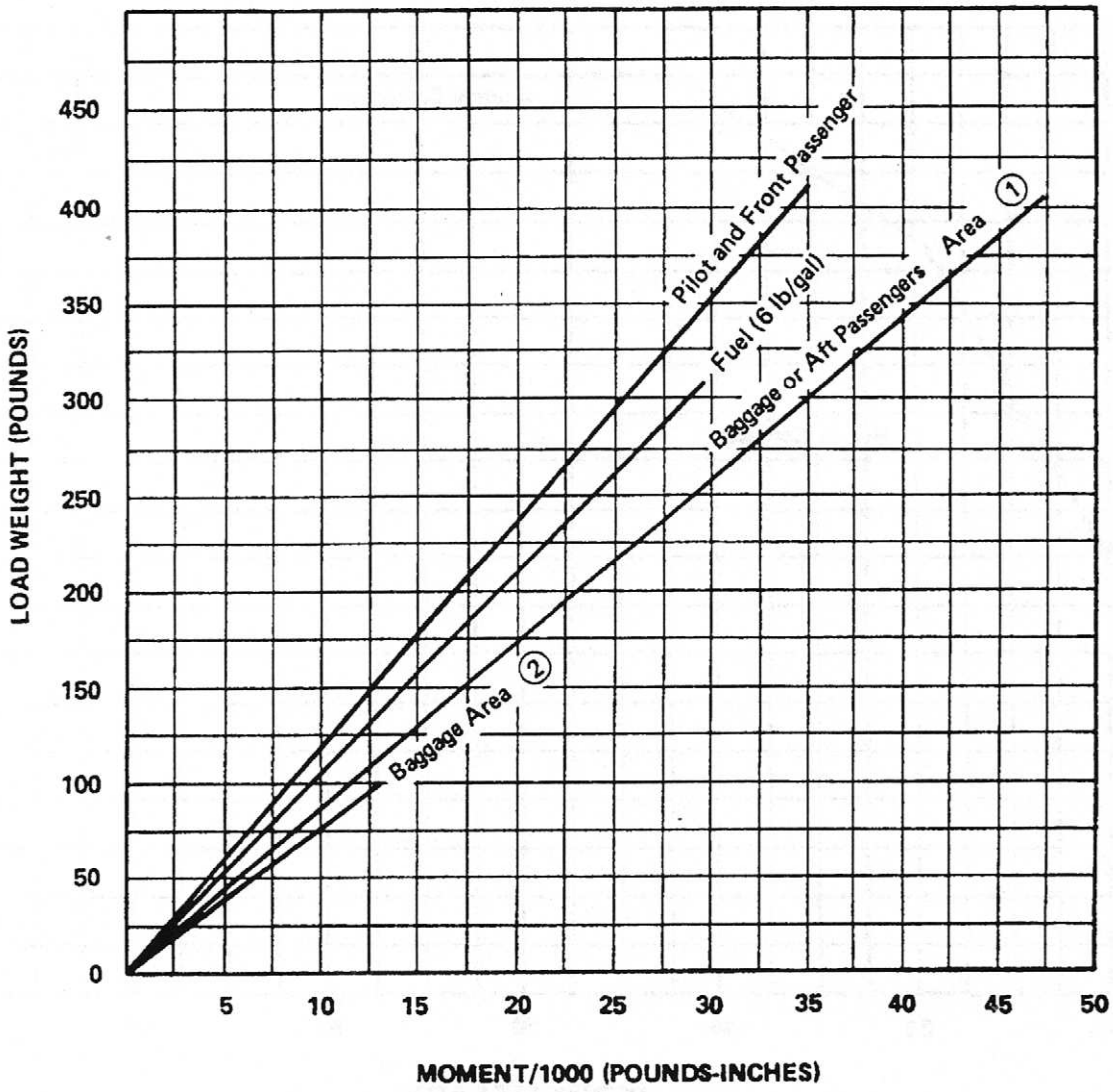
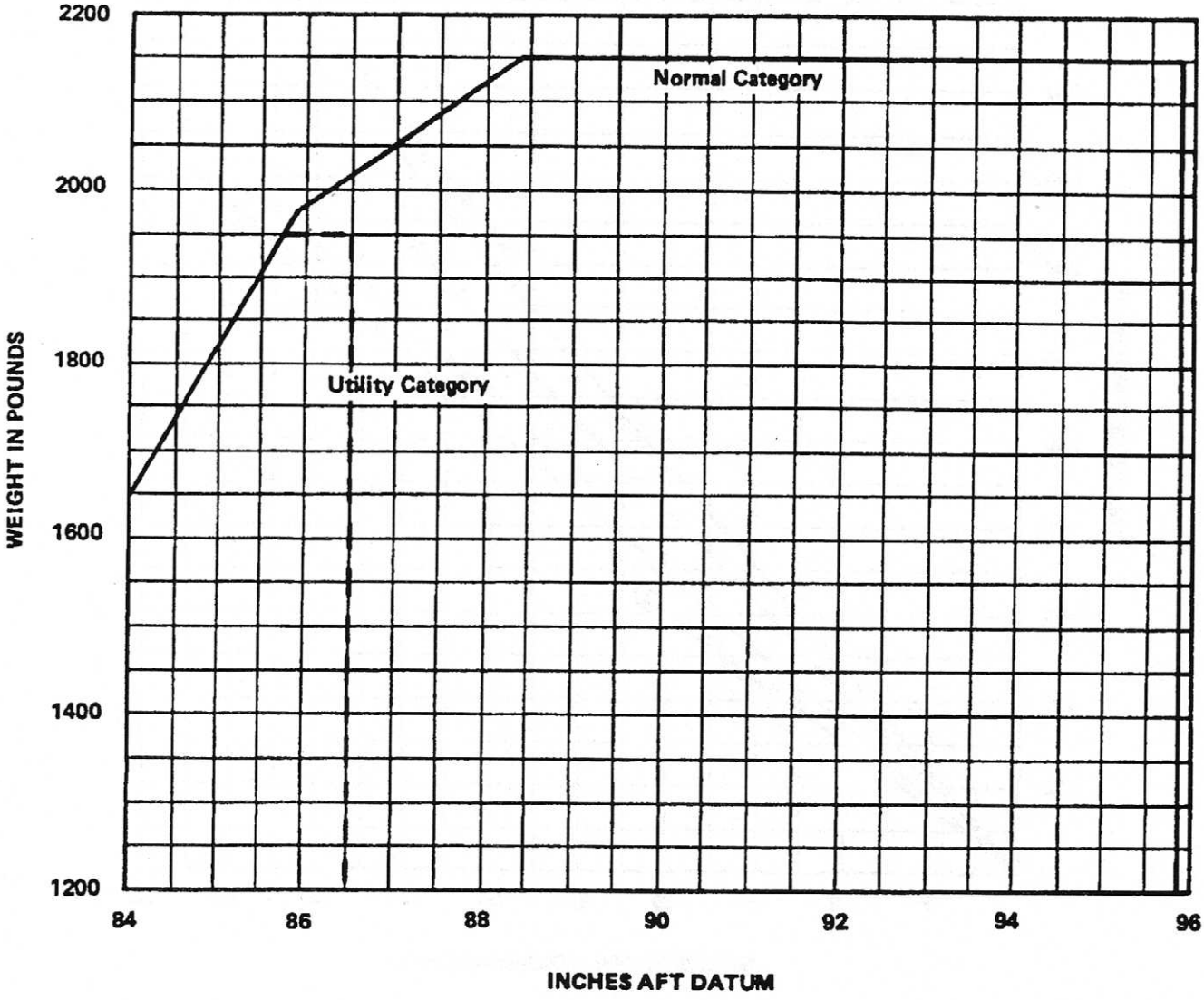
LOADING GRAPH



C. G. RANGE AND WEIGHTS



EQUIPMENT LIST

The following is a list of equipment which may be installed in the PA-28-140. Items marked with an "X" are items installed when the airplane was licensed by the manufacturer.

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
A.	Propeller and Propeller Accessories				
_____	Propeller, Sensenich 74DM6-0-58	30.0	10.1	303	TC P920
_____	Spinner and Attachment Plates				
_____	Installation PAC Dwg. 99516	2.0	8.0	16	TC 2A13

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
B.	Engine and Engine Accessories				
_____	Engine - Lycoming Model O-320-E3D	265.2	26.5	7028	TC 274
_____	Fuel Pump, Electric Auxiliary Bendix Model 478360	1.8	41.8	75	TC 2A13
_____	Fuel Pump. Engine Driven Lycoming Dwg. No. 75246	1.6	41.3	66	TC 274
_____	Oil Cooler, Harrison #C-8526250 or Niagara N.D.M. 20002A Piper Dwg. 18622	1.9	18.1	34	TC 2A13
_____	Air Filter, Fram Model CA-161 PL or Purolator AFP-2	.9	20.1	18	TC 2A13
_____	Starter - Lycoming #76210 Prestolite MZ4204	*17.0	19.5	332	TC 274
_____	Oil Filter - Lycoming** #75528 (AC#OF5578770)	3.3	40.5	134	TC 2A13
_____	Oil Filter - Lycoming** #LW-13743 (Champion #CH-48110	2.8	40.5	113	TC 2A13

*Included in Engine Weight.
**Serial nos. 28-7525001 through 28-7625275

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
C.	Landing Gear and Brakes				
_____	Two Main Wheel Assemblies 6.00 - 6	32.0	109.6	3507	TC 2A13
	(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	TC 2A13
	(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				

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
D.	Electrical Equipment				
_____	Stall Warning Device, Safe Flight Instrument Corporation, No. C52207-4	.2	80.2	16	TSO C54
_____	Voltage Regulator, Wico Electric No. X16300B	.9	56.9	51	TC 2A13
_____	Battery 12V, 25 A.H., Rebat Model S-25	21.9	114.9	2516	TC 2A13
_____	Overvoltage Relay, Wico Electric No. X16799	.5	60.4	30	TC 2A13
_____	Annunciator Lights*	.9	61.0	55	TC 2A13

*Serial nos. 28-7525001 through 28-7625275

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
	E. Instruments				
_____	Compass - Piper Dwg. 67462-4	.9	64.9	58	TSO C7c
_____	Airspeed Indicator - Piper Dwg. 63205	.6	66.8	40	TSO C2b
_____	Tachometer - Piper Dwg. 62177-2, -3 or -8	.7	66.2	46	TC 2A13
_____	Engine Cluster - Piper Dwg. 95241-17	.8	67.4	54	TC 2A13
_____	Altimeter - Piper PS50008-2 or -3	1.0	65.9	66	TSO C10b
_____	Ammeter - Piper Dwg. 66696	.3	67.4	20	TC 2A13

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
F.	Miscellaneous				
_____	Forward Seat Belts (2) PS50039-4-2A .75 lbs. each	1.5	86.9	130	TSO C22
_____	Inertia Safety Belts (2) PS50039-4-16 .75 lbs. each	1.5	119.6	179	TC 2A13
_____	Baggage Tie Down Straps Piper Dwg. 66804 & 66805	1.2	118.0	142	TC 2A13
_____	Flight Manual & Logs	2.6	95.1	247	TC 2A13
_____	Tow Bar, Piper Dwg. 99458	1.3	103.5	135	TC 2A13
_____	Toe Brakes (Dual), Piper Dwg. 63476-3 & 63473-8	11.0	54.6	601	TC 2A13

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
G.	Engine and Engine Accessories (Optional Equipment)				
_____	Vacuum Pump, Airborne Mfg. Co., Model No. 200cc and Drive	5.0	37.0	185	TC 2A13
_____	Starter - Lycoming 76211 (Prestolite MZ4206) (Weight 18.0 lbs.)	* 1.0	19.5	20	TC 274
_____	Oil Filter - Lycoming ** 75528 (AC#OF5578770)	3.3	40.5	134	TC 2A13
_____	Oil Filter- Lycoming ** #LW-13743 (Champion #CH-48110)	2.8	40.5	113	TC 2A13
_____	Vacuum Regulator, Airborne ** Mfg. Co., #133A4	.6	57.0	34	TC 2A13
_____	Vacuum Filter, Airborne Mfg. Co., 1J7-1	.3	57.0	17	TC 2A13
_____	Vacuum Pump, Airborne Mfg. Co., Model 211cc and Drive, PAC 79399-0	3.2	37.0	118	TC 2A13
_____	Low Vacuum Annunciator Light ***	Neglect			TC 2A13
_____	Vacuum Regulator, Airborne *** Mfg. Co., # 2H3-19	.5	57.0	28	TC 2A13

*Weight and moment difference between standard and optional equipment.
**Serial nos. 28-7425001 through 28-7425454
***Serial nos. 28-7525001 through 28-7625275

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
H.	Electrical Equipment (Optional Equipment)				
_____	Rotating Beacon	1.5	263.4	395	TC 2A13
_____	Landing Light, G.E. Model 4509	.5	18.1	9	TC 2A13
_____	Navigation Lights (2) Grimes Model A1285 (Red and Green)	.4	106.6	43	TSO C30b
_____	Navigation Light (Rear) (1) Grimes Model A2064-1073 (White)	.2	281.0	56	TSO C30b
_____	Battery 12V, 35 A.H. Rebat R-35 (Weight 27.2 lbs.)	* 5.3	114.9	609	TC 2A13
_____	Cabin Speaker, SB-15052 or 6EU 1937, Quincy Speaker Co., Oakton, Ind.	.8	104.0	83	TC 2A13
_____	Auxiliary Power Receptacle Piper Dwg. 65529	3.0	133.0	399	TC 2A13
_____	External Power Cable, Piper Dwg. 62355-7	4.6	117.0	538	TC 2A13
_____	Piper Pitch Trim, Piper Dwg. 67496-2	4.3	155.3	668	TC 2A13
_____	Piper Dwg. 67496-3**	4.3	155.3	668	TC 2A13
_____	Heated Pitot Head, Piper Dwg. 69041-5	.4	100.0	40	TC 2A13
	Anti-Collision Lights, Whelen Engineering Co., Piper Dwg. 99033-2 or -5				
_____	Power Supply, Model HS No. A412A-14 (with Fin Light only)	2.3	198.0	455	TC 2A13

*Weight and moment difference between standard and optional equipment
**Serial nos. 28-7525096 through 28-7625275

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
H.	Electrical Equipment (Optional Equipment) (cont)				
_____	Light, Fin Tip A470	.4	263.4	105	TC 2A13
_____	Cable, Fin Light A417-1/151	.4	230.7	92	TC 2A13
_____	Power Supply Model HD T3 A413 (with Fin and Wing Lights)	3.0	198.0	594	TC 2A13
_____	Lights, Wing Tip (2) (0.15 lbs. each) No. 429 PR or PG	.3	106.6	32	TC 2A13
_____	Cable Wing Lights A417-1/388 & A417-1/326	2.0	115.6	231	TC 2A13
_____	Overhead Red Panel Lights (2) Grimes 15-0083-7	.2	99.0	20	TC 2A13
_____	Instrument Panel Lights	.3	67.8	20	TC 2A13

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
I.	Instruments (Optional Equipment)				
	Suction Gauge, Piper Dwg. 99480-0 or -2	.5	67.2	34	TC 2A13
_____	Vertical Speed, Piper Dwg. 99010-2, -4 or -5	1.0	65.9	66	TSO C8b
_____	Vertical Speed, Piper Dwg. 99010-3	.5	67.2	34	TSO C8b
_____	Attitude Gyro, Piper Dwg. 99002-2, -3, -4 or -5	2.2	64.4	142	TSO C4c
_____	Directional Gyro, Piper Dwg. 99003-2, -3, -4 or -5	2.6	64.7	168	TSO C5c
_____	Air Temperature Gauge, Piper Dwg. 99479-0 or -2	.2	77.6	16	TC 2A13
_____	Clock	.4	67.4	27	TC 2A13
_____	Tru-Speed Indicator, Piper Dwg. 62143 or 62143-12	(same as Standard Equipment Weight)			
_____	Turn and Slip Indicator, Piper PS50030-2 or -3	2.6	64.7	168	TSO C3b
_____	Manifold Pressure Gauge, Piper PS50031-3 or -4	.9	64.7	58	TSO C45
_____	Encoding Altimeter Piper PS50008-6 or -7	* .9	65.3	59	TSO C10b C88
_____	Engine Hour Meter** Piper Dwg. 79548-2	.3	66.2	20	TC 2A13

*Weight and moment difference between standard and optional equipment.
**Serial nos. 28-7625001 through 28-7625275

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
J.	Autopilots (Optional Equipment)				
	AutoControl III *				
_____	Roll Servo # 1C363-1-183R	2.5	122.2	306	STC SA1406SW
_____	Console, # 1C338 (thru S/N 9999)	1.2	65.1	78	STC SA1406SW
_____	Cables	.7	95.5	67	STC SA1406SW
_____	Attitude Gyro, # 52D66	2.3	64.4	148	STC SA1406SW
_____	Directional Gyro, # 52D54	3.2	64.0	205	STC SA1406SW
_____	Omni Coupler, # 1C388	.9	64.3	58	STC SA1406SW
	AutoFlite II				
_____	Roll Servo, # 1C363-1-183R	2.5	122.2	306	STC SA1406SW
_____	Cable	.7	93.4	65	STC SA1406SW
_____	Panel Unit, # 52D75-3 or -4	2.4	64.4	155	STC SA1406SW
	AutoControl IIIB **				
_____	Roll Servo # 1C363-1-183R	2.5	122.2	306	STC SA1406SW
_____	Console, # 1C338 (S/N 10000 & up)	1.0	65.1	65	STC SA1406SW
_____	Cables	.5	95.5	48	STC SA1406SW
_____	Attitude Gyro, # 52D66	2.7	64.4	174	STC SA1406SW
_____	Directional Gyro, # 52D54	2.9	64.0	186	STC SA1406SW
_____	Omni Coupler, # 1C388	1.0	64.3	64	STC SA1406SW

*Serial nos. 28-7425001 through 28-7425454
**Serial nos. 28-7525001 through 28-7625275

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
K.	Radio Equipment (Optional Equipment)				
	Narco Mark 16 (VHF Comm/Nav) *				
_____	Transceiver, Single	7.5	61.9	464	TC 2A13
_____	Transceiver, Dual	15.0	61.9	929	TC 2A13
_____	Narco VOA-50M Omni Converter *	2.1	64.9	136	TC 2A13
_____	Narco VOA-40(M) Omni Converter *	1.9	64.9	123	TC 2A13
_____	Narco VOA-40 Omni Converter *	1.9	64.9	123	TC 2A13
_____	Narco Comm 10A VHF Transceiver	3.9	62.4	243	TC 2A13
_____	Narco Comm 11A VHF Transceiver	3.6	62.4	225	TC 2A13
_____	Narco Dual Comm 11A VHF Transceiver	7.1	62.4	443	TC 2A13
_____	Narco Nav 10 VHF Receiver	1.9	63.6	121	TC 2A13
_____	Narco Nav 11 VHF Receiver	2.8	63.6	178	TC 2A13
_____	Narco Nav 12 VHF Receiver	3.4	63.6	216	TC 2A13
_____	Narco Dual Nav 11 VHF Receiver	5.6	63.6	356	TC 2A13
	King KX170 ( ) VHF Comm/Nav or King KX175 ( ) VHF Comm/Nav				
_____	Transceiver, Single	7.5	61.6	462	TC 2A13
_____	Transceiver, Dual	15.0	61.6	924	TC 2A13
	King KI201 ( ) VOR/LOC Ind.	2.5	64.9	162	TC 2A13
	King Dual KI201 ( ) VOR/LOC Ind.	5.0	64.9	324	TC 2A13
_____	King KI214 ( ) VOR/LOC/GS Ind.	3.2	64.9	207	TC 2A13

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Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
K.	Radio Equipment (Optional Equipment) (cont)				
_____	Nav Receiving Antenna	.5	265.0	133	TC 2A13
_____	Cable, Nav Antenna	.9	157.0	141	TC 2A13
_____	#1 VHF Comm Antenna	.3	157.8	47	TC 2A13
_____	Cable, Antenna #1 VHF	.4	105.9	42	TC 2A13
_____	#2 VHF Comm Antenna	.3	192.8	58	TC 2A13
_____	Cable, Antenna #2 VHF	.5	123.4	62	TC 2A13
	Anti-Static Kit				
_____	#1 VHF Comm Antenna	1.0	160.8	161	TC 2A13
_____	Cable #1 VHF Comm Antenna	0.4	105.9	42	TC 2A13
_____	#2 VHF Comm Antenna	1.0	195.8	196	TC 2A13
_____	Cable #2 VHF Comm Antenna	0.5	123.4	62	TC 2A13
_____	Low Frequency Antenna	0.5	150.0	75	TC 2A13
_____	Static Wicks	—	—	—	TC 2A13
_____	Narco Audio Panel * CP-25B/125	1.2	55.0	66	TC 2A13
_____	MBT-12-R Marker Beacon Receiver	3.3	75.4	249	TC 2A13
	Bendix ADF-T-12 *				
_____	Receiver	3.5	64.4	225	TC 2A13
_____	Audio Amplifier	.8	57.4	46	TC 2A13
_____	Servo Indicator	1.7	65.9	112	TC 2A13
_____	Loop Antenna	1.3	160.8	209	TC 2A13
_____	Cable, Interconnecting	2.3	108.0	248	TC 2A13
_____	Sense Antenna and Cable	.4	150.0	60	TC 2A13
	King KR-85 ADF				
_____	Receiver	4.3	64.4	277	TC 2A13
_____	Servo Indicator	1.2	66.3	80	TC 2A13
_____	Loop Antenna	1.3	161.5	210	TC 2A13
_____	Loop Cable	1.8	108.0	194	TC 2A13
_____	Audio Amplifier	.8	56.0	45	TC 2A13
_____	Sense Antenna and Cable	.4	150.0	60	TC 2A13

*Serial nos. 28-7425001 through 28-7425454

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
K.	Radio Equipment (Optional Equipment) (cont)				
	UGR-2A Glide Slope				
_____	Receiver	2.4	141.8	340	TC 2A13
_____	Cable	1.8	106.0	191	TC 2A13
_____	Antenna	.4	92.4	37	TC 2A13
_____	Cable, Antenna	.5	145.0	73	TC 2A13
	Narco AT-50A Transponder				
_____	Panel Unit	* 3.0	62.3	187	TC 2A13
	King KN60C DME				
_____	Receiver	6.8	61.7	420	TC 2A13
_____	Antenna	.2	112.1	22	TC 2A13
_____	Cable, Antenna	0.3	85.6	26	TC 2A13
	King KT76/78 Transponder				
_____	Panel Unit	3.1	63.1	196	TC 2A13
_____	Antenna and Cable	—	—	—	TC 2A13
	King KMA-20 ( ) Audio Panel	2.8	65.2	183	TC 2A13
_____	Antenna	.5	116.3	58	TC 2A13
_____	Cable	.4	90.0	36	TC 2A13
	Piper Automatic Locator Transmitter, Piper				
_____	Dwg 79265-0	1.7	236.2	402	TC 2A13
	Transmitter, Piper				
_____	Dwg. 79265-6	1.3	236.2	307	TC 2A13
	Transmitter, Piper				
_____	Dwg 79761-3	1.7	236.2	402	TC 2A13
_____	Antenna and Cable	.2	224.4	45	TC 2A13
_____	Shelf and Access Panel	.33	235.4	78	TC 2A13
	Microphone, Piper Dwg.				
_____	68856-10	.3	70.9	21	TC 2A13
	Microphone (Dynamic)				
_____	Piper Dwg. 68856-12	.3	70.9	21	TC 2A13
	Headset, Piper Dwg.				
_____	68856-10	.5	65.0	33	TC 2A13

*Weight includes Antenna and Cable.

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
K.	Radio Equipment (Optional Equipment) (cont)				
_____	King KI-213 VOR/LOC/GS Indicator *	2.5	65.4	164	TC 2A13
	King KR-86 ADF *				
_____	Receiver	3.9	64.4	251	TC 2A13
_____	Loop Antenna	1.5	161.5	242	TC 2A13
_____	Loop Cable	1.3	108.0	140	TC 2A13
_____	Audio Amplifier	0.8	56.0	45	TC 2A13
_____	Sense Antenna & Cable	0.4	150.0	60	TC 2A13
	King KR-86 ADF (2nd) *				
_____	Receiver	3.9	64.4	251	TC 2A13
_____	Loop Antenna	1.5	150.7	226	TC 2A13
_____	Loop Cable	1.3	105.0	137	TC 2A13
_____	Sense Antenna & Cable	3.0	147.5	443	TC 2A13
_____	King KN-73 Glide Slope Receiver *	3.2	184.3	590	TC 2A13
_____	King KN-77 VOR/LOC Converter *	3.6	183.6	661	TC 2A13
_____	King Dual KN-77 VOR/LOC Converter *	7.8	183.6	1432	TC 2A13
	King KN-65 DME *				
_____	Receiver	7.6	201.6	1532	TC 2A13
_____	Antenna	0.2	112.1	22	TC 2A13
_____	Cable, Antenna	0.3	157.1	47	TC 2A13
_____	Indicator	1.0	67.4	67	TC 2A13
	King KN-74 R-Nav *				
_____	Computer	3.7	62.6	232	TC 2A13
_____	Cable Assy.	1.0	53.0	53	TC 2A13
_____	King Dual KNI-520	5.6	64.9	363	TC 3A13
_____	King KN61 DME	12.5	179.1	2239	TC 2A13
_____	King KN65A DME	13.0	175.2	2278	TSO C66a

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Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
K.	Radio Equipment (Optional Equipment) (cont)				
_____	Narco Comm 11B VHF Transceiver *	3.9	62.4	243	TC 2A13
_____	Narco Dual Comm 11B VHF Transceiver *	7.8	62.4	487	TC 2A13
_____	Narco Comm 111 VHF Transceiver *	3.0	62.4	187	TC 2A13
_____	Narco Dual Comm 111 VHF Transceiver *	6.0	62.4	374	TC 2A13
_____	Narco Comm 111B VHF Transceiver *	3.9	62.4	243	TC 2A13
_____	Narco Dual Comm 111B VHF Transceiver *	7.8	62.4	487	TC 2A13
_____	Narco Nav 111 VHF Receiver *	2.5	63.6	159	TC 2A13
_____	Narco Nav 112 VHF Receiver *	3.3	63.6	210	TC 2A13
_____	Narco Nav 14 VHF Receiver *	2.5	62.4	156	TC 2A13
_____	Narco Nav 114 VHF Receiver *	2.5	62.4	156	TC 2A13
	Narco UGR-3 Glide Slope *				
_____	Receiver	2.4	141.8	340	TC 2A13
_____	Cable	1.8	106.0	191	TC 2A13
_____	Antenna	0.4	92.4	37	TC 2A13
_____	Cable, Antenna	0.5	145.0	73	TC 2A13
_____	Narco CP-125 Audio Selector Panel *	2.2	55.0	121	TC 2A13
	Narco ADF-140*				
_____	Receiver	2.5	63.3	158	TC 2A13
_____	Servo Indicator	1.3	66.0	86	TC 2A13
_____	Loop Antenna	1.6	162.0	259	TC 2A13
_____	Cable, Loop	0.6	105.5	63	TC 2A13
_____	Sense Antenna and Cable	0.4	147.5	59	TC 2A13

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Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
K.	Radio Equipment (Optional Equipment) (cont)				
	Narco Dual ADF-140 *				
_____	Receivers	5.0	63.3	317	TC 2A13
_____	Dual Needle Indicator	3.5	66.0	231	TC 2A13
_____	Loop Antenna #1	1.6	162.0	259	TC 2A13
_____	Cable, Loop #1	0.6	105.5	63	TC 2A13
_____	Sense Antenna and Cable #1	0.4	143.8	57	TC 2A13
_____	Loop Antenna #2	1.6	150.0	240	TC 2A13
_____	Cable, Loop #2	0.6	93.8	56	TC 2A13
_____	Sense Antenna and Cable #2	3.0	143.8	431	TC 2A13
_____	Remote for Dual Ind.	2.0	185.5	371	TC 2A13
	Narco DME-190*				
_____	Receiver	5.2	61.8	321	TC 2A13
_____	Antenna	0.3	113.9	34	TC 2A13
_____	Cable, Antenna	0.4	85.6	34	TC 2A13
	Microphone (Dynamic)*				
_____	Piper Dwg. & 68856-11	0.6	69.9	42	TC 2A13

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Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
L.	Miscellaneous (Optional Equipment)				
_____	Fire Extinguisher, Scott #42211, Piper Dwg. 76167-2 Brackets - Piper Dwg. 76167	4.6	71.0	327	TC 2A13
_____	Nose Wheel Fairing, Piper Dwg. 65348-2	3.6	41.3	149	TC 2A13
_____	Main Wheel Fairing, Piper Dwg. 65237	7.6	113.6	863	TC 2A13
_____	Assist Step, Piper Dwg. 65384-0	1.8	156.0	281	TC 2A13
_____	Lighter #200462 12V Universal	.2	67.9	14	TC 2A13
_____	Jump Seat Installation, Piper Dwg. 99360-4 Jump Seats (2) Seat Back 99948-0 (2) Seat Bottom 99949-0 (2)	16.2	117.0	1895	TC 2A13
_____	Ash Trays (2) 2A20580 Grand Rapids Metalcraft	.4	110.2	44	TC 2A13
_____	Jump Seat Belts and Cables PS50039-4-3 & 96908-0 & -3	*1.1	123.0	135	TC 2A13
_____	Inertia Safety Belts (2) 0.8 lbs each - PS50039-4-14	1.6	140.3	224	TC 2A13
_____	Close Out Panel, Piper Dwg. 66671-0 or-2	*7.3	140.6	1026	TC 2A13
_____	Ventilators (2) Piper Dwg. 68416-1	1.0	100.9	101	TC 2A13
_____	Assist Strap and Coat Hook Piper Dwg. 62353-5	.2	109.5	22	TC 2A13
_____	Assist Strap Piper Dwg. 79455	.2	109.5	22	TC 2A13

*Weight and moment difference between standard and optional equipment.

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
L.	Miscellaneous (Optional Equipment) (cont)				
_____	Vert. Adjustable Front Seat (Left), Piper Dwg. 79180-0	* 6.6	85.2	562	TC 2A13
_____	(Left), Piper Dwg. 79590-0	* 5.0	84.8	424	TC 2A13
_____	Vert. Adjustable Front Seat (Right), Piper Dwg. 79180-1	* 6.8	84.6	575	TC 2A13
_____	(Right), Piper Dwg. 79590-1	* 5.1	84.2	429	TC 2A13
_____	Cabin Overhead Vent System Piper Dwg. 79183-0 △	5.1	159.2	812	TC 2A13
_____	Cabin Overhead Vent System With Ground Ventilating Blower Piper Dwg. 79183-2 △	12.6	171.8	2165	TC 2A13
_____	Cabin Overhead Vent System Piper Dwg. 79183-3 △	5.6	159.8	893	TC 2A13
_____	Cabin Overhead Vent System With Ground Ventilating Blower Piper Dwg. 79183-4 △	13.1	171.4	2246	TC 2A13
_____	Super Cabin Sound Proofing Piper Dwg. 78030-0	16.3	89.3	1456	TC 2A13
_____	Alternate Static Source	.4	66.0	26	TC 2A13
	Calibrated Alternate Static Source Placard Required: Yes _____ No _____				
_____	Headrest (2) (Front) Piper Dwg. 96806-17 or 79337-18	2.0	99.5	199	TC 2A13
_____	Air Conditioning Installation Piper Dwg. 99286-3 △	67.0	107.5	7203	TC 2A13
_____	Zinc Chromate Finish	5.0	158.0	790	TC 2A13
_____	Corrosive Resistant Kit	3.0	106.0	318	TC 2A13

* Weight and moment difference between standard and optional equipment.
△ Requires optional close out panel.

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
L.	Miscellaneous (Optional Equipment) (cont)				
_____	Stainless Steel Control Cables	—	—	—	TC 2A13
	TOTAL OPTIONAL EQUIPMENT	_____	_____	_____	

EXTERIOR FINISH

Base Color_____ Registration No. Color _____

Trim Color_____ Type Finish _____

Accent Color _____

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