

WEIGHT AND BALANCE
FOR
CHEROKEE WARRIOR

28-7415543

W81388

MODEL - PA-28-151

ISSUED: MAY 14, 1973

REPORT: VB-535
MODEL: PA-28-151

INDEX - WEIGHT AND BALANCE

Log of Revisions	5-iii
Weight and Balance	5-1
Weight and Balance Data - Weighing Procedure	5-3
Weight and Balance Data	5-7
C. G. Range and Weight Instructions	5-8
Equipment List	5-11
A. Propeller and Propeller Accessories	5-11
B. Engine and Engine Accessories	5-12
C. Landing Gear and Brakes	5-13
D. Electrical Equipment	5-14
E. Instrument	5-15
F. Miscellaneous	5-16
G. Engine and Engine Accessories (Optional Equipment)	5-17
H. Electrical Equipment (Optional Equipment)	5-18
I. Instruments (Optional Equipment)	5-20
J. Autopilots (Optional Equipment)	5-21
K. Radio Equipment (Optional Equipment)	5-22
L. Miscellaneous (Optional Equipment)	5-26

THIS PAGE INTENTIONALLY LEFT BLANK

WEIGHT AND BALANCE LOG OF REVISIONS

Revision	Revised Pages	Description and Revision	Approved Date
1	5-8	Revised Arm and Moment values and Fuel capacity for Sample Loading Problem.	<i>P. J. J. J.</i> Aug. 30, 1973
2	5-10 5-17 5-27	Revised C.G. Range and Weight Chart. Added Vacuum Pump (79399-0). Revised Ground Ventilating Blower.	——— Jan. 25, 1974

WEIGHT AND BALANCE

In order to achieve the performance, safety and good 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 envelope. The aircraft offers a tremendous flexibility of loading. However, you cannot fill the airplane 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 try 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 aircraft, however, will perform as intended. This airplane is designed to provide excellent performance and safety within the flight envelope. Before the airplane is delivered, it is weighed, and a basic weight and C.G. location is computed. (Basic weight consists of the empty weight of the aircraft plus the unusable fuel and full oil capacity.) Using the basic weight and C.G. location, the pilot can easily 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 basic weight and C.G. location for a particular airplane are recorded in the aircraft log book or in the weight and balance section of the Airplane Flight Manual. 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 basic weight and basic C.G. position and to write these in the aircraft log book. The owner should make sure that it is done.

A weight and balance calculation can be helpful in determining how much fuel or baggage can be boarded so as to keep the C.G. within allowable limits. If it is necessary to remove some of the fuel to stay within maximum allowable gross weight, the pilot should not hesitate to do so.

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

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 5-7.

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 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) deflating nose wheel tire, to center bubble on level.

CHEROKEE WARRIOR

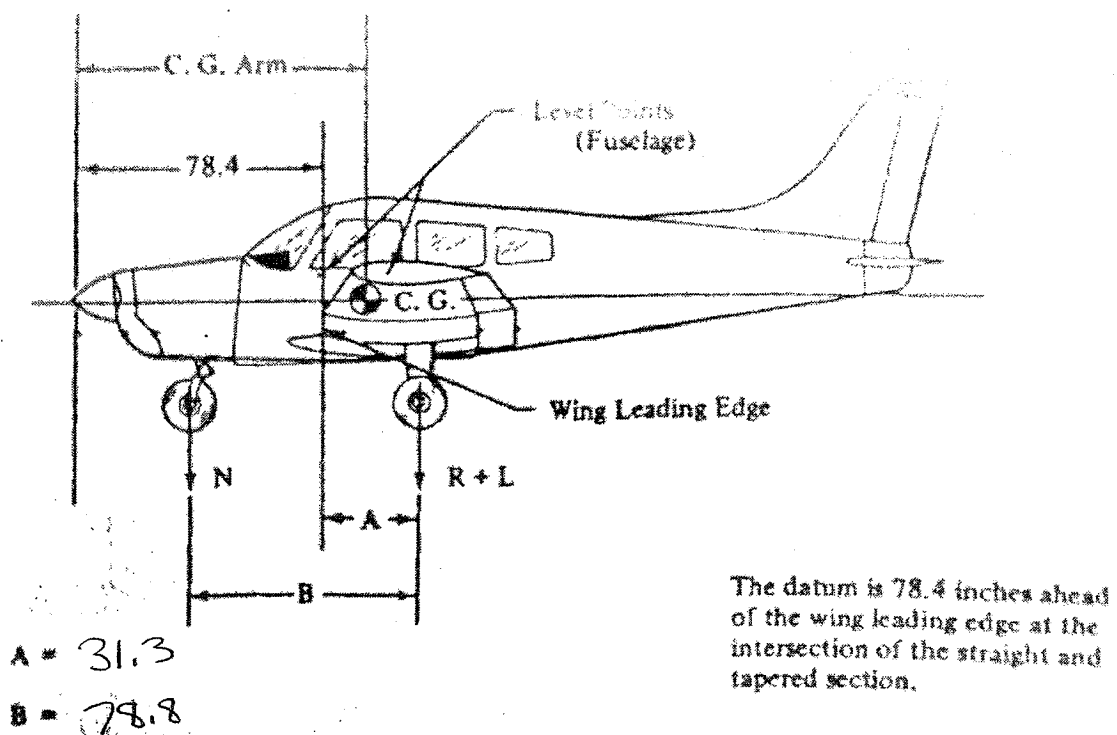
3. WEIGHING - AIRPLANE EMPTY WEIGHT

- 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)	424		
Right Main Wheel (R)	504		
Left Main Wheel (L)	496		
Airplane Empty Weight, as Weighed (T)	1424		

4. EMPTY WEIGHT CENTER OF GRAVITY

- a. The following geometry applies to the PA-28-151 airplane when airplane is level (See Item 2).



- b. Obtain measurement "A" by measuring from a plumb bob dropped from one wing leading edge, at the intersection of the straight and inboard 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:

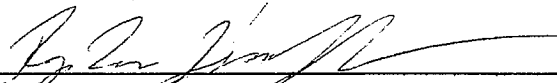
$$C.G. Arm = 78.4 + A - \frac{B(N)}{T}$$

$$C.G. Arm = 78.4 + (31.3) - \frac{(78.8)(424)}{(1424)} = 86.23 \text{ inches}$$

5. LICENSED EMPTY WEIGHT AND EMPTY WEIGHT CENTER OF GRAVITY

	Weight	Arm	Moment
Empty Weight (as weighed)	1424	86.23	1122791
Unusable Fuel (2.0 gal.)	12 lb	103.0	1136
Licensed Empty Weight	1436		

Aircraft Weight and Balance Revision

Tail Number: N813SS			Date: October 28, 2019		
Prepared by: Kachemak Bay Flying Service 7720 C Airport Road Temple, Texas 76504			Work Order No: 3505		
			Type Certificate Data No: 2A13		
Aircraft Make: Piper	Model: PA-28-151	Serial No: 28-7415543	Time: 2356.38		
Registered Owner: Luke Wimmer		Address: 8213 Northgate Loop Temple, TX 76502			
Maximum Weight 2325		CG Range FWD 83.0		AFT 93.0	
As Received; Date of Previous Weight and Balance: 5/20/2017		Useful Load: 884.0	EW: 1441.0	EWCG: 86.4	Moment: 124538
Notes:					
			Weight	Arm	Moment
Installed Garmin GA-35 WAAS GPS Antenna			0.70	90.0	63.00
Installed Garmin GDL-82 UAT			1.22	53.0	64.66
			0.00	0.00	0.00
			0.00	0.00	0.00
			0.00	0.00	0.00
			0.00	0.00	0.00
			0.00	0.00	0.00
			0.00	0.00	0.00
			0.00	0.00	0.00
			0.00	0.00	0.00
<input checked="" type="checkbox"/> As Calculated <input type="checkbox"/> As Weighed		Moment 124665.66 <hr/> Weight 1442.92	New Empty Weight CG		New Useful Load
			86.40		882.08
Signature Roep Lee Hausenfluke					
					
Repair Agency G8VR708N or License No:					



WEIGHT AND BALANCE CORRECTION SHEET

PREPARED BY:
Luke R. Wimmer
2515 Twin Ridge CT
Belton, TX 76513
PH: 386-547-6633

MAY 20, 2017

N813SS
Piper PA 28-151
SERIAL NUMBER: 28-7415543

Old Empty Weight with Unusable Fuel: 1436
Old Arm: 86.3
OLD MOMENT: 123,927


EQUIPMENT REMOVED

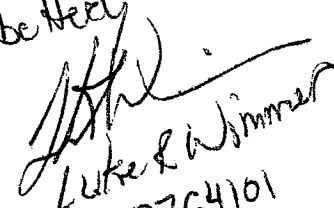
	WT	ARM	Moment
TKM MX-11	-3.0	(+57.4)	-173
Narco NAV 11 VHF Receiver	-2.8	(+58.6)	-164

EQUIPMENT ADDED

King KX-155 NAV/COMM	5.3	(+57.4)	304
King KI 209 Indicator	1.2	(+58.6)	70

UPDATED MOMENT: ~~123,964~~ 124,538
 UPDATED EMPTY WEIGHT: ~~1436~~ LB 1441.0
 UPDATED USEFUL LOAD NORMAL: 901 LB 896 LB
 UPDATED USEFUL LOAD UTILITY: 526 LB 521 LB
 New ARM ~~86.3~~ 86.4

Signed: 
 Luke R. Wimmer
 A&P 2764101

Supervisor
10/2/19
 update for installation of
 Concord battery January 2018

 Luke R. Wimmer
 A&P 2764101

Item Weight LBS Arm Moment

Item	Weight LBS	Arm	Moment
Installed Equipment:			
Propeller & Accessories Sensenich 74DM6-0-58	31.6	3.8	120
Spinner & Attachment Plates	2.5	3.0	7
Engine- Lycoming Model O-320-E3D	268.0	21.2	5682
Fuel pump Electric AUX Bendix model 478360	1.6	44.7	72
Fuel pump engine driven	1.7	36.3	62
Oil cooler Harrison C-8526250	1.9	31.3	58
Air Filer Dwg 35477	0.4	30.0	12
Alternator Prestolite No. ALY6408	10.5	14.0	147
*Starter Lycoming 76210 (Prestolite MZ4204)	17.0	14.5	246
Two Main Wheel Assemblies	32.3	109.6	3540
One Nose Wheel 5.00-5	8.3	29.8	247
Stall warning Device Flight instrument Corp # 53514-101	0.4	80.2	32
Voltage Regulator, Wilco Electric X-16300B	0.5	51.9	26
Overvoltage relay, Wilco Electric # X16799	0.5	55.4	28
Compass, Piper Dwg 67462	0.9	59.9	54
Airspeed Indicator Piper Dwg 63205-2	0.6	61.8	37
Tachometer, Piper Dwg 62177-3	0.7	61.2	43
Altimeter, Piper PS50008-2	1.0	60.9	61
Engine Cluster, Piper Dwg 95241-7	0.8	62.4	50
Ammeter, piper Dwg 66696	0.3	62.4	19
Forward seatbelts (2) .75 LBS Each	1.5	81.9	123
Inerta Safety Belts (2) .9 LBS Each	1.8	119.6	215
Rear Seat Belts (2) .7 LBS Each	1.4	123	172
Rear Seat	20	124.2	2484
Flight Manual	2.6		
Toe Brakes (Dual) Piper Dwg 63473	10.5	49.6	521
Vacuum Pump Airborne Model 200cc and drive	5.0	32.0	160
Oil Filter Lycoming 75528 (AC#OF5578770)	3.3	35.5	117
Vacuum Regulator	0.7	52.0	36
Vacuum Filter	0.3	52.0	16
Primer System, Piper Dwg 35327-0	1.2	50.0	60
Rotating Beacon Grimes 40-0101-15-12	1.5	263.4	395
Landing Light GE Model 4509	0.5	13.1	7
Navigation Lights (2) red & green, Grimes model A1285	0.4	106.6	43
Navigation light rear (1), Grimes model 2064 (white)	0.2	281.0	56
**Battery 12V Rebat R-35 (27.2 LBS)	5.3	114.9	609
Cabin light, Piper DWG 66632-0 & 95229-0	0.3	99.0	30
Cabin Speaker SB-15052 or 6EU 1937	0.8	99.0	79

Optional Equipment:			
Suction Gauge Piper Dwg 99480-0 or -2	0.5	62.2	31
Vertical Speed indicator, Piper Dwg 99010-2, -4 or -5	1.0	60.9	61
Attitude Gyro, Piper Dwg 99002-2, -3, -4 or -5	2.2	59.4	131
Directional Gyro, Piper Dwg 99003-2, -3, -4 or -5	2.6	59.7	155
Air Temp Gauge, Piper Dwg 99479-0 or-2	0.2	72.6	15
Clock, Piper Dwg 99478	.4	62.4	25
Turn and Slip Indicator Piper PS50030-2 or -3	2.6	59.7	155
TKM MX11 Comm	3.0	57.4	173
Narco Nav 11 VHF receiver	2.8	58.6	164
Nav receiving antenna	0.5	265	133
Cable Nav antenna	0.9	157	141
1 vhf Comm antenna	0.3	157.8	47
1 vhf antenna cable	0.4	1.3.4	41
King KT76/78 Transponder (panel, antenna and cable)	3.1	85.1	180
ACK-30 Encoder (transponder)	.6	56.0	34
ELT Transmitter (AK-450)	2.1	236.2	497
ELT Antenna & Cable	0.2	224.4	45
ELT Shelf and Access Plate	0.3	235.4	71
Microphone Piper Dwg 68856-10	0.5	70.0	35
Headset, Piper Dwg 68856-10	0.5	60.0	30
Assist Step, Piper Dwg 65384-0	1.8	156	281
Tow Bar, Piper Dwg 99458	1.3	140	182
Nose Wheel Fairing, Piper Dwg 35513	3.8	29.8	113
Main Wheel Fairing, Piper Dwg 65237	7.6	113.6	863
Vert Adjustable Front Seat Left, Piper Dwg 76340-0	6.6	80.7	533
Super Cabin Sound Proofing, Piper Dwg 79030-2	18.1	86.8	1571
Rear Seat Vents	2.5	98	245
Baggage Tie Down Straps	1.3	126.7	165
Lighter 12V Universal 200462	0.2	62.9	13
Assist Strap and Coat Hook, Piper Dwg 62353-5	0.2	109.5	22
Overhead Vent systems, Piper Dwg 76304-0	5.3	155.8	822
Sun Visors, Piper Dwg 66991-0	1.5	85.0	128
Optional Equipment Weight Total:	74.9	94.81	7102

* Included in engine weight

** Weight and moment difference between standard and optional equipment

WEIGHT AND BALANCE DATA

MODEL PA-28-151 CHEROKEE

Airplane Serial Number 28-7415543

Registration Number N81383

Date June 6, 1974

AIRPLANE EMPTY WEIGHT

Item	Weight (Lbs)	×	C. G. Arm (Inches Aft of Datum)	=	Moment (In-Lbs)
*Empty Weight	1315.0 Computed		85.6		112699
Unusable Fuel (2 gal.)	12		103		1136
Standard Empty Weight	1327.0		85.6		113635
Optional Equipment	93.1		92.8		8643
Licensed Empty Weight	1420.1		86.1		122278

*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: (2325 lbs) - (1420.1 lbs) = 904.9 lbs

Utility Category: (1950 lbs) - (1420.1 lbs) = 529.9 lbs

THIS LICENSED EMPTY WEIGHT, C. G. AND USEFUL LOAD ARE FOR THE AIRPLANE AS DELIVERED FROM 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.

SAMPLE LOADING PROBLEM (Normal Category)

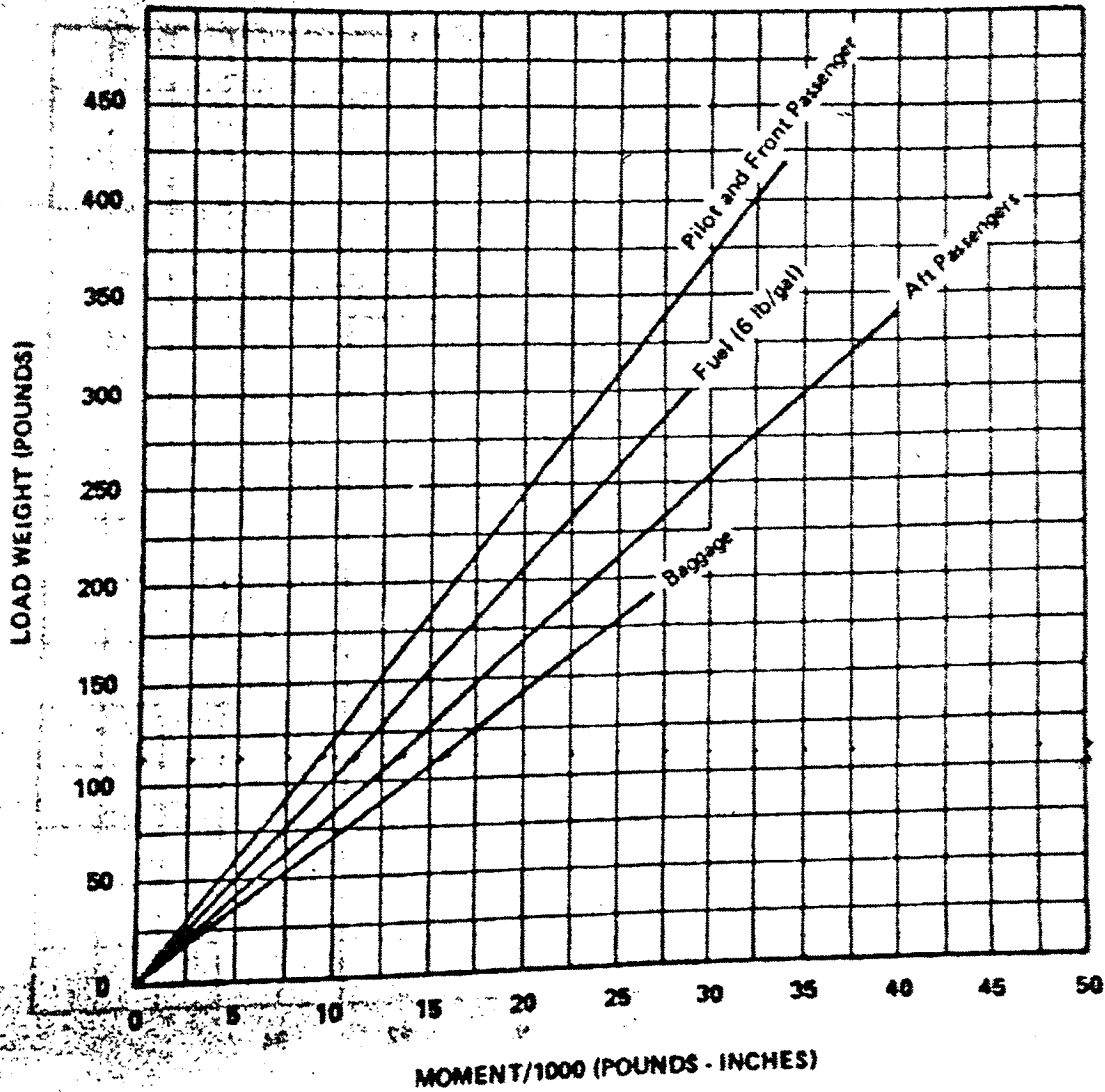
	Weight (Lbs)	Arm Aft Datum (Inches)	Moment (In-Lbs)
Licensed Empty Weight	1420.1	86.1	122278
Oil (8 quarts)	15	27.5	413
Pilot and Front Passenger	340	80.5	27370
Passengers, Aft* (Rear Seat)	340	118.1	40154
Fuel (48 Gal. Maximum)	209.9	95.0	19941
Baggage*		142.8	
Total Loaded Airplane	2325	90.4	210156

The center of gravity (C.G.) of this sample loading problem is at 90.4 inches aft of the datum line. Locate this point (90.4) 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.

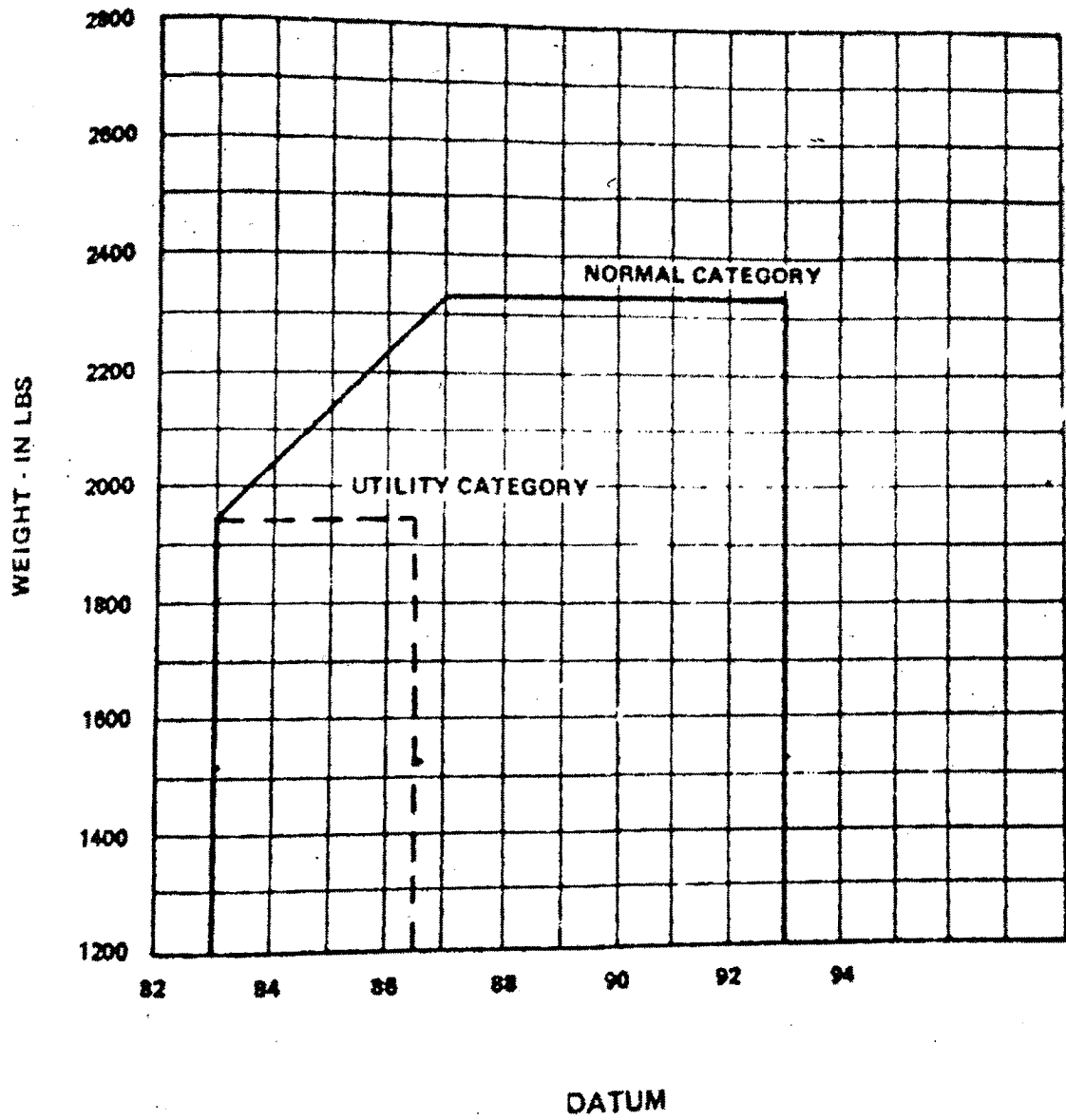
IT IS THE RESPONSIBILITY OF THE PILOT AND AIRCRAFT OWNER TO INSURE THAT THE AIRPLANE IS LOADED PROPERLY.

*Utility Category Operation - No baggage or aft passengers allowed.

LOADING GRAPH



C. G. RANGE AND WEIGHT



EQUIPMENT LIST

The following is a list of equipment which may be installed in the PA-28-151. Items marked with an "X" are items installed when the airplane was delivered by the manufacturer.

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
	A. Propeller and Propeller Accessories				
X	Propeller, Sensenich 74DM6-0-58	31.6	3.8	120	TC P886
	or McCaughey 1C1 60EGM7653	30.6	3.8	116	TC P910
X	Spinner and Attachment Plates	2.5	3.0	7	TC 2A13

CHEROKEE WARRIOR

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
B. Engine and Engine Accessories					
<u>X</u>	Engine - Lycoming Model O-320-E3D	268.0	21.2	5682	TC 274
<u>X</u>	Fuel Pump, Electric Auxiliary, Bendix Model 478360	1.6	44.7	72	TC 2A13
<u>X</u>	Fuel Pump, Engine Driven, Lycoming Dwg. No. 73297, 74082, 75148 or 75246	1.7	36.3	62	TC P286
<u>X</u>	Oil Cooler, Piper Dwg. 18622 Harrison *C-8526250	1.9	31.3	58	TC 2A13
<u>X</u>	Air Filter, Piper Dwg. 35477	.4	30.0	12	TC 2A13
<u>X</u>	Alternator, 60 Amp, Prestolite No. ALY6408	10.5	14.0	147	TC 2A13
<u>X</u>	Starter - Lycoming 76210 (Prestolite MZ4204)	* 17.0	14.5	246	TC 274

*Included in Engine Weight.

Item	Weight Lbs.	Arm Aft Datum	Moment	Cont. Basis
------	----------------	------------------	--------	----------------

C. Landing Gear and Brakes

<input checked="" type="checkbox"/> Two Main Wheel Assemblies	32.3	109.6	3540	TC 2A13
<ul style="list-style-type: none"> (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 				
<input checked="" type="checkbox"/> One Nose Wheel 5.00 - 5	8.3	29.8	247	TC 2A13
<ul style="list-style-type: none"> (a) Cleveland Aircraft Products Wheel Assembly No. 40-77A (Less Brake Drum) (b) One Nose Wheel 4-Ply Rating Tire 5.00 - 5 with Regular Tube 				

CHEROKEE WARRIOR

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
	D. Electrical Equipment				
<u>X</u>	Stall Warning Device, Safe Flight Instrument Corporation No. 53514-101	.4	80.2	32	TSO C306
<u>X</u>	Voltage Regulator, Wico Electric *X-16300B	.5	51.9	26	TC 2A13
	Battery 12V, 25 A.H., Rebat Model S-25	21.5	168.0	3612	TC 2A13
<u>X</u>	Overvoltage Relay, Wico Electric No. X16799	.5	55.4	28	TC 2A13

CHEROKEE WARRIOR

Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
B. Instrument				
X Compass - Piper Dwg. 67462	.9	59.9	54	TSO C7c
X Airspeed Indicator, Piper Dwg. 63205-2	.6	61.8	37	TSO C2b
X Tachometer, Piper Dwg. 62177-3	.7	61.2	43	TC 2A13
X Altimeter, Piper PS50008-2 or -3	1.0	60.9	61	TSO C10b
X Engine Cluster, Piper Dwg. 95241-7	.8	62.4	50	TC 2A13
X Ammeter - Piper Dwg. 66696	.3	62.4	19	TC 2A13

CHEROKEE WARRIOR

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
	F. Miscellaneous				
<u>X</u>	Forward Seat Belts (2) .75 lbs. each Piper Spec. PS50039-4-2A	1.5	81.9	123	TSO C22
<u>X</u>	Inertia Safety Belts (2) 0.9 lbs. each Piper Spec. PS50039-4-9	1.8	119.6	215	TC 2A13
<u>X</u>	Rear Seat Belts (2) .70 lbs. each Piper Spec. PS50039-4-3	1.4	123.0	172	TSO C22
<u>X</u>	Rear Seat	20.0	124.2	2484	TC2A13
<u>X</u>	Flight Manual	2.6	—	—	TC 2A13
<u>X</u>	Toe Brakes (Dual) Piper Dwg. 63473	10.5	49.6	521	TC 2A13

ISSUED: MAY 14, 1973

CHEROKEE WARRIOR

Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
G. Engine and Engine Accessories (Optional Equipment)				
<input checked="" type="checkbox"/> Vacuum Pump, Airborne Mfg. Co., Model No. 200cc and Drive	5.0	32.0	160	TC 2A13
<input checked="" type="checkbox"/> Oil Filter - Lycoming No. 75528 (AC*OF5578770)	3.3	35.5	117	TC 2A13
<input checked="" type="checkbox"/> Vacuum Regulator	.7	52.0	36	TC 2A13
<input checked="" type="checkbox"/> Vacuum Filter	.3	52.0	16	TC 2A13
<input checked="" type="checkbox"/> Primer System, Piper Dwg. 35327-0	1.2	50.0	60	TC 2A13
Starter - Lycoming 76211 (Prestolite MZ4206) (Weight 18 lbs)	* 1.0	14.5	15	TC 286
Vacuum Pump, Airborne Mfg. Co., Model 211cc and Drive, PAC 79399-0	3.2	32.0	103	TC 2A13

*Weight and moment difference between standard and optional equipment.

CHEROKEE WARRIOR

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
H. Electrical Equipment (Optional Equipment)					
X	Rotating Beacon, Grimes *40-0101-15-12	1.5	263.4	395	TC 2A13
X	Landing Light, G.E. Model 4509	5	13.1	7	TC 2A13
X	Navigation Lights (2) Grimes Model A1285 (Red and Green)	4	106.6	43	TSO C306
X	Navigation Light (Rear) (1) Grimes Model 2064 (White)	2	281.0	56	TSO C306
X	Battery 12V, 35 A.H. Rebat R-35 (Weight 22.0 27.2 lbs.)	22.0 27.2	114.9 100.0	609 609	TC 2A13
X	Cabin Light, Piper Dwg. 66632-0 & 95229-0	3	99.0	30	TC 2A13
X	Cabin Speaker SB-15052 or 6EU 1937	8	99.0	79	TC 2A13
	Auxiliary Power Receptacle, Piper Dwg. 35289	2.7	178.5	482	TC 2A13
	External Power Cable 62355-11	4.6	142.8	657	TC 2A13
	Piper Pitch Trim, Piper Dwg. 67498-0	4.3	155.3	668	TC 2A13
	Heated Pitot Head Piper Dwg. 35493-2	4	100.0	40	TC 2A13

*Weight and moment difference between standard and optional equipment.

Item	Description	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
H. Electrical Equipment (Optional Equipment) (cont)					
J. Red Strobe Light, Whelen Engineering Co. Piper Dwg. 99033-7					
_____	Power Supply, Whelen Model RS A412A-14	2.3	198.0	455	TC 2A13
_____	Light (Fin Tip)	.4	263.4	105	TC 2A13
_____	Cable	.4	230.7	92	TC 2A13
Red/White Strobe Light, Whelen Engineering Co. Piper Dwg. 99033-10					
_____	Power Supply, Whelen Model HD, T3 No. A413 (with Fin and Wing Lights)	3.0	198.0	594	TC 2A13
_____	Light (Fin Tip)	.4	263.4	105	TC 2A13
_____	Cable	.4	230.7	92	TC 2A13
_____	Lights (Wing Tip) (2)	.3	106.6	32	TC 2A13
_____	Cables	2.0	115.6	231	TC 2A13

CHEROKEE WARRIOR

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
L. Instruments (Optional Equipment)					
X	Suction Gauge, Piper Dwg. 99480-0 or -2	.5	62.2	31	TC 2A13
X	Vertical Speed, Piper Dwg. 99010-2, -4 or -5	1.0	60.9	61	TSO C3b
X	Attitude Gyro, Piper Dwg. 99002-2, -3, -4 or -5	2.2	59.4	131	TSO C4c
X	Directional Gyro, Piper Dwg. 99003-2, -3, -4 or -5	2.6	59.7	155	TSO C5c
X	Air Temperature Gauge. Piper Dwg. 99479-0 or -2	.2	72.6	15	TC 2A13
X	Clock, Piper Dwg. 99478	.4	62.4	25	TC 2A13
X	Tru-Speed Indicator, Piper Dwg. 62143 or -12	(Same as Standard Equipment)			TC 2A13
X	Turn and Slip Indicator, Piper PS50030-2 or -3	2.6	59.7	155	TSO C3b

Item No.	Description	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
I. Autopilots (Optional Equipment)					
AutoControl III, Piper					
Dwg. 79221-7, -8, -9					
_____	Roll Servo, *1C363-1-430R	2.5	122.2	306	STC SA1406SW
_____	Console, *1C338E	1.2	60.1	72	STC SA1406SW
_____	Cables	.7	95.5	67	STC SA1406SW
_____	Attitude Gyro, *52D66	2.3	59.4	137	STC SA1406SW
_____	Directional Gyro, *52D54	3.2	59.0	189	STC SA1406SW
_____	Omni Coupler, *1C388	.9	59.3	53	STC SA1406SW
AutoFile II, Piper Dwg.					
99447-3					
_____	Roll Servo, *1C363-1-430R	2.5	122.2	306	STC SA1406SW
_____	Cable	.7	93.4	65	STC SA1406SW
_____	Panel Unit, *52D75-3 or -4	2.4	59.4	143	STC SA1406SW

CHEROKEE WARRIOR

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	56.9	427	TC 2A13
_____	Transceiver, Dual	15.0	56.9	854	TC 2A13
_____	Narco VOA-50M Omni Converter	2.1	59.9	126	TC 2A13
_____	Narco VOA-40 (M) Omni Converter	1.9	59.9	114	TC 2A13
_____	Narco VOA-40 Omni Converter	1.9	59.9	114	TC 2A13
_____	Narco Comm 10A VHF Transceiver	3.9	57.4	224	TC 2A13
_____	Narco Comm 11A VHF Transceiver	3.6	57.4	207	TC 2A13
_____	MX-11 (TKM) Narco Dual Comm 11A VHF Transceiver	3.0	57.4	173	
_____	Narco Nav 10 VHF Receiver	1.9	58.6	111	TC 2A13
_____	Narco Nav 11 VHF Receiver	2.8	58.6	164	TC 2A13
_____	Narco Nav 12 VHF Receiver	3.4	58.6	199	TC 2A13
_____	Narco Dual Nav II VHF Receiver	5.6	58.6	328	TC 2A13
_____	King KX-175B VHF Transceiver	9.4	56.6	532	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 KNI-520 VOR/ILS Indicator	1.7	60.5	103	TC 2A13
_____	King KX-175B VHF Transceiver (2nd)	8.6	56.6	487	TC 2A13
_____	King KN-77 VOR/LOC Converter	4.2	183.6	771	TC 2A13
_____	King KNI-520 VOR/ILS Indicator	1.7	60.5	103	TC 2A13

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
	K. Radio Equipment (Optional Equipment) (cont)				
_____	Narco Comm 110 VHF Transceiver	3.0	57.4	172	TC 2A13
_____	Narco Comm 111 Transceiver	3.0	57.4	172	TC 2A13
_____	Narco Dual Comm 111 Transceiver	6.0	57.4	344	TC 2A13
_____	Narco Nav 110 VHF Receiver	1.7	58.6	100	TC 2A13
_____	Narco Nav 111 VHF Receiver	2.5	58.6	147	TC 2A13
_____	Narco Nav 112 VHF Receiver	3.3	58.6	193	TC 2A13
_____	King KX170B () (VHF Comm/Nav) Transceiver, Single	7.5	56.6	425	TC 2A13
_____	Transceiver, Dual	15.0	56.6	849	TC 2A13
_____	King KI201 () VOR/LOC Ind.	2.5	59.6	149	TC 2A13
_____	King Dual KI201 () VOR/LOC Ind.	5.0	59.9	300	TC 2A13
_____	King KI214 () VOR/LOC/GS Ind.	3.3	59.9	198	TC 2A13
<input checked="" type="checkbox"/>	Nav Receiving Antenna	.5	265.0	133	TC 2A13
<input checked="" type="checkbox"/>	Cable, Nav Antenna	.9	157.0	141	TC 2A13
<input checked="" type="checkbox"/>	*1 VHF Comm Antenna	.3	157.8	47	TC 2A13
<input checked="" type="checkbox"/>	Cable, Antenna *1 VHF	.4	103.4	41	TC 2A13
<input checked="" type="checkbox"/>	*2 VHF Comm Antenna	.3	192.8	58	TC 2A13
_____	Cable, Antenna *2 VHF	.5	120.9	60	TC 2A13

CHEROKEE WARRIOR

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
K. Radio Equipment (Optional Equipment) (cont)					
	Anti Static Kit				
_____	*1 VHF Comm Antenna	1.0	160.8	161	TC 2A13
_____	Cable *1 VHF Antenna	0.4	103.4	41	TC 2A13
_____	*2 VHF Comm Antenna	1.0	195.8	196	TC 2A13
_____	Cable *2 VHF Comm Antenna	0.5	120.9	60	TC 2A13
_____	Low Frequency Antenna	0.5	147.5	74	TC 2A13
_____	Static Wicks	—	—	—	TC 2A13
	Narco ADF-31 A/B				
_____	Panel Unit	5.0	58.5	293	TC 2A13
_____	Sensor Unit	2.5	162.7	407	TC 2A13
_____	Sensor Cable	2.3	100.6	231	TC 2A13
_____	Sense Antenna and Cable	.4	150.0	60	TC 2A13
	Bendix ADF-T-12C or Bendix ADF-T-12D				
_____	Receiver	3.5	59.4	208	TC 2A13
_____	Audio Amplifier	.8	52.4	42	TC 2A13
_____	Servo Indicator	1.7	60.9	104	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				
_____	Receiver	4.3	59.4	255	TC 2A13
_____	Servo Indicator	1.2	61.3	74	TC 2A13
_____	Loop Antenna	1.3	161.5	210	TC 2A13
_____	Loop Cable	1.8	108.0	194	TC 2A13
_____	Audio Amplifier	.8	51.0	41	TC 2A13
_____	Sense Antenna and Cable	.4	150.0	60	TC 2A13
	PM-1 Marker Beacon				
_____	Receiver	1.1	121.3	133	TC 2A13
_____	Remote Unit	.3	128.4	39	TC 2A13
_____	Cable	.3	80.0	24	TC 2A13
	UGR-2 Glide Slope				
_____	Receiver	2.4	173.8	417	TC 2A13
_____	Cable	1.8	128.0	230	TC 2A13
_____	Antenna	.4	87.4	35	TC 2A13
_____	Cable, Antenna	.5	145.0	73	TC 2A13

CHEROKEE WARRIOR

Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
K. Radio Equipment (Optional Equipment) (cont)				
_____ Narco CP-25B/125 Audio Selector Panel	1.5	60.2	90	TC 2A13
_____ Narco MBT-12A Marker Beacon Panel	1.2	52.5	63	TC 2A13
_____ Narco AT50A Transponder Panel Unit	* 3.0	57.3	172	TC 2A13
_____ King KT76/78 Transponder Panel Unit	3.1	58.1	180	TC 2A13
_____ Antenna and Cable				TC 2A13
_____ ACK 30 ALTITUDE ENCODER	.6	56	340	
_____ King KMA-20 Audio Panel	2.8	60.2	169	TC 2A13
_____ Antenna	.5	116.3	58	TC 2A13
_____ Cable	.4	87.5	35	TC 2A13
_____ King KN60C DME Receiver	6.8	56.7	386	TC 2A13
_____ Antenna	.2	107.1	21	TC 2A13
_____ Cable, Antenna	0.3	80.6	24	TC 2A13
_____ Piper Automatic Locator, Piper Dwg. 99890				
_____ Transmitter	1.7	236.2	402	TC 2A13
_____ Antenna and Cable	.2	224.4	45	TC 2A13
_____ Shelf and Access Plate	.3	235.4	71	TC 2A13
_____ Audio Selector Panel, Piper Dwg. 99395-0, -2 or -3	.7	61.3	43	TC 2A13
_____ Microphone (Dynamic), Piper Dwg. 68856-12	.5	70.0	35	TC 2A13
_____ Microphone (Carbon), Piper Dwg. 68856-10	.5	70.0	35	TC 2A13
_____ Headset, Piper Dwg. 68856-10	.5	60.0	30	TC 2A13

*Weight includes Antenna and Cable.

CHEROKEE WARRIOR

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
L. Miscellaneous (Optional Equipment)					
_____	Fire Extinguisher, Scott Aviation 42211-00, Piper Dwg. 76167-2	5.3	71.0	376	TC 2A13
X _____	Assist Step Piper Dwg. 65384-0	1.8	156.0	281	TC 2A13
_____	Inertia Safety Belts (Rear) (2) 0.8 lbs. each Piper Spec. PSS0039-4-6	1.6	140.3	224	TC 2A13
X _____	Tow Bar, Piper Dwg. 99458	1.3	140.0	182	TC 2A13
X _____	Nose Wheel Fairing Piper Dwg. 35513	3.8	29.8	113	TC 2A13
X _____	Main Wheel Fairings Piper Dwg. 65237	7.6 10.0	113.6 108.0	863 1080	TC 2A13
X _____	Vert. Adj. Front Seats (Left) Piper Dwg. 76340-0	6.6 10.0	80.7 108.0	533 1080	TC 2A13
_____	Vert. Adj. Front Seat (Right) Piper Dwg. 76340-1	* 3.2	85.7	280	TC 2A13
X _____	Super Cabin Sound Proofing Piper Dwg. 79030-2	18.1	86.8	1571	TC 2A13
X _____	Rear Seat Vents	2.5	98	245	TC 2A13
X _____	Baggage Tie Down Straps	1.3	126.7	165	TC 2A13
X _____	Lighter, 12V Universal 200462	.2	62.9	13	TC 2A13
X _____	Assist Strap and Coat Hook, Piper Dwg. 62353-5	.2	109.5	22	TC 2A13

*Weight and moment difference between standard and optional equipment.

CHEROKEE WARRIOR

Item	Item	Weight Lbs.	Arm Aft Datum	Moment	Cert. Basis
	L. Miscellaneous (Optional Equipment) (cont)				
	Overhead Vent System with Ground Ventilating Blower, Piper Dwg. 76304-2	12.9	170.1	2194	TC 2A13
<input checked="" type="checkbox"/>	Overhead Vent System, Piper Dwg. 76304-0	5.3	155.8	822	TC 2A13
	Alternate Static Source, Piper Dwg. 67479-2	4	61.0	24	TC 2A13
	Calibrated Alternate Static Source				
	Placard Required: Yes _____ No _____				
<input checked="" type="checkbox"/>	Headrest (2) (Front)	2.2	94.5	208	TC 2A13
<input checked="" type="checkbox"/>	Sun Visors, Piper Dwg. 66991-0	1.5	85.0	128	TC 2A13
	Zinc Chromate Finish, Piper Dwg. 65665	5.0	158.0	790	TC 2A13

TOTAL OPTIONAL EQUIPMENT 93.1 92.8 8643

EXTERIOR FINISH

Base Color Summit White

Trim Color Behrens Blue

Accent Color Madrid Red

Registration No. Color Red

Type Finish Lacquer

ISSUED: MAY 14, 1973
REVISED: JANUARY 25, 1974

REPORT: VB-535 PAGE 5-27
MODEL: PA-28-151