AIRPLANE FLIGHT MANUAL

MODEL PA-28R-180
RETRACTABLE

FAA IDENTIFICATION NO. N7674J

SERIAL NO. 28R-31074

THIS DOCUMENT MUST BE KEPT IN AIRPLANE AT ALL TIMES.

FAA APPROVED: for Henry C Fallin

John F. Vogel
Chief, Engineering & Manufacturing Branch
Southern Region---Atlanta, Georgia

DATE: June 8, 1967

Log of Revisions (Continued)

REVISION NO.	PAGE	DESCRIPTION	APPROVED	DATE
8	4	Changed Caution Range airspeed.	D. H. Trompler FAA DOA SO-1	May 24, 1989

Revision	Revised Pages	Description and Revision	FAA Approved Date
9	iii 4.1	Added Rev. 9 to L of R. Revised text in Procedures Section, Para. 3.	Eric A. Wright March 22, 2013

FAA APPROVED AIRPLANE FLIGHT MANUAL SUPPLEMENT OR SUPPLEMENTAL FLIGHT MANUAL FOR

AIRCRAFT MODEL: PA 28R-180

SERIAL NUMBER: 28R 31074

REGISTRATION NUMBER: N7674J

This supplement must be attached to the FAA approved Airplane Flight Manual, when the Precise Flight Standby Vacuum has been installed in accordance with STC(s).
SA2160NM, SA2161NM, SA2162NM, SA2164NM, SA2167NM, SA2168NM, SA2683NM - Aircraft
&
SE1779NM - Lycoming Engine
or
SE1780NM - Continental Engine

The information contained in this document supplements or supersedes the basic manual only in those areas listed. For Limitations, Procedures, and Performance information not contained in this supplement, consult the basic Airplane Flight Manual.

FAA APPROVED: _____
Manager,
Special Certification Branch
Seattle Aircraft Certification Office

DATE OF APPROVAL: Feb. 4, 2000

SYSTEM DESCRIPTION

A Precise Flight Standby Vacuum System may be installed to provide a temporary vacuum system in the event of a primary vacuum failure. The Standby Vacuum System operates on the differential between the intake manifold and ambient air pressure and is directed through a shuttle valve system to drive your flight instruments.

CAUTION: The use of the Standby Vacuum System requires a degree of Pilot skill and proficiency that is best maintained through practice. It is recommended, upon recurrent IFR training, in VFR conditions, in the presence of a CFI, that the aircraft be flown at the RPM and or Manifold Pressure settings found on the required placard and entered in this AFMS. This procedure will familiarize the pilot with limitations of using engine manifold vacuum for instrument power and maintaining level flight.

I. OPERATING LIMITATIONS

A. INSTRUCTIONS

1. The Standby Vacuum System is for emergency or standby use only and not for dispatch purposes.
2. Vacuum powered and/or Vacuum gyro directed autopilot operation may be unreliable when the Standby Vacuum System is the sole source of vacuum. Vacuum powered or vacuum gyro directed autopilot should be OFF when operating with a failed primary vacuum system.
3. The Supplemental Vacuum System is not designed to operate pneumatic de-ice systems. DO NOT operate a pneumatic de-ice system when operating with a failed primary vacuum system.
4. Above 10,000 ft. pressure altitude, engine power settings may have to be significantly reduced to provide adequate vacuum power for proper gyro instrument operation.
5. The following placards are required to be in full view of pilot:

I. OPERATING LIMITATIONS (CONT.)

B. PLACARDS

Placard to be located on the push/pull control cable

Placard to be located around the LED for the pump inop warning light.

Placard to be placed in front and in full view of the pilot.

STANDBY VACUUM SYSTEM EQUIPPED: FOR OPERATING INSTRUCTIONS AND LIMITATIONS SEE SUPPLEMENT IN OWNERS MANUAL OR PILOTS OPERATING HANDBOOK

I. OPERATING LIMITATIONS (CONT.)

B. PLACARDS

One of the following placards must be placed in full view of the pilot near the instrument vacuum indicator after appropriate entries have been made.

Approximate Standby Vacuum Available - Altitude - Power Chart for aircraft with Constant Speed Propeller - Maximum Continuous RPM.

PRESS ALT. (FT.)	RPM	MAN. PRESSURE	SVS VACUUM IN. HG MIN.
2000	Max. Cont.	22	3.5
4000	Max. Cont.	20	3.5
6000	Max. Cont.	18	3.5
8000	Max. Cont.	16	3.5
10,000	Max. Cont.	14	3.5

Approximate Standby Vacuum Available - Altitude - Power Chart for aircraft with a Fixed Pitch Propeller

PRESS ALT. (FT.)	RPM	SVS VACUUM IN. HG MIN.
2000		
4000		
6000		
8000		
10,000		

II. OPERATING PROCEDURES

A. NORMAL PROCEDURES

1. GROUND CHECK

a. Cycle the Standby Vacuum Control Knob **OUT - ON -** , and return Control Knob **IN - OFF -** position.

2. BEFORE TAKEOFF

a. Idle Engine at low speed, momentarily pull the standby vacuum knob **OUT - ON -** and check vacuum gauge. Normally, the vacuum reading will be slightly higher. After checking system push Standby Vacuum System knob **IN - OFF -**. Check that vacuum gauge has returned to the previous reading.

3. ENROUTE

a. Regularly check vacuum gauge and monitor warning light for proper vacuum system operation.

B. EMERGENCY PROCEDURES

1. PRIMARY VACUUM FAILURE WARNING LIGHT ILLUMINATES

a. Pull the Standby Vacuum System knob **OUT -ON-** and adjust throttle setting as required to maintain adequate vacuum for the primary instruments - Suction Gauge Reading in the Green Arc - If necessary descend to a lower altitude to obtain a larger differential between manifold and ambient pressure. Vacuum power must be closely monitored by checking the vacuum gauge frequently.

b. The SVS is not designed for continued IFR flight. Immediate steps should be taken to return to VFR conditions or to land. If this is not possible, IFR flight should be continued only as long as necessary to return to VFR conditions or land the airplane.

WARNING: FAILURE OF THE VACUUM SYSTEM STILL CONSTITUTES AN EMERGENCY SITUATION REGARDLESS OF THE INSTALLATION OF THE SVS. IT MAY NOT BE POSSIBLE TO MAINTAIN A SAFE ALTITUDE AND MAKE USE OF THE SVS. IN SUCH A SITUATION THE AIRPLANE MUST BE FLOWN USING NON-VACUUM POWERED INSTRUMENTS.

B. EMERGENCY PROCEDURES (CONT.)

c. If descent is impractical:

- Periodically and temporarily reduce power as required to provide adequate vacuum to the aircraft primary instruments.
- Reapply power as required, while comparing vacuum driven gyros against the Turn and Bank Indicator, Turn Coordinator, VSI and/or other flight instruments.
- When an obvious discrepancy is noted between the vacuum driven instruments and other flight instrumentation. Periodically and temporarily reduce power as required to provide adequate vacuum to the aircraft primary instruments.

III. PERFORMANCE

NO CHANGE

- - END - -

Log of Revisions

REVISION NO.	PAGE	DESCRIPTION	APPROVED	DATE

FAA APPROVED - June 8, 1967

Piper Model PA-28R-180
Normal Category Only

AIRPLANE FLIGHT MANUAL

1. Limitations Section — The following limitations must be observed in the operation of this airplane:

Engine	Lycoming IO-360-B1E	
Engine Limits	For all operations 2700 rpm, 180 hp	
Fuel	100/130 minimum octane aviation fuel	
Propeller	Hartzell HC-C2YK-1/7666A-0 Low pitch stop 13.0° High pitch stop 29.0° Maximum diameter 76 inches, minimum diameter 74.5 inches Avoid continuous operation 2000 - 2200 rpm	
Power Instruments	Oil Temperature:	GREEN arc (normal operating range) 75° F to 245° F
		RED line (maximum) 245° F
	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) 14 psi to 45 psi
		RED line (minimum) 14 psi
		RED line (maximum) 45 psi
	Tachometer:	GREEN arc (normal operating range) 500 to 2000 and 2200 to 2700 rpm
		RED arc 2000 to 2200 rpm
		RED line (maximum continuous power) 2700 rpm

FAA APPROVED - June 8, 1967

REVISED _____

Airspeed Limits (Calibrated Airspeed) (Miles per Hour)	Never exceed	214
	Maximum structural cruise	170
	Maneuvering	134
	Flaps extended	125
	Maximum gear extension	150
	Maximum gear retraction	125
	Maximum positive load factor	3.8
	Maximum negative load factor	No inverted manuevers approved

Maximum Weight: 2500 lbs

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.

Weight (Pounds)	Forward Limit (In. aft of datum)	Rearward Limit (In. aft of datum)
2500	91.0	95.9
1925	81.0	95.9

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: All acrobatic maneuvers including spins prohibited.

Placards:

1. In full view of the pilot:

"THIS AIRCRAFT APPROVED FOR NIGHT IFR NON-ICING FLIGHT WHEN EQUIPPED IN ACCORDANCE WITH FAR 91 FAR 135."

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

2. In full view of the pilot:

"NO ACROBATIC MANEUVERS INCLUDING SPINS APPROVED."

FAA APPROVED - June 8, 1967

REVISED _____

Placards (Continued)

3. On the instrument panel in full view of the pilot:

   "MANEUVERING SPEED - 134 MPH."

4. On the instrument panel in full view of the pilot:

   "DEMONSTRATED CROSS WIND COMPONENT - 20 MPH."

5. Adjacent to upper door latch:

   "ENGAGE LATCH BEFORE FLIGHT."

6. On the inside of the baggage compartment door:

   "BAGGAGE MAX. 200 LBS. SEE WEIGHT AND BALANCE DATA FOR BAGGAGE LOADINGS BETWEEN 150 LBS AND 200 LBS."

7. Near EMERGENCY GEAR LEVER: "EMERGENCY DOWN" "OVERRIDE UP"

8. Near landing gear selector switch:

   "GEAR UP 125 MPH MAX"
   "DOWN 150 MPH MAX"

9. 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."

Airspeed Instrument Markings

RED radial line	Never exceed	214 mph (186 knots)
YELLOW arc	Caution range (Smooth air only)	170 to 214 mph (148 to 186 knots)
GREEN arc	Normal operating range	69 to 170 mph (60 to 148 knots)
WHITE arc	Flap down range	63 to 125 mph (55 to 109 knots)

FAA APPROVED - June 8, 1967

REVISED _____

2. Procedures Section

1. The stall-warning system is inoperative with the master switch off.

2. The electric fuel pump must be on for both landing and takeoff.

3. This airplane is equipped with an airspeed-power sensing system (back-up gear extender) which extends the landing gear under low airspeed-power conditions* even though the pilot may not have selected gear down. This system will also prevent retraction of the landing gear by normal means when the airspeed power values are below a predetermined minimum. (See Item 5, Procedures Section)

   For normal operation, the pilot should extend and retract the landing gear with the gear selector switch located on the instrument panel, just as he would if the back-up gear extender system were not installed.

   * Approximately 105 mph IAS at any altitude, power off.

4. Landing gear position indication and warning lights:

   (a) The red gear warning light on the instrument panel and the horn operate simultaneously when:

      (1) In flight, when the throttle is reduced to where the manifold pressure is approximately 14 inches of mercury or below, and the gear selector switch is not in the down position.

      (2) In flight, when the back-up gear extender system has lowered the landing gear and the gear selector switch is not in the down position and the throttle is not full open.

      (3) On the ground, when the master switch is on and the gear selector switch is in the up position.

   (b) The three green lights on the instrument panel operate individually as each associated gear is locked in the extended position.

   (c) The yellow "In Transit" light on the instrument panel operates whenever any of the three gears is not in either the fully retracted position or the fully extended and locked position.

2. Procedures Section Section

Prior to takeoff and landing, the Emergency Gear Extension Lever should be verified in the normal/disengaged position to permit normal gear extension/retraction. For aircraft which do not have the back-up gear extender, the Emergency Gear Extension Lever should be verified in the up position to permit normal gear operation. In both gear operating system configurations, gear operation with the Emergency Gear Extension Lever in an intermediate position can result in a gear malfunction.

*Approximately 105 MPH IAS at any altitude, power off.

4. Landing gear position indicator and warning lights:

(a) The RED gear warning light on the instrument panel and the horn operate simultaneously when:

(1) In flight, when the throttle is reduced to less than approximately 14 inches Hg manifold pressure, and the gear selector switch is not in the DOWN position.

(2) In flight, on airplanes equipped with the backup gear extender, when the system has lowered the landing gear and the gear selector switch is not in the DOWN position and the throttle is not full open.

(3) On the ground, when the master switch is on and the gear selector switch is in the UP position.

(b) The three green lights on the instrument panel operate individually as each associated gear is locked in the extended position.

(c) The yellow "In Transit" light on the instrument panel operates whenever any of the three gears is not in either the full retracted position or the fully extended position.

On airplanes NOT equipped with the backup gear extender, an additional switch is installed which activates the warning horn and light whenever the flaps are extended beyond the approach position (10°) and the landing gear is not down and locked.

2. Procedures Section (Continued)

5. Takeoff considerations:

During takeoff, if the gear selector switch is placed in the gear up position before reaching the airspeed at which the back up gear extender system no longer commands gear down, * the gear will not retract. For obstacle clearance on takeoff and for takeoffs from high altitude airports, the landing gear can be retracted at the pilot's discretion by placing the gear selector switch in the up position and then holding the emergency gear lever in the override up position. It is necessary to hold the lever in the override up position until the speed required for retraction by the back up gear extender system has been attained.

* Approximately 85 mph IAS at sea level to approximately 100 mph IAS at 10,000 ft, with a straight line variation between.

2. Procedures Section (Continued)

6. Emergency landing gear extension instructions:

   (a) Reduce airspeed below 100 mph.

   (b) Move landing gear selector switch to gear down position.

   (c) If gear has failed to lock down, raise emergency gear lever to "Override Up" position.

   (d) If gear has still failed to lock down, move emergency gear lever to "Emergency Down" position.

   (e) If gear has still failed to lock down, yaw the airplane abruptly from side to side with the rudder.

7. Gear up emergency landing:

   In the event a gear up landing is required, make an initial approach at not less than 110 mph to prevent the gear from free falling.

   (a) Leave flaps up (to reduce wing and flap damage).

   (b) Close the throttle and shut off the master and ignition switches.

   (c) Turn the fuel selector valve to off.

   (d) Hold the emergency gear lever in the override up position while reducing airspeed and until the airplane has come to rest. Contact the surface at minimum airspeed.

   NOTE: With the master switch off, the landing gear cannot be retracted.

8. (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 pushing pitch trim switch on instrument panel to off position.

   (b) In an emergency, electric pitch trim may be overpowered using manual pitch trim.

   (c) In cruise configuration, malfunction results in 10^{o} pitch change and 30 ft. altitude variation.

2. Procedures Section (Continued)

9. (Automatic Pilot Installation Only)

(a) Automatic pilot off during takeoff and landing.

(b) For normal operation, refer to Manufacturer's Operation Manual.

(c) For other than normal operation:

(1) In case of malfunction, disengage automatic pilot controls.

(2) In emergency, automatic pilot may be over-powered manually.

(3) Delay malfunctions in cruise or approach configurations result in bank and altitude loss as follows:

Automatic Pilot System	Cruise 3-Second Delay		Approach 1-Second Delay	
	Bank	Altitude	Bank	Altitude
Autoflite	60°	200'	10°	0'
Autocontrol III	60°	200'	10°	0'

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 2500 pounds.

Loss of altitude during stalls varied from 100 to 310 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 (gear down)	69	71	79	86	98
Flaps down (gear down)	63	65	72	79	89

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

Airplane Serial Number 28R - 31074

Registration Number N7674J

Date DEC 20 1968

AIRPLANE EMPTY WEIGHT

Item	Weight (lbs)	X C.G. Arm (Inches Aft of Datum)	= Moment (In-Lbs)
Standard Empty Weight * ~~Actual~~ Computed	1420.0	85.0	120757
Optional Equipment	66.5	108.3	7203
Unusable Fuel (3 Pints)	2.2	103.0	227
Licensed Empty Weight = Total of Above Items	1488.7	86.1	128187

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

AIRPLANE USEFUL LOAD - NORMAL CATEGORY OPERATION

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

(2500 lbs) - (1488.7 lbs) = 1011.3 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.

A. Grenier

Inspection Representative

Aircraft Weight and Balance Revision

Tail Number: **N7674J**	Date: 04/08/2016
Prepared by: Festus Flying Service 905 Airport Rd. Festus, MO 63028	Work Order No: Type Certificate Data No:

Aircraft Make:	Model:	Serial No:	Time:
Piper	PA28R-180	28R-31074	

Registered Owner:	Address:
KAMMERER, DANIEL	1967 EDGEMONT DR. ARNOLD, MO 63010-1959

Maximum Weight **2500**	CG Range FWD **91** AFT **95.9**

As Received; Date of Previous Weight and Balance:	**Useful Load:**	**EW:**	**EWCG:**	**Moment:**
06/21/2006	896.0	1604.0	85.68	137435.00

Notes:

	Weight	**Arm**	**Moment**
Removed HartzellHC-C2YK-1/7666A-0 Propeller	-55.0	3.1	-170.50
Removed Spinner and Attachment Plates	-3.5	4.8	-16.80
Removed Governor, Hartzell F-2-7 (A)	-5.5	39.1	-215.05
Installed Hartzell HC-C3YR-1RF/F7282 Propeller	72.4	3.1	224.44
Installed new PCU5000 Governor	3.5	39.1	136.85
	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

☒ As Calculated ☐ As Weighed	Moment 137393.94 Weight 1615.90	**New Empty Weight CG** **85.03**	**New Useful Load** **884.10**

Signature Charles Edward Kemper

Charles Edward Kemper

Repair Agency or License No: A&P 3460671 IA

Aircraft Weight and Balance Revision

Tail Number: **N7674J**	Date: 6/21/2006
Prepared by: David A. Willett C&D Wings n' Things,LLC	Work Order No:
	Type Certificate Data No: 2A13

Aircraft Make:	Model:	Serial No:	Time:
Piper	PA28R-180	28R-31074	

Registered Owner:	Address:
Robert L Near	1356 Cobblestone Troy, Mi 48098

Maximum Weight **2500**	CG Range FWD **91**	AFT **95.9**

As Received; Date of Previous Weight and Balance:	**Useful Load:**	**EW:**	**EWCG:**	**Moment:**

Notes: Weighed with full fuel and full oil

	Weight	**Arm**	**Moment**
Weight at Nose wheel	482	20.5	9881.00
Weight at Right Main	692	109.8	75981.60
Weight at Left Main	718	109.8	78836.40
Full fuel removed	-300	95	-28500.00
Unusable fuel remaining	12	103	1236.00
	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

SUPERCEDED 04/08/2014

			New Empty Weight CG	**New Useful Load**
☐ As Calculated	Moment	137435.00	**85.68**	**896.00**
☒ As Weighed	Weight	1604.00		

Signature David A Willett

Repair Agency or License No: 3040062

Weight / Balance & Equipment List Revision

Huron Avionics, Inc. - H4NR191N

150 North Airport Drive Kimball MI 48074
810-364-2722

WB ID # : 145
A/C Tail # : N7674J
Register Name : ROB NEAR
Address : 1357 COBBLESTONE DR.
City, State, PC : TROY, MI. 48085

A/C Make : PIPER
A/C Model : PA28R-180
A/C Serial # : 28R-31074
WO Ref # : 4265
WB Date : Mar-06-2004

Previous data taken from document dated Apr-05-1999 Previous useful load = 964.01

Model / Part #	Description	(LB / IN)	Weight	CG/Arm	Moment
		Previous data ->	1535.99	85.61	131488.62
* R E M O V E D					
ADF31A	NARCO ADF RECEIVER		-4.80	63.50	-304.80
SENSE ANT.	NARCO ADF SENSOR UNIT		-2.20	162.70	-357.94
SENSE ANT CABLES	NARCO ADF CABLES		-0.40	150.00	-60.00
MK16	NARCO NAV/COMM		-5.80	61.00	-353.80
VOA50M	NARCO NAV INDICATOR		-1.80	63.00	-113.40
UGR3	NARCO G/S RECEIVER		-2.40	173.00	-415.20
REMOVED	6 Items @		-17.40	92.25	-1605.14
* I N S T A L L E D					
GMA340	GARMIN AUDIO PANEL		1.75	64.00	112.00
GNS430	GARMIN GPS/NAV/COMM		6.50	61.00	396.50
GI106A	GARMIN GPS/NAV INDICATOR		1.20	64.00	76.80
GA56	GARMIN GPS ANTENNA		0.50	96.00	48.00
ACF314	AVIONICS FAN		1.50	60.00	90.00
INSTALLED	5 Items @		11.45	63.17	723.30
NEW DATA >>	NEW USEFUL LOAD = 969.96		1530.04	85.36	130606.78

IT IS THE PILOTS RESPONSIBILITY TO ASSURE THE THE AIRCRAFT IS PROPERLY LOADED AT ALL TIMES!

Authorized Individual : H4NR191N WILLIAM C. MCKELVEY

WEIGHT AND BALANCE DATA

A/C MFR: Piper
REGISTRATION NO: N7674J
MODEL: PA28R-180
CATEGORY: stanard
SERIAL NO: 31074
DATE: 4-5-99

This Weight and Balance supersedes Weight and Balance dated 2-15-97

ITEM	WEIGHT	ARM	MOMENT
PREVIOUS EMPTY WEIGHT	1525.29	85.76	130810.19
Removed Belly strobe	- 0.375	159.4	59.775
Remove old power supply	- 2.0	184.0	368.0
Removed old Beacon and Fairing	-1.656	263.72	-436.721
Rear side windows L&R	+0.875	145.4	127.225
Center side windows L & R	+1.875	120.9	226.688
Door window & Pilot window	+2.376	93.4	221.918
Windshield L & R ¼ "	+7.6	71.4	542.64
New Power Supply	+1.313	184.0	241.5
New rudder fin Cap W/Strobe	+0.694	263.72	182.956
TOTALS	1535.99	85.61	131488.62

NEW WEIGHT AND BALANCE (COMPUTED)

TOTAL MOMENTS	EMPTY WEIGHT	EMPTY WEIGHT C.G.
131488.62	1535.99	85.61
GROSS WEIGHT	EMPTY WEIGHT	USEFUL LOAD
2500	1535.99	964.01

Prepared by: R H Gunter
AP 2027307828 IA
DIAL EASTERN STATES AIRCRAFT PAINTING, INC.

SUPERSEDED
Date: 3-6-2004

WEIGHT/BALANCE & EQUIPMENT LIST REVISION 15-JUL-97

Top Flight Avionics, Inc. - FAA CRS# TFGR831K

1661 Airport Road - Waterford, MI 48327

Rob Near
1426 Leafgreen Drive
Troy, MI 48083

N7674J
PIPER PA28R-180
S# 28R-31074

OLD >	WEIGHT	CG	MOMENT
	1525.29	85.76	130810.19

*** REMOVED ***

* NO ITEMS REMOVED

*** INSTALLED ***

SF-2000 DISPLAY STRIKEFINDER	1.20	64.00	76.80
SF-2000 SENSOR ANTENNA	0.60	182.00	109.20

Superseded 4-5-1999

NEW >	WEIGHT	CG	MOMENT
	1527.09	85.78	130996.19

It is the pilot's responsibilty to load the A/C properly at all times.
The "OLD" figures were taken from a document dated 25-FEB-94.

Top Flight Avionics, Inc.
1661 Airport Rd
Waterford Mi 48327
(313) 666-1777

WEIGHT & BALANCE FORM

MAKE Piper MODEL PA28R-180 S/N 28R-31074 REG. # N7674J

OWNER Bishop Ronald E. Near Robert L. W/O # 3488

ADDRESS 32046 Auburn Road

CITY Beverly Hills STATE MI ZIP 48025

ITEM	WEIGHT	ARM	MOMENT
AIRCRAFT EMPTY WEIGHT 6/16/93	1526.59	85.74	130886.99
REMOVED:			
Narco MK-16 Nav/Com	-5.8	61.0	-353.8
Narco VOA-40 Ind.	-1.8	63.0	-113.4
INSTALLED:			
Narco MK-12D+ Nav/Com	4.4	61.0	268.4
Narco ID-825 Ind.	1.0	64.0	64.0
Edo-Aire Radio Coupler	.9	64.3	58.0
MAX TAKE OFF WEIGHT			

SUPERSEDED
SEE TOP FLIGHT AVIONICS, INC. WEIGHT & BALANCE
DATED 7-15-97

TOTALS 1525.29 130810.19

REVISED WEIGHT & BALANCE (COMPUTED)

AIRCRAFT EMPTY WEIGHT 1525.29

NEW AIRCRAFT C.G. 85.76 MOMENT 130810.19

PREPARED BY [signature] DATE 2/25/94

CAMPBELL AVIATION, INC
OAKLAND TROY AIRPORT
2672 INDUSTRIAL ROW
TROY, MI 48084
(313) 288-4260

CURRENT

PIPER PA 28R-180; SERIAL NO. 28R-31074; REG. NO. N7674J
RONALD E. BISHOP & ROBERT L. NEAR, 62046 AUBURN DR, BEV.HILLS, MI 48025

		WEIGHT CHANGE				RUNNING EMPTY WEIGHT		
		ADDED		REMOVED				
DATE		WT(LBS)	ARM(IN)	WT(LBS)	ARM(IN)	C.G.	WEIGHT	MOMENT
07/14/81	AIRCRAFT WEIGHED BY STRATMAN AERO SERVICE GOLETA, CALIFORNIA 93017					86.35	1521.00	130564.00
04/13/93	STANDBY VACUUM SYSTEM, PRECISE SA2167NM	2.0	52.00			85.80	1523.00	130668.00
NEW BASIC EMPTY WEIGHT						85.80	1523.00	130668.00

SUPERSEDED
SEE BEACON AVIONICS, INC. WEIGHT & BALANCE
DATED 6-16-93

MAX GROSS WEIGHT	2500.00
NEW EMPTY WEIGHT	1523
USEFULL LOAD	977

JAMES A. CAMPBELL
A&P 372446961 I.A.

REVISED WEIGHT AND BALANCE - 4/13/93
WEIGHT AND BALANCE COMPUTED ON PREVIOUS WEIGHT AND BALANCE INFORMATION
ATED 7/14/81 BY STRATMAN AERO SERVICE, GOLETA, CALIFORNIA

WEIGHT & BALANCE FORM

MAKE PIPER MODEL PA28R-180S/N 28R-31074 REG. # N7674J

OWNER BISHOP RONALD E. NEAR ROBERT L. W/O # 0945

ADDRESS 32046 AUBURN DR.

CITY BEVERLY HILLS STATE MI. ZIP 48025

ITEM	WEIGHT	ARM	MOMENT
PREVIOUS AIRCRAFT EMPTY WEIGHT DATE 4/13/93	1523.00	85.80	130668.00
INSTALLED LRN-500 LORAN	3.59	61.00	218.99
Max Take-Off Weight			

SUPERSEDED
SEE TOP FLIGHT AVIONICS, INC. WEIGHT & BALANCE
DATED 2-25-94

TOTALS 1526.59 130886.99

REVISED WEIGHT & BALANCE (COMPUTED)

AIRCRAFT EMPTY WEIGHT 1526.59 USEFUL LOAD

NEW AIRCRAFT C.G. 85.74 MOMENT 130886.99

PREPARED BY [signature] DATE 6-16-93

AIRCRAFT WEIGHING RECORD

STRATMAN aero service
101 CYRIL HARTLEY PLACE
SANTA BARBARA AIRPORT
GOLETA, CALIF. 93017

DATE WEIGHED	REGISTRATION No.	MFG. MODEL
7-14-81	N7674J	PA28R
SERIAL	**OWNER** M.J. Fagan, Jr. & E.W. Sage, Jr.	**DATUM**
28R-31074		78.4 forward lead. edge
SCALE DATA		**CAL DATE**
Cox & Steven #3061		11-14-80

REACTION	SCALE READING	~~TARE~~ zero	SCALE ERROR	NET WT.	ARM	MOMENT/100
LEFT MAIN	707	+1	0	708		
RIGHT MAIN	707	+5	0	712		
SUB-TOTAL				A 1420	106.4	151088.0
NOSE / ~~TAIL~~	397	+8	0	B 405	20.46	8286
TOTAL (as weighed)	1811	+14		C 1825	87.32	159374

WEIGH POINTS USED at
STATION 20.46 (NOSE / ~~TAIL~~)
STATION 106.4 (MAIN)

COLUMN I (Below)	314		-28913
COLUMN II (Below)	1511 + 10		130461 +103
BASIC WEIGHT	1521	EWCG 86.35	130564

COLUMN I				COLUMN II			
ITEMS WEIGHED BUT NOT PART OF BASIC WEIGHT	WT.	ARM	MOM.	BASIC ITEMS NOT IN AIRPLANE WHEN WEIGHED	WT.	ARM	MOM.
Full fuel	300	95	28500	Unus. fuel	10	103	
Oil 7.5 qt.	14	29.5	413				
			28913		10	103	

SUPERSEDED

MEASUREMENTS EW includes undrainable oil and unusable fuel

A 106.4 inches, the distance from reference datum to C/L of ~~main~~ wing jack pads. (Cross out words not applicable)

B 20.46 inches, the distance from reference datum to C/L of nose / ~~tail~~ wheel jack pads.

C 87.32 inches, the distance from reference datum to Center of Gravity of aircraft as weighed

New EW 1521
EWCG 86.35
Useful load 979.0

DONALD W. STRATMAN AP 1515779 1A

FEDERAL AVIATION AGENCY

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

Form Approved
Budget Bureau No. 04-R060.1

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-28R-180
	SERIAL NO.: 28R-31074	NATIONALITY AND REGISTRATION MARK: N7674J
2. OWNER	NAME (As shown on registration certificate): Ky Erecting Service, Inc.	ADDRESS (As shown on registration certificate): 628 N. Broadway, Lexington, Ky. 40500

3. FOR FAA USE ONLY

4. UNIT IDENTIFICATION / 5. TYPE

UNIT	MAKE	MODEL	SERIAL NO.	5. TYPE: REPAIR	5. TYPE: 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.
LaRue Coy Marshall Field Georgetown, Ky. 40324	X U.S. CERTIFICATED MECHANIC	A.P. 7134
	FOREIGN CERTIFICATED MECHANIC	
	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	SIGNATURE OF AUTHORIZED INDIVIDUAL
2/18/69	LaRue Coy

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 Agency and is [X] APPROVED [ ] REJECTED

BY						
	FAA FLT. STANDARDS INSPECTOR		MANUFACTURER	X	INSPECTION AUTHORIZATION	OTHER (Specify)
	FAA DESIGNEE		REPAIR STATION		CANADIAN DEPARTMENT OF TRANSPORT INSPECTOR OF AIRCRAFT	

DATE OF APPROVAL OR REJECTION	CERTIFICATE OR DESIGNATION NO.	SIGNATURE OF AUTHORIZED INDIVIDUAL
2/18/69	A.P. 7134	LaRue Coy

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. DESCRIPTION OF WORK ACCOMPLISHED *(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)*

Installed 2nd. Mark 12, and Narco ADF-31A as per Piper Drawings 67440, 67445, 67456

Item	Wt.	Arm	Moment
Aircraft	1488.7	86.1	128187
Narco ADF-31A	4.8	63.5	305
Sensor unit & doubler	2.2	162.7	358
Sense antenna & Cables	.4	150.0	60
Narco Mark 12	6.0	61.9	371
Modulator	4.0	186.0	744
Cables	2.3	120.0	276
Transmitor selector switch	.7	66.0	46
Narco VOA-4 omni head	3.0	64.0	193
Trans. Antenna	.5	135.0	68
	1512.6	86.3	130608

$\frac{130608}{1512.6}$ = 86.3 in. aft of datum

SUPERSEDED

New empty wt 1512.6 lbs.
New empty C.G. 86.3
New useful Load. 987.4 Lbs.

********** NOTHING BELOW THIS LINE **********

☐ ADDITIONAL SHEETS ARE ATTACHED

* U.S. GOVERNMENT PRINTING OFFICE : 1965 OF—761-748

U.S. Department of Transportation

Federal Aviation Administration

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

Form Approved
OMB No. 2120-0020

For FAA Use Only

Office Identification

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed $ 1000 for each such violation (Section 901 Federal Aviation Act of 1958).

1. Aircraft	Make: PIPER	Model: PA28R-180
	Serial No.: 28R-31074	Nationality and Registration Mark: N7674J
2. Owner	Name (As shown on registration certificate): NEAR ROBERT L	Address (As shown on registration certificate): 1357 COBBLESTONE DR. TROY, MI. 48098-4918

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. Kind of Agency	C. Certificate No.
Huron Avionics, Inc. 150 North Airport Drive Kimball, MI 48074 H4NR191N	[ ] U. S. Certified Mechanic [ ] Foreign Certified Mechanic [X] Certified Repair Station [ ] Manufacturer	H4NR191N RADIO I, II

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	Signature of Authorized Individual
06-March-2004	WILLIAM C. MCKELVEY William C McKelvey

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 [X] APPROVED [ ] REJECTED

BY							Other (Specify)
	[ ]	FAA Flt. Standards Inspector	[ ]	Manufacturer	[ ]	Inspection Authorization	
	[ ]	FAA Designee	[X]	Repair Station	[ ]	Person Approved by Transport Canada Airworthiness Group	

Date of Approval or Rejection	Certificate or Designation No.	Signature of Authorized Individual
06-March-2004	H4NR191N	WILLIAM C. MCKELVEY William C McKelvey

FAA Form 337 (12-88)

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. DESCRIPTION OF WORK ACCOMPLISHED (If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

N7674J

A.1. REMOVED NARCO ADF31A ADF SYSTEM.
2. REMOVED NARCO UGR3 GLIDESLOPE RECEIVER.
3. REMOVED NARCO MK16 NAV/COMM SYSTEM.

B.1. INSTALLED GARMIN GMA340 AUDIO PANEL IN ACCORDANCE WITH STC# SA00710WI.
2. INSTALLED GARMIN GNS430 GPS/NAV/COMM SYSTEM IN ACCORDANCE WITH STC# SA00705WI.
3. INSTALLED GARMIN GA56 GPS ANTENNA.
4. INSTALLED GARMIN GI106A GPS/NAV INDICATOR.
5. INSTALLED SANDIA ACF314 AVIONICS COOLING FAN.

C.1. ITEM B.1 INSTALLED AT TOP OF LEFT RADIO STACK.
2. ITEM B.2 INSTALLED AS #1 GPS/NAV/COMM, WIRED TO THE GI106A GPS/NAV INDICATOR FOR LEFT/RIGHT, TO/FROM, NAV VALID AND OBS DATA. IT IS ALSO WIRED TO THE GARMIN GA56 GPS ANTENNA AND EXISTING NARCO AT150 ATC TRANSPONDER FOR ALTITUDE INFORMATION.
3. ITEM B.3 INSTALLED TOP OF FUSELAGE.
4. ITEM B.4. INSTALLED IN EXISTING PILOT PANEL INSTRUMENT CUT-OUT.
5. ITEM B.5. INSTALLED BEHIND COPILOT INSTRUMENT PANEL.

D.1. ALL WORK DONE PER: AC43.13-1B CH 11-12, ALL APPLICABLE PARAGRAPHS
AC43.13-2A CH 02-03, ALL APPLICABLE PARAGRAPHS
AC20-138A
MANUFACTURER'S INSTALLATION MANUALS
2. ALL AIRCRAFT ELECTRICAL SYSTEMS TESTED AND GPS DOES NOT INETERFERE WITH ANY SYSTEM.
3. PLACARDED INSTRUMENT PANEL "GPS FOR VFR USE ONLY" IN FULL VIEW OF PILOT, THIS PLACARD NOT INCLUDED IN STC INSTRUCTIONS.
4. NEW AIRCRAFT WEIGHT AND BALANCE COMPUTED.
5. AIRCRAFT EQUIPMENT LIST REVISED.
6. CONDUCTED ELECTRICAL LOAD ANALYSIS AND THE INSTALLED EQUIPMENT HAS NO EFFECT ON THE INTEGRITY OF THE AIRCRAFT ELECTRICAL SYSTEM.
7. TO ENSURE SYSTEM ACCURACY, AFTER ANY MAINTENANCE THE GNS430 WILL BE CHECKED IN ACCORDANCE WITH AC20-138A AND THE INSTRUCTIONS FOR CONTINUED AIRWORTHINESS FOUND IN THE APPENDIX OF THE CURRENT GNS430 INSTALLATION MANUAL.

**********END**********

☐ ADDITIONAL SHEETS ARE ATTACHED

* U.S.GPO:1991-0-568-012/40035

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.

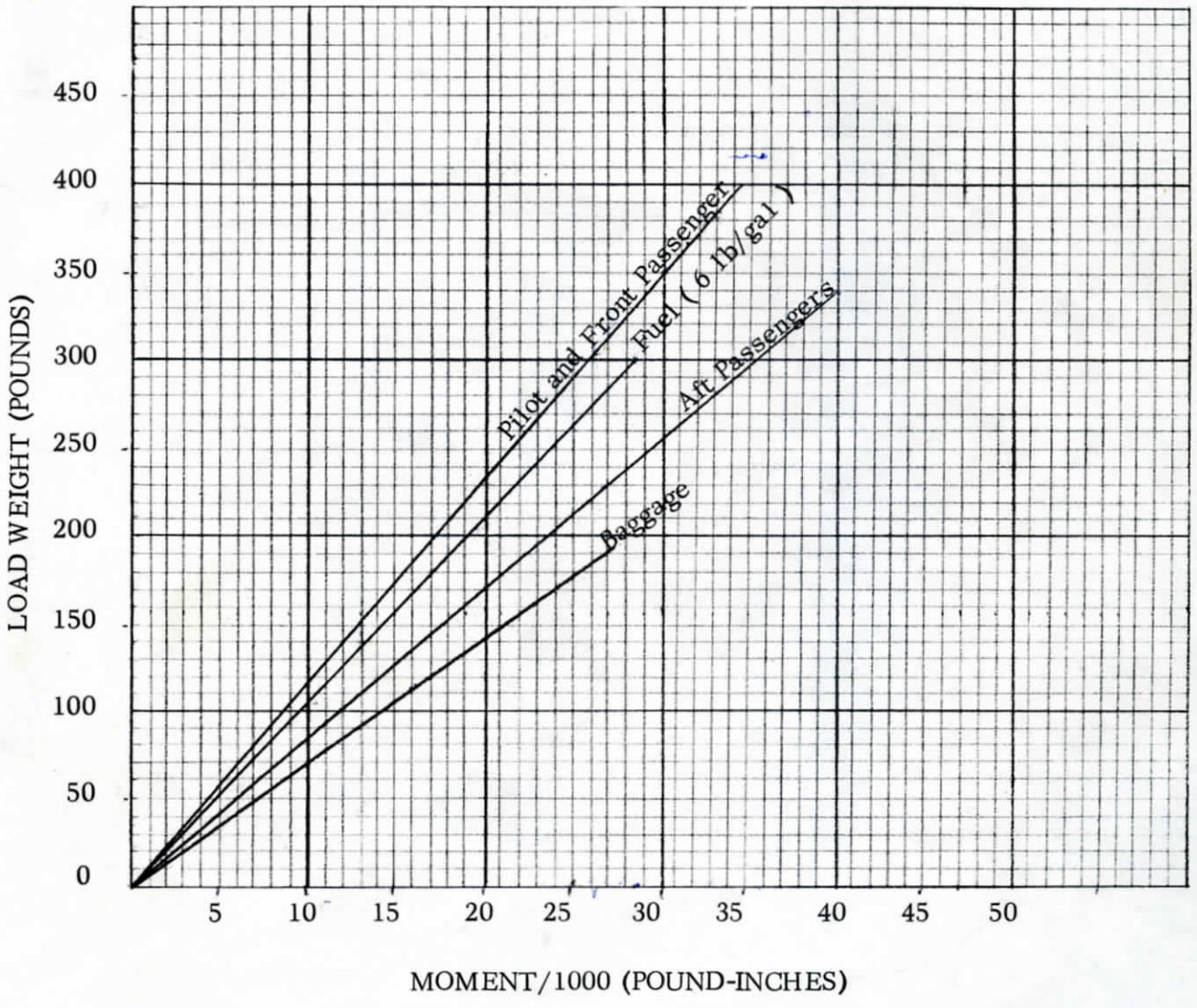
SAMPLE LOADING PROBLEM (Normal Category)

	Weight (lbs)	Arm Aft Datum (Inches)	Moment (In - Lbs)
Licensed Empty Weight	1488.7	86.1	128187
Oil (8 quarts)	15	29.5	443
Pilot and Front Passenger	340	85.5	29070
Passengers, Aft (Rear Seat)	340	118.1	40154
Fuel (50 Gal. Maximum (45.8 gals.)	275	95.0	26125
Baggage	41.3	142.8	5898
Moment due to Retracting of Landing Gear	-	-	819
Total Loaded Airplane	2500	92.3	230696

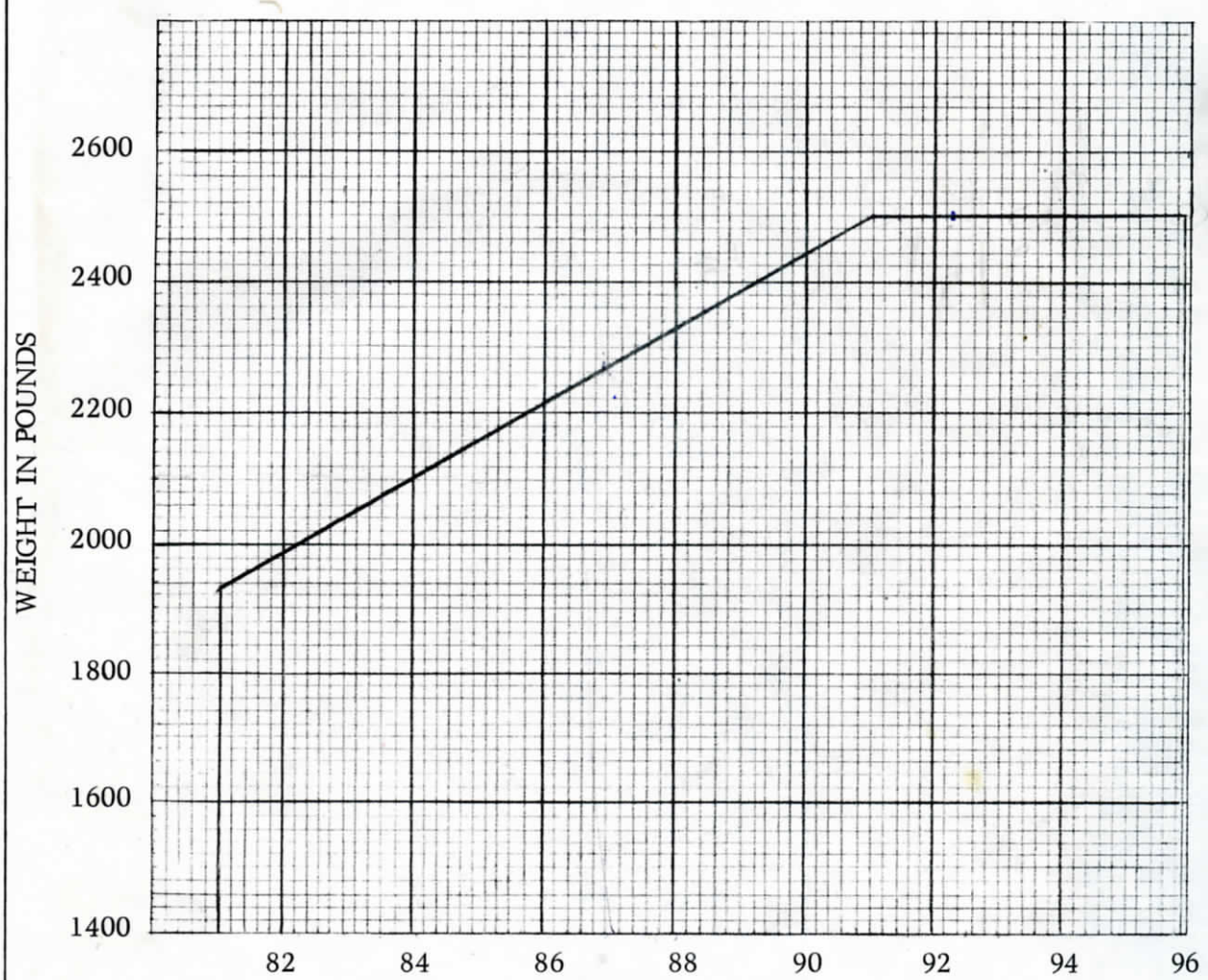
The center of gravity (C. G.) of this sample loading problem is at 92.3 inches aft of the datum line. Locate this point (92.3) on the C. G. range and weight graph. Since this point falls within the weight - C. G. envelope, this loading meets the weight and balance requirements.

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

LOADING GRAPH



C. G. RANGE AND WEIGHT



MOMENT DUE TO RETRACTING LANDING GEAR = +819 IN-LBS

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.

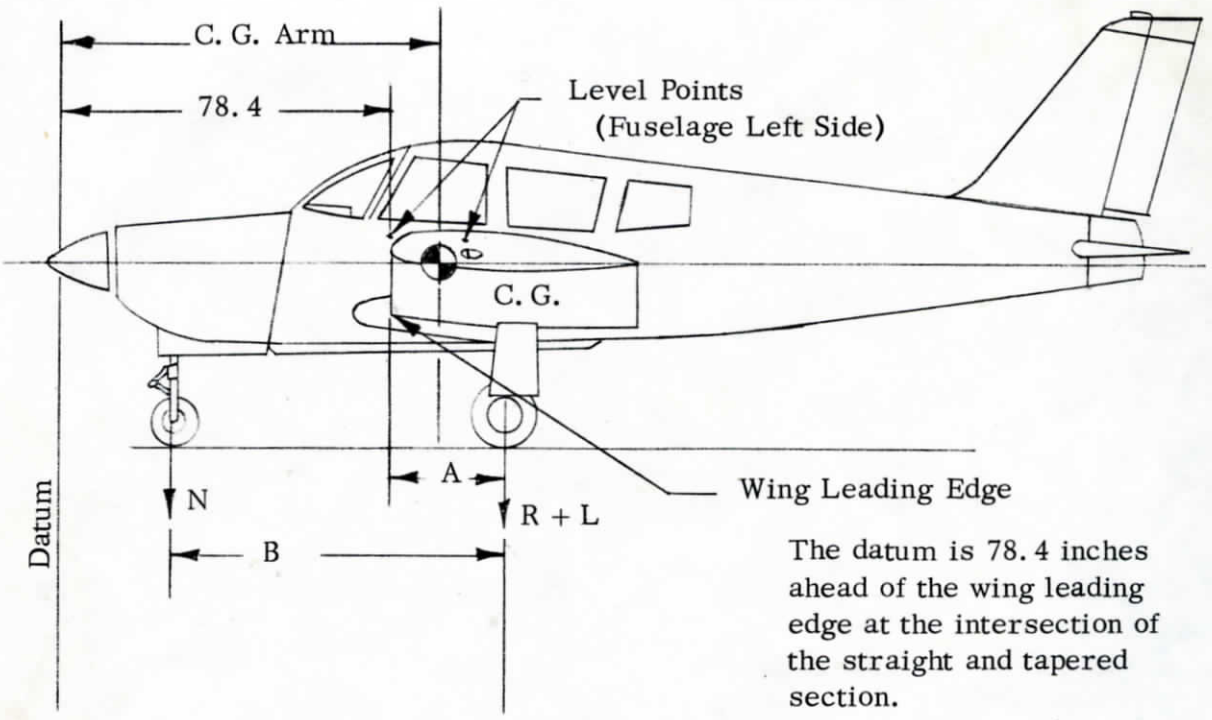
3. WEIGHING - AIRPLANE EMPTY WEIGHT

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-28R-180 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:

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

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

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			

US Department of Transportation
Federal Aviation Administration

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

Form Approved
OMB No. 2120-0020

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. This report is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed $1,000 for each such violation (Section 901 Federal Aviation Act of 1958).

1. Aircraft	Make: PIPER	Model: PA-28R-180
	Serial No.: 28R-31074	Nationality and Registration Mark: N7674J
2. Owner	Name *(As shown on registration certificate)*: BISHOP RONALD E. NEAR ROBERT L.	Address *(As shown on registration certificate)*: 32046 AUBURN DR, BEVERLY HILLS, MI. 48025

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. Kind of Agency	C. Certificate No.
CAMPBELL AVIATION, INC. Oakland-Troy Airport 2672 Industrial Row Troy, Michigan 48084 (313) 288-4260	X U.S. Certificated Mechanic Foreign Certificated Mechanic Certificated Repair Station Manufacturer	372446961

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	Signature of Authorized Individual
4/14/93	Jana a Campbell

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	X	Inspection Authorization	Other *(Specify)*
	FAA Designee		Repair Station		Person Approved by Transport Canada Airworthiness Group	

Date of Approval or Rejection	Certificate or Designation No.	Signature of Authorized Individual
4/14/93	372446961	Jana a Campbell

FAA Form 337 (12-88)

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

INSTALLED PRECISE FLIGHT INC, STANDBY VACUUM SYSTEM III IN ACCORDANCE WITH AIRFRAME STC #SA2167NM AND LYCOMING STC #SE1779NM, EQUIPMENT LIST, WEIGHT AND BALANCE AMENDED

END

☐ Additional Sheets Are Attached

★U.S.GPO:1990-0-568-012/40004

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

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND-INCHES)
	Engine Accessories			
X	Engine - Lycoming Model IO-360-B1E	284.5	23.4	6657
X	Fuel Pump, Electric Auxiliary, Weldon #8120-AB	2.8	47.9	134
X	Fuel Pump, Engine Driven, Lycoming 75247	1.6	37.0	59
X	Oil Cooler, PAC 18622, Harrison #C-8526250	2.2	45.0	99
X	Filter, Fram Model CA-144PL	.5	42.2	21
X	Alternator, 60 Amp, Chrysler #2642997	12.5	14.6	183
X	Starter - Lycoming 76211 (Prestolite MZ4206)	18.0 *	15.5	279
	Propeller and Propeller Accessories			
X	Propeller, Hartzell HC-C2YK-1/7666A-0	55.0	3.1	171
X	Spinner and Attachment Plates	3.5	4.8	17
	Governor, Hartzell F-2-2 ( )	5.5	39.1	215
X	Governor, Hartzell F-2-7 (A)	5.5	39.1	215

* Included in Engine Weight.

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND-INCHES)
	Landing Gear and Brakes			
X	Two Main Wheel Assemblies 6.00-6	31.5	109.8	3459
	(a) Cleveland Aircraft Products Wheel Assembly No. 40-84 Brake Assembly No. 30-41			
	(b) Two Main 4-Ply Rating Tires 6.00-6 with Regular Tubes			
X	One Nose Wheel 5.00-5	8.1	20.5	166
	(a) Cleveland Aircraft Products Wheel Assembly No. 40-77 (Less Brake Drum)			
	(b) One Nose Wheel 4-Ply Rating Tire 5.00-5 with Regular Tube			
	Electrical Equipment			
X	Stall Warning Device, Safe Flight Instrument Corporation No. C52207-4	.2	80.2	16
X	Voltage Regulator, Wico Electric No. X-16300	.5	64.4	32
	Battery 12V, 25 A.H., Rebat Model S-24 or S-25	21.5	168.0	3612

PREPARED / CHECKED / APPROVED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Weight and Balance Data Model PA-28R-180
	STANDARD EQUIPMENT LIST	PAGE 10 Section 1

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND-INCHES)
	Instruments			
X	Compass, Piper Drawing 67462	.9	65.7	59
	Airspeed Indicator, Piper Dwg. 67434-2	.6	66.8	40
X	Tachometer, Stewart-Warner, PAC 62177-5	.8	66.2	53
	Altimeter, Karnish No. AC-157	1.0	65.9	66
X	Altimeter, Macleod No. 12003 or 12003M	1.0	65.9	66
X	Manifold Pressure and Fuel Flow, Piper Drawing 67414 or 67474	1.1	65.8	72
	Engine Cluster, Piper Drawing 67441-2	.9	67.4	61
	Engine Cluster, Piper Drawing 67441-3	.9	67.4	61
	Manifold Pressure Gauge, PAC 21962	1.1	65.8	72
X	Engine Cluster, Piper Drawing 95241-2	.9	67.4	61
X	Engine Cluster, Piper Drawing 95241-3	.9	67.4	61
	Miscellaneous			
X	Forward Seat Belts (2)	1.5	86.9	130
X	Aft Seat Belts (2)	1.4	123.0	172
X	Flight Manual	-	-	-
X	Toe Brakes (Single)	5.0	54.6	273
X	Tow Bar	2.3	133.0	306

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

OPTIONAL EQUIPMENT LIST

MODEL PA-28R-180

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND-INCHES)
	Engine Accessories			
X	Vacuum Pump & Drive, Airborne Mechanisms	5.0	34.6	173
X	Vacuum Regulator and Filter	2.2	57.0	125
X	Oil Filter-Lycoming #74911 (AC 81-A #6437032)	3.3	38.1	126
	Electrical Equipment			
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	15.0	8
X	Navigation Light (Rear)(1) Grimes Model A2064 (White)	.2	281.5	56
X	Navigation Lights (2) Grimes Model A1285 (Red and Green)	.4	106.6	43
X	Dome Light	.3	104.0	31
X	Speaker	.8	104.0	83
X	Battery 12V, 35 A.H., Rebat R-33 or R-35 (Weight 27.0 lbs)	5.5 *	168.0	924
X	Auxiliary Power Receptacle and Diode, PAC Drawing 65647	2.7	178.5	482
X	External Power Cable, PAC Dwg. 62355-2	4.6	142.8	657
X	Piper Pitch Trim	4.0	158.0	632
X	Heated Pitot Head	.4	100.0	40

* Weight and moment difference between standard and optional equipment.

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND-INCHES)
	Instruments			
X	Exhaust Gas Temperature Gage, PAC 25668	.7	60.4	42
X	Brittain Turn Coordinator #TC-100(12)	2.6	64.7	168
X	Rate of Climb, Karnish #135-3	1.0	65.9	66
	Rate of Climb, AN5825	1.4	65.9	92
X	Air Temperature Gage, Manning, Maxwell & Moore NHM-70	.2	82.6	17
X	Clock, 8-Day, MIL-C-7939	.4	67.4	27
X	Tru-Speed Indicator, PAC Drawing 67433-2	Same as Standard Equipment Weight		
	Electric Turn & Bank	2.2	64.9	143
	Pictorial Rate of Turn, Mitchell 52D69	1.3	65.3	85
	Directional Gyro, Garwin #4000B	2.4	64.7	155
	or AIM #200	3.1	64.0	198
	Attitude Gyro, Garwin #5000B	1.8	64.9	117
	or AIM #100	2.2	64.4	142
	Attitude Gyro, R.C. Allen (3")	2.2	65.6	144
	Directional Gyro, R.C. Allen (3")	3.3	64.8	214
	Rate of Climb, Standard Precision SP-1403-(1)-PIP	.5	65.9	33
X	Suction Gauge, Piper Drawing 67481	.5	67.2	34
	Suction Gauge, U.S. Gauge AW1821AFO3	.5	67.2	34
	Suction Gauge, Airborne Mechanisms IG3-4	.5	67.2	34
	AutoPilots			
	AutoFlite			
	Roll Servo, Mitchell #1D363-183R	2.6	122.2	318
	Gyro Amplifier, Mitchell #1C359-1	1.8	111.8	201

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND-INCHES)
	AutoPilots			
	Cables	1.0	95.5	96
	Panel Unit	.3	67.9	20
X	AutoControl III			
X	Roll Servo, Mitchell #1D363-183R	2.5	122.2	306
X	Console, Mitchell #1C338	1.2	65.1	78
X	Cables	.7	95.5	67
X	Attitude Gyro, Garwin	1.9	64.9	123
	or AIM #700-2CF	2.3	64.4	148
X	Directional Gyro, Garwin	2.5	64.7	162
	or AIM #200-6	3.2	64.0	205
X	Omni Coupler	.9	64.3	58
	Radio			
	Bendix ADF-T-12			
	Receiver	3.8	65.8	250
	Loop Antenna	1.2	160.8	193
	Servo Indicator	1.7	66.4	113
	Audio Amplifier	.8	56.0	45
	Antenna Cable	1.5	108.0	162

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND-INCHES)
	Radio (Continued)			
	Narco ADF-31A, Piper Dwg. 67456			
	Panel Unit	4.8	63.5	305
	Sensor Unit and Doublers	2.2	162.7	358
	Sensor Cable	2.3	105.6	243
	Sense Antenna and Cable	.4	150.0	60
	King KX150B	9.1	61.9	563
	Low Frequency Antenna	.5	167.0	84
	Narco Mark III	7.5	62.7	470
X	Narco Mark 12A			
X	Transceiver, Single	6.0	61.9	371
	Transceiver, Dual	12.0	61.9	742
X	Modulator - Power Unit, Single	4.0	186.0	744
	Modulator - Power Unit, Dual	8.0	186.0	1488
X	Cables - Single	1.7	120.0	204
	Cables - Dual	5.1	120.0	612
X	Junction Box	.6	67.2	40
	Transmitter Selector (Dual VHF Only)	.7	66.3	46
	Narco VOA-6 Omni Convertor	1.8	64.4	116
	Narco VOA-5 Omni Convertor	3.1	64.4	200

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND-INCHES
	Radio (Continued)			
_____	Narco VOA-4 Omni Convertor	3.0	64.4	193
X	Omni Receiving Antenna, Narco VRP-37 (Includes Cables)	1.4	203.0	284
X	VHF #1 Transmitting Antenna, Narco VTP-17	.3	157.8	47
_____	VHF #2 Transmitting Antenna, Narco VTP-17	.3	192.8	58
X	Cable VHF #1 Trans Antenna	.4	118.0	47
_____	Cable VHF #2 Trans Antenna	.5	135.0	68
_____	PM-1 Marker Beacon			
_____	Receiver	1.1	121.3	133
_____	Panel Unit	.3	68.1	20
_____	Cable	.3	85.0	26
_____	Glide Slope - UGR-2			
_____	Receiver	2.4	173.8	417
_____	Cable	2.1	128.0	269
_____	Antenna	.4	92.4	37
_____	Cable, Antenna	.5	145.0	73
_____	Narco VOA-4 Omni Convertor	3.0	64.4	193

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

Check if Installed	ITEM	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND-INCHES)
	Radio (Continued)			
	Narco UDI-4, DME			
	Receiver	8.5	61.7	524
	Antenna	.3	113.9	34
	Cable	.4	100.0	40
X	Microphone	.5	75.0	38
X	Headset	.5	65.0	33
	Omni Tracker (#1D482)	.5	54.9	27
X	Narco VOA-8 Omni Convertor	3.3	64.4	213
	Narco VOA-9 Omni Convertor	3.4	64.4	219
	Miscellaneous			
X	Assist Step	1.8	156.0	281
	Toe Brakes (Right)	5.0	54.6	273
	Fire Extinguisher-Stop Fire #A-20	7.5	93.0	698
	Inertia Safety Belt	2.5	111.6	279
X	Assist Strap & Coat Hooks	.2	109.5	22
X	Lighter	.2	67.9	14
	Alternate Static Source	.4	64.9	26
	Fire Extinguisher, Kidde Kompact VI (With Brackets)	5.3	85.0	451
	TOTAL OPTIONAL EQUIPMENT	66.5	108.3	7203

EXTERIOR FINISH

Base Color Juneau White

1st Trim Color Ocala Orange

2nd Trim Color Dakota Black

Registration No. Color Ocala Orange

Type Finish Lacquer