

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	
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AIRPLANE FLIGHT MANUAL

MODEL PA-28-180

FAA IDENTIFICATION NO. N9781J

SERIAL NO. 28-3982

THIS DOCUMENT MUST BE KEPT IN AIRPLANE AT ALL TIMES.

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

DATE: August 3, 1962

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

DATE: August 12, 1964

Log of Revisions

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

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Log of Revisions

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

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Airplane Flight Manual
Model PA-28-180

PAGE 1 of 6

Piper Model PA-28-180

Normal and Utility Categories

AIRPLANE FLIGHT MANUAL

1. Limitations Section

The following limitations must be observed in the operation of this airplane:

Engine

Lycoming O-360-A3A or O-360-A4A

Engine Limits

Maximum permissible RPM for takeoff, 2475. For all other operations, 2700 rpm, 180 hp, (A/C S/N 28-671 to 1760A). For all operations, 2700 rpm, 180 hp, (A/C S/N 28-1761 & up).

Fuel

91/96 minimum octane aviation fuel.

Propeller

Sensenich M76 EMM (S/N 671 to 1760A)
Sensenich M76 EMMS (S/N 1761 and up)
Maximum diameter 76 inches, minimum diameter 76 inches.
Static RPM at maximum permissible throttle setting. Not over 2450, not under 2275. No additional tolerance permitted.

Power Instruments

Oil temperature: GREEN arc (normal operating range) 120° F to 245° F; YELLOW arc (caution range) 60° F to 120° F; RED line (maximum) 245° F (S/N 671 to S/N 1760A)

Oil Temperature: GREEN arc (Normal operating range) 75° F to 245° F; RED line (maximum) 245° F (S/N 1761 and up).

Oil Pressure: GREEN arc (normal operating range) 60 psi to 90 psi; YELLOW arc (caution range) 25 psi to 60 psi; RED line (minimum) 60 psi; RED line (maximum) 90 psi.

Fuel Pressure: GREEN arc (normal operating range) .5 psi to 5 psi; RED line (minimum) .5 psi; RED line (maximum) 5 psi (S/N 671 to S/N 1760A)

Fuel Pressure: GREEN arc (normal operating range) .5 psi to 8 psi; RED line (minimum) .5 psi; RED line (maximum) 8 psi (S/N 1761 and up)

Tachometer: GREEN arc (normal operating range) 500 to 2700 rpm; RED line (maximum continuous power) 2700 rpm.

FAA APPROVED 8/3/62

REVISED 12/6/66

Rev. No. 10

Airspeed Limits

Never exceed	171 mph
Maximum structural cruise.....	140
Maneuvering.....	129
Flaps extended.....	115
Maximum positive load factor.....	3.8 Normal Category
Maximum positive load factor.....	4.4 Utility Category
Maximum negative load factor.....	No inverted maneuvers approved

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

Baggage Capacity 200 lbs.

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

1. Normal Category

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

2. Utility Category

Weight (Pounds)	Forward Limit (In. aft of datum)	Rearward Limit (In. aft of datum)
1950	86.5	86.5
1850	85.1	86.5
1650	84.0	86.5

Straight line variation between points given.

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

Maneuvers

1. Normal Category - All acrobatic maneuvers including spins prohibited.
2. Utility Category - Approved maneuvers for Utility Category only.

	<u>Entry Speed</u>
Spins (Flaps Up).....	Stall
Steep Turns.....	129 mph
Lazy Eights.....	129
Chandelles.....	129

FAA APPROVED 8/3/62

REVISED 12/6/66

Rev. No. 10

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Airplane Flight Manual Model PA-28-180
CHECKED		
APPROVED		PAGE <u>3</u> of 6

Placards

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

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

ALL MARKINGS AND PLACARDS ON THIS AIRPLANE APPLY TO ITS OPERATION AS A UTILITY CATEGORY AIRPLANE. FOR NORMAL AND UTILITY CATEGORY OPERATIONS, REFER TO THE AIRPLANE FLIGHT MANUAL.

FOR SPIN RECOVERY, USE FULL RUDDER AGAINST SPIN, FOLLOWED IMMEDIATELY BY FORWARD WHEEL.

NO ACROBATIC MANEUVERS (INCLUDING SPINS) ARE APPROVED FOR NORMAL CATEGORY OPERATIONS. "
2. Adjacent to upper door latch:

"ENGAGE LATCH BEFORE FLIGHT. "
3. On the inside of the baggage compartment door:

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

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

"ROUGH AIR OR MANEUVERING SPEED 129 MPH. "

"UTILITY CATEGORY OPERATION - NO AFT PASSENGERS ALLOWED. "
5. On the instrument panel in full view of the pilot when the oil cooler winterization kit is installed:

"OIL COOLER WINTERIZATION PLATE TO BE REMOVED WHEN AMBIENT TEMPERATURE EXCEEDS 50⁰ F. "
6. On the instrument panel in full view of the pilot when the autoflite is installed:

"FOR HEADING CHANGES: PRESS DISENGAGE SWITCH ON CONTROL WHEEL. CHANGE HEADING, RELEASE DISENGAGE SWITCH.

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REVISED 12/6/66

Rev. No. 10

Placards (Cont'd) 7. On the instrument panel in full view of the pilot: "UTILITY CATEGORY ONLY." Acrobatic maneuvers are limited to the following:

		<u>Entry Speed</u>
	Spins (Flaps Up).....	Stall
	Steep Turns.....	129 mph
	Lazy Eights.....	129
	Chandelles.....	129
Airspeed Instrument Markings	RED radial line Never exceed YELLOW arc Caution Range (Smooth Air Only) GREEN arc Normal Operating Range WHITE arc Flap Down Range	171 mph (148 knots) 140 to 171 mph (121 to 148 knots) 67 to 140 mph (58 to 121 knots) 57 to 115 mph (50 to 100 knots)

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

FAA APPROVED 8/3/62

REVISED 12/6/66 Rev. No. 10

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CHECKED		
APPROVED		PAGE 5 of 6

Procedures Section
(Cont'd.)

5. (Electric Pitch Trim Installation Only)
The following emergency information applies in case of electric pitch trim malfunction:
 - a. In case of malfunction, disengage electric pitch trim by pulling out circuit breaker on instrument panel.
 - b. In emergency, electric pitch trim may be overpowered using manual pitch trim.
 - c. In cruise configuration, malfunction results in 10° pitch change and 30 Ft. altitude variation.

6. (Autoflite Installation Only)
The following emergency information applies in case of autoflite malfunction:
 - a. In case of malfunction PRESS disconnect switch on pilot's control wheel.
 - b. Rocker switch on instrument panel - OFF.
 - c. Unit may be overpowered manually.
 - d. In cruise configuration malfunction, 3 seconds delay results in 60° bank, and 100 Ft. altitude loss.
 - e. In approach configuration malfunction, 1 second delay results in 10° bank and 0 Ft. altitude loss.

7. (AutoControl III Installation Only)
 - I. Limitations:
Pilot off during take off and landing.
 - II. Procedures:
 - a. Normal Operation
Refers to Manufacturer's Operation Manual.
 - b. Emergency
 1. In case of malfunction, disengage manual controls.
 2. In emergency, pilot may be overpowered manually.
 3. In cruise configuration malfunction, 3 seconds delay results in 60° bank and 100 Ft. altitude loss.
 4. In approach configuration malfunction, 1 second delay results in 10° bank and 0 Ft. altitude loss.

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Airplane Flight Manual Model PA-28-180
CHECKED		
APPROVED		
		PAGE <u>6</u> of <u>6</u>

3. Performance Section

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

Loss of altitude during stalls varied from 125 to 200 feet, depending on configuration and power.

Stalling speeds, in mph, power off, versus angle of bank (Calibrated Airspeed):

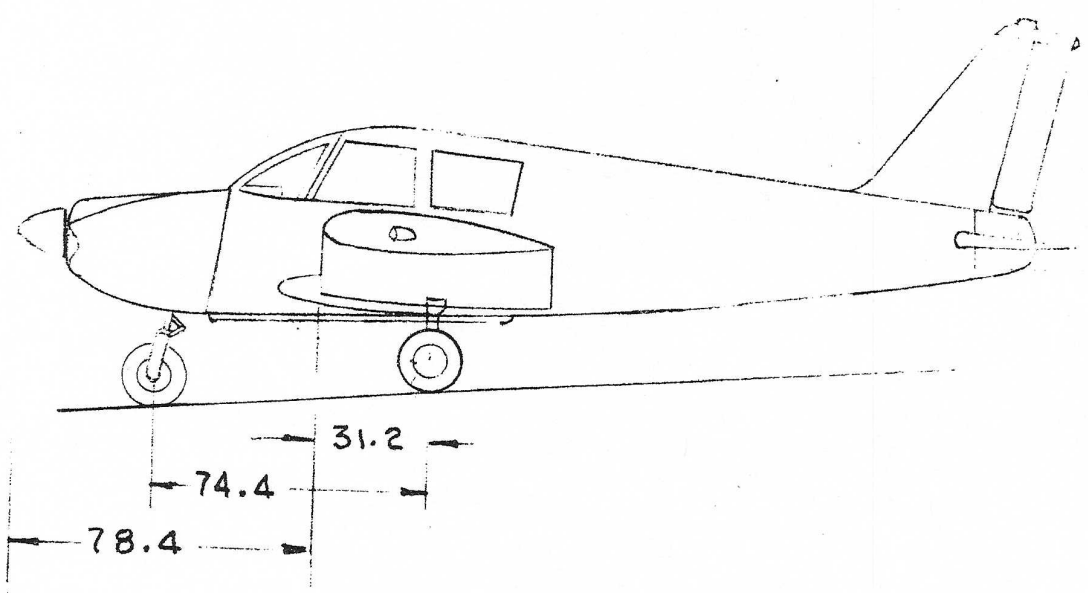
Angle of bank	0	20	40	50	60
Flaps Up	67	69	76	83	94
Flaps Down	57	--	--	--	--

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

ACTUAL WEIGHT AND BALANCE *of Equip. List*
MODEL PA 28-180

SERIAL NUMBER 28- 3982
 CERTIFICATE NUMBER N9781J
 DATE 3-31-69



J. M. Canithers
 Inspection Representative

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CHECKED		
APPROVED		
		PAGE 2 Section 1

WEIGHT AND BALANCE
STANDARD EQUIPMENT LIST
MODEL PA 28-180

Check if Installed	ITEM	WEIGHT (LBS.)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<u>Engine Accessories</u>			
	Engine - Lycoming Model 0-360-A3A	275.4	26.1	7188
<u>X</u>	Engine - Lycoming Model 0-360-A4A	283.4	26.1	7397
<u>X</u>	Fuel Pump, Electric Auxiliary, Bendix Model 478360	1.8	41.8	75
<u>X</u>	Fuel Pump, Engine Driven Lycoming Dwg. No. 73297, 74082, 75148 or 75246	1.6	41.3	66
<u>X</u>	Oil Cooler, Piper Dwg. Harrison #C-8526250	2.6	18.1	47
<u>X</u>	Filter, Fram Model CA-161 PL or AC No. A48C or Purolator AFP-2	.9	20.1	18
	Alternator, 35 Amp., Chrysler No. 2098615	12.5	19.0	238
<u>X</u>	Alternator, 60 Amp., Chrysler No. 2642210 or 2642997	12.5	19.0	238
	Starter - Lycoming 74092 (Delco Remy 1109511)	* 18.0	19.5	351
<u>X</u>	Starter - Lycoming 76211 (Prestolite MZ4206)	* 18.0	19.5	351
	<u>Propeller and Propeller Accessories</u>			
	Propeller, Sensenich M76EMM	34.5	10.1	348
<u>X</u>	Propeller, Sensenich M76EMMS60	38.5	8.8	339
<u>X</u>	Spinner and Attachment Plates	2.0	8.0	16

* Included in Engine Weight

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Weight and Balance Data
CHECKED		Model PA 28-180
APPROVED		PAGE 3 Section 1

Check if Installed	ITEM	WEIGHT (LBS.)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<u>Landing Gear and Brakes</u>			
	Two Main Wheel Assemblies 6.00-6	32.0	109.6	3507
	(a) Cleveland Aircraft Products Wheel Assembly No. 40-28 Brake Assembly No. 30-18			
	(b) Two Main 4-Ply Rating Tires 6.00-6 with Regular Tubes			
<u>X</u>	Two Main Wheel Assemblies	32.3	109.6	3540
	(a) Cleveland Aircraft Products Wheel Assembly No. 40-86 Brake Assembly No. 30-55			
	(b) Two Main 4-Ply Rating Tires 6.00-6 with Regular Tubes			
<u>X</u>	One Nose Wheel 6.00-6	14.0	34.3	480
	(a) Cleveland Aircraft Products Wheel Assembly No. 38501 (Less Brake Drum)			
	(b) One Nose Wheel 4-Ply Rating Tire 6.00-6 with Regular Tubes			
	<u>Electrical Equipment</u>			
<u>X</u>	Stall Warning Device, Safe Flight Inst. Corp. No. C52207-4	.2	80.2	16
	Voltage Regulator, Delco Remy No. 118704	1.5	168.5	253
	Voltage Regulator, Chrysler No. 2098613	.5	57.8	29
<u>X</u>	Voltage Regulator, Wico Electric No. X-16300	.5	57.8	29
<u>X</u>	Battery 12 V., 25 A. H., Rebat Model S-25	21.5	160.9	3459

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Weight and Balance Data
CHECKED		Model PA 28-180
APPROVED		PAGE 4 Section 1

Check if Installed	ITEM	WEIGHT (LBS.)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<u>Instrument</u>			
<u>X</u>	Compass - Airpath No. C2350-L41	.9	66.6	60
<u>X</u>	Airspeed Indicator, PAC 63205-2	.6	67.7	41
<u>X</u>	Tachometer, AC 1548302	.8	67.7	54
<u>X</u>	Tachometer, Stewart Warner PAC 62177-2 or 62177-3	.7	67.7	47
	Altimeter, Aero Marine No. 522	1.4	66.8	94
	Engine Cluster, PAC 63922-2	.8	68.8	55
<u>X</u>	Engine Cluster, PAC 63426	.8	68.8	55
	Engine Cluster, PAC 63426-2	.8	68.8	55
	<u>Miscellaneous</u>			
<u>X</u>	Fwd. Seat Belts	1.0	86.9	87
<u>X</u>	Aft Seat Belts	.8	123.0	98
<u>X</u>	Flight Manual	----	----	----
	TOTAL			
	AIRCRAFT EMPTY WEIGHT AS WEIGHED	<u>1289.8</u>	<u>84.9</u>	<u>109529</u>
	(INCLUDES ITEMS CHECKED ON STANDARD EQUIPMENT LIST, UNUSABLE FUEL AND UNDRAINABLE OIL)			

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CHECKED		Model PA 28-180
APPROVED		PAGE 5 Section 1

OPTIONAL EQUIPMENT LIST
MODEL PA 28-180

Check if Installed	ITEM	WEIGHT (LBS.)	ARM AFT DATUM (INCHES)	MOMENT (POUND-INCHES)
	<u>Engine Accessories</u>			
<u>X</u>	Vacuum Pump, Airborne Mechanisms Model No. 10-113A1, 113A5 or 200cc	3.6	36.3	131
<u>X</u>	Oil Filter - Lycoming #74911 (AC 81-A #6437032)	2.0	36.3	73
	<u>Electrical Equipment</u>			
	Rotating Beacon, Grimes Model D7080	2.0	263.4	527
<u>X</u>	Landing Light, G. E. Model 4509	.5	18.1	9
<u>X</u>	Navigation Light (Rear) (1) Grimes Model 2064 (White)	.1	280.9	28
<u>X</u>	Navigation Lights (2) Grimes Model A1285 Red and Green	.4	106.6	43
	Battery 12V, 35 A.H., Reading R-35	27.0	160.9	4344
	Roll Servo Mitchell 1x221E-CH-1	2.8	60.6	170
	Console Amplifier and Cables Mitchell 1x214E-3	1.8	66.6	120
<u>X</u>	Cabin Light and Speaker	1.1	99.4	109
<u>X</u>	SIRROB- GRIMES - Rotating Beacon, Whelan Model WRM L-12	1.6	263.4	421
	Auxiliary Power Receptacle PAC 62225	2.6	163.5	425
	External Power Cable PAC 62355-2	4.6	142.8	657
	Piper Pitch Trim	3.0	158.0	474

	ITEM	WEIGHT (LBS.)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
Check if Installed				
	<u>Instruments</u>			
_____	Turn and Bank, Pioneer A-5	1.5	66.4	100
_____	Suction Gauge, AN5771-11	.4	68.1	27
<u>X</u> _____	Suction Gauge, Airborne Mech. 1G3-4	.4	68.1	27
_____	Suction Gauge, U. S. Gauge AW1821AFO3	.4	68.1	27
<u>X</u> _____	Altimeter, AN5760-2 (C-12 or C-13)	Same as Standard Equipment Weight		
_____	Rate of Climb, Pioneer C-7	1.4	66.8	94
_____	Rate of Climb, AN5825	1.4	66.8	94
<u>X</u> _____	Directional Gyro, AN5735-1A	2.5	66.6	167
<u>X</u> _____	Artificial Horizon, AN5736-1A	2.7	66.1	179
<u>X</u> _____	Air Temperature Gauge, Rochester Manufacturing Co., No. 1592-C2	.2	82.6	17
<u>X</u> _____	Clock, 8 Day, MIL-C-7939	.4	68.3	27
_____	Directional Gyro, Mitchell #52B15E (Auto Pilot)	4.3	66.6	286
_____	Artificial Horizon, Mitchell #52B9 (Auto Pilot)	4.5	66.1	298
<u>X</u> _____	Tru-Speed Indicator, PAC 62143-2	Same as Standard Equipment Weight		
_____	Piper Course Selector PAC 31058	3.0	66.6	200
_____	Electric Turn and Bank	1.9	65.8	125
<u>X</u> _____	Pictorial Rate of Turn Mitchell 52D69	1.0	66.6	67
<u>X</u> _____	Rate of Climb, Karnish AC 135-3	1.4	66.8	94

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 Weight and Balance Data
Model PA-28-180

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PAGE 6A Section 1

Check if Installed	ITEM	WEIGHT (LBS.)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<u>Instruments</u>			
_____	Auto Control II			
_____	Roll Servo, Mitchell #1X221E-CH-1	2.8	60.6	170
_____	Console, Mitchell #1X224E-3	1.3	66.6	87
_____	Directional Gyro, Mitchell #52B15E or	4.3	66.6	286
_____	Directional Gyro, Course Selector PAC Drawing 31058-2	3.0	66.6	200
_____	Artificial Horizon, Mitchell #52B9	4.5	66.1	298
_____	Auto Control III			
_____	Roll Servo, Mitchell #1D363-183R	2.0	122.2	244
_____	Console, Mitchell #1C338	1.0	66.6	67
_____	Cables	1.7	95.5	162
_____	Attitude Gyro, Mitchell #52D66	2.7	66.6	180
_____	Directional Gyro, Course Selector Mitchell #52D54	3.2	66.1	212
_____	Brittain Turn Coordinator #TC-100(12)	2.4	66.4	160
_____	Auto Flite			
_____	Roll Servo, Mitchell 1D363-153	2.0	122.2	244
_____	Gyro Amplifier, Mitchell 1C359	1.8	111.8	201
_____	Cables	1.0	95.5	96

	ITEM	WEIGHT (LBS.)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
Check if Installed	<u>Radio</u>			
_____	PM-1 Marker Beacon (with Cables)	1.7	107.7	183
_____	Piper Radio Compass PRC-3	4.5	64.4	290
_____	Piper VHF Transceiver PTR-1	5.0	64.8	324
_____	Piper Omni Convertor O-1	2.5	65.3	163
_____	King KX 150A	9.1	62.8	572
<u>X</u>	Omni Receiving Antenna, Narco VTP-37	1.2	203.0	243
<u>X</u>	VHF Transmitting Antenna, Narco VTP-17	.7	131.0	92
_____	Low Frequency Antenna	.5	167.0	84
_____	Loop Antenna (PRC-3)	.3	54.5	16
<u>X</u>	Narco Mark 12A VHF Transceiver	9.0	59.4	535
_____	Narco VOA-6 Omni Convertor	1.8	65.3	118
_____	Narco VOA-5 Omni Convertor	2.9	65.3	189
<u>X</u>	Narco VOA-4 Omni Convertor	2.9	65.3	189
_____	Narco ADF-30	9.9	107.9	1068
_____	Narco Omnigator VTR-2A Installation (Less Ant.)	14.0	58.0	812
_____	Marker Antenna	1.2	64.8	78
_____	Piper Radio Compass PRC-4	4.9	64.4	316
_____	Loop Antenna (PRC-4)	.4	112.6	45
_____	Piper Omni Convertor OL-1	2.8	65.3	183
_____	Narco ADF-31 (Panel Unit)	4.8	64.4	309

PREPARED		PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Weight and Balance Data Model PA 28-180	
CHECKED				
APPROVED			PAGE 8 Section 1	
Check if Installed	ITEM	WEIGHT (LBS.)	ARM AFT DATUM (INCHES)	MOMENT (POUND- INCHES)
	<u>Radio (Cont'd.)</u>			
	Loop Antenna (ADF-31)	2.5	114.9	287
	Loop Cable (ADF-31)	2.3	89.0	205
	Loop Antenna (ADF-T-12) (Includes Loop Cables)	2.0	147.4	295
	Bendix ADF-T-12 (Includes Receiver, Indicator, Audio Amplifier, Audio Cables)	6.6	64.4	425
	Narco - UDI-III DME	8.6	62.6	538
<input checked="" type="checkbox"/>	Narco Mark III	7.5	63.6	477
	Narco UDI-4 DME	8.6	62.6	538
	<u>Miscellaneous</u>			
<input checked="" type="checkbox"/>	Nose Wheel Fairing	3.3	34.3	113
<input checked="" type="checkbox"/>	Main Wheel Fairing	7.4	109.6	811
<input checked="" type="checkbox"/>	Assist Step	1.8	156.0	281
	Toe Brakes (Dual)	10.5	54.6	573
<input checked="" type="checkbox"/>	Toe Brakes (Single)	5.0	54.6	273
	Fire Extinguisher - Stop Fire #A-20	7.5	93.0	698
	Inertia Safety Belt PAC 65766	2.5	111.6	279
	EMPTY C.G. AFT DATUM IS <u>84.8</u>	TOTAL	<u>44.2</u>	<u>3656</u>
	AIRCRAFT EMPTY WEIGHT	<u>1289.8</u>		<u>109529</u>
	OPTIONAL EQUIPMENT WEIGHT	<u>44.2</u>		<u>3656</u>
	LICENSED EMPTY WEIGHT	<u>1334</u>		<u>113185</u>

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Weight and Balance Data
CHECKED		Model PA 28-180
APPROVED		PAGE 9 Section 1

IT IS THE RESPONSIBILITY OF THE PILOT AND AIRCRAFT OWNER TO INSURE THAT THE AIRPLANE IS LOADED PROPERLY. THE EMPTY WEIGHT C. G. IS FOR THE AIRPLANE AS DELIVERED FROM THE FACTORY. REFER TO FORM FAA-337 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 weight 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 all weight and balance requirements.

SAMPLE LOADING PROBLEM (NORMAL CATEGORY)

	<u>WEIGHT (LBS.)</u>	<u>ARM AFT DATUM (INCHES)</u>	<u>MOMENT (POUND-INCHES)</u>
LICENSED EMPTY WEIGHT	1334	84.8	113185
OIL (2 GAL.)	15	32.5	488
PILOT & PASSENGER	340	85.5	29070
FUEL 48.3 gal.	290	95.0	27550
PASSENGERS * (REAR SEAT)	340	118.1	40154
BAGGAGE *	<u>81</u>	142.8	<u>11567</u>
TOTAL LOADED AIRPLANE	2400		222014

SUPERCEDED W/B DATED 6/24/71

$$\frac{222014}{2400} = 92.5 \text{ INCHES (ARM AFT DATUM)}$$

LOCATE THIS POINT (92.5) ON THE C. G. RANGE AND WEIGHT GRAPH. SINCE THIS POINT FALLS WITHIN THE C. G. ENVELOPE THE LOADING MEETS ALL WEIGHT AND BALANCE REQUIREMENTS.

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

Normal Category Operation - Maximum baggage 125 lbs. (S/N 671 to 1760A).
Maximum baggage 200 lbs. (S/N 1761 and up).
Check aft C. G. between 150 lbs. and 200 lbs.