APPROVED	REPORT VB-163	PAGE
CHECKED	DEVELOPMENT CENTER, VERO BEACH, FLA.	
PREPARED	PIPER AIRCRAFT CORP	

#### AIRPLANE FLIGHT MANUAL

MODEL PA-28-180

SERIAL NOS. 671 THRU 5600

FAA IDENTIFICATION NO. N7405W
SERIAL NO. 28-1291

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: Cene Dearing For Retype Only.

Gene Dearing
Aerospace Engineer

DATE: August 12, 1964

DUPLICATE

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# <u>Log of Revisions</u>

REVISION	PAGE	DESCRIPTION	APPROVED	DATE
NO	· 1	Deleted Propeller Pitch Information. Added Static R.P.M.	H. E. Waterman Supervisor SO-EMDO-42	5/25/64
2	2	Placards Section: Added Placard No. 5	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		8/5/64
	I	Added Sensenich M76EMMS	,	
4	3	Item 5 added to Procedures Section.	Supervisor SO-EMD0-43	10/20/64
5	1	Limitations Section: Revised Oil Temperature and Fuel Pressure Range	H. C. Faller Supervisor, SO-EMDO-43	6/23/65
6	1	Limitation Section: Add note to Engine Limits	H.C. Faller Supervisor, SO-EMDO-43	L <sub>1/5/66</sub>
7	2	C. G. Range: 1975 lbs. 85.9 lm. 95.9 lm. 1650 lbs. 84.0 lm. 95.9 lm. Was 18.50 lbs. 85.1 lm. 95.9 lm.		
	4	Added Procedures Section And Item 6	1/ L(1.n	
	2	Added Placard No. 6	Hend Faithe	<b>₹</b> 5/20/66
FAA APPROVED	8/3/62		/ Bupervisor SO-EMDO-43	

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# Log of Revisions

Revision				
No.	Page	Description	Approved	Date
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	Hubert T. Herolo Henry C. Faller Supervisor SO-EMDO-43	7/15/66
9	1	Limitations Section Add "or 0-360-A4A	Jenny C. Faller Henry C. Faller Supervisor SO-EMDO-43	8/2/66
10	2,3	C.G. Range - Placard No. I and Placard No. 3 revised to include utility category operations Added utility category max approved maneuvers		
	4	Procedures Section - Added to Item 3 "For Normal Category Operation". Added Placard	d No. 7.	
	3	Placards Section - Added utility category operation to Item 4.		
	1	Added Utility Category		
FAA APPROV	2 ED 8/3/62	Added maximum positive load factor for Utility Category. Added Baggage Capacity.	Henry C. Faller Supervisor SO-EMDO-43	12/6/66

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			1
REVISION NO.	PAGE	DESCRIPTION	ĀPPROVED DATE
11	3	Placards Section: Revised Placard No. to read, "In Full View of the Pilot"	
12	2	Revised C.G. Range	Supervisor SO-EMDO-43
13	3, 4	Revised Placard No. 4 and No. 7 to read: "In full view of the pilot"	Supervisor SO-EMDO-43
. 14	1	Added Aircraft Serial Numbers 1571 and 1573 to Engine and Propeller Limitations	H.C. Faller 6/3/68 Supervisor SO-EMDO-43
15	1	Added Propeller Designations	H. C. Faller 6/24/68 Supervisor SO-EMDO-43
16	Title	Allocated Piper Report No. VB-163 to this Manual.	Herb M. Toomey 11/14/ FAA DOA SO-1
17	Title	Added Applicable Serial Nos. 1 Thru 4377	X1. W2 1 63 4 1 0 1
	1	Added Supplement No. 1	H. M. Toomey FAA DOA SO-1  422/69

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## Log of Revisions

REVISION				
NO.	PAGE	DESCRIPTION	APPROVED	DATE
18	Title	Changed applicable Serial Nos. from 1 thru 4377 to 1 thru 5600.	H.M. Toomey FAA DOA SO-1	7/13/69
19	Title	Changed applicable Serial Nos. from 1 thru 5600 to 671 thru 5600.	J. M. Laone H. M. Toomey FAA DOA SO-1	ig9/23/69
20	2	Added Forward Intermediate and Forward Gross Weight Points	H. M. Toomey FAA DOA SO-1	45/8/76
21	2	Deleted Forward Intermediate and Forward Gross Weight Points	Mum Cattalia G. C. Stephen FAA DOA SO-1	m. 9/14/70
22	1	Changed oil pressure gauge markings	WardEvans	- 7-25-75

PROPERTY OF THE PROPERTY OF TH

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 0-360-A3A or 0-360-A4A

Engine Limits

Maximum permissible RPM for takeoff, 2475. For all other operations, 2700 rpm, 180 hp, (A/C S/N 28-671 to 1760A). For all operations, 2700 rpm, 180 hp, (A/C S/N 28-1571, 1573,

1761 and up).

Fuel

91/96 minimum octane aviation fuel.

Propeller

Sensenich M76 EMM or 76EM8 (S/N 671 to 1760A)
Sensenich M76 EMMS or 76EM8S5 (S/N 1571, 1573, 1761 & up).
Maximum diameter 76 inches, minimum diameter 76 inches.
Static RPM at maximum permissible throttle setting. Not over 2450, not under 2275. No additional tolerance permitted.

Power Instruments

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

Oil Temperature: GREEN arc (normal operating range) 75°F to 245°F; RED line (maximum) 245°F (S/N 1571, 1573, 1761 &up).

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

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

Fuel Pressure: GREEN arc (normal operating range).5 psi to 8 psi; RED line (minimum).5 psi; RED line (maximum) 8 psi (S/N 1571, 1573, 1761 and up)

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

FAA APPROVED 8-3-62 REVISED 7-25-75

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СНЕСКЕВ	<del></del>	IT CENTER, VERO BEAC	1 1
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Airspeed Limits	Maximum stru Maneuvering . Flaps extended Maximum posi Maximum posi	ctural cruise  d	171 mph 140 129 115 3.8 Normal Category 4.4 Utility Category No inverted maneuvers approved.
Maximum Weight	2400 lbs - Nor	mal Category; 150 lbs	- Utility Category.
Baggage Capacity	200 lbs		
C.G. Range		d is 78.4 inches ahead of the straight and tapere	of wing leading edge at the d section.
	1. Normal C	ategory	
	Weight (Pounds)	Forward Limit (In. Aft of Datum)	Rearward Limit (In. Aft of Datum)
	2400 2200 1975 1650	92.1 89.2 85.9 84.0	94.5 95.9 95.9 95.9
	2. <u>Utility Car</u>	tegory	
	Weight (Pounds)	Forward Limit (In. Aft of Datum)	
	1950 1650	85.8 84.0	86.5 86.5
	Straight li	ne variation between po	ints given.
	to		the airplane owner and the pilot is properly loaded. See weight ading instructions.
Maneuvers	1. Normal C	ategory - All acrobatic prohibited.	maneuvers including spins
	2. Utility Ca	tegory - Approved mar	euvers for Utility Category only.
FAA APPROVED 8/	: I	Spins (Flaps Up) Steep Turns Lazy Eights Chandelles	. 129 mph . 129
REVISED 9/14/70	Rev. No. 21		

PREPARED		PIPER AIRCRAFT CORP.	Airplane Flight Manua
CHECKED	-	DEVELOPMENT CENTER, VERO BEACH, FLA. Model PA-28-18	
APPROVED		REPORT VB-163	PAGE 3 of 6
Placards	1.	In full view of the pilot:	
		"THIS AIRPLANE MUST BE OPERATED AS CATEGORY AIRPLANE IN COMPLIANCE V LIMITATIONS STATED IN THE FORM OF AND MANUALS.	VITH THE OPERATING
		ALL MARKINGS AND PLACARDS ON THIS ITS OPERATION AS A UTILITY CATEGOR NORMAL AND UTILITY CATEGORY OPER THE AIRPLANE FLIGHT MANUAL.	Y AIRPLANE. FOR
		FOR SPIN RECOVERY, USE FULL RUDDE LOWED IMMEDIATELY BY FORWARD WH	
		NO ACROBATIC MANEUVERS (INCLUDING FOR NORMAL CATEGORY OPERATIONS.'	
	2.	Adjacent to upper door latch:	
		"ENGAGE LATCH BEFORE FLIGHT."	
	3.	On the inside of the baggage compartment of	door:
		"MAXIMUM BAGGAGE 125 LBS." (S/N 67 (MAXIMUM BAGGAGE MAY BE INCREASE ANCE WITH PIPER SERVICE SPARES LET	D TO 200 LBS. IN ACCOR
		UTILITY CATEGORY OPERATION - NO BAGGAGE AND AFT PASSENGER LIMITAT	OPERATION - SEE AIR- ALANCE SECTION FOR
	4.	In full view of the pilot:	
		"ROUGH AIR OR MANEUVERING SPEED 1	29 MPH."
		''UTÏLITY CATEGORY OPERATION - NO A ALLOWED."	AFT PASSENGERS
	5.	On the instrument panel in full view of the p winterization kit is installed:	oilot when the oil cooler
		"OIL COOLER WINTERIZATION PLATE T AMBIENT TEMPERATURE EXCEEDS 50°	
	6.	On the instrument panel in full view of the is installed:	pilot when the autoflite
		"FOR HEADING CHANGES: PRESS DISEN	IGAGE SWITCH ON

CONTROL WHEEL. CHANGE HEADING, RELEASE DISENGAGE

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SWITCH.

PREPARED PIPER AIRCRAFT CORP. Airplane Flight Manual DEVELOPMENT CENTER, VERO BEACH, FLA. Model PA-28-180 CHECKED APPROVED REPORT VB-163 4 of 6 PAGE. In full view of the pilot: "UTILITY CATEGORY ONLY." Placards (Cont'd) Acrobatic maneuvers are limited to the following: Entry Speed Spins (Flaps Up)..... Stall Steep Turns..... 129 mph. Lazy Eights..... 129 Chandelles..... 129 RED radial line Airspeed Never exceed 17.1 mph (148 knots) Instrument YELLOW arc Caution Range 140 to 171 mph (121 Markings (Smooth Air Only) to 148 knots) 67 to 140 mph (58 GREEN arc Normal Operating Range to 121 knots) WHITE arc Flap Down Range 57 to 115 mph (50 to 100 knots) 2. Procedures The stall-warning system is inoperative with the master switch off. Section 2. Electric fuel pump must be on for both landing and takeoff. 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: 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. 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. 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. Except as noted above, all operating procedures for this airplane are normal.

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# Procedures Section (Cont'd.)

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

  The following emergency information applies in case of autoflite malfunction:
  - a. In case of malfunction PRESS disconnect switch on pilot's control wheel.
  - b. Rocker switch on instrument panel OFF.
  - c. Unit may be overpowered manually.
  - d. In cruise configuration malfunction, 3 seconds delay results in 60° bank, and 100 Ft. altitude loss.
  - e. In approach configuration malfunction, 1 second delay results in 100 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  $60^{\circ}$  bank and 100 Ft. altitude loss.
      - In approach configuration malfunction,
        1 second delay results in 10<sup>0</sup> bank and
        0 Ft. altitude loss.

FAA APPROVED 8/3/62 REVISED 7/15/66 Rev. No. 8

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#### 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  $125\ \mathrm{to}\ 200\ \mathrm{feet},$  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				

FAA APPROVED 8. REVISED 7/15/66

8/3/62

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Airplane Flight Manual
Model PA-28

Supplement No. 1
PAGE \_\_\_\_1

#### SUPPLEMENT NO. 1 TO PIPER MODEL PA-28 FLIGHT MANUAL

MODELS AFFECTED: Piper PA-28 models equipped with Lycoming 0-360-A3A engine and Sensenich M76EMM-0, M76EMMS-0, 76EM8S5-0 or 76EM8-0 propeller.

#### PROPELLER LIMITS

Avoid continuous operation between 2150 and 2350 RPM.

The aircraft tachometer must be placarded to show a red arc between 2150 and 2350 RPM in accordance with Piper Service Letter No. 526.

NOTE: This document must be attached to the Airplane Flight Manual.

FAA DOASO-1 APPROVED

H. M. Toomey

DATE

PREPARED		Airplane Flight Manual Supplement
CHECKED	ATUTIANNITUT DESTEN NEMA STIRN ELL	Model PA-28-180
APPROVED	REPORT VB-261	PASE

AIRPLANE FLIGHT MANUAL SUPPLEMENT NO. 2

CENTER OF GRAVITY RANGE

FOR

MODEL PA-28-180

THIS AIRPLANE FLIGHT MANUAL SUPPLEMENT IS APPLICABLE TO AIRCRAFT WITH SERIAL NUMBERS 28-671 TO 28-3072, INCLUSIVE, WHEN PIPER PART NO. 65280-00 TUBE-LANDING GEAR STRUT PISTON IS INSTALLED.

SERIAL NUMBERS 28-3073 TO 28-5859 MAY USE THIS SUPPLEMENT WITH NO ADDITIONAL MODIFICATION TO THE AIRCRAFT.

THIS DOCUMENT MUST BE ATTACHED TO THE AIRPLANE FLIGHT MANUAL

FAA APPROVED:

G. C. Stephen, FAA DOA SO-I Piper Aircraft Corporation

DATE: September 14, 1970

PRIPARED	PIPER AIRCRAFT CORP.	Airplane Flight Manual Supplement
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PIPER MODEL PA-28-180

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DESCRIPTION APPROVED

DATE

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APPROYED	REPORT VB-261	Model PA-28-180

PIPER MODEL PA-28-180 NORMAL AND UTILITY CATEGORIES

#### AIRPLANE FLIGHT MANUAL SUPPLEMENT

This supplement must be attached to the Airplane Flight Manual dated August 3, 1962 or August 12, 1964 or April 22, 1969, when the expanded C.G. Envelope is used. The information contained herein supplements the information of the basic Airplane Flight Manual; for limitations, procedures, and performance data not contained in this document, consult the manual proper.

1. Limitations Section

The following limitations must be observed in the operation

of this airplane with this center of gravity range:

Maximum Weight

2400 lbs.

C.G. Range

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

#### 1. Normal Category

Weight	Forward Limit	Rearward Limit
(Pounds)	(In. Aft of Datum)	(In. Aft of Datum)
2400	91.0	94.5
2200	87.8	95.9
2150	87.0	95. 9
1650	84.0	95.9

#### Utility Category

Weight	Forward Limit	Rearward Limit	
(Pounds)	(In. Aft of Datum)	(In. Aft of Datum)	
1950	85.8	86.5	
1650	84. Ó	86.5	

2. Procedures

"No Change"

3. Performance

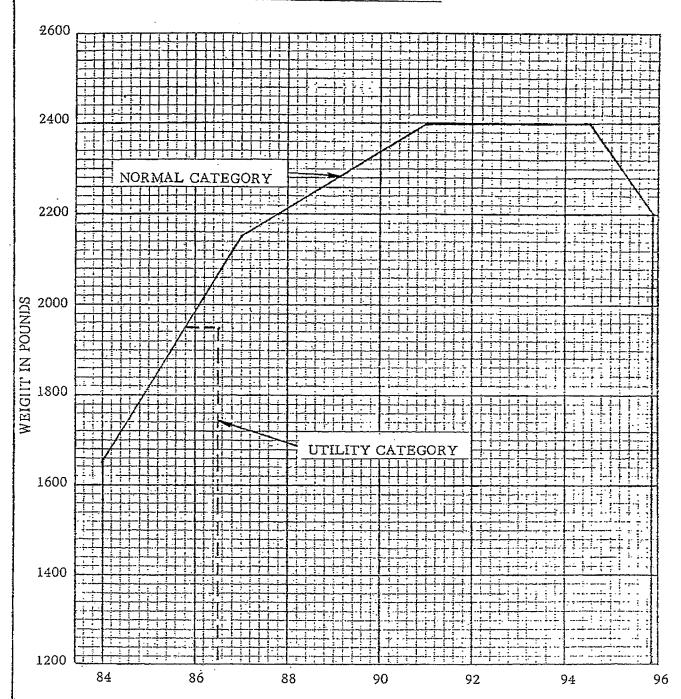
"No Change"

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#### C. G. RANGE AND WEIGHT



INCHES AFT OF DATUM

.FAA Approved 9/14/70

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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)

	WEIGHT (LBS)	ARM AFT DATUM (INCHES)	MOMENT (POUND-INCHES)
LICENSED EMPTY WEIGHT			
OIL (2 GALLON)	15	32.5	488
PILOT & PASSENGER	340	85.5	29070
FUEL		95.0	
PASSENGERS (REAR SEAT) *	340	118.1	40154
BAGGAGE *		142.8	
TOTAL LOADED AIRPLANE			
	=	INCHES (A	ARM AFT DATUM)

LOCATE THIS POINT ( ) 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.

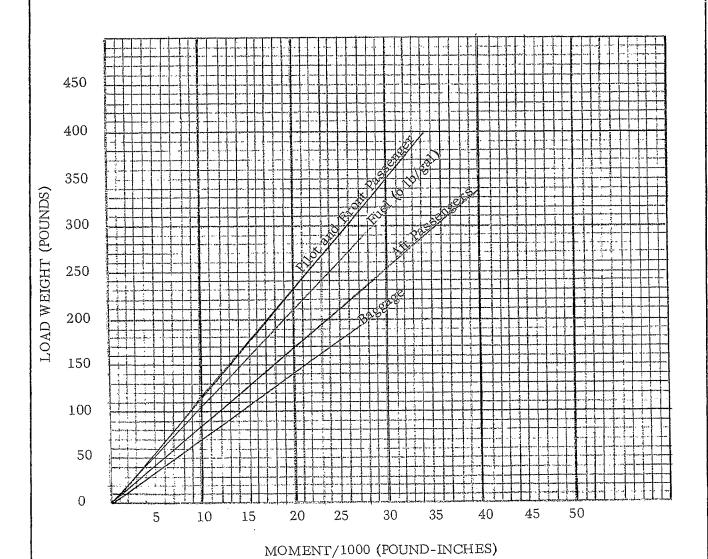
Normal Category Operation - Maximum baggage 125 lbs. (S/N 671 to 1760A).

Maximum baggage 200 lbs. (S/N 1761 and up).

Check aft C. G. between 150 lbs. and 200 lbs.

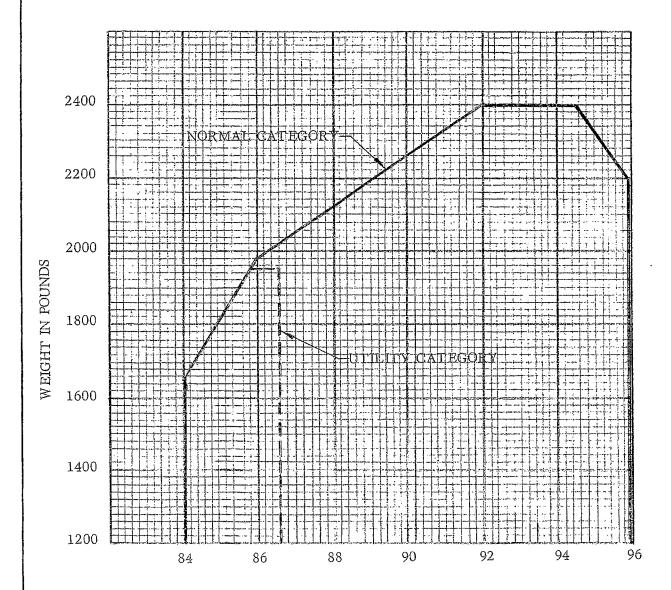
PREPARED		Weight and Balance Data
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### LOADING GRAPH



PREPARED	PIPER AIRCRAFT CORP.	Weight and Balance Data
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#### C. G. RANGE AND WEIGHT



INCHES AFT OF DATUM