

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Airplane Flight Manual Model PA-28-180
CHECKED		
APPROVED	REPORT VB-210	PAGE <u>  i  </u>

AIRPLANE FLIGHT MANUAL

MODEL PA-28-180

FAA IDENTIFICATION NO.   N5163S  

SERIAL NO.   28-7105017  

THIS DOCUMENT MUST BE KEPT IN AIRPLANE AT ALL TIMES.

FAA DOA SO-1  
APPROVED

H. M. Toomey  
H. M. Toomey

DATE

4/22/69

**WARNING**

The rudder pedals are suspended from a torque tube which extends across the fuselage. The pilot should become familiar with the proper positioning of his feet on the rudder pedals so as to avoid interference with the torque tube when moving the rudder pedals or operating the toe brakes.

757 436

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Log of Revisions

REV. NO.	PAGE	DESCRIPTION	APPROVED	DATE
1	1	Engine Limitations Section: Deleted "Maximum Permissible RPM for Take-off, 2475".		
	3	Added to Placard No. 3: "Baggage Maximum 200 Lbs."	<i>H.M. Toomey</i> H. M. Toomey FAA DOA SO-1	<i>12/17/69</i>
2	2	Added Forward Intermediate and Forward Gross Weight Points	<i>H.M. Toomey</i> H. M. Toomey FAA DOA SO-1	<i>5/8/70</i>
3	4	Placards Section: Added Items 8 and 9.		
	7	Procedures Section: Added Item 8. Added Page 7	<i>G.C. Stephen</i> G. C. Stephen FAA DOA DO-1	<i>3/11/70</i>

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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-A4A
- Engine Limits For all operations,  
2700 rpm, 180 hp.
- Fuel 91/96 minimum octane aviation fuel.
- Propeller Sensenich M76EMMS or 76EM8S5. 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)  
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)  
.5 psi to 8 psi  
RED line (minimum) .5 psi  
RED line (maximum) 8 psi
- Tachometer: GREEN arc (normal operating range)  
500 to 2700 rpm  
RED line (maximum continuous power)  
2700 rpm

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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 wing leading edge at the intersection of the straight and tapered section.

1. Normal Category (S/N 671 thru S/N 5859, inclusive)

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

Normal Category (S/N 7105001 and up)

Weight (Pounds)	Forward Limit (In. Aft of Datum)	Rearward Limit (In. Aft of Datum)
2400	91.0	94.5
2200	87.8	95.9
2150	87.0	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	85.8	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.

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

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Placards

1. 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:  

"BAGGAGE MAXIMUM 200 LBS."

"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. 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 50°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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Placards  
(Cont'd)

7. 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

8. On the instrument panel in full view of the pilot when the AutoFlite II is installed:

"TURN AUTOFLITE ON. ADJUST TRIM KNOB FOR MINIMUM HEADING CHANGE. FOR HEADING CHANGE, PRESS DISENGAGE SWITCH ON CONTROL WHEEL, CHANGE HEADING, RELEASE SWITCH. ROTATE TURN KNOB FOR TURN COMMANDS. PUSH TURN KNOB IN TO ENGAGE TRACKER. PUSH TRIM KNOB IN FOR HI SENSITIVITY. LIMITATIONS AUTOFLITE OFF FOR TAKEOFF AND LANDING."

9. On the instrument panel in full view of the pilot when the supplementary white strobe lights are installed:

"WARNING - TURN OFF STROBE LIGHTS WHEN TAXIING IN VICINITY OF OTHER AIRCRAFT, OR DURING FLIGHT THROUGH CLOUD, FOG OR HAZE."

Airspeed	RED radial line	Never Exceed	171 mph (148 knots)
Instrument	YELLOW arc	Caution Range (Smooth Air Only)	140 to 171 mph (121 to 148 knots)
Markings	GREEN arc	Normal Operating Range	67 to 140 mph (58 to 121 knots)
	WHITE arc	Flap Down Range	57 to 115 mph (50 to 100 knots)

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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.

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2. Procedures  
Section  
(Cont'd)

5. (Electric Pitch Trim Installation Only with Pitch Trim Switch)

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° 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 takeoff 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.

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2. Procedures  
Section  
(Cont'd)

8. (AutoFlite II Installation Only)

I Limitations: AutoFlite off for takeoff and landing.

II Procedures:

- a. Normal Operation - Refer to Manufacturer's Operation Manual.
- b. Emergency
  - 1. In case of malfunction PRESS disconnect switch on pilot's control wheel.
  - 2. Rocker switch on instrument panel - OFF.
  - 3. Unit may be overpowered manually.
  - 4. In cruise configuration malfunction, 3 seconds delay results in 30° bank, and 100' altitude loss.
  - 5. In approach configuration malfunction, 1 second delay results in 10° bank and 0' altitude loss.

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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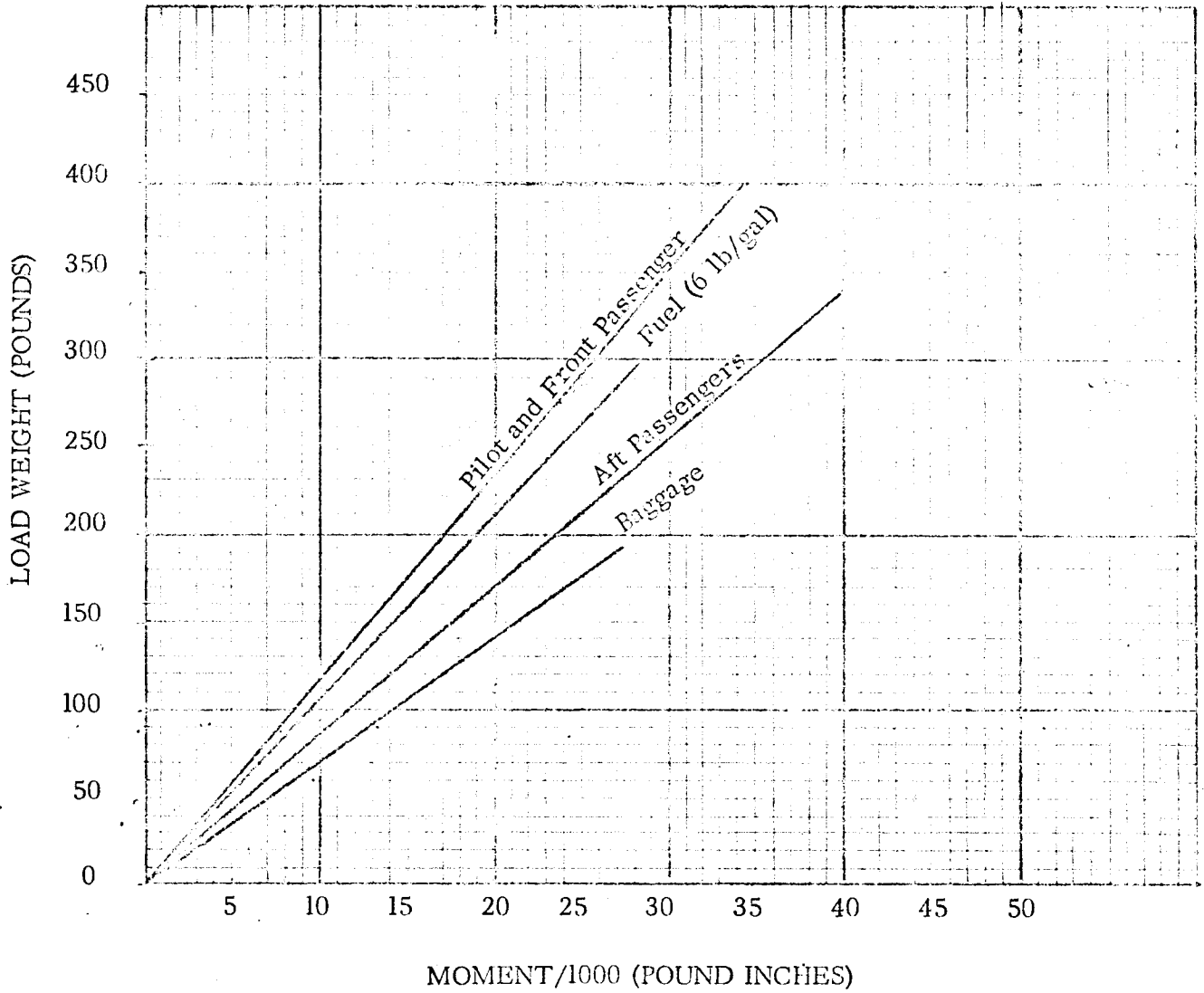
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Weight & Balance Data  
Model PA 28-180

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LOADING GRAPH



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C. G. RANGE AND WEIGHT

