

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	Airplane Flight Manual Model PA-28-180
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APPROVED	REPORT VB-437	PAGE _____

AIRPLANE FLIGHT MANUAL

MODEL PA-28-180

FAA IDENTIFICATION NO. N55028

SERIAL NO. 28-7305295

APPLICABLE TO SERIAL NUMBERS 28-7305001 THROUGH 28-7305601

AND SERIAL NUMBER 28-E13

THIS DOCUMENT MUST BE KEPT IN AIRPLANE AT ALL TIMES.

FAA APPROVED:

H. W. Barnhouse
H. W. Barnhouse, FAA DOA SO-1
Piper Aircraft Corporation

DATE:

May 22, 1972

DUPLICATE

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Log of Revisions

REV. NO.	PAGE	DESCRIPTION	APPROVED	DATE
1	6	Procedures Section: Added the following wording to Paragraph 3. c: "and full opposite aileron"	<i>H.W. Bamhouse</i>	6-29-72
2	Title	Removed Serial Numbers	<i>H.W. Bamhouse</i>	8-21-76
3	7	Revised Limitations on AutoControl III and AutoFlite II and revised Emergency Procedures on AutoControl III		
	8	Revised Emergency Procedures on AutoFlite II	<i>H.W. Bamhouse</i>	7-1-72
4	8	Corrected item 9. b. for serial number restrictions. Moved Item 3 to Page 9.		
	9	Added information from Page 8.	<i>H.W. Bamhouse</i>	3-20-73
5	TITLE	Added Serial Number Effectivity	<i>W.D. Traylor</i>	9-12-73
6	TITLE	Added Serial Number 28-E13	<i>W.D. Traylor</i>	5-14-74
7	1	Changed oil pressure gauge markings.	<i>Ward Evans</i>	7-25-75

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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 with carburetor setting IO-3878
- Engine Limits For all operations, 2700 rpm, 180 hp.
- Fuel 100/130 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 2425, not under 2325. No additional tolerance permitted.
- Power Instruments
- Oil Temperature: GREEN arc (normal operating range)
75° to 245°
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) 25
25 psi when installed or
60 psi when installed
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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Airpeed Limits	Never exceed	171 mph
	Maximum structural cruise	140
	Maneuvering	127
	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 2450 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

<u>Weight</u> (Pounds)	<u>Forward Limit</u> (In. Aft of Datum)	<u>Rearward Limit</u> (In. Aft of Datum)
2450	87.4	93.0
2050	82.0	93.0

2. Utility Category

<u>Weight</u> (Pounds)	<u>Forward Limit</u> (In. Aft of Datum)	<u>Rearward Limit</u> (In. Aft of Datum)
1950	82.0	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

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

	<u>Entry Speed</u>
Steep Turns	127 mph
Lazy Eights	127
Chandelles	127

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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.

NO ACROBATIC MANEUVERS ARE APPROVED FOR NORMAL CATEGORY OPERATIONS. SPINS ARE PROHIBITED FOR BOTH NORMAL AND UTILITY CATEGORIES."

2. In full view of the pilot, the following takeoff and landing checklists will be installed:

TAKEOFF CHECKLIST

Fuel on proper tank	Mixture set	Fasten belts/harness
Electric fuel pump on	Seat backs erect	Trim tab - set
Engine gauges checked		Controls - free
Flaps - set		Door - latched
Carb heat off		Air Conditioner - off

LANDING CHECKLIST

Fuel on proper tank		Flaps - set (115 mph)
Mixture rich	Seat backs erect	Fasten belts/harness
Electric fuel pump on		Air Conditioner - off

The "AIR COND OFF" item in the above takeoff and landing checklists is mandatory for air conditioned aircraft only.

3. In full view of the pilot, in the area of the air conditioner control panel when the air conditioner is installed:

"WARNING - AIR CONDITIONER MUST BE OFF TO INSURE NORMAL TAKEOFF CLIMB PERFORMANCE."

4. Adjacent to upper door latch: "ENGAGE LATCH BEFORE FLIGHT."

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Placards
(cont'd)

5. On inside of the baggage compartment door:
 "BAGGAGE MAXIMUM 200 LBS."
 "UTILITY CATEGORY OPERATION - NO BAGGAGE OR AFT PAS-
 SENGERS ALLOWED. NORMAL CATEGORY OPERATION - SEE
 AIRPLANE FLIGHT MANUAL WEIGHT AND BALANCE SECTION
 FOR BAGGAGE AND AFT PASSENGER LIMITATIONS."

6. In full view of the pilot:
 "ROUGH AIR OR MANEUVERING SPEED - 127 MPH."
 "UTILITY CATEGORY OPERATION - NO AFT PASSENGERS
 ALLOWED."

7. 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."

8. 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."

9. In full view of the pilot: "Utility Category Only."

Acrobatic maneuvers are limited to the following:

	<u>Entry Speed</u>
Steep Turns	127 mph
Lazy Eights	127
Chandelles	127

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Placards
(cont'd)

10. 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."

11. 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
Instrument
Markings

RED radial line	Never Exceed	171 mph (148 knots)
YELLOW arc	Caution Range (Smooth Air Only)	140 to 171 mph (121 to 148 knots)
GREEN arc	Normal Operating Range	68 to 140 mph (59 to 121 knots)
WHITE arc	Flap Down Range	61 to 115 mph (53 to 100 knots)

Air Conditioned
Airplanes.

Air Conditioner must be off for takeoff and landing.

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 both normal and utility 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.

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Section
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- 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.
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 200 ft. altitude variation.
 - d. In approach configuration, a malfunction can result in a 5° pitch change and 50 ft. altitude loss.
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.

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Procedures
Section
(cont'd)

- d. In climb, cruise or descending flight an autopilot runaway, with a 3 second delay could result in a 50° bank, and 190 ft. altitude loss.
 - e. In approach configuration an autopilot runaway, with a 1 second delay could result in a 15° bank and 40 ft. altitude loss.
7. (AutoControl III Installation Only)
- I. Limitations: Autopilot off during takeoff and landing.
AutoFlite use prohibited above 160 mph CAS.
 - II. Procedures:
 - a. Normal Operation
Refer to Manufacturer's Operation Manual
 - b. Emergency
 - 1. In case of malfunction, turn off autopilot.
 - 2. In emergency, autopilot may be overpowered manually.
 - 3. In climb, cruise or descending flight an autopilot runaway, with a 3 second delay could result in 60° bank and 100 ft. altitude loss.
 - 4. In approach configuration an autopilot runaway, with a 1 second delay could result in 10° bank and 10 ft. altitude loss.
8. (AutoFlite II Installation Only)
- I. Limitations: AutoFlite off for takeoff and landing.
AutoFlite use prohibited above 160 mph CAS.
 - 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.

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Procedures

Section

(cont'd)

3. Autopilot may be overpowered manually.
 4. In climb, cruise or descending flight an autopilot runaway, with a 3 second delay could result in 60° bank, and 190 ft. altitude loss.
 5. In approach configuration an autopilot runaway, with a 1 second delay results in 15° bank and 40 ft. altitude loss.
9. (Air Conditioned Models Only)

Prior to takeoff, the air conditioner should be checked for proper operation as follows:

- a. Check aircraft master switch on
- b. (For aircraft serial numbers 7205092 through 7305071). Turn the air conditioner control switch to "AIR COND" - the "AIR COND DOOR OPEN" warning light will turn on, thereby indicating proper air conditioner condenser door actuation.

(For aircraft serial numbers 7305072 and up). Turn the air conditioner control switch to "ON" and the fan switch to one of the operating positions - the "AIR COND DOOR OPEN" warning light will turn on, thereby indicating proper air conditioner condenser door actuation.

- c. Turn the air conditioner control switch to OFF - the "AIR COND DOOR OPEN" warning light will go out, thereby indicating the air conditioner condenser door is in the up position.
- d. If the "AIR COND DOOR OPEN" light does not respond as specified above, an air conditioner system or indicator bulb malfunction is indicated and further investigation should be conducted prior to flight.

The above operational check may be performed during flight if an inflight failure is suspected.

10. Air Conditioned Models only: Warning - The air conditioner must be off to insure normal takeoff performance.

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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 2450 pounds.

Loss of altitude during stalls varied from 100 to 250 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	68	70	78	85	96
Flaps Down	61	--	--	--	--

Air Conditioned Models only:

When the full throttle position is not used or in the event of a malfunction which causes the compressor to operate and the condenser door to remain extended, a decrease in rate of climb of as much as 100 fpm can be expected at all altitudes.