




# **APPROVED FLIGHT MANUAL**

PIPER PA-28-180  
(Serial numbers 28-03, 28-1 through 28-7205318)

DEPARTMENT OF TRANSPORT

**PARTICULAR AMENDMENT RECORD SHEET**

Amendment Number	Paragraph(s) Affected	Signature	Date of Incorporation
P1	Section 8 - Supplements  Special Flight Manual Supplement For Operation Using Automotive Petrol (MOGAS)		20-9-93

Incorporation of a Particular Amendment must be certified by inserting the date of incorporation and signature in the appropriate columns. All amendments must be embodied consecutively. This page will be reissued with each Particular Amendment, and previous copies should be retained in the Flight Manual to serve as a record of amendments issued. Superseded Flight Manual pages should be removed and destroyed.

16/09/1993

.....  
Date

  
.....  
For the Authority

FLIGHT MANUAL APPROVAL

Nationality and Registration : VH- WIA  
Marks

Aeroplane Serial Number : 28-4375

Manufacturer : Piper Aircraft Corporation

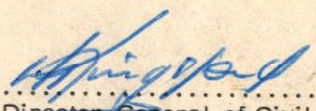
Designation of Aeroplane : Piper PA-28-180  
(Serial numbers 28-03, 28-1  
through 28-7205318)

Certification Category or Categories : Normal and Utility

This Flight Manual has been approved by the Director-General of Civil Aviation and is the Flight Manual referred to in Certificate of Airworthiness Number

.6621.....

Date : 2 October, 1974  
.....

  
.....  
for Director-General of Civil Aviation

Any person finding this Manual should return it to the nearest Regional Office of the Department of Transport, Air Transport Group

Piper PA-28-180  
Serial Nos. 28-03,  
28-1 through 28-7205318.  
20 June 1974.

## INTRODUCTION

This Flight Manual applies only to the particular aeroplane identified by registration marking and serial number on Page (i) and contains the airworthiness limitations and essential operating data for that aeroplane. Special operations requiring additional limitations and instructions are listed in "Section 8 - Supplements" and this section shall be consulted before undertaking any such operations. For operating information not included in this Manual, reference should be made to the appropriate operations or manufacturer's manuals.

The Flight Manual shall be carried in the aeroplane on all flights. It is the responsibility of the pilot in command to be familiar with the contents of this Manual and to comply with all directions contained herein relating to the operation of the aeroplane.

Amendments will be issued by the Director-General of Civil Aviation as necessary and will take the form of replacement pages, with changes to the text indicated by a vertical line in the margin together with the amendment number. It is the owner's responsibility to incorporate in this manual all such amendments, and to enter the date of incorporation and his signature on the appropriate Amendment Record Sheet.

The aeroplane has been certificated on the basis of the equipment fitted at the time of certification. Any changes in equipment are subject to approval by the Director-General of Civil Aviation.

No entries or endorsements may be made to this Flight Manual except in the manner and by the persons authorised for the purpose by the Director-General of Civil Aviation.

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## DEFINITIONS

The following definitions shall apply throughout this Manual:

### AIRFIELD PRESSURE HEIGHT

The Airfield Pressure Height is that height registered at the surface of an aerodrome by an altimeter with the pressure sub-scale set to 1013.2 millibars.

### I. A. S.

Indicated airspeed, which is the reading obtained from an airspeed indicator having no calibrated error.

### TAKE-OFF SAFETY SPEED

The Take-off Safety Speed is a speed chosen to ensure that adequate control will exist under all conditions, including turbulence and sudden and complete engine failure, during the climb after take-off.

### APPROACH SPEED

The Approach Speed is a speed chosen to ensure that adequate control will exist under all conditions, including turbulence, to carry out a normal flare and touchdown.

### NORMAL OPERATING LIMIT SPEED (MAXIMUM STRUCTURAL CRUISING SPEED)

This speed shall not normally be exceeded. Operations above the Normal Operating Limit Speed shall be conducted with caution and only in smooth air.

### MANOEUVRING SPEED

Maximum for manoeuvres involving an approach to stall conditions or full application of the primary flight controls.

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1.4 - OIL

Specification : Lycoming specification 301E

Ambient Air Temperature	Viscosity Grade
Above 16°C	SAE. 50
-1°C to 32°C	SAE. 40
-18°C to 21°C	SAE. 30
Below -12°C	SAE. 20

Capacity : 7.6 litres, 1.6 Imp. gall., 2.0 U.S. gall. total  
 5.6 litres, 1.2 Imp. gall., 1.5 U.S. gall. usable

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SECTION 1 - AEROPLANE GENERAL DATA

1.1 - ENGINE

Manufacturer : Lycoming  
 Type : 0-360-A3A or 0-360-A4A

1.2 - PROPELLER

Manufacturer	Type	Diameter	Full Throttle Static RPM
Sensenich	M76EMM or 76EM8 (Eligible on aircraft serial nos. 28-671 through 28-1760A)	Not over : 76.0 inches	Not over : 2450
		Not under : 76.0 inches	Not under : 2275
Sensenich	M76EMMS or 76EM8S5 (Eligible on aircraft serial nos. 28-1573 and 28-1761 through 28- 7205318)	Not over : 76.0 inches	Not over : 2450
		Not under : 76.0 inches	Not under : 2275

1.3 - FUEL

Grade : 91/96 minimum grade aviation gasoline  
 Capacity -  
 Main Tanks : 189 litres, 41.6 Imp. gall., 50.0 U.S. gall. total  
 187 litres, 41.2 Imp. gall., 49.5 U.S. gall. usable

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2.4 - POWER PLANT

(a) Power and Temperatures :

For aircraft serial nos. 28-671 through 28-1760A.

Power	R. P. M.	Manifold Pressure	Maximum Oil Temperature	Max. Cyl. Head Temp.
Maximum Take-off	2475	Throttle as necessary	118°C, 245°F	260°C, 500°F
Maximum Continuous 180 b. h. p.	2700	Full Throttle	118°C, 245°F	260°C, 500°F

For aircraft serial nos. 28-1571, 28-1573, 28-1761 through 28-7205318.

Power	R. P. M.	Manifold Pressure	Maximum Oil Temperature	Max. Cyl. Head Temp.
Maximum Take-off 180 b. h. p.	2700	Full Throttle	118°C, 245°F	260°C, 500°F
Maximum Continuous 180 b. h. p.	2700	Full Throttle	118°C, 245°F	260°C, 500°F

NOTE (i) Manually operated mixture controls may be used to establish and maintain lean mixture strengths only at authorised cruise power settings. At all higher power settings such mixture controls may be used only to the extent necessary to avoid rough running which would otherwise result from an over-rich mixture.

(ii) With Lycoming O-360-A3A power plants installed avoid continuous operation between 2150 and 2350 r. p. m.

(b) Oil Pressure :

Normal . . . . . 414-620 kPa, 60-90 lb./sq. in.

Minimum safe in flight . . . . . 414 kPa, 60 lb./sq. in.

Minimum safe idling . . . . . 172 kPa, 25 lb./sq. in.

(c) Oil Temperature :

Minimum for take-off power . . . . . 49°C, 120°F.

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SECTION 2 - OPERATING LIMITATIONS

2.1 - AIRSPEEDS (I. A. S.)

Never exceed . . . . . 147 knots  
 Normal operating limit . . . . . 120 knots  
 (Maximum structural cruising)  
 Manoeuvring . . . . . 111 knots  
 Maximum, wing flaps extended . . . . . 99 knots

2.2 - MANOEUVRES PERMITTED

(a) Normal Category :

Operations shall be limited to normal flying manoeuvres, but may include straight and steady stalls, and turns in which the angle of bank does not exceed 60 degrees. All acrobatic manoeuvres, including spins, are not permitted.

(b) Utility Category :

No acrobatic manoeuvres are approved except those listed below -

MANOEUVRE	ENTRY SPEED (I. A. S.)
Chandelles . . . . .	111 knots
Lazy eights . . . . .	111 knots
Steep turns . . . . .	111 knots
Spins . . . . .	Slow deceleration
Stalls (except whip stalls) . . . . .	Slow deceleration

NOTE : The baggage compartment must be empty and the rear seat unoccupied.

2.3 - CROSSWIND COMPONENT

The maximum permissible crosswind component for take-off and landing is 15 knots.

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## 2.5 - WEIGHT AND BALANCE ( CONTINUED)

### (ii) Utility Category -

#### Forward limit :

2179 mm. (85.8 inches) aft of the datum at 884 kg. (1950 lb.), and  
2134 mm. (84.0 inches) aft of the datum at 748 kg. (1650 lb.),  
or less, with linear variation between 748 kg (1650 lb.) and  
884 kg. (1950 lb.).

#### Rear limit :

2197 mm. (86.5 inches) aft of the datum at all weights.

### (c) Datum :

1991 mm. (78.4 inches) forward of wing leading edge outboard of  
the tapered sections.

### (d) Baggage Compartment Loading :

#### (i) Maximum permissible baggage compartment load :

90 kg. (200 lb.) - Normal Category only.

(ii) Where passenger seats are removed to permit the carriage  
of cargo the maximum load in the seat area shall not exceed  
77 kg. (170 lb.) plus the weight of the seat removed.

## 2.6 - SMOKING

Smoking is not permitted during take-off, landing and refuelling or  
defuelling operations.

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## 2.4 - POWER PLANT (CONTINUED)

### (d) Fuel Pressure :

Normal . . . . . 3.5-34.5 kPa, 0.5-5.0 lb./sq. in.

Minimum safe in flight . . . . . 34.5 kPa, 5.0 lb./sq. in.

## 2.5 - WEIGHT AND BALANCE

### (a) Weight :

Maximum take-off weight (Normal Category) .. 1088 kg. (2400 lb.)

Maximum take-off weight (Utility Category) .. 844 kg. (1950 lb.)

Maximum landing weight .. . . . . . 1088 kg. (2400 lb.)

### (b) Centre of Gravity :

#### (i) Normal Category -

##### Forward limit :

(For aircraft serial nos. 28-671 through 28-5859 inclusive,  
see also NOTE).

2339 mm. (92.1 inches) aft of the datum at 1088 kg. (2400 lb.),  
2266 mm. (89.2 inches) aft of the datum at 997 kg. (2200 lb.),  
2182 mm. (85.9 inches) aft of the datum at 895 kg. (1975 lb.) and  
2134 mm. (84.0 inches) aft of the datum at 748 kg. (1650 lb.),  
or less, with linear variation between 748 kg. (1650 lb.),  
895 kg. (1975 lb.), 997 kg. (2200 lb.) and 1088 kg. (2400 lb.).

##### Forward limit :

(For aircraft serial nos. 28-7105001 through 28-7205318)

2311 mm. (91.0 inches) aft of the datum at 1088 kg. (2400 lb.),  
2230 mm. (87.8 inches) aft of the datum at 997 kg. (2200 lb.),  
2216 mm. (87.0 inches) aft of the datum at 975 kg. (2150 lb.) and  
2134 mm. (84.0 inches) aft of the datum at 748 kg. (1650 lb.),  
or less, with linear variation between 748 kg. (1650 lb.),  
975 kg. (2150 lb.), 997 kg. (2200 lb.) and 1088 kg. (2400 lb.).

##### Rear limit (All PA-28-180 aircraft)

2400 mm. (94.5 inches) aft of the datum at 1088 kg. (2400 lb.) and  
2436 mm. (95.9 inches) aft of the datum at 997 kg. (2200 lb.),  
or less, with linear variation between 997 kg. (2200 lb.) and  
1088 kg. (2400 lb.).

NOTE : Piper PA-28-180 serial nos. 28-671 through 28-5859 inclusive  
may be operated to the expanded C of G envelope as for serial  
nos. 28-7105001 through 28-7205318 if fitted with Landing Gear  
Strut Piston Tube Part No. 65280-00V.

FULL FUEL 748  
EMPTY 622.KG.



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### 3.4 - ELECTRICAL POWER

Do not turn off the generator in flight except in an emergency.

This aeroplane is fitted with a generating system which relies on battery power for initial excitation, therefore there is a possibility that if the generator is turned off in flight, the loss of the battery system, or the subsequent discharge of the battery will result in the loss of all electrical power.

### 3.5 - FUEL SYSTEM

When the fuel tanks are approximately  $\frac{1}{4}$  full or less, continuous unco-ordinated flight such as slips or skids can uncover the tank outlets, causing fuel starvation and engine failure. Therefore, with low fuel quantities, avoid prolonged unco-ordinated flight.

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## SECTION 3 - HANDLING

This Section contains essential information relating to the handling characteristics and operation of the aeroplane and its systems.

### 3.1 - STALLING SPEEDS (I. A. S.)

Flap Setting	Stalling Speeds - Power Off	
	Gross Weight 1088 kg. (2400 lb.)	Gross Weight 884 kg. (1950 lb.)
UP	58 knots	52 knots
10°	55 knots	50 knots
40°	49 knots	44 knots

### 3.2 - STALL WARNING

Visual warning is provided by a stall warning light, which produces a steady signal approximately 4 to 9 knots before the stall in all configurations.

### 3.3 - FLAPS

The take-off and landing weight charts in Section 4 of this Flight Manual are based on the following flap settings :

Take-off . . . . . 10°  
Landing . . . . . 40°

SHORT FIELD LANDING 64KN Full Flap

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#### 4.3 - LANDING

The gross weight of the aeroplane for landing shall not exceed the lesser of:

- (i) the maximum landing weight specified in Section 2 of this Manual; and
- (ii) the gross weight for landing determined from the landing weight chart of this Section.

The landing weight chart is based on factored landing distances on a short dry grass surface from a height of 50 feet to stop. The chart is also applicable to sealed and gravel strips. Wet and/or slippery surfaces will increase the landing distance over that scheduled and the pilot should therefore ensure that adequate strip length is available to cover these conditions.

The technique used in establishing the landing distance is such that the aeroplane approaches at the given approach speed in a glide through the 50 foot height point at the strip threshold. After touchdown, maximum wheel braking is used to bring the aeroplane to a stop.

When included on the landing weight chart, the climb weight limitation graph provides for a weight restriction to ensure that the aeroplane achieves the required 3.2 percent climb gradient during a baulked landing. This graph is based on a climb at the approach speed using take-off power.

In determining the gross weight for landing from the landing weight chart of this Section for Night V.M.C. operations, the distance applied to the landing weight chart shall be the actual distance available reduced by 20 percent.

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### SECTION 4 - PERFORMANCE

#### 4.1 - PERFORMANCE CHARTS

The charts in this Section contain data establishing weight limitations for take-off and landing in accordance with Air Navigation Orders Section 20.7.4.

Extrapolation outside the boundaries of the performance charts is not permitted. When the outside air temperature and/or pressure height is below the lowest range scheduled on the charts, the aeroplane performance shall be assumed to be no better than that appropriate to this lowest range. The performance information is not valid when the outside air temperature and/or pressure height exceed the maximum values for which this information is scheduled.

#### 4.2 - TAKE-OFF

The gross weight of the aeroplane for take-off shall not exceed the lesser of:

- (i) the maximum take-off weight specified in Section 2 of this Manual; and
- (ii) the gross weight for take-off determined from the take-off weight chart of this Section.

The take-off weight chart is based on factored take-off distances from rest to a height of 50 feet with the engine operating at take-off power. The surface corrections on the chart are based on standard factors related to strips with a firm surface. Soft ground and unusually long and/or wet grass will increase the take-off distance over that scheduled and the pilot should therefore ensure that adequate strip length is available to cover these conditions.

For sealed and gravel surfaces, the gross weight for take-off shall be determined as for a short dry grass surface.

The technique used in establishing the take-off distance is such that the aeroplane is held on or close to the ground until the appropriate take-off safety speed is approached, and the climb away then commenced so that this speed is achieved and maintained at or before the 50 foot height point.

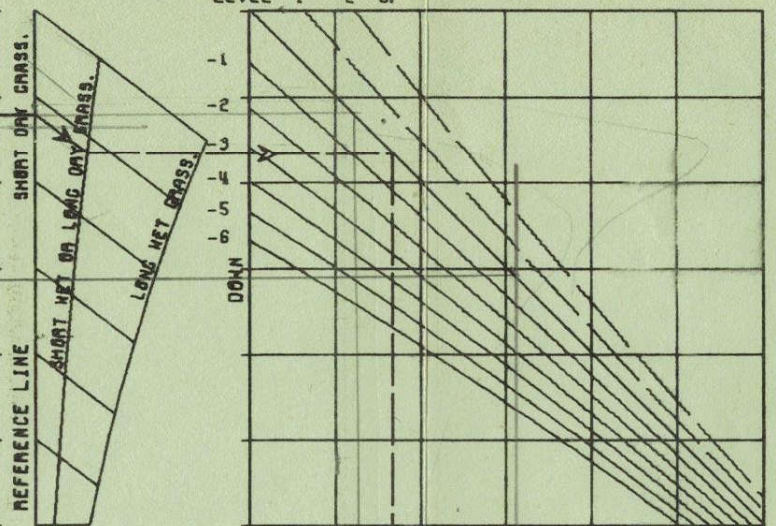
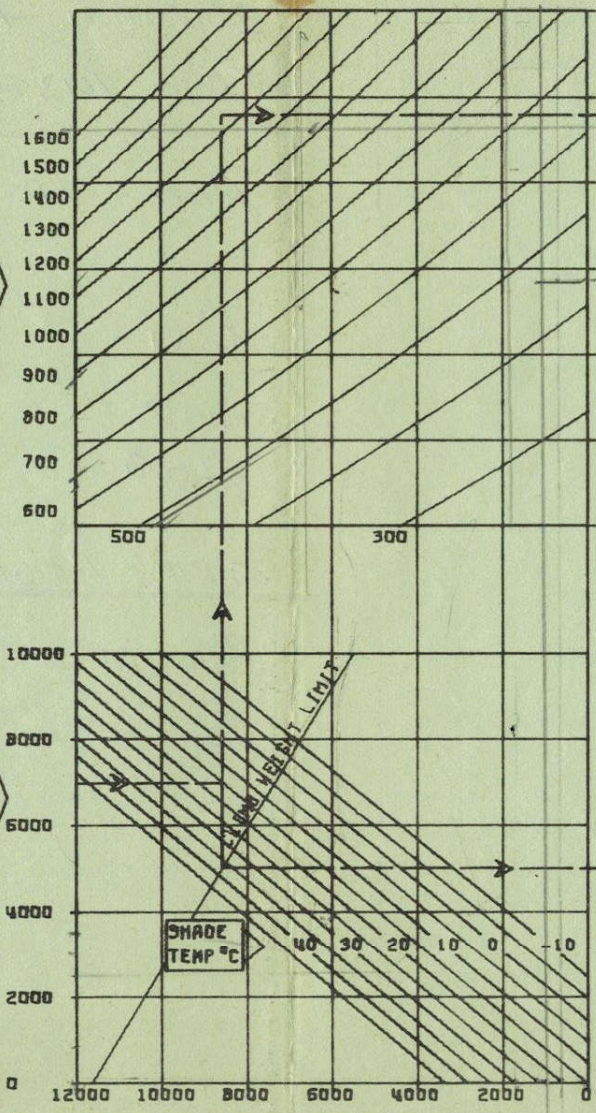
When included on the take-off weight chart, the climb weight limitation graph provides for a weight restriction to ensure that the aeroplane achieves the required 6 percent climb gradient at take-off. This graph is based on a climb at the take-off safety speed using take-off power.

**NOTE**  
 THE GROSS WEIGHT AT TAKE-OFF SHALL NOT EXCEED THE LESSER OF (A) AND (B).

TAKE-OFF DISTANCE AVAILABLE METRE

START HERE AIRFIELD PRESSURE HEIGHT FEET

SURFACE SLOPE-PERCENT



TAKE-OFF WEIGHT -KG.

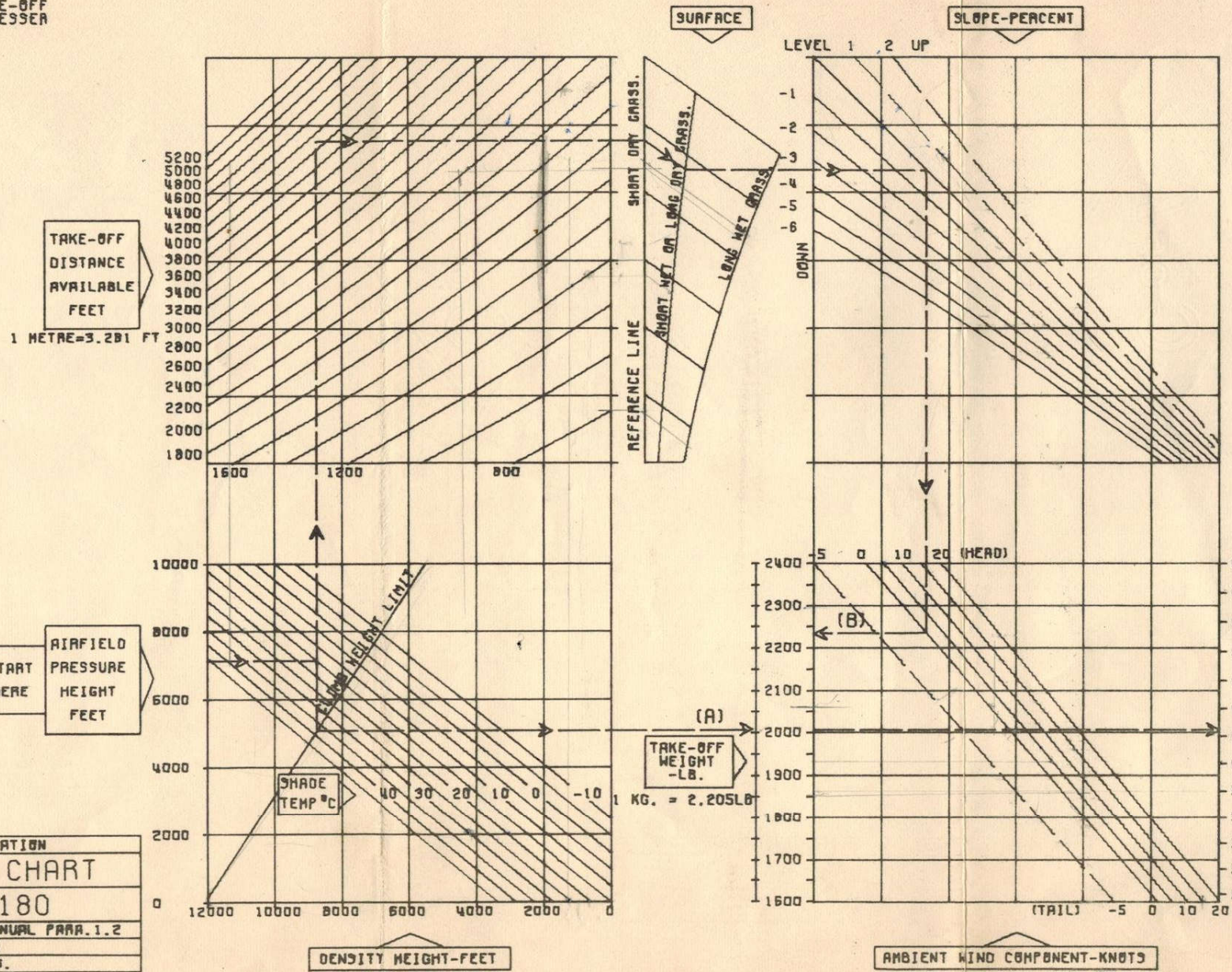
TAKE OFF SAFETY SPEED KNOT I.R.S.

DEPARTMENT OF CIVIL AVIATION		
TAKE-OFF WEIGHT CHART		
PIPER PA-28-180		
TO	R.P.M.	SEE FLIGHT MANUAL PARA.1.2
D	MAN.PRESS.	FULL THROTTLE
SETTING		10 DEGREES.
F SAFETY SPEED	SEE GRAPH	
F DIST.FACTOR	1.15	

DENSITY HEIGHT- FEET

AMBIENT WIND COMPONENT-KNOTS

**NOTE**  
 THE GROSS WEIGHT AT TAKE-OFF SHALL NOT EXCEED THE LESSER OF (A) AND (B).



TAKE-OFF DISTANCE AVAILABLE FEET

1 METRE=3.281 FT

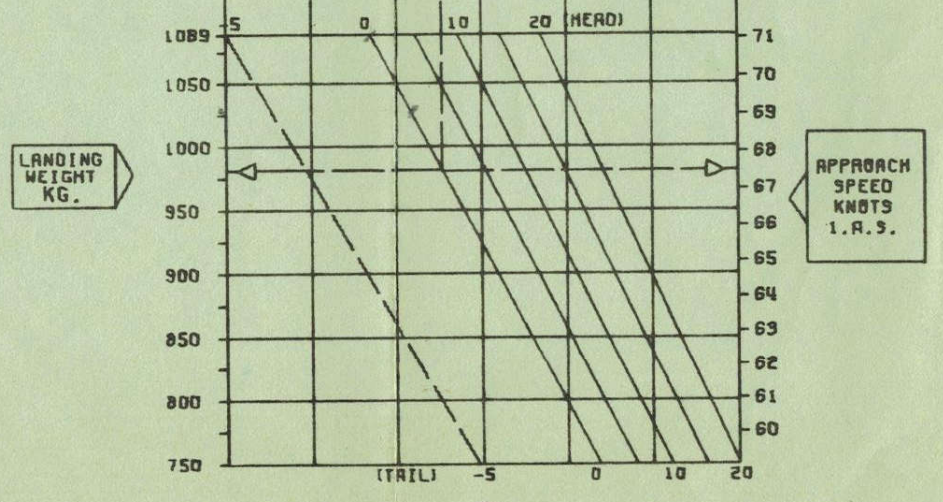
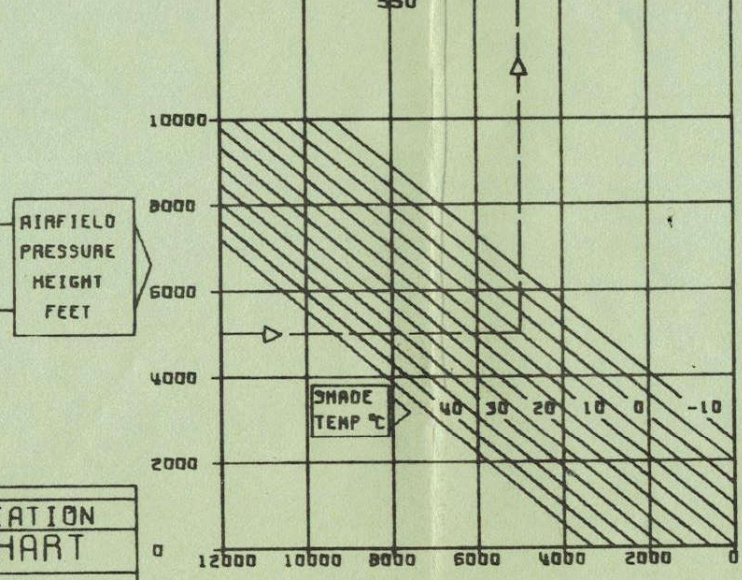
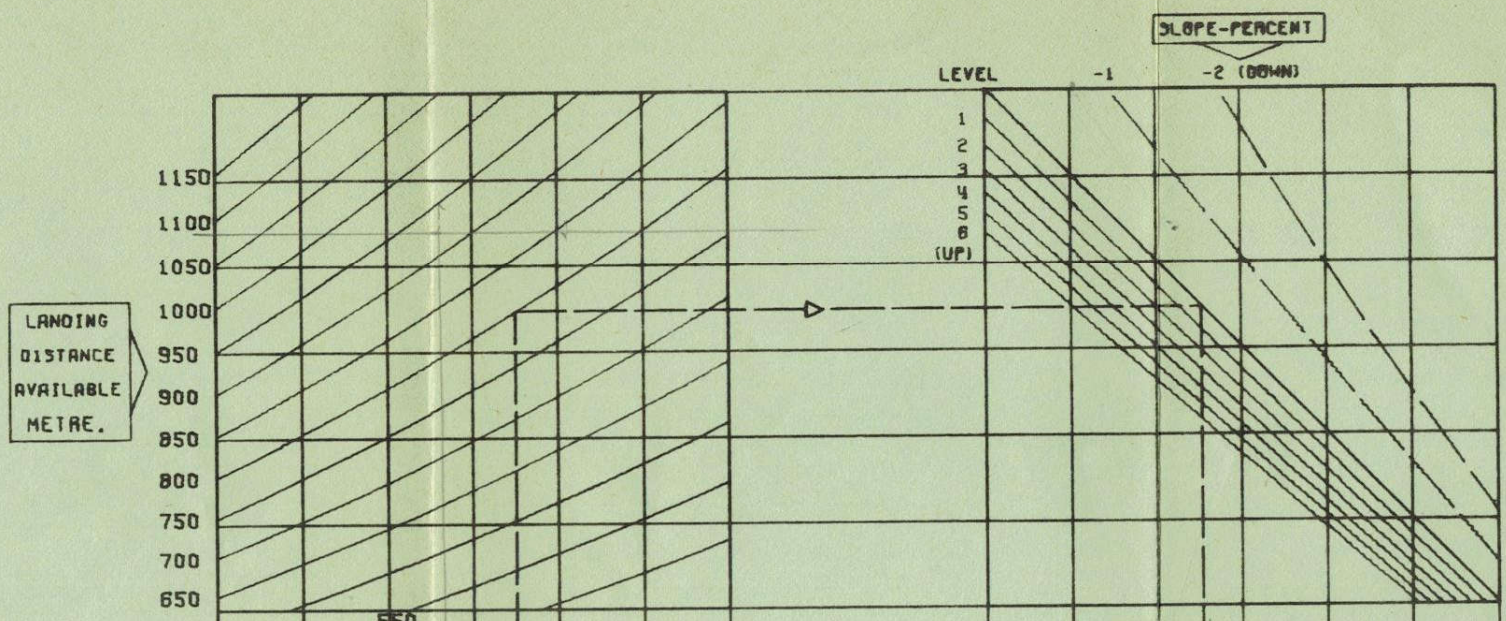
START HERE AIRFIELD PRESSURE HEIGHT FEET

SHADE TEMP °C

(A) TAKE-OFF WEIGHT -LB.

TAKE OFF SAFETY SPEED KNOT I.R.S.

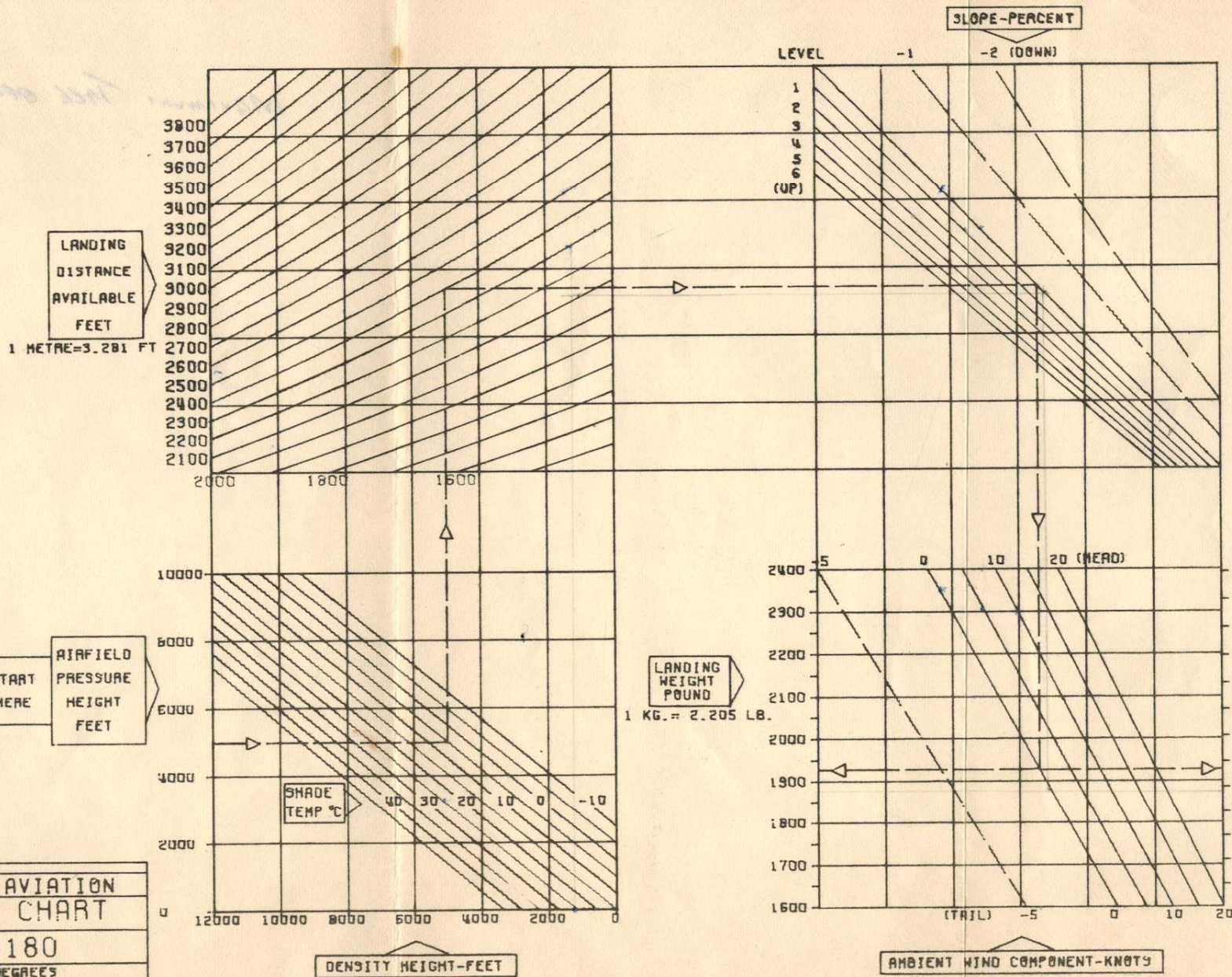
DEPARTMENT OF CIVIL AVIATION		
TAKE-OFF WEIGHT CHART		
PIPER PA-28-180		
AS TO USED	R.P.M.	SEE FLIGHT MANUAL PARA.1.2
SETTING	MAN.PRESS.	PULL THROTTLE
		10 DEGREES.
		SEE GRAPH
		1.15



DEPARTMENT OF CIVIL AVIATION	
LANDING WEIGHT CHART	
PIPER PA-28-180	
SETTING	40 DEGREES
CRUISE SPEED	SEE GRAPH
LIFT COEFFICIENT	1.15

DENSITY HEIGHT- FEET

AMBIENT WIND COMPONENT- KNOTS



DEPARTMENT OF CIVIL AVIATION  
LANDING WEIGHT CHART

PIPER PA-28-180

AP SETTING	40 DEGREES
APPROACH SPEED	SEE GRAPH
DISTANCE FACTOR	1.15

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6.2 - AEROPLANE WEIGHT

Aeroplane Type : Piper PA28-180 .....

Registration Marking : VH- WIA .....

Issue	Date	Date of Expiry
1	22.3.71	Indefinite unless subject to significant weight change AND 100.7 refters

Aeroplane Weight and Centre of Gravity Data :

Item	Weight	Arm	Index Unit	Cabin Configuration
	kg	mm aft of datum	kg mm	
1	622	2167	1348287	4 Seats
			3500000	
OIL	-9KG PER LITRE			
FUEL	-72KG PER LITRE			

NOTE : The above weight(s) include unusable fuel and undrainable oil.

DEPARTMENT OF TRANSPORT  
 AIR TRANSPORT GROUP  
 APPROVED pursuant to regulation 227  
 of the Air Navigational Regulations  
 Approval Stamp  
*[Signature]*  
 delegate of the Director-General of  
 Civil Aviation

Date 9.12.74

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 20 June 1974.

6.2 - AEROPLANE WEIGHT

Aeroplane Type : Piper PA28-180 .....

Registration Marking : VH- WIA .....

Issue	Date	Date of expiry
1	22.3.71	Indefinite unless subject to significant weight change AND 100.7 refters

Aeroplane Weight and Centre of Gravity Data :

Item	Weight	Arm	Index Units	Cabin Configuration
	lb	inches aft of datum	lb ins	
1	1372	85.3	117110	4 Seats
Row 1		80.5		
Row 2		118.1		
Fuel		95.0		
Bags		142.8		
Other		-		

NOTE : The above weight(s) include unusable fuel and undrainable oil.

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 AIR TRANSPORT GROUP  
 APPROVED pursuant to regulation 227  
 of the Air Navigational Regulations  
 Approval Stamp  
*[Signature]*  
 delegate of the Director-General of  
 Civil Aviation

Date 9.12.74

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SECTION 5 - INSTRUMENT AND EQUIPMENT AND INSTALLATIONS

5.1 - MANDATORY INSTRUMENTS AND INDICATORS

The aeroplane shall not be operated unless, in addition to the minimum flight and navigational instruments required by Air Navigation Orders Section 20.18, the following indicators and instruments are also installed:

- (a) Position Indicators -  
Trim position indicator
- (b) Power Plant Instruments and Indicators
  - (i) Fuel quantity indicator for each tank
  - (ii) Fuel pressure indicator
  - (iii) Oil pressure indicator
  - (iv) Oil temperature indicator
  - (v) Tachometer
  - (vi) Cylinder head temperature indicator
- (c) Other Airworthiness Instruments or Indicators -  
Stall warning indicator

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20 June 1974.

6.3 - LOADING SYSTEM

Aeroplane Type : . . . Piper PA28-180 . . . . .

Registration Marking VH- . . . WIA . . . . .

ISSUE	DATE
1	22.3.71

Normal Category

- 1 Load from front to rear.
- 2 With 4 occupants maximum fuel is 150 litres (33 imp gal).

Utility Category

Rear locker must be empty and rear seat unoccupied.

DEPARTMENT OF TRANSPORT  
AIR TRANSPORT GROUP  
APPROVED pursuant to regulation 227  
of the Air Navigational Regulations  
Approval Stamp  
*[Signature]*  
delegate of the Director-General of  
Civil Aviation  
Date 9-12-74



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SECTION 7 - RADIO SYSTEMS AND OPERATIONAL LIMITATIONS

7.1 - GENERAL

The radio communication and radio navigation systems in the aeroplane are approved for the types of operation and maximum operating altitudes shown in the Radio Systems Approval table of this Section. Approval of a radio system for a particular type of operation is signified in this table by inclusion of the maximum operating altitude of the equipment (expressed in thousands of feet) under the appropriate headings.

Before the aeroplane may engage in the types of operation for which the radio systems are approved, the instruments, radio systems and equipment which are required, in accordance with the appropriate Sections of Air Navigation Orders Part 20, for the operation to be performed shall be installed and airworthy to the standards required for that operation.

NOTE : Reported unserviceability of instruments, radio systems and equipment will be indicated on the Maintenance Release.

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SECTION 6 - LOADING DATA

6.1 - GENERAL

This Section contains basic weight and centre of gravity information necessary to ensure correct loading of the aeroplane and comprises Aeroplane Weight and Loading System pages. Both of these documents, separately approved by the Director-General of Civil Aviation or an aircraft weight control design signatory, are to be carried in the Flight Manual at all times.

Piper PA-28-180  
 Serial Nos. 28-03,  
 28-1 through 28-7205318.

13-11-92 vh-wia

7.2 - RADIO SYSTEMS APPROVAL

System	Equipment Type	Type of Operation		
		I.F.R.	Limited I.F.R.	V.F.R. and Night V.M.C.
VHF COM NO.1	KING KY_97A	-	-	20
GPS	MORROW 820C	-	-	20
MODE C	ACK 30	-	-	20
ATC TSP	KING KT 76A	-	-	20
ADF	BENDIX T-12C	-	-	20
P1				

Piper PA-28-180  
 Serial Nos. 28-03,  
 28-1 through 28-7205318.  
 20 June 1974.

FLIGHT MANUAL SUPPLEMENT

NIGHT V.M.C. OPERATIONS

This aeroplane is eligible for Night V.M.C. operations provided that the radio communication and radio navigation systems installed in the aeroplane are approved for this type of operation - see Flight Manual Section 7 - Radio Systems and Operational Limitations.

Note: Reported unserviceability of instruments, radio systems and equipment will be indicated on the Maintenance Release. Air Navigation Orders Part 20 require the placarding or removal of unserviceable instruments, radio systems and equipment.

SUPPLEMENTS

GENERAL - Section 8

Flight Manual Supplements covering the special operations for which this aeroplane is approved are listed below.

The operations listed shall be conducted in accordance with the limitations and instructions contained in the appropriate Supplements included in this Manual.

SUPPLEMENT TITLE

Night V.M.C. Operations

Operation With Door Removed

Operation Using Automotive Petrol (MOGAS)

PETERSEN AVIATION, INC.  
SUPPLEMENT

OPERATION ON MOGAS

PA-28-160, -161, -180, -181

SPECIAL FLIGHT MANUAL SUPPLEMENT  
FOR OPERATION USING AUTOMOTIVE PETROL (MOGAS)

LOG OF PAGES

ORIGINAL ISSUE July 1991

PAGE

1-6

REVISION NO.

0

APPROVED

*J. R. Pashley*

For the Authority

Date:

30/7/91

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PETERSEN AVIATION, INC.  
SUPPLEMENT

OPERATION ON MOGAS

PA-28-160, -161, -180, -181

SPECIAL FLIGHT MANUAL SUPPLEMENT  
FOR OPERATION USING AUTOMOTIVE PETROL

(MOGAS)

PETERSEN AVIATION, INC.

This supplement is required to be inserted into the aircraft Flight Manual when the aeroplane is being operated using Automotive Fuel (MOGAS) following incorporation of Petersen Aviation, Inc. drawing lists 28-TL-2 and 28-TL-3 (FAA STCs SA2560CE, SE2563CE and SE2587CE etc.).

The information contained herein supplements the information of the Basic Flight Manual. For limitations, procedures and performance data not contained in this supplement, consult the Basic Flight Manual.

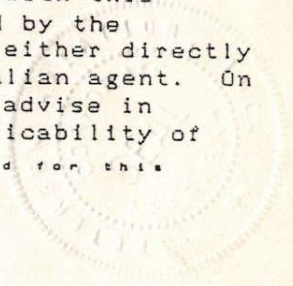
Operation of the aeroplane in accordance with this supplement is only approved when operated by the owner/operator or his agent if purchased either directly through Petersen Aviation or their Australian agent. On change of ownership, the new owner is to advise in writing of this transfer to maintain applicability of MOGAS approval (as stated on the approval certificate).

Approved

*J. R. Pashley*

For the  
Civil Aviation Authority

Date: 30/7/91



SECTION 1 CONTINUED

FUEL SAMPLING CHECKS

In addition to the requirements and responsibilities with respect to CAO 20.9, the pilot must satisfy himself that the fuel being loaded is clean, uncontaminated automotive fuel of the correct grade. A sample must be taken of fuel from each container used during each refueling and visually checked for correct colour, characteristic petrol smell, clarity and brightness, and freedom from visible dirt, and water.

SECTION 2. LIMITATIONS

APPROVED FUELS

91/96 Min Grade aviation gasoline.  
Super Grade Automotive Petrol.  
Premium Unleaded Automotive Petrol (minimum AKI = 91),  
OR Mixtures of these.

Whenever a mixture of aviation gasoline and automotive petrol is used it is to be considered automotive petrol.

CATEGORIES OF OPERATION

Whenever automotive petrol is used operational categories are restricted to private and aerial work.

CAUTION

Intermixing of AVGAS and MOGAS will invalidate the colour identification. For example, the red colour of super petrol or the purple colour of normal unleaded petrol mixed with either blue or green avgas may give loss of colour or erroneous indications; similarly the mixing of premium unleaded petrol (yellow) with blue 100 LL avgas may give a green colour in some proportions. Make the colour checks before addition to the aircraft fuel system.

SECTION 1. GENERAL

This supplement specifies limitations and procedures for operation with SUPER GRADE and/or Premium UNLEADED Automotive Petrol (MOGAS) when the aeroplane conforms with Petersen Aviation, Inc. Drawing List 28-TL-2 and 28-TL-3 involving the addition of electric fuel pumps and when fitted with 3/8" fuel lines from the right hand fuel tank. For all other limitations not contained in this supplement refer to basic aircraft flight manual.

Application of this supplement involves the use of a fuel which although under normal quality conditions is technically suitable for this aeroplane, is a fuel not specifically manufactured nor distributed for this purpose and may have a wider specification application.

It is the responsibility of the pilot to ensure that all fuel added to the tanks of this aeroplane, under the authority of this supplement, is of the type, quality, and cleanliness as required by this supplement and is appropriate to its application. Fuels containing alcohol are not permitted.

As oil company facilities are unlikely to be available for fueling with automotive fuels, alternative arrangements need to be provided. These may include private fixed bulk storage facilities, mobile fueling dollies or vehicles or drums. These facilities must be adequately designed, maintained and operated for the purpose for which they are used and comply with relevant local or state requirements. Fueling facilities must provide an adequate level of filtration; namely that equivalent to AVGAS which achieves a filtration standard of 5 microns.

LONG TERM EFFECTS

The use of unleaded petrol exclusively may give some inlet valve recession in some engines. This is avoided by use of 10% leaded fuel (avgas or petrol) in any 100 hour period. Do not use standard ULP (purple).

SECTION 4. NORMAL PROCEDURES (CONT)

Before starting engine, with the battery switch on, check each pump works by noting its sound and its proper pressure. Turn the fuel pumps off.

CARBURETTOR ICING When using automotive fuel, the onset of carburettor ice may occur earlier than with AVGAS under the same atmospheric conditions. There is no change in technique for correcting carburettor icing.

USE OF CARBURETTOR HEAT Carburettor heat should only be used in accordance with engine and/or manufacturers recommendations. Avoid excessive use of carburettor heat, particularly in atmospheric conditions that are not conducive to icing.

SECTION 5. PERFORMANCE

POTENTIAL RANGE REDUCTION Under high ambient temperatures there will be a tendency with MOGAS to lose more fuel as vapour through the vent system than with AVGAS. Due regard to reduction in range needs to be accounted for under these conditions.

SECTION 6. WEIGHT AND BALANCE

CHANGE Refer basic Manual.

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SECTION 2. LIMITATIONS CONTINUED

PLACARDS In addition to the existing fuel markings there should be:

"Fuels: Australian Automotive Petrol, Super grade or premium unleaded."

On the instrument panel, in full view of the pilot:

"Takeoff and land on right tank with mogas"

SECTION 3. EMERGENCY PROCEDURES

1. If for any reason, fuel quantity in the right hand tank is less than 1/4 full, landing may be made on the left tank.

2. In older engines, deterioration of metal or composite floats may occur with avgas or mogas. Should the float sink the carburettor will flood creating a fire safety hazard during starting or engine failure in flight. (In the latter case, stem the excess flow with continuous very lean mixture adjustments or turning on and off the fuel tap as required. Land as soon as possible.)

SECTION 4. NORMAL PROCEDURES

FUEL SELECTOR Use right hand tank for take off and landing when using mogas or mixtures of avgas and mogas.

Plan fuel use to leave no less than 1/4 tank for landing (this is critical above 30°C).

AUXILIARY FUEL PUMP There are two pumps controlled by electric switches on the pilot's instrument panel. Either one of the pumps must be ON for takeoff, landing, taxi or climb. The switch may be turned off during cruise (ensure fuel pressure remains in the green arc; see limitations). Alternate use of switches to give relatively even usage.

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AUSTRALIA  
DEPARTMENT OF TRANSPORT

No. 6621


**CERTIFICATE OF AIRWORTHINESS — AIRCRAFT**

1. Nationality and Registration Marks  VH- WIA	2. Manufacturer  Piper Aircraft Corporation  Manufacturer's Designation of Aircraft  PA28-180	3. Aircraft Serial No.  28-4375  Place and Year of Construction  USA 1967
4. Categories  NORMAL		

5. This Certificate of Airworthiness is issued pursuant to the Convention on International Civil Aviation dated 7th December, 1944, and the Air Navigation Regulations of Australia, in respect of the above mentioned aircraft which is considered to be airworthy when maintained and operated in accordance with the Air Navigation Regulations and the limitations specified in the flight manual approved or issued for the aircraft under the Air Navigation Regulations.

6. Subject to suspension or cancellation under the Air Navigation Regulations, the period during which this certificate shall remain in force shall be from its date of issue until.....~~WITTEDRAWN~~.....or until the aircraft ceases to be registered in the Register of Australian Aircraft.

Date of Issue  
11 January 1978

Signature 	Appointment <input type="checkbox"/> Secretary to the Department of Transport <input checked="" type="checkbox"/> Delegate of the Secretary to the Department of Transport <input type="checkbox"/> Authorised Person appointed under the Air Navigation Regulations.
--	--

No entries or endorsements may be made on this certificate except in the manner and by a person authorised by the Secretary to the Department of Transport.

**ALL CERTIFICATES OF AIRWORTHINESS PREVIOUSLY ISSUED IN  
RESPECT OF THIS AIRCRAFT ARE HEREBY SUPERSEDED AND  
CANCELLED**

### Active Entry Mode

The Active Entry mode is entered by pressing and holding the Transfer button for more than two seconds. The frequency in the "STBY" window will blank and the frequency displayed in the "active" window may then be changed with the frequency control knobs. The receiver will be tuned to the frequency displayed in the "active" window at all times.



Momentarily pressing the Transfer button will return the control unit to the

Standby Entry mode. The "STBY" frequency displayed prior to entering the Active Entry mode remains unchanged.

### Default Mode

Turning the units on while holding the Transfer button down will bring the unit on in Active Entry and load 120.00 MHz as the active frequency. This will aid the pilot in blind tuning the radio in the case of display failure.



## Specifications

### TSO compliance:

Transmitter: TSO C37c, Class 4

### Receiver:

TSO C38c, Class C & D (-60 Flavors)  
TSO C38c, Class A & B (-61 Flavors)

### Dimensions:

Height: 1.3 inches (3.3 cm)  
Width: 6.25 inches (15.88 cm)  
Depth: 10.50 inches (26.67 cm)

### Weight:

2.9 lbs (1.32 Kg)

### Temperature Range:

-20°C to +55°C with short time operation at +70°C.

### Frequency Range:

118.0 to 136.975MHz in 25KHZ increments.

### Power Output:

5 Watts minimum

### Modulation:

70% modulation with 90% limiting.  
Less than 15% distortion at 70% modulation.

### Duty Cycle:

1 minute on, 4 minutes off.

### Receiver Sensitivity:

2uV (hard) or less for 6dB S+N/N with 1KHz tone modulated 30%.

## BENDIX/KING

General Aviation Avionics Division  
400 North Rogers Road  
Olathe, Kansas 66062-1212  
Telex 669916 KINGRAD FAX 913-764-5847  
Outside USA & Canada (913) 782-0700  
USA & Canada (913) 782-0400

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Allied-Signal Aerospace Company

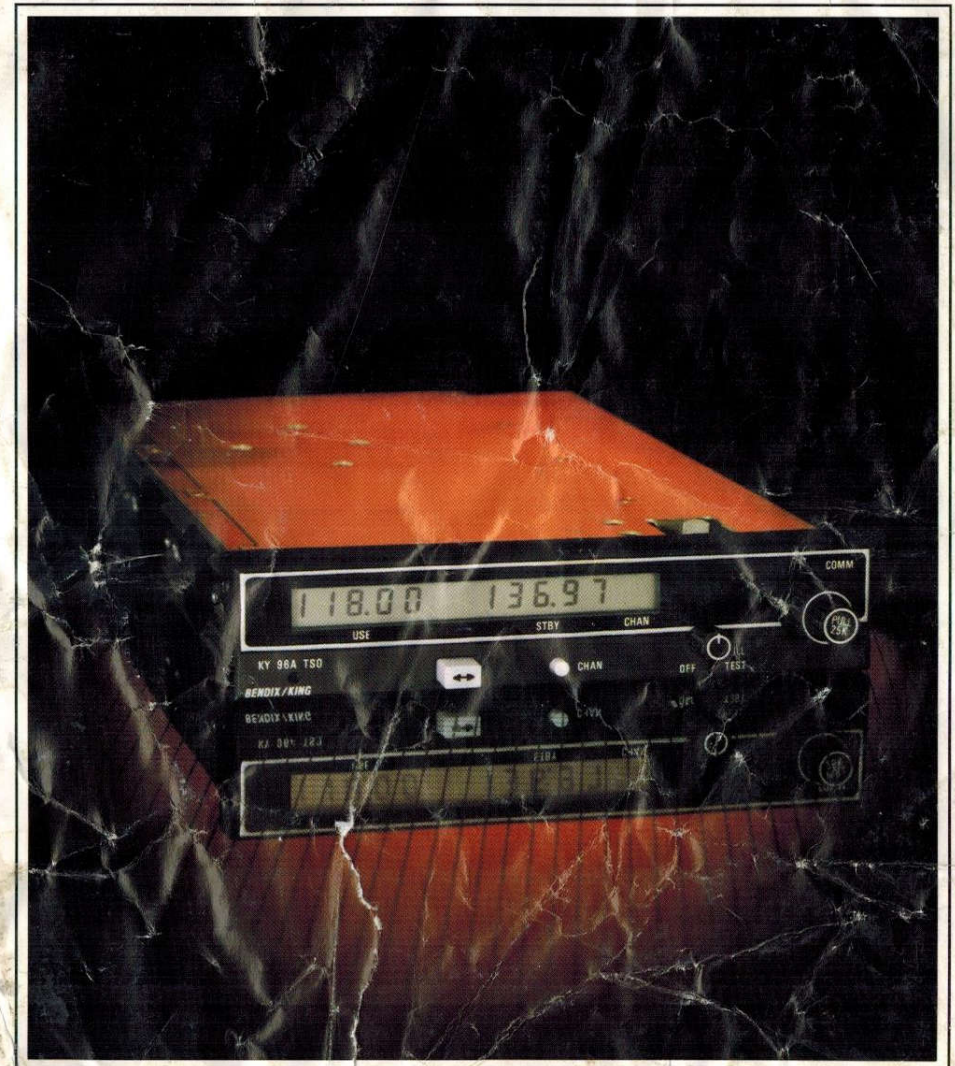


# Pilot's Guide

## KY 96A and KY 97A

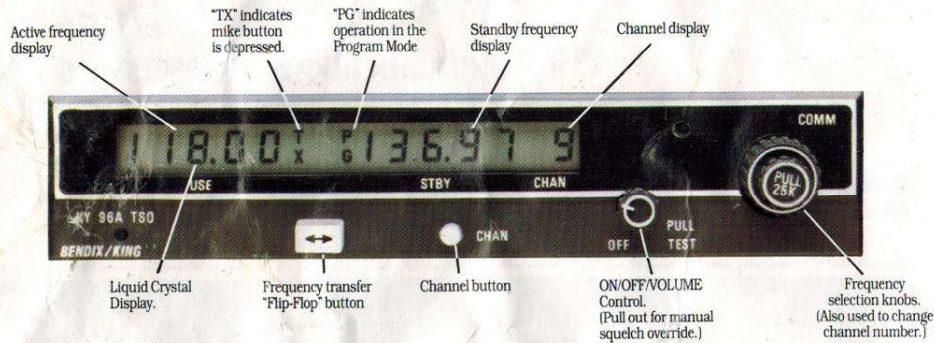
### VHF Communications Transceivers

This operations guide may be detached from the brochure and retained in the aircraft for easy access to operational information on the KY 96A and KY 97A COMM transceivers.





# KY 96A and KY 97A Operation.



## POWER UP

When you turn the ON/OFF/VOLUME knob clockwise to the "on" position, your KY 96A or KY 97A will display the last used frequencies in the "USE" and "STBY" (Standby) windows.

To override the automatic squelch, pull the ON/OFF/VOLUME knob out and rotate it for the desired listening level on the noise being produced by the receiver. Push the volume knob back in to activate the automatic squelch.

**Note:** As with all avionics, the KY 96A and KY 97A should be turned on only after engine start-up. This is a simple precaution which will help protect the solid-state circuitry and extend the operating life of your avionics equipment.

## Transmitting

During COMM transmissions, a "TX" appears to indicate the keying of the microphone.



## The Frequency Mode (normal operation)

1. Select a new frequency in the "STBY" window using the frequency selection knobs. The larger knob offers changes of 1MHz. The smaller knob provides changes of 50kHz when pushed in and 25kHz when pulled out.

At the outside limits of the band the display will wrap around to the other end of the band—going from 136MHz to 118MHz.



2. Press the transfer button to activate the new frequency. The newly entered frequency in the "STBY" window flip-flops with the frequency in the "USE" window. This new frequency tunes the radio for operation. An optional remote-mounted frequency transfer button may also be used to perform this "flip-flop" function.



## Program Mode

The Program mode is used to set memory locations for use in the channel mode.  
1. Depress the Channel (CHAN) button for longer than two seconds, until "PG" is annunciated on the display. The last used active frequency will remain tuned in the "USE" window and the last used channel number will flash.



2. Turning either frequency selection knob changes the channel number.



3. Once you've selected the desired channel number, pressing the transfer button will cause the frequency corresponding to that channel number to flash. You may then select the frequency for the displayed channel number simply by turning the frequency selection knobs.



4. To program additional channels, push the transfer button again to make the channel number flash and repeat step three above.

5. If you wish to program less than 9 channels and have certain channel numbers skipped over when operating in the Channel mode, proceed as follows: Rotate the MHz frequency knob left or right beyond 136 or 118 MHz. Dashes "---" will appear in the "STBY" window. This indicates that the affected channel number will be skipped when operating in the Channel mode.



6. To exit the Program mode, momentarily press the Channel (CHAN) button. The unit will also automatically exit the Program mode if approximately 20 seconds elapse with no programming.

## The Program Secure Mode

The Program Secure mode may be used to lock a desired frequency to a channel number, prohibiting program changes by the pilot from the front of the unit. Your KY 96A or KY 97A should be taken to your Bendix/King dealer for programming of the Program Secure mode.

## Channel Mode

The Channel Mode is used to recall preset channels stored in memory.

1. Push the Channel (CHAN) button while in the Frequency mode to enter the Channel mode. The last active frequency remains displayed in the "USE" window.



The last used channel number is displayed in the channel window. If no channels have been programmed, channel 1 automatically appears and dashes are displayed in the "STBY" window.

2. Turn either tuning knob to change the channel number and the channel's corresponding frequency in the "STBY" window.



3. If there is no activity for five seconds the radio will return to the Frequency mode with the channel frequency remaining in the "STBY" window.

4. You can also return to the Frequency mode by pressing the transfer button while in the Channel mode. The channel frequency will become the "USE" frequency and the last "USE" frequency will become the "STBY" frequency.

**Note:** If the optional remote channel increment switch is installed, each activation of the switch will put the unit in the Channel mode and cause the next higher channel number and its corresponding frequency to be displayed.

Piper PA-28-180  
Serial Nos. 28-03,  
28-1 through 28-7205318.  
20 June 1974.

FLIGHT MANUAL SUPPLEMENT

OPERATION WITH DOOR REMOVED

This Supplement shall apply when the aeroplane is operated with the right hand cabin door removed. Only that information which differs from the basic Flight Manual is contained herein.

LIMITATIONS

1. Maximum speed - door removed : 134 knots I. A. S.
2. Operations are limited to V. F. R. only and shall be confined to normal flying manoeuvres. Turns in which the angle of bank exceeds 30 degrees, stalls, side-slips, and acrobatic manoeuvres shall not be performed.
3. Smoking is not permitted.
4. When determining the gross weight for take-off as limited by local conditions, the distance applied to the take-off weight chart shall be the actual distance available reduced by 5 percent. When a climb weight limitation is included on the take-off and/or landing weight charts, then the gross weights determined in accordance with this limitations shall be reduced by 5 percent.
5. No baggage or other loose articles may be carried unless adequately restrained or stowed.
6. The following placard shall be displayed on the instrument panel in full view of the pilot during actual operation with the door removed -

"OPERATION WITH DOOR REMOVED

- (i) Operations are limited to normal flying manoeuvres. Turns exceeding 30° bank, stalls, side-slips and acrobatic manoeuvres are not permitted.
  - (ii) Speeds not in excess of 134 knots I. A. S.
  - (iii) No smoking is permitted.
  - (iv) No loose articles permitted.
  - (v) For additional requirements see Approved Flight Manual Supplement."
7. For requirements relating to the carriage and restraint of persons and the dropping of articles, refer to the relevant sections of Air Navigation Orders Parts 20 and 29.