



**APPROVED
FLIGHT MANUAL**

PITTS S-2A

DEPARTMENT OF CIVIL AVIATION

AUSTRALIAN GOVERNMENT

(i)

APPROVED
FLIGHT MANUAL

Nationality and Registration : VH - **DXB.**
Marks

Aeroplane Serial Number : 2057


Manufacturer : Aerotek Incorporated
Afton, Wyoming USA

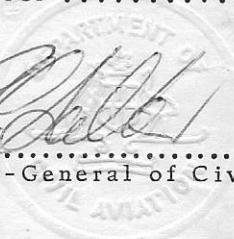
Designation of Aeroplane : Pitts S2A

Certification Category : Normal and Acrobatic
or Categories

This Flight Manual has been approved by the Director-
General and is the Flight Manual referred to in
Certificate of Airworthiness Number ...2493.....

Date:..29/11/73..


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



Any person finding this Manual should return it to
the nearest Regional Office of the Department
of Civil Aviation.

GENERAL AMENDMENT RECORD SHEET

Amendment Number	Paragraph(s) Affected	Signature	Date of Incorporation
G2	2.4 (a)	<i>[Signature]</i>	23-11-77

Incorporation of a General 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 General 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 Superseded Flight Manual pages should be removed and destroyed.

Date: 23 November 1977 (11)

[Signature]
.....
for Secretary

AMENDMENT RECORD SHEET

Amendment Number	Description of Amendment	Pages Affected	Signature and Date of Incorporation
G1	Index Page (vii) and, Metric Take-Off and Landing Performance Charts added.		21. NOV. 73
G2	Para 2.4 (a)		22 NOV 77
G3	Para's 1.1, 1.2, 1.2, 1.4, 2.1, 2.2, 2.3 & 2.4.		APRIL 93

NOTE: Amendment numbers may not always be consecutive

PARTICULAR AMENDMENT RECORD SHEET

Amendment Number	Paragraph(s) Affected	Signature	Date of Incorporation

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 Superseded Flight Manual pages should be removed and destroyed.

Date:

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

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 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.

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.

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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- 1.3 - Fuel
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SECTION 1 - GENERAL AEROPLANE PARTICULARS

1.1 - ENGINE :

Lycoming IO-360-A1A as modified by STC SE469SO
with Hartzell Propeller HC-C2YK-4/C7666A-2 or
HC-C2YK-4AF/FC7666A-2 and Hartzell Governor F6-3A.

Lycoming AEIO-360-A1A or AEIO-360-A1E
with Hartzell Propeller HC-C2YK-4AF/FC7666A-2 or
HC-C2YR-4CF/FC7666A-2 and Hartzell governor F6-58Z.

1.2 - PROPELLER LIMITS:

Manufacturer	Type	Diameter	Pitch Settings
Hartzell	HC-C2YK-4/ C7666A-2	Not over: 74 inch.	At 30" station High $24 \pm 0.5^\circ$
	HC-C2YK-4AF /FC7666A-2	Not under: 72 inch.	Lcw 13.5°
	HC-C2YR-4CF /FC7666A-2		

1.3 - FUEL

Grade : 100/130 minimum grade aviation gasoline

Capacity -

Main Tanks: 91 Litres, (20 Imp gal, 24 US gal) total.

87 Litres, 19.2 Imp gal, 23 US gal) usable.

1.4 - OIL

Specification : Lycoming Specification No 301E

Ambient Air Temperature	Single Viscosity	Multi Viscosity
Above 16°C	SAE 50	SAE 40 or 50
-1 to 32°C	SAE 40	SAE 40
-18 to 21°C	SAE 40	SAE 40 or 20W-30
Below -12°C	SAE 20	20W-30

Capacity :

IO-360-A1A 7.5 Litres (6.6 Imp Qts 8 US Qts)

AEIO-360 Series 3.8 Litres (3.4 Imp Qts 4 US Qts)

SECTION 2 - OPERATING LIMITATIONS

The aeroplane shall at all times be operated in accordance with the limitations contained in this Section.

2.1 - AIRSPEEDS (I.A.S.)

Never exceed 172 Kts.
 Maximum normal operating limit 130 Kts.
 Manoeuvring 130 Kts.

G3

2.2 - MANOEUVRES PERMITTED

(a) Normal category :

Operation 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 prohibited.

(b) Acrobatic category :

No acrobatic manoeuvres are permitted except those listed below. Recommended entry speeds in knots I.A.S.

MANOEUVRE	INSIDE		OUTSIDE	
	Max.	Min.	Max.	Min.
LOOP (up)	155	110	155	110
LOOP (down)	90	60	90	60
SLOW ROLL	155	85	155	85
BARREL ROLL	155	110	155	110
SNAP ROLL	120	80	95	80
HAMMERHEAD	155	110	155	110
LAZY EIGHT	155	120	155	120
CHANDELLE	155	120	155	120
STALLS and SPINS	Slow deceleration			

For spin recovery put ailerons neutral, apply full opposite rudder briskly and then apply nose down elevator. Use power off for all spin recoveries.

For flat spins use aileron with the spin for recovery.

2.3 - CROSSWIND COMPONENT

The maximum permissible crosswind component for take-off and landing is 17 knots.

2.4 - POWER PLANT

(a) Power and Temperature :

Power	R.P.M.	Manifold Pressure	Max. Oil Temp.	Max Cyl. Head Temp.
Max Take-off 200 b.h.p.	2700	Full Throttle	118°C 245°F	246°C 475°F
Max Continuous 200 b.h.p.	2700	Full Throttle	118°C 245°F	246°C 475°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 over-rich mixture.

(ii) Avoid continuous operation between 2000 and 2350 rpm.
Avoid continuous operation above 2600 rpm in aerobatic flight.

(b) Oil Pressure :

Maximum 100 lb/sq in.
Normal 60-90 lb/sq in.
Minimum safe in flight 60 lb/sq in.
Minimum safe idling 25 lb/sq in.

(c) Oil Temperature :

Minimum for take-off power 38°C (100°F)

(d) Fuel Pressure :

Normal 0-12 lb/sq in.
Minimum 0 lb/sq in.

G3

2.5 - WEIGHT AND BALANCE

(a) Weight :

Maximum take-off weight (normal category)	..	715 kg. (1,575 lb.)
Maximum take-off weight (acrobatic category)	..	681 kg. (1,500 lb.)
Maximum landing weight	715 kg. (1,575 lb.)

(b) Centre of Gravity :

(i) Normal Category -

Forward Limit :

2400 mm. (94.50 inches) aft of the datum at 715 kg. (1,575 lb.) and
2345 mm. (92.35 inches) aft of the datum at 613 kg. (1,350 lb.)
or less, with linear variation between 613 kg. (1,350 lb.) and
715 kg. (1,575 lb.)

Rear Limit :

2441 mm. (96.13 inches) aft of the datum at 715 kg. (1,575 lb.) and
2476 mm. (97.50 inches) aft of the datum at 668 kg. (1,472 lb.)
or less, with linear variation between 668 kg. (1,472 lb.) and
715 kg. (1,575 lb.).

(ii) Acrobatic Category -

Forward Limit :

2427 mm. (95.58 inches) aft of the datum at 681 kg. (1,500 lb.) and
2345 mm. (92.35 inches) aft of the datum at 613 kg. (1,350 lb.)
or less, with linear variation between 613 kg. (1,350 lb.) and
681 kg. (1,500 lb.).

Rear Limit :

2451 mm. (96.50 inches) aft of the datum at 681 kg. (1,500 lb.) and
2467 mm. (97.12 inches) aft of the datum at 654 kg. (1,440 lb.)
or less, with linear variation between 654 kg. (1,440 lb.) and
681 kg. (1,500 lb.).

(c) Datum :

2484 mm. (97.81 inches) forward of the leading edge of the lower
wing.

2.5 - WEIGHT AND BALANCE (CONT'D)

(d) Baggage Compartment Loading :

Maximum permissible baggage compartment load :

9 kg. (20 lb.) - normal category only.

2.6 - SMOKING

Smoking is not permitted.

2.7 - SOLO FLYING

Solo flying from rear seat only.

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 715 kg. (1,575 lb.)	Gross Weight 681 kg. (1,500 lb.)
Not fitted	55 knots	52 knots

3.2 - STALL WARNING

Aural warning is provided by a stall warning horn, which produces a steady signal approximately 5 knots before the power-off stall and approximately 13 knots before the power-on stall.

3.3 - ELECTRICAL POWER

Do not turn off the generator in flight except in an emergency or while performing acrobatics.

If the generator is not switched off while inverted, the battery may be charging while inverted, which could result in damage to the battery case, and leaking since the battery is so designed that charging gases cannot vent while inverted.

3.4 - FUEL SYSTEM

When the fuel tank is approximately $\frac{1}{4}$ full or less, continuous violent acrobatic manoeuvres may cause momentary interruption of engine power. Therefore, with low fuel quantities, avoid prolonged or low-level acrobatic flight.

3.5 - INVERTED FLIGHT

Demonstrated flight-time inverted is 3 minutes.

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. These charts are applicable to operations both in Australia and Papua New Guinea.

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.

Unless otherwise approved by the Director-General, the maximum allowable slope for strips on the mainland shall be as specified in the Aeronautical Information Publication.

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 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.

4.2 - TAKE-OFF (CONT'D)

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

The technique 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.

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.

4.3 - LANDING (CONT'D)

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.

*H. J.
See amendment G. 3.*

TAKE-OFF
DISTANCE.
AVAILABLE
FEET

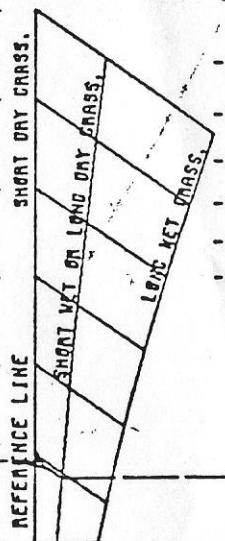
START
HERE

AIRFIELD
PRESSURE
HEIGHT
FEET

SHADE
TEMP °C

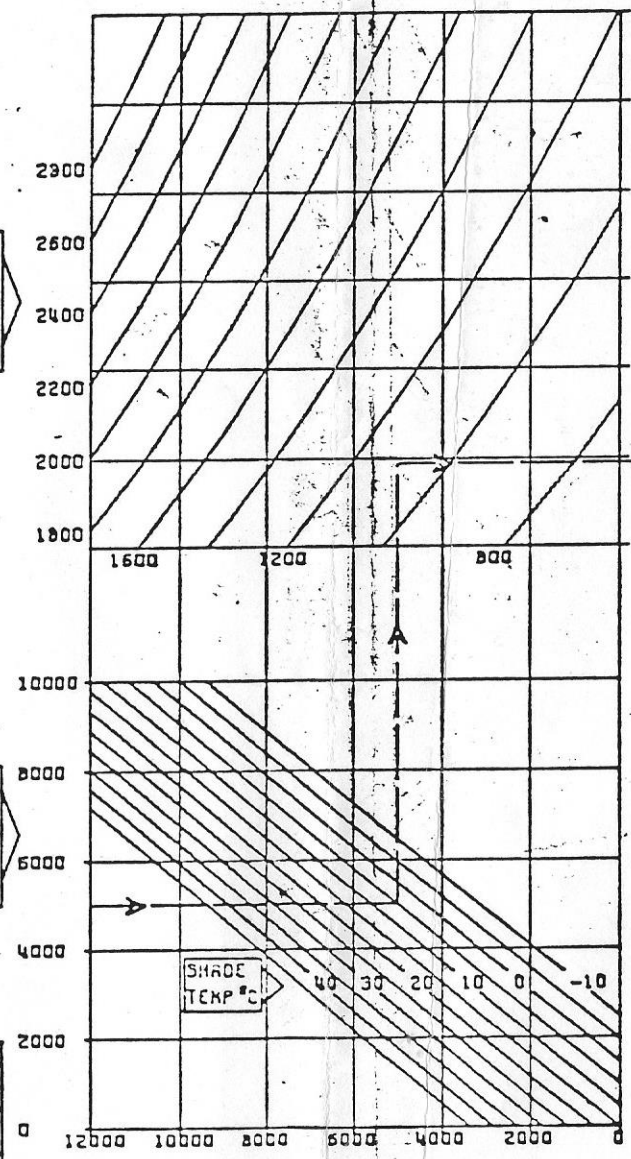
SURFACE

SLOPE-PERCENT

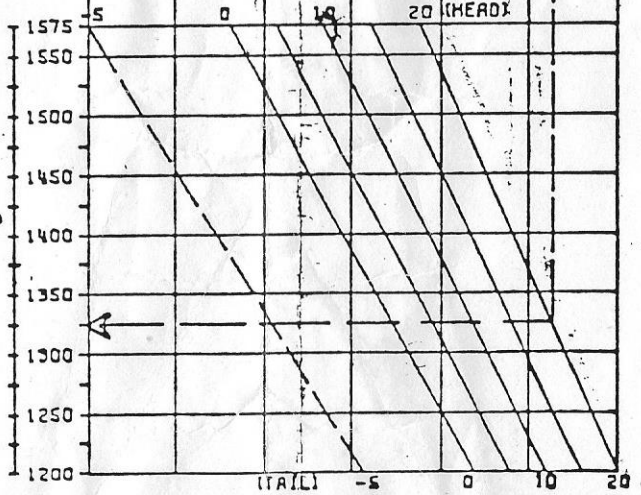


LEVEL 1 2 UP

DOWN



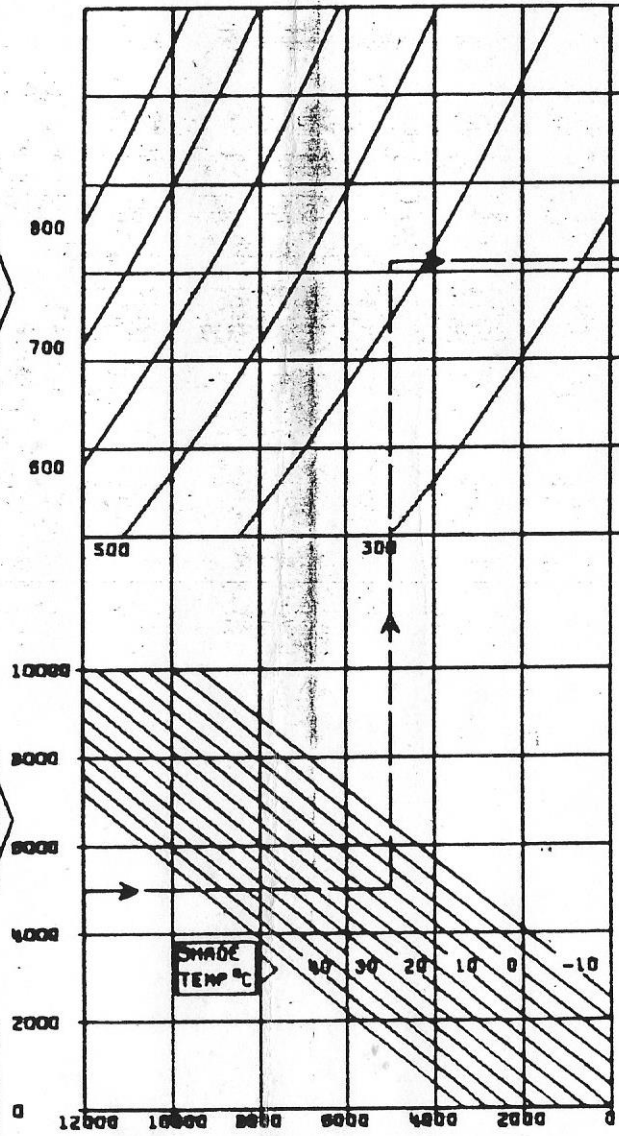
TAKE-OFF
WEIGHT
-LB.



DEPARTMENT OF CIVIL AVIATION	
TAKE-OFF WEIGHT CHART	
PITTS S2A	
TO	A.P.M. 1200 A.P.M.
TO	REF. PRESS. FULL THROTTLE
SETTING	31.0 000 GALS.
F SAFETY SPEED	70.0 KNOT - I.A.S.
F OIST. FACTOR	1.15

4-2
 G-3

TAKE-OFF
 DISTANCE
 AVAILABLE
 METRE



START
 HERE

AIRFIELD
 PRESSURE
 HEIGHT
 FEET

SHADE
 TEMP °C

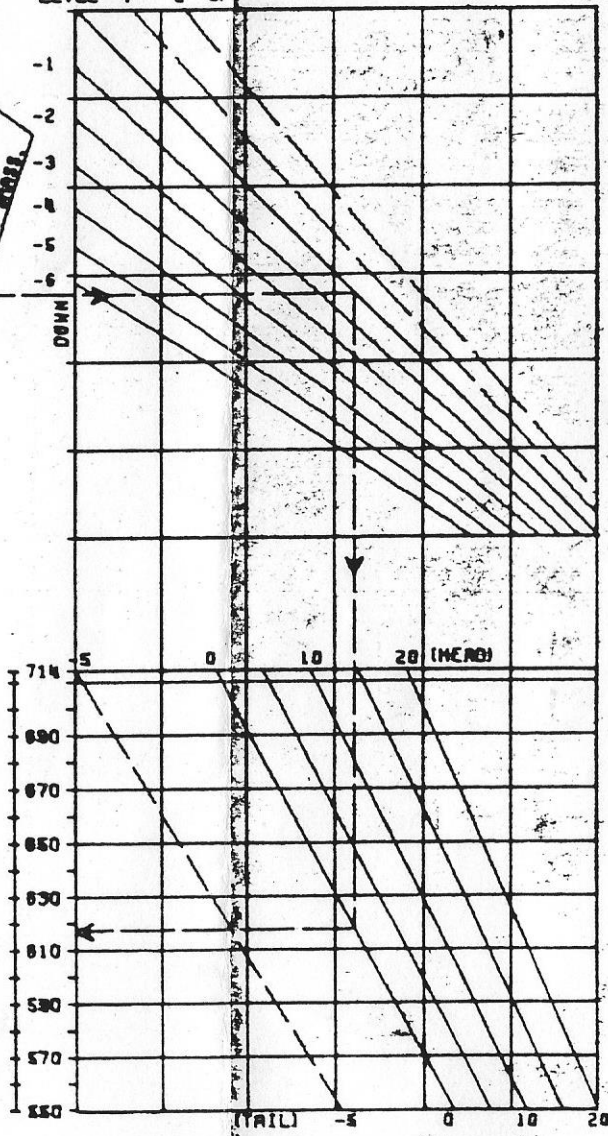
DENSITY HEIGHT-FEET

SURFACE



SLOPE-PERCENT

LEVEL 1 2 UP

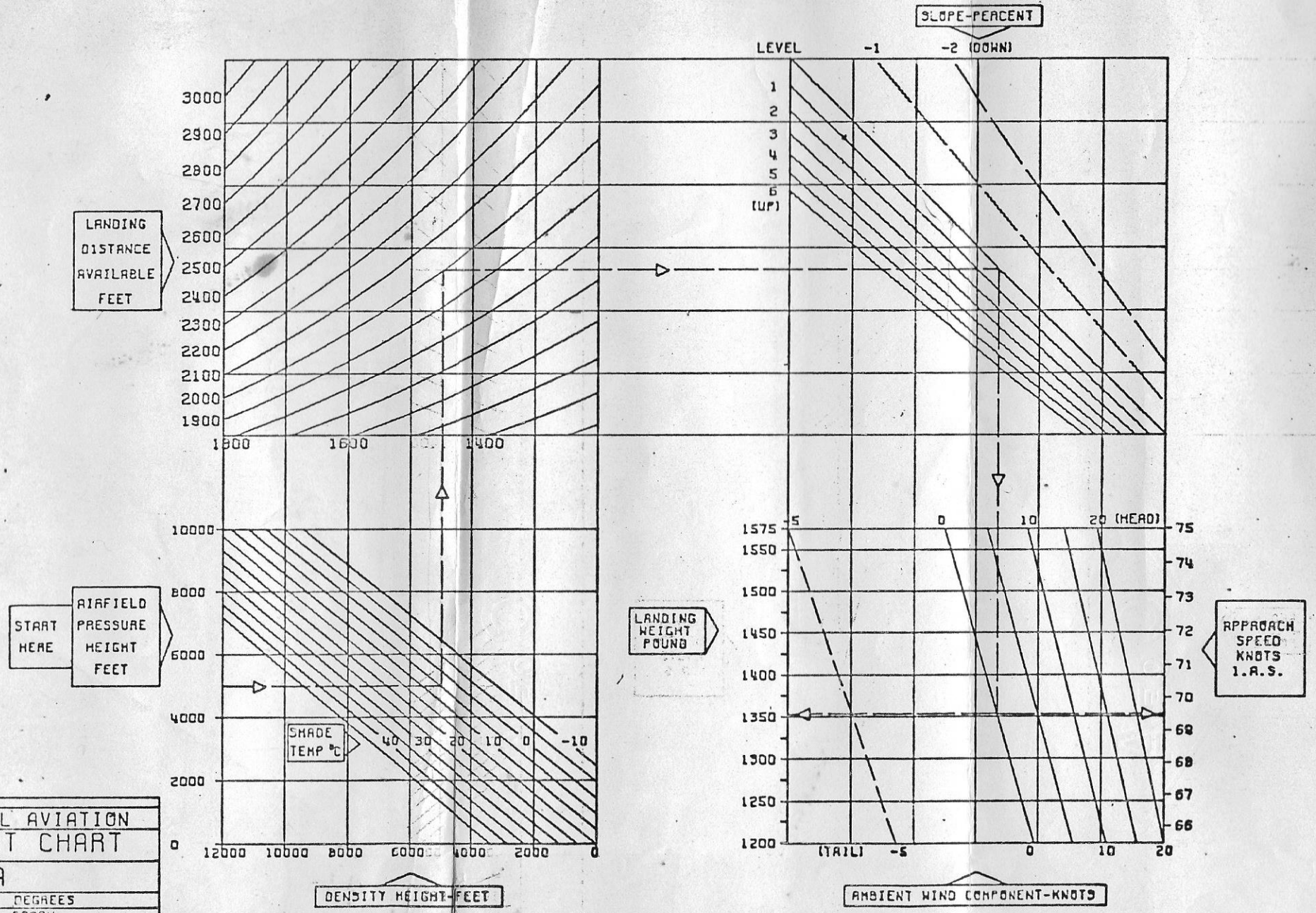


TAKE-OFF
 WEIGHT
 -KG.

AMBIENT WIND COMPONENT-KNOTS

GREEN

DEPARTMENT OF CIVIL AVIATION	
TAKE-OFF WEIGHT CHART	
PITTS S2A	
TO	A.P.M. 2700 A.P.M.
Q	MIN. PRESS. PULL THRUSTLE
SETTING	0 DEGREES.
F SAFETY SPEED	70.0 KNOT - I.A.S.
F QIST.FACTOR	1.15



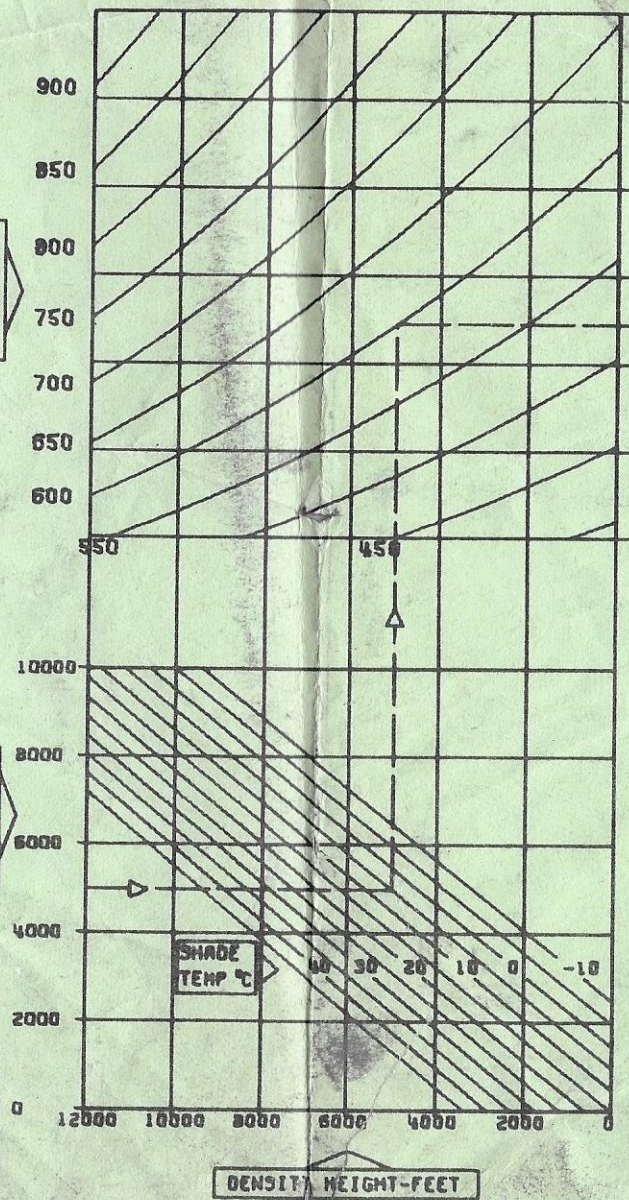
DEPARTMENT OF CIVIL AVIATION	
LANDING WEIGHT CHART	
PITTS S2A	
TEMP °C	0 DEGREES
WIND	SEE GRAPH
CG	1.15

DATE	RENO.
18/10/73	

LANDING
DISTANCE
AVAILABLE
METRE.

START
HERE

AIRFIELD
PRESSURE
HEIGHT
FEET



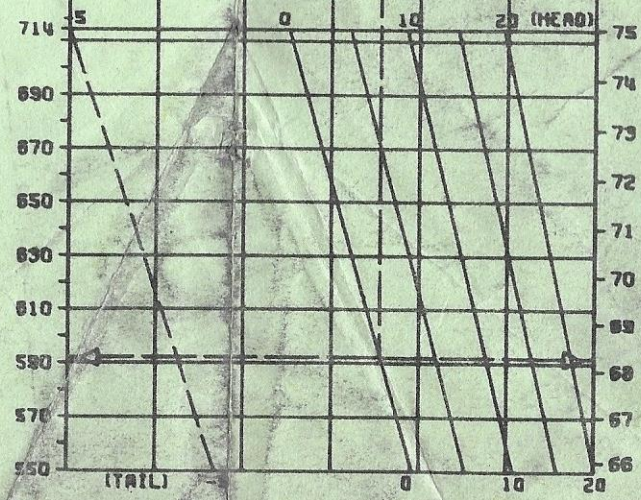
SHADE
TEMP °C

LANDING
WEIGHT
KG.

SLOPE-PERCENT

LEVEL -1 -2 (DOWN)

1
2
3
4
5
6
(UP)



APPROACH
SPEED
KNOTS
I.A.S.

WIND COMPONENT-KNOTS

DEPARTMENT OF CIVIL AVIATION
LANDING WEIGHT CHART

PITTS S2A

WIND	0 DEGREES
SPEED	SEE GRAPH
FACTOR	1.15

SECTION 5 - INSTRUMENT AND EQUIPMENT 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
- (ii) Fuel pressure indicator
- (iii) Oil pressure indicator
- (iv) Oil temperature indicator
- (v) Tachometer
- (vi) Manifold pressure gauge

(c) Other Airworthiness Instruments or Indicators -

Stall warning indicator

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 or an aircraft weight control design signatory, are to be carried in the Flight Manual at all times.

6.2 - AEROPLANE WEIGHT

Aeroplane Type : PITTS S2A

Registration Marking VH-~~UPU~~ DXB

Issue	Date	Date of Expiry
1	29/11/73	Indefinite - Subject to ANO 100.7

Aeroplane Weight and Centre of Gravity Data :

EMPTY Weight - kg. - (lb.) (See Note below)	Arm - mm. - (inches) aft of the datum	MOMENT Index Units	Cabin Configuration
478 (1050.5)	2191 (86.26")	91619	
		Inch/lbs	
Note - Loading System Specified on Page 6.3 is			
given in Imperial Units			

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

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COMMONWEALTH OF AUSTRALIA
DEPARTMENT OF CIVIL AVIATION

APPROVED pursuant to regulation 227
of the Air Navigation Regulations

Approval Stamp

R. Deek

delegate of the Director General of Civil
Aviation

Date 29 Nov. 1973

6.3 - LOADING SYSTEM

Aeroplane Type :..... PITTS S2A
Registration Marking VH-~~511~~ OXB.....

ISSUE :	DATE
1	29/11/73

Weight and Balance Section of FAA Approved. Flight Manual Pages 7,8,15,16 and 17. Use Weight from Load Data Sheet Page 6.2. *and moment*

COMMONWEALTH OF AUSTRALIA DEPARTMENT OF CIVIL AVIATION
APPROVED pursuant to regulation 227 of the Air Navigation Regulations Approval Stamp
<i>J. Seed</i>
delegate of the Director General of Civil Aviation
Date <i>29. Nov. 1973</i>

SECTION 7 - RADIO SYSTEMS - 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.

7.2 - RADIO SYSTEMS APPROVAL

System	Equipment Type	Type of Operation		
		DEFX	Limited DEFX	V.F.R. and Night V.M.C.
VHF NAV Comm.	GENAVE 500	-	-	10