



**Jabiru Aircraft**

**Model: J120-C**

**PILOT'S OPERATING HANDBOOK**

**JP-FM-10**

**Revision 2**

**28th October 2014**

**Airplane Registration Number:** \_\_\_\_\_

**Airplane Serial Number:** \_\_\_\_\_

*THIS DOCUMENT MUST BE CARRIED IN THE AIRCRAFT AT ALL TIMES*

*THIS AIRCRAFT MUST BE OPERATED IN ACCORDANCE WITH THE APPROVED  
DATA AND LIMITATIONS CONTAINED IN THIS MANUAL AT ALL TIMES.*

*ANY PERSON FINDING THIS MANUAL IS REQUESTED TO RETURN IT TO JABIRU  
AIRCRAFT*



## Record of Manual Revisions

This manual is revised as a complete document. All pages must display the same revision number.

Revision Notes:

0	Initial Issue
1	Layout revised as per ASTM F2746-12
2	Omissions and Errors corrected Minimum Take-off Oil temp corrected to be 40°C (104°F)



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## 0. INTRODUCTION

### 0.1 PILOT'S OPERATING HANDBOOK

The POH handbook consists of the following:

#### Basic POH

The basic POH provides all the information, procedures and limitations required to operate the aircraft as a Light Sport Aircraft. This basic POH is applicable to all Jabiru J120-C Aircraft.

The operating procedures presented herein are the result of Jabiru Aircraft's knowledge and experience gained up to the date of issue of this handbook. The handbook may be used for operational purposes only if kept in a fully amended state. It contains all the information considered necessary to safely operate the aircraft.

The operator must be thoroughly familiar with the aircraft and the contents of this handbook before initial operation. Thereafter the handbook should be reviewed periodically to enable the operator to maintain the highest level of familiarity with the aircraft, its controls and recommended operating procedures.

This POH also includes the information required of the Flight Training Supplement: there is no separate FTS for the J120-C.

#### Supplements

Self contained supplements are provided in Section 9 of the POH to provide details and procedures associated with the fitment of specified optional and special purpose equipment. Supplements are specific to the particular aircraft S/No. displayed on their title page.

#### Amendments

This manual is revised as a complete document. When a new issue of the manual becomes available operators must transfer the aircraft-specific data (such as aircraft weight and balance information and supplements) to the new manual. The old manual must not be used for further operation of the aircraft.

Operators must then familiarise themselves with the new revision of the manual. Those sections of the manual which have been revised are shown with a vertical line in the right margin.

### 0.2 SUPPORTING DOCUMENTATION

The following manuals are required for correct operation & maintenance of the Jabiru J120-C. The current revisions are available free of charge from the Jabiru Aircraft website [www.jabiru.net.au](http://www.jabiru.net.au) :

- Pilot's Operating Handbook
- Aircraft Technical Manual (incorporating Propeller Maintenance Manual)
- Engine Maintenance Manual
- Engine Overhaul Manual

In addition, the operator and maintainer must be aware of all current supplemental service information issued by Jabiru Aircraft – again, the latest revisions are available from the Jabiru Aircraft website. These documents include:

- Service Bulletins
- LSA Safety Directives
- Service Letters



Finally, operators and maintainers must be aware of any requirements issued by Airworthiness Authorities and available from their respective web sites:

- Airworthiness Directives issued by the Civil Aviation Safety Authority
- Recreational Airworthiness Notice issued by Recreational Aviation Australia

### **0.3 MANUFACTURER DETAILS**

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Street Address:

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Airport Drive, Hinkler Airport  
Bundaberg  
QLD 4670

### **0.4 STANDARDS LIST**

Design & Performance	The Jabiru J120-C has been designed to comply with the requirements of ASTM F2245-13b.
Quality Assurance	The Jabiru J120-C has been constructed under a Quality System meeting the requirements of ASTM F2279-10
Continued Airworthiness	The continued airworthiness of the J120-C is monitored by Jabiru Aircraft P/L in accordance with the requirements of ASTM F2295-10
POH	This POH has been prepared to comply with the requirements of ASTM F2746-12



## 0.5 SYMBOLS, ABBREVIATIONS AND TERMINOLOGY

<b>A</b>	Ampere
<b>AGL</b>	Above Ground Level
<b>AMSL</b>	Above Mean Sea Level
<b>AVGAS</b>	Aviation Gasoline
<b>BHP</b>	Brake Horse Power
<b>CASA</b>	Civil Aviation Safety Authority (Australia)
<b>CAO</b>	Civil Aviation Order (Australia)
<b>CAR</b>	Civil Aviation Regulation (Australia)
<b>°C</b>	Degrees Celsius
<b>CHT</b>	Cylinder Head Temperature
<b>cm</b>	Centimetre, centimetres
<b>DC</b>	Direct Current
<b>FAA</b>	Federal Aviation Administration (USA)
<b>°F</b>	Degrees Fahrenheit
<b>FAR</b>	Federal Aviation Regulation (USA)
<b>FTS</b>	Flight Training Supplement
<b>ft</b>	Foot, feet
<b>ft/min</b>	Feet per minute
<b>g</b>	Acceleration due to gravity
<b>Gal</b>	Gallon
<b>hPa</b>	Hectopascal, hectopascals
<b>HF</b>	High Frequency
<b>ICAO</b>	International Civil Aviation Organisation
<b>IFR</b>	Instrument Flight Rules
<b>IMC</b>	Instrument Meteorological Conditions
<b>in</b>	Inch, inches
<b>in Hg</b>	Inches of mercury
<b>in lbs</b>	Inch pounds
<b>ISA</b>	International Standard Atmosphere
<b>kg</b>	Kilogram
<b>kg/l</b>	Kilogram per litre
<b>kHz</b>	Kilohertz
<b>kts, K</b>	Knots
<b>kPa</b>	Kilopascals
<b>kW</b>	Kilowatt, kilowatts
<b>l</b>	Litre, litres
<b>lb</b>	Pound, pounds
<b>LH</b>	Left hand
<b>LHS</b>	Left hand side
<b>m</b>	Metre



<b>m<sup>2</sup></b>	Square metre
<b>m<sup>3</sup></b>	Cubic metre
<b>mA</b>	Milli ampere
<b>MAC</b>	Mean Aerodynamic Chord
<b>max</b>	Maximum
<b>MHz</b>	Megahertz
<b>mm</b>	Millimetre
<b>min</b>	Minimum or minute
<b>MOGAS</b>	Automotive Fuel
<b>nm</b>	Nautical mile, nautical miles
<b>OAT</b>	Outside Air Temperature
<b>PAX</b>	Passenger
<b>POH</b>	Pilots Operating Handbook
<b>PROP</b>	Propeller
<b>psi</b>	Pounds per square inch
<b>QTY</b>	Quantity
<b>qts</b>	Quarts
<b>RH</b>	Right Hand
<b>RHS</b>	Right Hand Side
<b>RON</b>	Fuel Octane Rating Scale (Research Octane Number)
<b>RPM</b>	Revolutions per minute
<b>SAE</b>	Society of Automotive Engineers
<b>sec</b>	Seconds
<b>SQ</b>	Square
<b>STBY</b>	Standby
<b>TBO</b>	Time between overhauls
<b>T/O</b>	Take Off
<b>U/S</b>	Unserviceable
<b>USG</b>	US Gallon
<b>US Gal</b>	US Gallon
<b>V</b>	Volts
<b>VFR</b>	Visual Flight Rules
<b>VHF</b>	Very High Frequency
<b>VMC</b>	Visual Meteorological Conditions

### General Airspeed Terminology and Symbols

- **CAS**      *Calibrated Airspeed*: the indicated speed of an aircraft corrected for position and instrument error. Calibrated airspeed is equal to true airspeed in standard atmosphere at sea level.
- **KCAS**:      Calibrated Airspeed expressed in knots.





- **IAS**      *Indicated Airspeed:* the speed of an aircraft as shown on the airspeed indicator. IAS values in this manual assume zero instrument error.
- **KIAS**      Indicated Airspeed expressed in knots.
- **TAS**      *True Air Speed:* the airspeed of an aircraft relative to the undisturbed air through which it passes.
- **T.O.S.S**      *Take-Off Safety Speed:* the airspeed 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. It is the speed required at 50 feet.
- **V<sub>A</sub>**      *Manoeuvring Speed:* the maximum speed at which application of full available aerodynamic control will not damage or overstress the aircraft.
- **V<sub>FE</sub>**      *Maximum Flap Extended Speed:* the highest speed permissible with wing flaps in a prescribed extended position.
- **V<sub>NE</sub>**      *Never Exceed Speed:* the limiting airspeed that may not be exceeded at any time.
- **V<sub>C</sub>**      *Maximum Structural Cruising Speed:* the speed that should not be exceeded except in smooth air and then only with caution.
- **V<sub>S</sub>**      *Stalling Speed:* or the minimum steady flight speed at which the aircraft is controllable.
- **V<sub>SO</sub>**      *Stalling Speed:* or the minimum steady flight speed at which the aircraft is controllable in the landing configuration.
- **V<sub>X</sub>**      *Best Angle-of-Climb Speed:* the airspeed which delivers the greatest gain of altitude in the shortest possible horizontal distance.
- **V<sub>Y</sub>**      *Best Rate-of-Climb Speed:* the airspeed which delivers the greatest gain in altitude in the shortest possible time.

### Meteorological Terminology

- **OAT – Outside Air Temperature** – the outside free air static temperature.
- **Airfield Pressure Height** – The height registered at the surface of an aerodrome by an altimeter with the pressure sub-scale set to 1013 hPa (29.92 inches Hg).
- **Pressure Altitude** – Altitude measured from standard sea-level pressure (1013 hPa/29.92 inches Hg) by a pressure or barometric altimeter corrected for position and instrument error.
- **Indicated Pressure Altitude** – the altitude actually read from an altimeter when the pressure barometric sub-scale has been set to 1013 hPa (29.92 inches Hg).
- **QNH** – The local pressure setting that if set on the subscale of an altimeter will cause the altimeter to indicate local altitude above mean sea level.
- **Wind** – The wind velocities to be used as variables on aircraft performance are to be understood as the headwind or tail wind components of the reported winds.



## Aircraft Performance and Flight Planning Terminology

- **Climb Gradient** – The ratio of the change in height during a climb, to the horizontal distance travelled.
- **Demonstrated Crosswind Component** – The crosswind component, during take-off and landing, for which adequate control of aircraft was actually demonstrated during certification tests.

## Weight and Balance Terminology

- **Datum** – An imaginary vertical plane from which all horizontal distances are measured for balance purposes.
- **Station** – A location along the aircraft fuselage usually given in terms of distance from the reference datum.
- **Arm** – The horizontal distance from the reference datum to the centre of gravity (C of G) of an item.
- **Moment** – The product of the weight of an item multiplied by its arm.
- **Index Unit** – Moment divided by a constant. Used to simplify balance calculations by reducing the number of digits.
- **Centre of Gravity (C of G)** – The point at which an aircraft would balance if suspended. The distance from the C of G to the reference datum can be found by dividing the total moment by the total weight of the aircraft.
- **C of G Arm** – The arm obtained by adding the aircraft's individual moments and dividing the sum by the total weight.
- **C of G Limits** – The extreme centre of gravity locations within which the aircraft must be operated at a given weight.
- **Useable Fuel** – The quantity of fuel available for flight planning purposes.
- **Unusable Fuel** – The quantity of fuel (determined under adverse fuel flow conditions) that is not available for flight.
- **Empty Weight** – Weight of aircraft with unusable fuel and full oil.
- **Useful Load** – Difference between take-off weight, and basic empty weight.
- **Maximum Take-Off Weight** – Maximum weight approved for take-off.
- **Maximum Landing Weight** – Maximum weight approved for the landing.
- **Header Tank** – Fuel tank plumbed between the wing tanks and the engine. Also known as **Collector Tank** or **Sump Tank**.



## 0.6 USE OF METRIC/IMPERIAL UNITS

This POH uses the metric system as the basic system of measurement. Where common usage or available instrumentation refer to the Imperial/US unit system, both units are quoted. The following conversion factors are presented as a ready reference to the conversion factors that have been used in this manual as well as supplying some others that may be found useful.

1 Pound (lb)	=	0.4536 Kilogram (kg)
1 Pound per sq in (psi)	=	6.895 Kilopascal (kPa)
1 Inch (in)	=	25.4 Millimetres (mm)
1 Foot (ft)	=	0.3048 Metre (m)
1 Statute mile	=	1.609 Kilometres (km)
1 Nautical mile (NM)	=	1.852 Kilometres (km)
1 Millibar (mb)	=	1 Hectopascal (hPa)
1 Millibar (mb)	=	0.1 Kilopascal (kPa)
1 Imperial gallon	=	4.546 Litres (l)
1 US gallon	=	3.785 Litres (l)
1 US quart	=	0.946 Litre (l)
1 Cubic foot (ft <sup>3</sup> )	=	28.317 Litres (l)
1 Acre	=	0.4047 Hectares
1 Degree Fahrenheit (EF)	=	[1.8 x EC]+32
1 Inch Pound (in lb)	=	0.113 Newton Metres (Nm)
1 Foot Pound (ft lb)	=	1.356 Newton Metres (Nm)

## 0.7 WARNINGS, CAUTIONS & NOTES

Definitions used in the POH such as **WARNING, CAUTION, NOTE** are employed in the following context:

### WARNING

*Operating procedures, techniques, etc. which if not followed correctly, may result in personal injury or death.*

### CAUTION

*Operating procedures, techniques, etc. which if not strictly observed, may result in damage to the aircraft or to its installed equipment.*

### NOTE

*Operating procedures, techniques, etc. which it is considered essential to highlight.*



## 1. GENERAL INFORMATION

### 1.1 LIGHT SPORT AIRCRAFT NOTIFICATION

There are inherent risks in the participation in recreational aviation aircraft. Operators and passengers of recreational aviation aircraft, by participation, accept the risks inherent in such participation of which the ordinary prudent person is or should be aware. Pilots and passengers have a duty to exercise good judgment and act in a responsible manner while using the aircraft and to obey all oral or written warnings, or both, prior to or during use of the aircraft, or both.

#### **WARNING:**

**THIS AIRCRAFT WAS MANUFACTURED IN ACCORDANCE WITH LIGHT SPORT AIRCRAFT AIRWORTHINESS STANDARDS AND DOES NOT CONFORM TO STANDARD CATEGORY AIRWORTHINESS REQUIREMENTS.**

Jabiru Aircraft Pty Ltd has devoted significant resources and testing to develop the Jabiru J120-C aircraft. The Jabiru J120-C is designed to be operated and maintained only in strict accordance with its supporting documentation – consisting of Pilot's Operating Handbook, Aircraft Technical Manual (Including Maintenance Manual), Engine Maintenance Manual, Propeller Maintenance Manual, Jabiru Australia Service Bulletins, Service Letters and any other documents produced by Jabiru Aircraft Australia or the appropriate regulatory authorities.

Any variation in procedure or failure to operate or maintain the aircraft according to the supporting documentation may cause damage or harm to the aircraft, its parts, or components and may lead to injury or death. Any such actions may render the aircraft un-airworthy and will void any warranty issued by Jabiru.

Any variation to the aircraft of any kind, including alteration to any component at all, whether replacement, relocation, modification or otherwise which is not strictly in accordance with these documents may lead to dramatic changes in the performance of the aircraft, may cause damage or harm to other parts of the aircraft and may lead to injury or death. Jabiru Aircraft Pty Ltd does not support any modifications to the aircraft, its parts, or components. Any such actions may render the aircraft un-airworthy and will void any warranty issued by Jabiru.

Maintenance cannot be supervised by the manufacturer. Maintenance requires extreme cleanliness, exact parts, precise workmanship and proper consumables. It is your responsibility to ensure absolute attention to detail no matter who may become involved in work on this aircraft. Your safety, your life and your passenger's lives rely on precise and accurate following of the maintenance documentation for this aircraft.



## 1.2 ABOUT THE JABIRU J120-C

Jabiru Aircraft have been built in Bundaberg, Australia since the early 1990's. The original was a small 2 seat aircraft powered by a 2-stroke engine; it had limited range, basic equipment and little room to spare in the cabin. But this aircraft introduced the Jabiru ideal to the world – an aircraft which was light and efficient with good handling, good performance and excellent occupant protection. An aircraft which met all these goals while using modern technology to be cost effective to own and operate and to introduce newcomers to aviation – people who always thought that aviation was beyond their reach. Since the time of those first aircraft, Jabiru Aircraft have evolved dramatically. The current Jabiru models are all far more powerful, spacious and better equipped than their ancestor while still meeting the Jabiru Ideal.

The Jabiru J120-C is the smallest factory-complete model offered for sale by Jabiru Australia today and the most inexpensive, making it a very obvious choice for recreational flyers. The aircraft makes a surprisingly good cross-country machine considering its small size, with cruise speeds of up to 100 knots (TAS), an endurance of 4 hours and handling which is smooth and stable. The large, efficient wing easily carries heavy loads and the powerful engine is smooth and quiet so that the crew can fly for hours without fatigue from noise and vibration. The J120-C is a popular training aircraft - it is easy and fun to fly, forgiving of learner-pilot mistakes and the side-by-side seating makes the instructor's job easy.

On the ground the J120-C is also an excellent performer – it is the simplest of all Jabiru designs with solid wings and a cabin fuel tank, allowing maintenance to be carried out quickly and easily to get the aircraft back into the air as soon as possible. The same Jabiru 2200 engine which provides powerful performance in the air is also light, simple, easy to maintain and so quiet that people living near the airport barely hear it. The composite construction allows the aircraft to be both light and very strong – with the J120-C being designed to an ultimate factor of around +8g / -4g. The fibreglass structure won't rust or corrode, has an almost infinite fatigue life and like all Jabiru's, the J120-C has been designed with a very strong cabin structure to provide a safety cell for its crew.

Today's J120-C is the latest design of an aircraft model which has been a popular choice with pilots for many years. The design is thoroughly proven and thoroughly tested – both by Jabiru test pilots and demanding customers all over Australia. It can be extensively customised and thanks to the wide range of interior options, instrument systems and other optional extras every Jabiru J120-C is unique. Most importantly, the J120-C still embodies the original Jabiru Ideal and continues to show people who never thought they could have an aircraft of their own that anything is possible.



### 1.3 OWNER/OPERATOR RESPONSIBILITIES

The following responsibilities for the owner/operator of a LSA listed are prescribed in the ASTM standard F2295:

- Each owner/operator of a LSA shall read and comply with the maintenance and continued airworthiness information and instructions provided by the manufacturer.
- Each owner/operator of a LSA shall be responsible for providing the manufacturer with current contact information where the manufacturer may send the owner/operator supplemental notification bulletins.
- The owner/operator of a LSA shall be responsible for notifying the manufacturer of any safety of flight issue or significant service difficulty upon discovery.
- The owner/operator of a LSA shall be responsible for complying with all manufacturer issued notices of corrective action and for complying with all applicable aviation authority regulations in regard to maintaining the airworthiness of the LSA.
- An owner of a LSA shall ensure that any needed corrective action be completed as specified in a notice, or by the next scheduled annual inspection.
- Should an owner/operator not comply with any mandatory service requirement, the LSA shall be considered not in compliance with applicable ASTM standards and may be subject to regulatory action by the presiding aviation authority.

### 1.4 J120-C PERFORMANCE AND SPECIFICATION SUMMARY

Gross Weight	500kg (1102 lb)
Top Speed at Sea Level	120 KCAS
Cruise Speed, $V_C$	95 KCAS (at 2800 rpm)
Full Fuel Range <sup>1</sup>	350 nm at 2800 rpm, 5000' ASL (if achieving 15 lt/hr fuel consumption)
Rate of Climb at Sea Level <sup>2</sup>	500 fpm $V_Y$ 450 fpm $V_X$
Take-Off Distance	400 m
Landing Distance	300 m
Stall Speed Clean	49 KCAS
Stall Speed Flaps Full Down	45 KCAS
Fuel Capacity	66 L (17.4 USgal) Total Capacity 64 L (16.9 USgal) Useable
Approved Fuels	AVGAS 100LL, AVGAS 100/130 or MOGAS with RON of 95 or higher.
Maximum Engine Power	80 hp @ 3300 RPM.

Refer to the main body of this handbook below for more information.

<sup>1</sup> Range with 45 minute reserve at stated power setting

<sup>2</sup> At Gross Weight, ICAO Standard Atmosphere



## 2. LIMITATIONS

### 2.1 AIRSPEED LIMITATIONS

SPEED	KIAS	ASI MARKING	REMARKS
Design Manoeuvring Speed ( $V_A$ )	102	-	Do not make full or abrupt control movements above this speed.
Operating Manoeuvring Speed at MTOW ( $V_{O\text{MTOW}}$ )*	102	-	Do not make full or abrupt control movements above this speed at MTOW.
Operating Manoeuvring Speed at Minimum weight ( $V_{O\text{MIN}}$ **)	85	-	Do not make full or abrupt control movements above this speed at Minimum weight.
Never Exceed Speed ( $V_{NE}$ )	140	Red Line at upper end of yellow arc	Do not exceed this speed in any operation.
Max Structural Cruising Speed ( $V_C$ )	112	Upper end of green arc / start of yellow arc	Do not exceed this speed except in smooth air and then with caution.
Maximum Flap Extension Speed ( $V_{FE}$ )	94	Upper end of white arc	Do not exceed this speed with the flaps deployed.
Stalling Speed ( $V_S$ )	51	Lower end of green arc	in Cruise Configuration
Stalling Speed ( $V_{S0}$ )	47	Lower end of white arc	in Landing Configuration

\* Operating Manoeuvring speed at '**MTOW**' refers to maximum gross weight = **500kg (1102lb)**.

\*\* Operating Manoeuvring speed at '**Minimum weight**' is calculated based on typical light empty weight (285kg), a single lightweight occupant (55kg) and 45 minutes reserve fuel (10kg) = **350kg (771lb)**. Typical operating weight will usually always be much heavier.

Note: Refer to Section 5.4 for conversion to Calibrated Airspeed (KCAS).

#### 2.1.1 ASI Markings:

- White Arc: Flap extended speed range – flapped stall speed to maximum allowable with flaps deployed (47-94 KIAS).
- Green Arc: Normal operating Speed range (51-112 KIAS)
- Yellow Arc: Caution speed range – Do not exceed this speed except in smooth air and then with caution (112-140 KIAS)
- Red Line: Do not exceed this speed in any operation (140 KIAS)

### 2.2 AIRCRAFT SERVICE CEILING

10 000 feet ASL



### 2.3 LIMIT LOAD FACTORS

Flap Position	Speed	Positive	Negative
UP	$V_A$	+ 4g	-2g
UP	$V_{NE}$	+ 4g	-2-g
DOWN	$V_{FE}$	+ 2.0g	0g

### 2.4 FLIGHT OPERATION LIMITATIONS

Manoeuvres in the course of normal flying are approved.

Stalls may be carried out at bank angles of up to 60°.

All aerobatic manoeuvres including spins are prohibited.

Flight Operations are limited to VMC (Visual Meteorological Conditions).

Flight Operations in IMC (Instrument Meteorological Conditions) are prohibited.

### 2.5 FUEL

Total Capacity: 66L (17.4USgal) Useable

Usable Capacity: 64L (16.9USgal) Useable

Grade: Avgas 100LL  
Avgas 100/130

MOGAS with minimum Octane Rating of 95 RON<sup>1</sup> may be used

Max zero wing fuel weight: Not applicable (no wing fuel tanks)

( $W_{ZWF}$ )

### 2.6 POWER PLANT LIMITATIONS

	POWER	RPM	Maximum Temperatures		Fuel Pressure Limits		Oil Pressure Limits	
			Cyl Head	Oil	Min	Max	Min	Max
Absolute Limits	Maximum Take-Off (80 BHP)	3300	200 °C (392°F) (Note #1)	118°C (244°F)	5 kPa (0.75psi)	20 kPa (3psi)	220 kPa (31 psi)	525 kPa (76psi)
Continuous Limits	Maximum Cont (80 BHP)	3300	180°C (356°F)	100°C (212°F)	5 kPa (0.75psi)	20 kPa (3psi)	220 kPa (31 psi)	525 kPa (76 psi)
Limits For Ground Running	N/A	N/A	180°C (356°F) (Note #2)	100°C (212°F) (Note #2)	5 kPa (0.75psi)	20 kPa (3psi)	80 kPa (11 psi)	525 kPa (76 psi)

**Note #1** Time with CHT at between 180°C and 200°C is not to exceed 5 Minutes

**Note #2** If temperature limits are reached, shut the engine down or cool it by pointing the aircraft into wind.

**Table 2.4.2**

**Other limits are as follows:**

- Minimum oil pressure at idle: 80 kPa (11 psi)
- Maximum oil pressure at start: 525 kPa (76 psi)





## 2.7 CROSS WIND

The maximum allowable crosswind velocity is dependent on many factors including:

- Aircraft limitations
- Pilot capability.
- Ground conditions – i.e. turbulence from structures or trees
- Wind state – i.e. steady wind or gusting / thermal conditions.

With average pilot technique, steady, direct crosswinds of up to 14 knots can be handled with safety.

## 2.8 OTHER CLIMATIC RESTRICTIONS

Maximum Ambient Operating Temperature	38°C (100°F)
Flight into known icing conditions	Prohibited

## 2.9 KINDS OF OPERATION

The standard J120-C, as detailed within this POH, is approved for Day VFR Operations only.

## 2.10 POWER GENERATION SYSTEM LIMITATIONS

When the engine is turning at approximately 2000 RPM and above the alternator produces sufficient power for all lights to be run continuously. However, below this RPM the alternator cannot produce this power output and power must be drawn from the battery if all electrical systems are running. To reduce the load on the alternator, Jabiru Aircraft recommend only using the Landing Light for takeoff and landing – turning it off during normal cruise operations and wherever safe while taxiing.

## 2.11 OTHER LIMITATIONS

- Smoking is prohibited.
- In-cabin noise levels exceed 95db. Hearing protection must be worn.



### 3. EMERGENCY PROCEDURES

#### 3.1 GENERAL

This Section describes the procedures to be adopted in the event of an emergency or abnormal situation occurring in the J120-C aircraft.

The procedures are arranged in the sequence considered to be the most desirable in the majority of cases. Steps should be performed in the order listed unless good reasons for deviation exist.

It should be remembered however, that all conceivable eventualities cannot be foreseen by the manufacturer. Particular circumstances such as multiple or unanticipated emergencies, adverse weather etc. may require modification to these procedures. A thorough knowledge of the aircraft and its systems is essential to analyse the situation correctly and determine the best course of action in any particular circumstance.

The following **basic rules** apply to all aircraft emergencies:

1. **Maintain** Aircraft Control.
2. **Analyse** the situation and take appropriate action.
3. **Land** as soon as practicable.

#### 3.2 AIRSPEEDS FOR EMERGENCY OPERATIONS

Maximum Glide .....	.65 KIAS*
Landing Without Engine Power (Flaps Full) .....	.60 KIAS

\* - A slightly higher speed may give better distance over the ground if gliding into wind; a slightly slower speed if gliding downwind.



### 3.3 CARBURETTOR ICING

Carburettor icing occurs when moisture in the air forms ice within the carburettor – typically in the venturi throat and around the throttle butterfly. The ice restricts airflow and prevents the proper function of the carburettor.

Carburettor icing can occur in temperatures between around +30°C (86°F) and -15°C (5°F). Icing most often occurs at cruise, descent or idle power settings, in humid air (including fog, light rain or cloud) and at ambient temperatures between 0°C (32°F) and 20°C (68°F). However, icing can occur at other times and the pilot must be aware of the potential at all times.

**Applying carburettor heat is the recommended first corrective measure to be tried in almost any situation for the engine.**

Carburettor icing symptoms include:

1. RPM / power reducing for given throttle setting
2. Increased throttle opening required to maintain RPM / power
3. Rough, uneven or surging engine.
4. Engine stoppage

**If Carburettor icing is suspected:**

1. Throttle ..... FULL
2. CARB HEAT ..... FULL ON

**NOTE**

*Carburettor heat may be used at any power setting, but will result in a slight power loss. When icing is eliminated, return CARB HEAT to OFF. Carburettor heat should not be used for take-offs.*

*Maintain carburettor heat in ON position for a minimum of 1 minute to allow all ice to melt.*

*Carburettor heat may be used on the ground except during take-off.*

**CAUTION**

*Do not use partial carburettor heat as this may exacerbate ice accretion.*



### 3.4 EMERGENCY PROCEDURES CHECK LISTS

#### 3.4.1 Engine Failures

##### Engine Failure During Take-off Run

1. Throttle.....CLOSED
2. Brakes .....APPLY
3. Ignition .....OFF
4. Wing Flaps.....UP
5. Master Switch .....OFF
6. Fuel Shutoff Valve.....OFF

##### Engine Failure Immediately After Take-off

1. Airspeed.....65 KIAS.
2. Ignition.....OFF (As time permits)
3. Fuel Shutoff Valve.....OFF (As time permits)
4. Wing Flaps.....FULL RECOMMENDED
5. Master Switch.....OFF
6. Braking.....HEAVY AFTER TOUCHDOWN

##### Engine Failure During Flight

1. Airspeed.....65 KIAS\*.
2. Carburettor Heat.....ON
3. Fuel Pump.....ON
4. Fuel Shutoff Valve.....CONFIRM ON
5. Fuel Quantity.....CHECK
6. Oil.....CHECK TEMP AND PRESSURE
7. Ignition.....CYCLE BOTH ON
8. Throttle.....CHECK LINKAGE OPERATION
9. Airstart.....ATTEMPT IF PROP STOPPED

\* - A slightly higher speed may give better distance over the ground if gliding into wind; a slightly slower speed if gliding downwind.



### 3.4.2 Airstart & Limitations

In the event that the engine is stopped during flight, it may be restarted by application of fuel & ignition, provided that the propeller is still windmilling. The propeller may stop windmilling below 50 KIAS

The Jabiru 2200 engine is a high compression (7.8:1) engine & therefore airstarts when the propeller has stopped rotating, without the use of the starter, are unlikely before reaching  $V_{NE}$ . Therefore, the following procedure addresses only airstarts by use of the starter motor.

**IMPORTANT – NO NOT depress starter button while propeller is rotating.**

1. Ignition..... OFF
2. Cabin..... CLEAR
3. Airspeed..... REDUCE UNTIL PROPELLER  
STOPS TURNING.
4. Establish Glide..... 65 KIAS
5. Fuel..... ON
6. Fuel Pump..... ON
7. Master..... ON
8. Ignition Switches..... ON
9. Starter Button..... Depress
10. Throttle..... Open
11. Repeat as necessary, ensuring propeller has stopped before each restart attempt.

- Notes:**
- (a) If engine does not restart commence forced landing procedure.
  - (b) If clear symptoms of a mechanical failure exist, or if the engine has seized due to the loss of oil pressure, do not attempt a restart.
  - (c) If engine operates with only L or R ignition selected, leave the ignition switch in this position whilst a suitable landing area is selected.
  - (d) The engine cools quickly with the propeller stopped. Choke may needed to achieve a start.



### 3.4.3 Forced Landings

#### Emergency Landing Without Engine Power

1. Airspeed..... 65 KIAS
2. Ignition..... OFF
3. Fuel Shutoff Valve..... OFF
4. Fuel Pump..... OFF
5. Throttle..... CLOSED
6. Wing Flaps..... FULL PRIOR TO TOUCH DOWN
7. Master Switch..... OFF
8. Braking..... HEAVY AFTER TOUCH DOWN

#### Precautionary Landing With Engine Power

1. Airspeed..... 70 KIAS
2. Fuel Pump..... ON
3. Wing Flaps..... TAKE-OFF
4. Selected field..... OVERFLY & INSPECT
5. Wing Flaps..... FULL ON FINAL APPROACH
6. Airspeed..... 60 KIAS
7. Braking..... HEAVY AFTER TOUCH DOWN
8. Ignition..... OFF
9. Fuel Shutoff Valve..... OFF
10. Master Switch..... OFF

#### Ditching

1. Airspeed..... 65 KIAS
2. Power (if available)..... ESTABLISH 50 ft/min @ 55 KIAS
3. Approach  
High Winds, Heavy Seas..... INTO WIND  
Light Winds, Heavy Swells..... PARALLEL TO SWELLS
4. Wing Flaps..... FULL PRIOR TO TOUCH DOWN
5. Doors..... OPEN
6. Face..... CUSHION AT TOUCH DOWN
7. Touch Down..... SLOWEST PRACTICAL SPEED
8. Evacuate..... IF REQUIRED BREAK WINDOWS
9. Life Jackets / Life Rafts..... INFLATE
10. EPIRB (If Carried)..... ACTIVATE

### 3.4.4 Engine Fires

#### On Ground

1. Ignition..... OFF
2. Fuel Shutoff valve..... OFF
3. Fuel Pump..... OFF
4. Master Switch..... OFF
5. Abandon aircraft
6. Fire..... EXTINGUISH
- 7.

#### CAUTION

*If the fire is in the engine bay do not remove the cowlings. Removing cowls will provide more air to the fire, accelerating combustion.*



**Engine Fire In Flight**

1. Throttle ..... CLOSE
2. Fuel Valve..... OFF
3. Fuel Pump ..... OFF
4. Ignition..... OFF
5. Master Switch ..... OFF
6. Cabin Heat Vent ..... CLOSE
7. Cabin Air Vent..... OPEN BOTH
8. Airspeed ..... INCREASE UP TO  $V_{NE}^*$  if required to extinguish fire.
9. Forced Landing..... EXECUTE. Refer 3.4.3

\* - If it necessary to increase airspeed above  $V_{FE}$  (to no more then  $V_{NE}$ ) in order to extinguish a fire, the flaps must **NOT** be lowered.

**Electrical Fire In Flight**

1. Master Switch ..... OFF
2. Ignitions ..... ON
3. Electrical Switches ..... OFF
4. Extinguisher ..... ACTIVATE

***If fire goes out:***

5. Smoke ..... VENTILATE CABIN (DOORS MAY BE OPENED SLIGHTLY)
6. Precautionary Landing ..... AS SOON AS PRACTICAL

***If fire does not go out:***

4. Land ..... EXECUTE IMMEDIATELY

**WARNING**

*With the Master Switch turned off the wing flaps will not deploy.*

**Cabin Fire**

1. Master Switch ..... OFF
2. Cabin Heat Vent ..... CLOSE
3. Cabin Air Vent..... OPEN BOTH
4. Extinguisher (if fitted) ..... ACTIVATE
5. Land ..... AS SOON AS PRACTICAL
6. Smoke/Fume Evacuation ..... VENTILATE CABIN. DOORS MAY BE OPENED SLIGHTLY.

***Once fire is extinguished:***

1. Power ..... REDUCE
2. Airspeed ..... APPROX 80 KIAS
3. Cockpit Door(s)..... CLOSE
4. Power ..... ADJUST to maintain approx 80 KIAS
5. Land ..... AS SOON AS PRACTICAL

**NOTE**

*Doors should only be opened for emergency fume evacuation*



### 3.4.5 Other Emergencies

In some of the cases described below there is more than 1 potential cause for a given situation. For example, if the oil pressure gauge indicates zero, it may be due to a failure of the gauge or sender instead of an actual problem with the engine.

The procedures given below in all cases assume that the indications given are true and correct.

It is important to remain calm and think as clearly as possible. Again: The following **basic rules** apply to **all** aircraft emergencies:

1. **Maintain** Aircraft Control.
2. **Analyse** the situation before taking appropriate action. Don't act without thinking.
3. **Land** as soon as practicable.

#### Loss of Oil Pressure

1. Airspeed.....65 KIAS
2. Power.....IDLE
3. Precautionary Landing.....AS SOON AS PRACTICAL

#### High Oil Pressure

1. RPM.....REDUCE UNTIL PRESSURE DROPS
2. Precautionary Landing.....AS SOON AS PRACTICAL
- 3.

#### Emergency Descent – Type 1

1. Power.....IDLE
2. Carburettor heat.....ON
3. Airspeed.....120+ KIAS (less than  $V_{NE}$ )
4. Flaps.....UP

#### NOTE

*This descent gives high vertical speeds but may make controlling the aircraft difficult when passing through narrow holes in clouds etc. Type 1 descents are for clear, smooth air only.*

#### Emergency Descent – Type 2

1. Power.....IDLE
2. Carburettor heat.....ON
3. Airspeed.....94 KIAS ( $V_{FE}$ )
4. Flaps.....FULL DOWN

#### NOTE

*This type of descent gives high vertical speeds while minimising loads on the aircraft structure and improving controllability around obstacles (such as cloud etc).*

*S-Turns or Side slips may be used to increase descent rate; see Section 4.5*





### Precautionary Descent

1. Power ..... IDLE
2. Carburettor Heat ..... ON
3. Airspeed.....75 KIAS
4. Flaps.....UP
5. Bank Angle.....30°

#### NOTE

*This descent gives moderate vertical speeds. It allows good airspeed control & is suited to a descent in a confined area (such as a hole in a cloud layer).*

### Alternator Failure

1. Non-essential electrical equipment.....OFF
2. Land.....AT NEAREST AIRPORT

#### NOTE

*The Jabiru Engine does not require external power to run: the engine will not stop if the aircraft battery runs flat.*

### Overvoltage

1. Electrical equipment.....ALL ON – MONITOR VOLTAGE
2. RPM.....REDUCE – MONITOR VOLTAGE
3. Land.....AS SOON AS PRACTICAL

### Inadvertent Spin

Intentional spins are prohibited in this aircraft. Should an inadvertent spin occur, the following recovery procedure should be used:

1. **Retard the throttle to idle**
2. **Centralise ailerons**
3. **Apply and hold full rudder opposite to the direction of rotation**
4. **Move stick progressively forward far enough to break stall**
5. **Hold these control inputs until rotation stops**
6. **As rotation stops, centralise rudder and make a positive, smooth recovery from the resulting dive**

#### WARNING

*If the spin is encountered with flaps extended, DO NOT retract flaps until rotation ceases. Premature flap retraction will delay recovery.*

### Inadvertent Icing Encounter

1. Carburettor heat.....ON
2. Altitude.....REDUCE IF SAFE
3. Aircraft position / heading.....TURN BACK
4. Aircraft Performance.....MONITOR

Flight into known icing conditions is prohibited. If icing is inadvertently encountered, change flight level or turn back to a region less conducive to icing. Monitor ice formation on the airframe and its effects on aircraft performance.



### Inadvertent Operation in Light Rain

1. RPM.....REDUCE: 2200 – 2400 RPM
2. Flaps.....TAKEOFF (First Stage)
3. Carburettor heat.....ON
4. Aircraft position / heading.....AWAY FROM RAIN

#### WARNING

*The J120-C is not designed or approved to fly in heavy rain. The above is included for inadvertent operation in light rain only.*

### Loss of Primary Instruments

1. Circuit breakers.....CHECK. RE-SET ONCE ONLY
2. Master switch.....CYCLE OFF-ON
3. Land.....AS SOON AS PRACTICAL

#### WARNING

*Breakers should only be re-set once. If there is a serious fault in an electrical system repeated re-setting of the breaker can result in an electrical fire.*

### Landing With a Flat Main Tyre

1. Landing Area.....SUITABLE
2. Approach.....NORMAL
3. Wing Flaps.....FULL DOWN
4. Touchdown.....GOOD TYRE(S) FIRST, hold aircraft off flat tyre as long as possible with aileron and/or elevator control inputs
5. Ignition.....OFF
6. Fuel Shutoff Valve.....OFF
7. Master Switch.....OFF



## Loss of Flight Controls

It is a requirement of the design standard that the following section be included in this manual, however such failures are extremely rare. As always, the 3 key rules apply:

1. **Maintain** Aircraft Control.
2. **Analyse** the situation before taking appropriate action. Don't act without thinking.
3. **Land** as soon as practicable.

Primary flight controls failures can potentially be caused by the following:

1. Failure caused when either end of the cable becomes free of its clamp
2. Failure of the cable connecting hardware (bolts, rod ends etc)
3. Failure of the cable itself.
4. Jamming of the controls within the cabin
5. Jamming of the external controls
6. Structural failure of the control
7. Failure of autopilot mechanism

In an emergency the secondary effect of controls may be used to direct the aircraft:

1. The secondary effect of the rudder is to roll the aircraft. Loss of aileron control can be partially addressed through the use of the rudder.
2. The secondary effect of the aileron is to yaw the aircraft. Loss of rudder control can be partially addressed through the use of the ailerons.
3. The trim mechanism is separate to the elevator system and can be used to control the pitch and attitude of the aircraft.
4. In some cases the autopilot mechanism (where equipped) may still function and can be used to control the aircraft.
5. Wing flap position and engine power setting also affect the pitch of the aircraft and can be used to assist in control.

In some cases, shaking a jammed control can free it. However it can also potentially exacerbate the problem. Shaking is therefore not recommended until other troubleshooting techniques have been attempted.

The following steps are recommended:

1. Secondary control.....APPLY
2. Cabin end of control cable ..... CHECK CLAMP & HARDWARE
3. Control mechanism inside cabin ..... CHECK. Clear any obstructions
4. Control..... SHAKE
5. Brute Force..... APPLY
6. Land ..... AS SOON AS PRACTICAL

### WARNING

*Where possible have a passenger carry out checks. Complicated or awkward trouble-shooting measures which divert the pilot's attention should be avoided if possible.*



## 4. NORMAL PROCEDURES

### 4.1 GENERAL

Section 4 of this handbook describes the procedures to be adopted for normal operations of the J120-C aircraft.

The procedures are arranged in the sequence considered to be the most desirable and therefore steps should be performed in the order listed unless good reasons for a deviation exist.

### 4.2 SPEEDS FOR NORMAL OPERATION

Unless otherwise noted, the following speeds are based on a maximum weight of 500 kg (1102lb) and may be used for any lesser weight.

#### Take-Off:

T.O.S.S. (Speed @ 50 ft) .....	65 KIAS
Normal Climb Out.....	70 KIAS (Take Off Flap)

#### Climb, Flaps Up:

Initial (scheduled climb).....	70 KIAS
Enroute .....	70-80 KIAS

#### Landing Approach:

$V_{REF}$ (Speed @ 50 ft).....	65 KIAS
Balked Landing .....	65 KIAS Initially

#### Maximum Recommended in Turbulence:

All Weights .....	112 KIAS
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#### 4.2.1 Best Angle of Climb Speed

$V_X$ – Best angle of climb speed.....	65 KIAS
--	---------

#### 4.2.2 Best Rate of Climb Speed

$V_Y$ – Best Rate of climb speed .....	68 KIAS
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### 4.3 PREFLIGHT INSPECTION

Before flight, a careful visual inspection is to be carried out to ensure that the aircraft and its systems are serviceable. The following Figure is to be used in conjunction with the preflight inspection checklist:

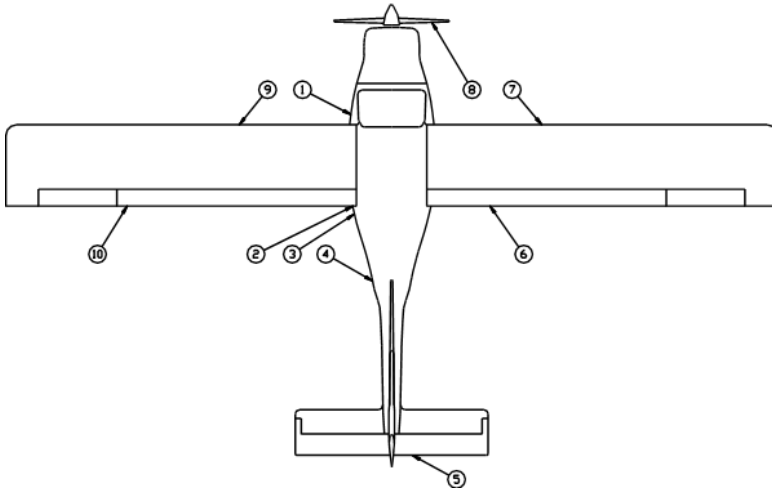


Figure 4-1. Pre-flight Inspection

#### 1. Cockpit

Ignition Switches.....	OFF
Control lock (if fitted).....	REMOVE
Fuel .....	CHECK CONTENTS
Fuel valve .....	ON
Master switch.....	ON
Alternator Warning Light .....	CONFIRM ON Before Start
Master Switch .....	OFF
Aileron and elevator cables & fasteners ...	CHECK
Rudder and nose wheel steering linkage	CHECK
Rudder centring springs.....	CHECK
Controls (all) .....	CHECK full travel, free movement.
Harnesses & Seats .....	CHECK CONDITION
Windshield.....	CLEANLINESS
Cockpit area .....	GENERAL CONDITION
Loose objects .....	SECURE
Cockpit Doors/Latches.....	CONDITION & OPERATION
Flight Manual .....	AVAILABLE

#### 2. Left Undercarriage

Mount bolts.....	CHECK SECURE*
Tyre .....	CHECK CONDITION / INFLATION

\* - Lock the hand brake on, then pull the aircraft forwards. Some flexing of the undercarriage legs is normal, but there should be no movement of the top of the leg relative to the fuselage.



**3. Fuel**

- Quantity in both tanks ..... Check
- Fuel caps ..... Secure
- Water Check ..... Both tanks and header tank

**4. Static Source**

- Static Source..... CHECK FOR BLOCKAGE

**5. Empennage**

- Tail tie-down..... DISCONNECT
- Control surfaces..... CHECK Security & Full & Free Movement
- Rudder, Elevator & Trim Cables..... CHECK Security & Full & Free Movement

**6. Right Wing – Trailing Edge**

- Aileron ..... CHECK Security & Full & Free Movement
- Flap..... CHECK Security
- Control rods & cables ..... CHECK Security. Check rod ends for freedom of rotation & excess movement.

**7. Right Wing**

- Wing Tie-Down ..... DISCONNECT
- Wing Strut Mount Bolts..... CHECK Security\*\*
- Wing Root Mount Bolts..... CHECK Security\*\*\*
- Pitot Tube ..... REMOVE COVER, CHECK for blockage.

\*\* - Wing strut bolts must not be tightened. Nut should just bear on washer.

\*\*\* - Holding the wingtip, push the tip up & down, forwards & backwards. If a wing / strut attachment is degrading, slop will be felt.

**8. Nose**

- Propeller & Spinner ..... CHECK for nicks & security
- Cowl..... CHECK Security, rubbing on engine.
- Engine Oil ..... CHECK using oil filler door.
- Nose Wheel ..... CHECK condition & pressure.

**9. Left Wing**

- Wing Tie-Down ..... DISCONNECT
- Wing Strut Mount Bolts..... CHECK Security\*\*
- Wing Root Mount Bolts..... CHECK Security\*\*\*

**10. Left Wing – Trailing Edge**

- Aileron ..... CHECK Security & Full & Free Movement
- Flap..... CHECK Security
- Control rods & cables ..... CHECK Security. Check rod ends for freedom of rotation & excess movement.

**11. “Pulling Through” The Engine**

Before the first flight of the day the engine must be “pulled through” by hand. This is the process of turning the engine over by turning the propeller by hand. The compression of each cylinder in turn will be felt a resistance as the propeller is turned. The engine should be rotated for a count of at least 8 compressions.



Master Switch .....	OFF
Ignitions .....	OFF
Throttle .....	Closed
Propeller .....	TURN by hand & observe engine for odd noises or heavy movements. Check for regular compression.

**CAUTION:**

Prior to pulling through the propeller by hand, the engine must be cold, both ignition circuits & the Master Switch must be switched OFF, the brakes applied & throttle closed.

**WARNING**

**A hot engine may fire with the ignition/s switched OFF.**

**DO NOT pull through a hot engine.**

**CAUTION**

Several causes of irregular compression – such as poorly sealing valves – can lead to extensive engine damage if not addressed. The Jabiru 2200 Engine Instruction & Maintenance Manual provides additional details.



#### 4.4 NORMAL PROCEDURES CHECK LISTS

##### 4.4.1 Before Starting Engine

Pre flight Inspection.....	COMPLETED
Passenger Briefing.....	COMPLETED
Harnesses.....	SECURE
Brakes .....	ON/PARK
Avionics .....	OFF
Circuit Breakers .....	IN
Fuel Level Warning Light (if fitted) .....	CHECK OPERATION using test switch

##### 4.4.2 Starting Engine - Cold

Master Switch .....	ON
Fuel Shutoff Valve.....	ON
Carburettor Heat .....	OFF
Choke .....	ON*
Throttle.....	CLOSED
Fuel Pump .....	ON
Ignition switches.....	ON
Starter.....	ENGAGE when engine fires RELEASE**
Oil Pressure .....	CHECK (pressure to be indicated within 10 secs)
Choke .....	Closed
Throttle .....	900 – 1000 RPM
Alternator Warning Light.....	CHECK OFF
Avionics .....	ON

\* - If the engine is hot, proceed as for cold engine, but do not use choke.

\*\* - If the engine is turning at less than 300 RPM it will not start.

##### 4.4.3 Taxiing

Power .....	1000-1200rpm
Speed .....	FAST WALKING PACE MAXIMUM
Strobe .....	ON
Landing Lights.....	OFF UNTIL ENTERING RUNWAY
Position.....	STAY RIGHT on taxiways
Carburettor heat.....	AS REQUIRED
Brakes .....	AS REQUIRED. Do not apply continuously.

If required, brakes should be applied periodically: allow the speed to build up to a fast walking pace then apply brakes to reduce to a slow walking pace. Release the brakes and allow the speed to gradually build up again. This allows the brakes time to cool down between applications & minimises wear.

For more details regarding taxiing refer to section 8.2





**4.4.4 Before Take-Off**

Park Brake..... ON

**Ground Check & Run Up**

Warm Up ..... 1000-1200 RPM avoid prolonged idle at low RPM  
 Ignition Check..... 2000 RPM Both-L-Both-R-Both. Max drop 100RPM  
 Carburettor heat..... 2000 RPM – ON – slight drop in RPM  
 Carburettor heat ..... 2000 RPM – OFF – RPM restored  
 Power Check ..... 2850 RPM +/- 150 RPM  
 Idle Check ..... 700 – 900 RPM  
 Trim ..... SET – Neutral

**Pre Take-Off**

Master Switch ..... ON  
 Ignition switches ..... BOTH ON  
 Fuel Shutoff Valve ..... ON  
 Fuel Quantity ..... CHECK sufficient for task  
 Fuel Pump ..... ON  
 Flaps ..... TAKE OFF (first stage)  
 Instruments..... SET AND CHECK ALL  
 Switches ..... SELECTED as required  
 Circuit Breakers ..... CHECK  
 Controls ..... FULL & FREE TRAVEL, CORRECT SENSE  
 Hatches ..... CLOSED & LOCKED  
 Harnesses ..... SECURE all seat belts correctly fastened and adjusted  
 Oil temperature ..... ABOVE 40°C (104°F)

**4.4.5 Take-Off**

Carburettor heat..... OFF  
 Throttle ..... FULL OPEN  
 Elevator Control..... NEUTRAL  
 Directional Control ..... NOSEWHEEL STEERING & RUDDER  
 Rotate..... 30 – 40 KIAS raise nosewheel clear of ground  
 Take Off Safety Speed..... 66 KIAS  
 Accelerate to Climb Speed..... 70 KIAS  
 Flaps ..... UP... Accelerate to 70 KIAS  
 Fuel Pump ..... OFF at top of climb.  
 Power ..... SET as required.

**4.4.6 Initial Climb**

Throttle ..... FULL OPEN  
 Airspeed ..... 70 KIAS

**4.4.7 Cruise**

75% Power ..... 2800 RPM (14 L/hr)

**4.4.8 Descent**

Power ..... As required  
 Carburettor heat..... As required

**4.4.9 Before Landing (and flight below 1000ft AGL)**

Brakes ..... OFF  
 Harnesses ..... SECURE



Fuel Pump .....ON

**4.4.10 Landing**

Airspeed @ 50ft .....63 KIAS  
 Wing Flaps .....FULL  
 Directional Control.....RUDDER & NOSEWHEEL STEERING  
 Power .....AS REQUIRED  
 Touchdown ..... Main wheels first  
 Braking.....AS REQUIRED

**NOTE**

*If the aircraft is contaminated by build up of insects or other debris, increase approach speed @ 50ft to 68 KIAS*

**4.4.11 Baulked Landing**

Power .....FULL THROTTLE  
 Carburettor heat .....COLD  
 Wing Flaps.....RETRACT **SLOWLY**  
 Airspeed.....ESTABLISH NORMAL CLIMB SPEED

**4.4.12 After Landing/Securing**

Wing Flaps .....UP  
 Fuel Pump .....OFF  
 Parking Brake .....ON/AS REQUIRED  
 Avionics .....OFF  
 Ignition .....OFF  
 Master Switch .....OFF  
 Controls .....SECURE

**4.4.13 Engine Management – Ground Running**

The 2200B engine fitted to the J120-C is cooled by air flowing over the engine and oil cooler. During ground running care must be taken to ensure that there is adequate airflow and that safe engine temperatures are maintained. The guidelines presented below will assist in controlling temperatures.

- Minimise ground running times – especially in hot weather<sup>3</sup>.
- Carry out as many checks as possible before starting the engine.
- Always carry out engine run-up tests with the aircraft pointing into wind.
- In hot weather, after performing run-up checks, leave the aircraft pointing into wind and idling at 1200rpm for 30 seconds to aid cooling.
- If the aircraft is required to wait – such as for runway clearance – temperatures must be monitored, and if they approach ground running limits (listed in Section 2 of this flight manual & displayed as yellow markings on engine gauges) the aircraft must be turned into wind or shut down to prevent any further temperature increase.
- Wind must be coming from within approximately 45° of the aircraft heading to be effective in aiding engine cooling.
- If there is no wind or low wind the engine must be shut down if ground-running temperature limits are reached.

<sup>3</sup> 30°C and above



#### 4.5 Advanced Procedures

The following procedures are advanced techniques designed for special circumstances. To carry them out successfully the pilot must be well trained and experienced in the particular aircraft being used. Before attempting them the pilot must realistically assess the circumstances and their skills.

#### WARNING

*The following procedures are used in less than optimal conditions. They are inherently less safe than normal procedures. The operator attempts them at their own risk.*

##### 4.5.1 Short Field Take-Off

Crew .....	HARNESS SECURE / BRACE
Aircraft Weight .....	MINIMISE
Ground Inspection .....	COMPLETE
Measure runway length.....	MARK TAKE-OFF ABORT POINT
Wheel Spats .....	ON FOR LONG GRASS OFF FOR SOFT SURFACE
Elevator Trim .....	NEUTRAL
Fuel Tap .....	ON
Fuel Pump .....	ON
Carburettor Heat .....	OFF (COLD)
Wing Flaps.....	TAKE OFF (1 <sup>st</sup> Stage)
Position.....	FOR MAX POSSIBLE RUNWAY LENGTH
Engine .....	WARM THOROUGHLY
Brakes .....	HOLD FULL ON BY HAND
Throttle .....	FULL. Wait for engine RPM to peak
Brakes .....	RELEASE
Elevator .....	FULL BACK until nose wheel lifts 25mm (1"). AS REQUIRED after
Abort.....	IF NOT AIRBORNE BY ABORT POINT
Rotate.....	AS SOON AS POSSIBLE
Lift-off .....	BEST ANGLE OF CLIMB SPEED until clear of obstacles.

#### NOTE

*Short field take-offs are potentially high risk manoeuvres. Reducing rotation and climb speeds lower the aircraft's safety margins, especially in a cross wind, wind gust or if the engine fails. Where possible, they should only be attempted in good conditions. If students are being taught short field take-offs the weather conditions must be appropriate and a long runway used.*

#### WARNING

*If high power is applied when the propeller is over loose gravel, grass etc propeller damage will result.*

#### WARNING

*It is possible to over-rotate the aircraft in ground effect to a dangerously nose-high pitch, resulting in a stall once clear of ground effect. Allow pitch angle & airspeed to stabilise out of ground effect before applying aggressive pitch inputs.*



**4.5.2 Short Field Landing**

Approach .....	FLAT. Aim for wheels to touch as near to the target point as possible. Approach under power.
Power .....	APPROX 1500 RPM
Airspeed.....	55 KIAS
Touch-down .....	AT TARGET POINT. Wheel brakes are the best way to slow the aircraft. Touching down positively and slightly fast then braking heavily will give shortest landing distances.
Power .....	IDLE
Brakes .....	HEAVY. DO NOT LOCK WHEELS.

**NOTE**

*Short field landings are potentially high risk manoeuvres. Reducing approach speeds and approaching under power lower the aircraft's safety margins, especially in a wind gust or if the engine fails. Where possible, they should only be attempted in good conditions. If students are being taught short field landings the weather conditions must be appropriate and a displaced threshold used.*

**NOTE**

*Short field approaches require great precision in airspeed and height control. Pilots must be prepared to go-around early.*

**NOTE**

*After heavy braking such as that required for a short field landing brake temperatures will rise dramatically and afterwards brake effectiveness may be significantly reduced.*

**WARNING**

*If the aircraft overruns the runway stop the engine to minimise propeller and engine damage*

**4.5.3 Soft Field Take-Off**

Crew .....	HARNESS SECURE / BRACE
Aircraft Weight .....	MINIMISE
Ground Inspection .....	COMPLETE
Measure runway length .....	MARK TAKE-OFF ABORT POINT
Wheel Spats.....	OFF FOR SOFT SURFACE
Elevator Trim.....	NEUTRAL
Fuel Tap.....	ON
Fuel Pump .....	ON
Carburettor Heat .....	OFF (COLD)
Position .....	FOR MAX POSSIBLE RUNWAY LENGTH
Engine .....	WARM THOROUGHLY
Brakes .....	HOLD FULL ON BY HAND
Throttle.....	FULL. Wait for engine RPM to peak
Brakes .....	RELEASE
Elevator.....	FULL BACK until nose wheel lifts 25mm (1"). AS REQUIRED after
Wing Flaps.....	UP DURING INITIAL GROUND ROLL
Abort.....	IF NOT AIRBORNE BY ABORT POINT
Wing Flaps.....	FULL DOWN at 48-50 KIAS
Rotate.....	AS SOON AS POSSIBLE
Lift-off.....	BEST ANGLE OF CLIMB SPEED until clear of obstacles.



**NOTE**

*Soft field take-offs are potentially high risk manoeuvres with reduced safety margins, especially in a cross wind, wind gust or if the engine fails. Where possible, they should only be attempted in good conditions. If students are being taught soft field take-offs the weather conditions must be appropriate and a long runway used.*

**WARNING**

*It is possible to over-rotate the aircraft in ground effect to a dangerously nose-high pitch, resulting in a stall once clear of ground effect. Allow pitch angle & airspeed to stabilise out of ground effect before applying aggressive pitch inputs.*

**WARNING**

*If high power is applied when the propeller is over loose gravel, grass etc propeller damage will result.*

**4.5.4 Soft Field Landing**

Crew ..... HARNESS SECURE / BRACE

**Surface Test:**

Wing Flaps..... TAKE-OFF (1<sup>st</sup> Stage)  
Approach ..... FLAT. Aim for wheels to touch as near to the target point as possible. Approach under power.  
Power ..... APPROX 1500 RPM  
Airspeed ..... 5 KIAS ABOVE STALL  
Main Wheels ..... TOUCH.  
Go-Around..... EXECUTE

**Landing:**

Wing Flaps..... FULL  
Approach ..... FLAT. Aim for wheels to touch as near to the target point as possible. Approach under power.  
Power ..... APPROX 1500 RPM  
Touch Down ..... MINIMUM / STALL SPEED  
Go-Around..... APPLY IF NEEDED  
Power ..... IDLE  
Brakes ..... AS REQUIRED

**NOTE**

*Soft field landings are high risk manoeuvres with potential for the aircraft to flip or become uncontrollable due to the soft surface. Where possible, they should only be attempted on a known runway in good conditions. If students are being taught soft field landings the weather conditions must be appropriate and a long runway used.*

**NOTE**

*Soft field approaches require great precision in airspeed and height control. Pilots must be prepared to go-around early.*



**4.5.5 Crosswind Take-Off**

Normal take-off checks.....	COMPLETE
Aileron .....	POINT FULLY TOWARDS WIND.
Normal take-off procedure.....	APPLY
Aileron .....	EASE AS REQUIRED as speed increases
Nose wheel .....	ON GROUND to maintain directional control until approximately 45 KIAS.
Rotate & climb.....	CARRY OUT. Avoid aggressive pitch input until aircraft is clear of ground effect.

**4.5.6 Crosswind Landing – “Wing Low” Method**

Jabiru Aircraft recommend using the “wing low” method of landing in crosswinds as it allows the strength of the crosswind to be continually assessed during the final approach and is less likely to cause directional control issues on touch-down.

Wind Strength .....	CHECK using the wind sock.
Runway & Surrounds .....	ASSESS. If the crosswind is strong carry out a low pass over the runway to check for control authority, areas of sink or turbulence. Note trees, hangars, hills etc will cause turbulence. Consider displacing threshold to avoid turbulence if safe.
Wing Flaps.....	AS NEEDED. Landing with less flap angle increases approach speed and improves control authority. Angle of attack increases and approach angle decreases however.
Approach Speed .....	HIGH. Add 5 – 10 KIAS to improve control authority & stall speed margin.
Direction.....	CHOOSE. Pilots flying from the left (command) seat normally prefer a cross wind from the left.

**WARNING**

*Do not attempt to land with a tail-wind component.*

Runway Alignment.....	SET EARLY. Allow a long final leg.
Aileron on Final .....	APPLY: lower the wing on the wind side of the aircraft. i.e. if the wind is coming from the left apply left aileron & lower the left wing.
Rudder on Final .....	APPLY AS NEEDED to keep the aircraft aligned with the runway.
Control Authority .....	ASSESS. If the aircraft centreline cannot be held on the runway centreline during final the crosswind is too strong & the landing must be aborted.
Power .....	APPROX 1500 RPM
Touch-down .....	1 MAIN WHEEL FIRST: the wing low orientation is maintained during flare & landing. Align nose wheel with runway before the wheel touches.
Nose Wheel .....	LOWER EARLY. Do not hold off nose wheel in crosswind conditions: lower it to improve directional control.



Power ..... IDLE  
 Brakes ..... AS NEEDED. DO NOT LOCK WHEELS.  
 Aileron / Elevator Deflection..... MAINTAIN: in strong wind the aircraft must be "flown" during ground operations to minimise the risk of being flipped.  
 See Section 8.2

**NOTE**

*When flying with "crossed controls" such as left Aileron with right Rudder the aircraft will be out of balance and experience higher than normal drag. Descent rates will increase. Aircraft response to control inputs may be slower than normal.*

**4.5.7 Crosswind Landing – "Crab" Method**

Situation Assessment ..... AS FOR "WING LOW" METHOD  
 Aircraft positioning & configuration..... AS FOR "WING LOW" METHOD  
 Runway Alignment..... SET EARLY. Allow a long final leg.  
 On Final..... "CRAB" AIRCRAFT: Adjust aircraft heading so that its course over the ground aligns with the runway. The aircraft nose points off to the windward side. Aircraft is in balance.  
 Power ..... APPROX 1500 RPM  
 Wing into wind ..... LOWER BEFORE STRAIGHTENING  
 Touch-down..... STRAIGHTEN BEFORE TOUCHDOWN:  
 Use the rudder to align the aircraft with the runway just before the wheels touch.  
 Nose Wheel..... LOWER EARLY. Do not hold off nose wheel in crosswind conditions: lower it to improve directional control.  
 Power ..... IDLE  
 Brakes ..... AS NEEDED. DO NOT LOCK WHEELS.  
 Aileron / Elevator Deflection..... MAINTAIN: in strong wind the aircraft must be "flown" during ground operations to minimise the risk of being flipped.  
 See Section 8.2



#### 4.5.8 S-Turns

S-turns are a means of losing excess height during the landing approach to position the aircraft correctly for touch-down. Essentially the pilot flies the aircraft through a sequence of left and right turns within an arc of 90° left to 90° right of the desired heading. In a turn the aircraft has significantly higher drag than normal and so descent rates increase considerably. In addition the turns effectively increase the distance from the aircraft to the threshold, allowing more time to lose height.

Remember that stall speed increases with bank angle – in a 60° bank with full flaps the J120-C will stall in still air at around 66 KIAS. An airspeed margin of around 10 KIAS above stall speed is recommended – more in gusty or turbulent conditions.

Power .....	IDLE
Speed .....	76 KIAS
Flaps .....	FULL DOWN
Bank Angles .....	DO NOT EXCEED 60°
Ground Conditions .....	ALLOW FOR TURBULENCE / GUSTS

#### WARNING

*Repeated banks at low height and relatively low speed can lead to a stall / spin accident if the pilot allows speed to drop too much. Monitor airspeed, bank & pitch angles carefully; note the raised stall speed during banks. Initial training must be carried out at a safe altitude (recommended 8000' AGL) to allow time for recovery in the event of an inadvertent spin.*

#### 4.5.9 Side Slips

Side slips are a means of losing excess height during the approach to landing. A side slip is where a pilot deliberately inputs “crossed controls” – i.e. right rudder with left aileron. Note that this is an extension of the “wing low” method of carrying out cross wind landings – except instead of applying the minimum control input to direct the aircraft along the runway the pilot applies excess inputs resulting in an exaggerated “wing low” configuration. With this combination of controls the aircraft will experience relatively high drag and associated sink rates. Because of the propeller wash most aircraft will slip better in one direction than another – typically a J120-C will prefer to be configured with the left wing low – i.e. apply left aileron and right rudder.

Power .....	IDLE
Speed .....	76 KIAS
Flaps .....	FULL DOWN
Bank Angles .....	DO NOT EXCEED 60°
Ground Conditions .....	ALLOW FOR TURBULENCE / GUSTS
Recover / straighten .....	EARLY: aircraft will take time to recover

#### WARNING

*Deliberately crossing controls at low height and relatively low speed can lead to a stall / spin accident if the pilot allows speed to drop too much. In this configuration the aircraft has high drag and will require time to recover and to respond to new inputs. Monitor airspeed carefully. Aggressive slipping should be avoided as it may cause turbulence and vibration over the tail. Initial training must be carried out at a safe altitude (recommended 8000' AGL) to allow time for recovery in the event of an inadvertent spin.*





## 5. PERFORMANCE

### 5.1 TAKE OFF AND LANDING DISTANCES

Take-Off Distance	400 m
Landing Distance	300 m

**Note:**

All distances quoted are for an aircraft at gross weight, operating from a paved runway surface at sea level in an ICAO standard atmosphere.

### 5.2 RATE OF CLIMB

Rate of Climb at Sea Level <sup>4</sup>	500 fpm
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**Note:**

All distances quoted are for an aircraft at gross weight, operating from a paved runway surface at sea level in an ICAO standard atmosphere.

### 5.3 CRUISE SPEEDS / RPM / FUEL CONSUMPTION

- Cruise speed values given are based on tests carried out at gross aircraft weight, at sea level and around 28°C. Values are averaged. Actual values will vary slightly from one aircraft to the next. Values used for flight planning should be based on previous experience with the specific aircraft wherever possible.
- Fuel consumption values given are averaged. Actual values will vary slightly from one aircraft to the next. Values used for flight planning should be based on previous experience with the specific aircraft wherever possible.

RPM	Fuel Consumption (Litres/hr)	IAS (Knots)
2600	11	100
2700	13.5	107
2800	15	105
2850	16	110
2900	17	115
3000	18	118

<sup>4</sup> At Gross Weight, ICAO Standard Atmosphere



#### 5.4 Airspeed Indicator System Calibration

**Conditions:**

**Power:** As required for level flight or maximum rated RPM as appropriate.

KIAS	KCAS		
	Flaps UP	Flaps Take-off	Flaps Landing
47	-	-	45
49	-	47	47
50	-	48	48
51	49	49	49
56	53	54	54
57	54	55	55
63	60	60	60
73	70	70	70
85	81	82	82
94	90	90	90
106	101	-	-
113	108	-	-
117	112	-	-
125	120	-	-
135	129	-	-
146	140	-	-



## 6. WEIGHT AND BALANCE INFORMATION

### 6.1 CENTRE OF GRAVITY LIMITS

Forward Limit:	1601-mm (63.03", 20%MAC) aft of datum up to & including 420 kg (926lb)  1661-mm (63.39", 26.1%MAC) aft of datum at 500kg (1190lb)  Linear variation between points.
Aft Limit	1695-mm (66.73", 29.5%) aft of datum at all weights
Datum	1403mm fwd of RHS Wing Leading Edge
Levelling Means	
Longitudinal	Spirit Level placed on the trim decal on the centre console.
Lateral	Spirit Level placed on the flap cross shaft.
Arms	
Arm for Front Seat Station	1688-mm aft of datum
Arm for Baggage On Shelf	2280-mm aft of datum
Fuel Station	2280-mm aft of datum

Table 6.4 – Centre of Gravity Limits

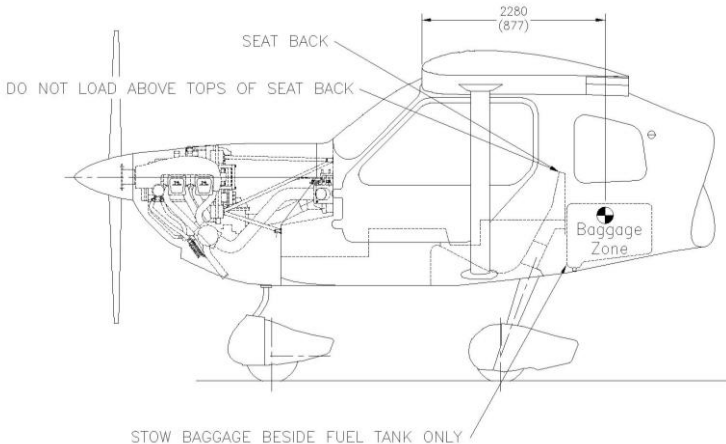


Figure 6.3.1 – Baggage Zones

Baggage is restrained using the straps fitted in the baggage areas.



6.2 MINIMUM EQUIPMENT LIST

System Instruments and/or Equipment	VFR Day	Remarks
<b>Communications</b>		
VHF Comm	A/R	As required per local operating regulations
<b>Electrical Power</b>		
Alternator	1	
Battery	1	
Voltage Indicator	1	
<b>Fire Protection</b>		
Portable Fire Extinguisher	A/R	As required per local operating regulations
<b>Flight Controls</b>		
Pitch Trim Indicator	1	
Pitch Trim System	1	
Flap Position Indicator	1	
Stall Warning System	1	
<b>Fuel</b>		
Fuel Quantity Indicator	1	Attached to translucent fuel tank inside cabin
Fuel On/Off Valve	1	
<b>Ice &amp; Rain Protection</b>		
Engine Alternate Air Induction System	1	
<b>Navigation &amp; Pitot Static</b>		



System Instruments and/or Equipment	VFR Day	Remarks
Altimeter	1	
Airspeed Indicator	1	
Magnetic Compass	1	
Time Piece	1	May be carried on the pilot
Turn Co-ordinator	A/R	As required per local operating regulations
Pitot/Static System	1	
Transponder	A/R	As required per local operating regulations
<b>Engine Indicating</b>		
Cylinder Head Temperature	1	
Tachometer	1	
Oil Pressure	1	
Oil Temperature	1	
Fuel Pressure	1	
Oil Quantity (Dip Stick)	1	
Caution Warning System	1	Fuel, electrical, and vacuum systems
<b>Approved Pilot's Operating Handbook</b>	1	

Insert Page 6.2 here



**Insert Page 6.3 here**



Insert Equipment List here.



### 6.2.1 Trim Sheets

A metric trim sheet has been provided. An example loading has been worked through for reference.

### 6.2.2 Trim Sheet Index Units

To use the trim sheets the aircraft's weight and balance information must be converted to "Trim Sheet Index Units" using the formula below:

$$\text{Trim Sheet Index Units} = \frac{\text{Aircraft Weight} \times (\text{Arm} - 1403)}{1000}$$

"Aircraft Weight" and "Arm" are written onto the aircraft's Load Data Sheet.

For example, an aircraft with "Aircraft Weight" of 260kg and "Arm" of 1590mm has a Trim Sheet Index Unit of 48.62 This is used for the starting point of using the Trim Sheets.

### Calculate Aircraft Weights

- 1-1 Use the Aircraft Empty Weight obtained from the latest aircraft weighing records to enter the vertical "Aircraft Empty Weight Scale" on right hand side of the chart.
- 1-2 Move horizontally to the left into the next scale which is the "Crew Weight" Scale.
- 1-3 Move vertically downward one line on this scale for each 10-kg of weight that is placed on the front seats, and mark a point.
- 1-4 Move horizontally to the left from the point made in Step 1-3 to enter the next scale which is the "Baggage Weight" Scale.
- 1-5 Move vertically downward one line on this scale for each 5-kg of weight that is placed in Baggage Zone and mark a point.
- 1-6 Move horizontally to the left from the point made in Step 1-7 to enter the next scale which is the "Fuel Quantity" Scale and mark a point, This point is the "Zero Fuel Weight Reference Point"
- 1-7 Move Horizontally to the left of the "Zero Fuel Reference Point" and Mark a "Zero Fuel Weight Line" across the "Aircraft Trim Condition" Graph.
- 1-8 From the "Zero Fuel Point" on the "Fuel Quantity Scale" (marked in Step 1-8), move vertically downward one line for each 10-*litres* of fuel being carried at the take-off condition. Mark this "Take-Off Fuel Point" on the scale.
- 1-9 Move horizontally to the left, and mark a "Take-Off Fuel Weight Line" across the "Aircraft Trim Condition" graph.





### Calculating the Operating CG Locations

- 2-1. Take the calculated Empty Weight Trim Index and mark it's position on the Aircraft Index Units Ladder at the top of the sheet.
- 2-2 Draw a vertical line down from the point marked above to intersect with a sloping line in the "Crew Index Units" scale and mark this point.
- 2-3 Calculate the weight of the crew and round this value to the nearest 10-kg.
- 2-4 Move horizontally to the right from the point marked in Step 2-2 one line for each 10-kg of load calculated. (i.e. 60-kg = 6 lines) and mark a point at this location.
- 2-5 Draw a vertical line down from the point marked above to intersect with a sloping line in the Baggage Area scale and mark this point.
- 2-6 Calculate the weight that will be placed Baggage Area and round this value to the nearest 5-kg.
- 2-7 Move horizontally to the right from the point marked in Step 2-5 one line for each 5-kg of load calculated. (i.e. 20-kg = 4 lines) and mark a point at this location.
- 2-8 Drop a vertical line down from the point marked in Step 2-10 to intersect a sloping line in "Fuel Chart", and mark a point at this location.
- 2-9 Continue the Vertical Line began in Step 2-11 down to intersect with the "Zero Fuel Weight Line" drawn in Step 1-7. mark this point as the "ZERO FUEL Condition"
- 2-10 Move horizontally to the right from the point marked in Step 2-11 in the "Take-Off Fuel Box", one line for each 10 liters of take-off fuel, and mark this point.
- 2-11 Move vertically downward from the take-off fuel point marked in Step 2-13 to intersect with the "Take-Off Fuel Weight Line" marked in Step 1-9. Mark this point the "Take-Off Condition"

#### 6.2.3 Allowable Loading Conditions

An allowable loading condition exists when both the "Zero Fuel Condition", and the "Take-Off Condition" fall with the area bounded by the Line in the Aircraft Trim Conditions Box.

For reference, the example below shows two 80kg people, 5kg in Baggage Zone and 60L of fuel. The aircraft's starting Index Unit is 48.6 at 260kg.

# EXAMPLE

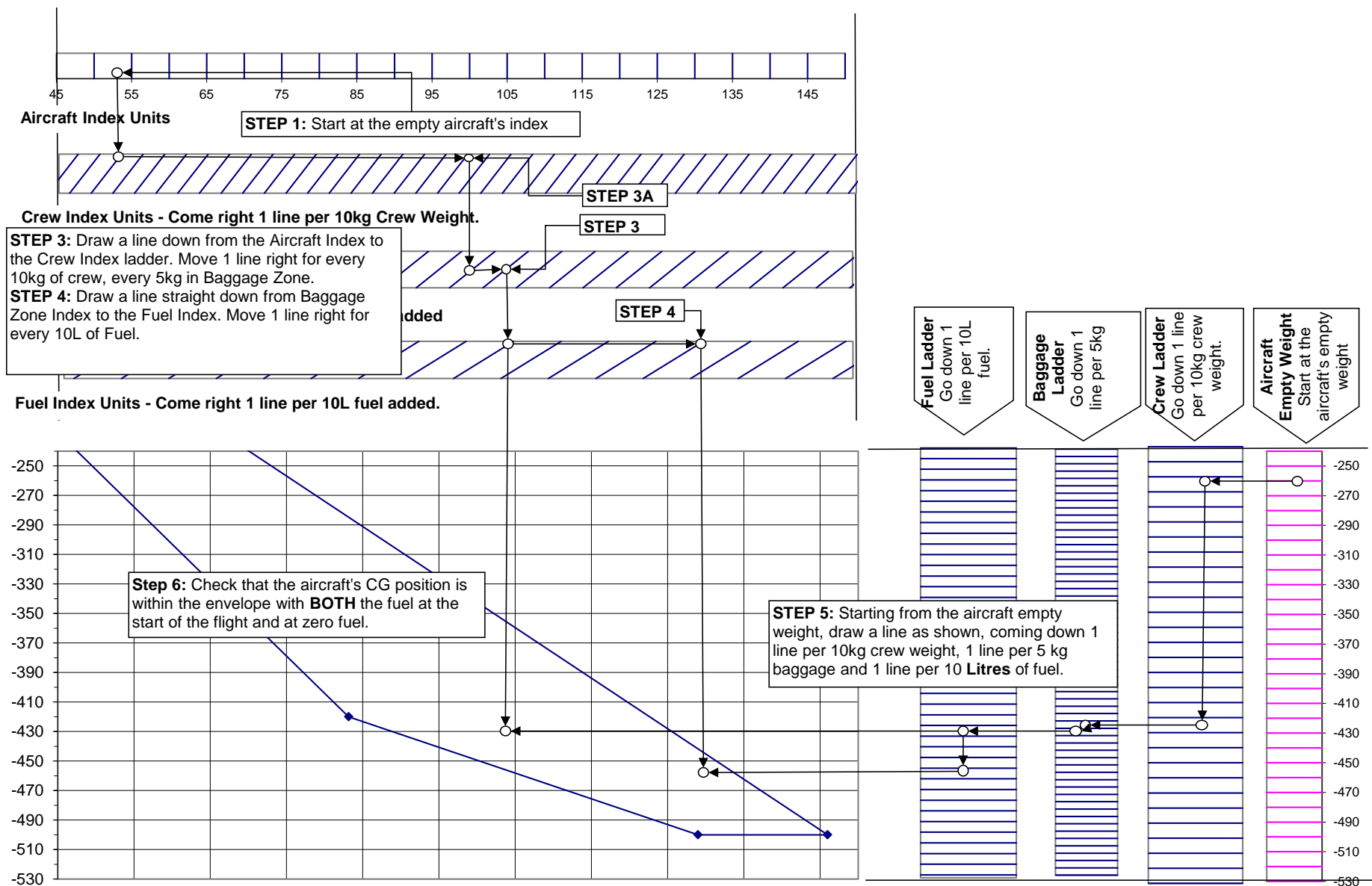


Figure 6-3a – Loading Trim Sheet Example



**ORIGINAL**

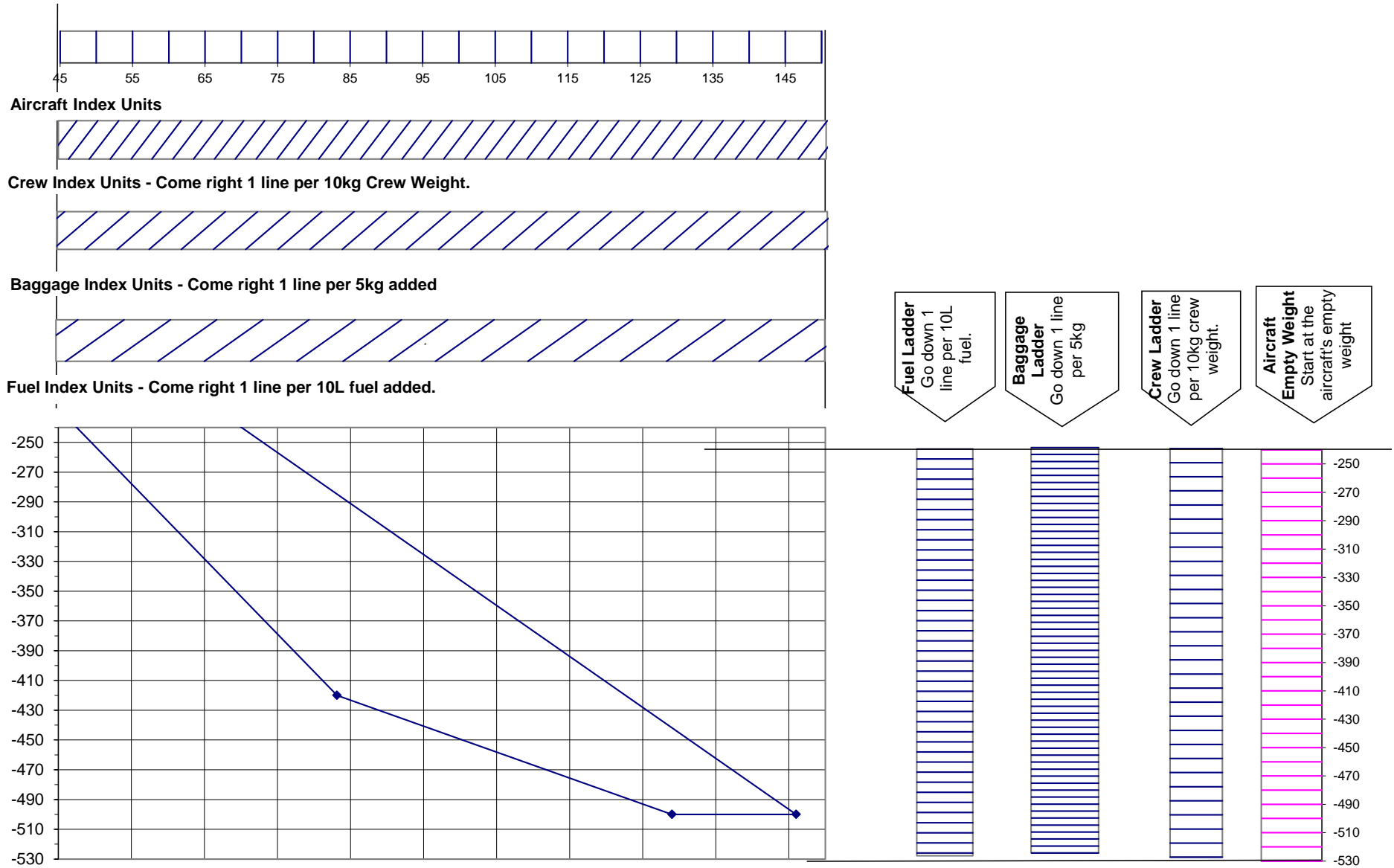


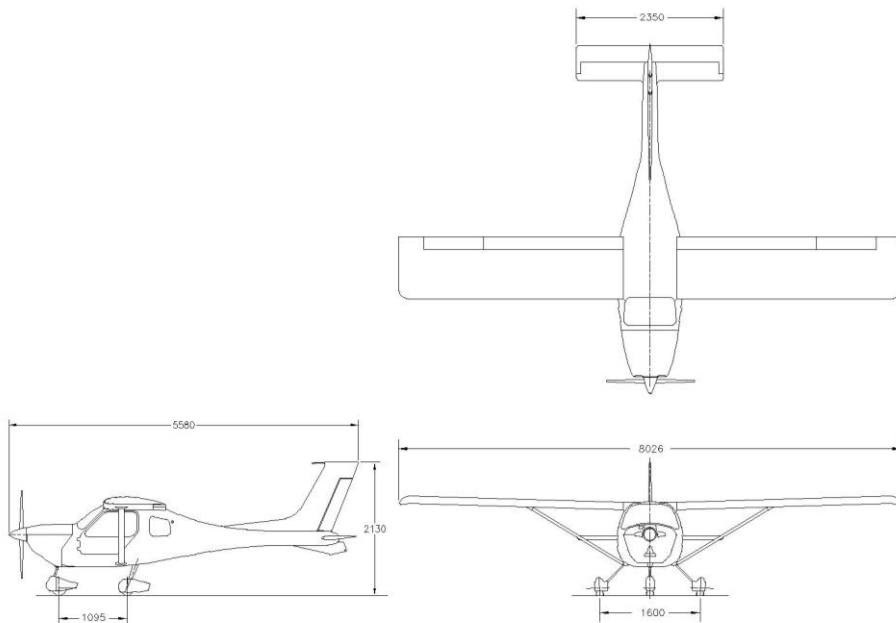
Figure 6.3b – Blank Trim Sheet



## 7. DESCRIPTION OF AIRPLANE AND SYSTEMS

### 7.1 GENERAL

The Jabiru J120-C is a high wing strut braced monoplane. The aircraft layout is shown below.



**Figure 1-1 Three View of the J120**

**Note: All dimensions in millimetres**



## 7.2 AIRFRAME

The fuselage, engine cowlings, wings, empennage, main undercarriage legs and all control surfaces are constructed of fibreglass-epoxy resin composite. The nose leg, engine mount and wing struts are the only large structural elements made from metallic materials. The aircraft uses a tricycle, nose-wheel undercarriage layout and is equipped with wheel spats (fairings) as standard equipment.

Main fuel tanks are built into the wings while a smaller header tank is fitted behind the sound curtain at the rear of the cabin.

## 7.3 FLIGHT CONTROLS

The J120-C is equipped with conventional 3-axis controls; Ailerons, Rudder & Elevator. The aircraft is also equipped with wing flaps to reduce landing speed.

The ailerons are a differential design (they move upwards around twice as much as down) to reduce adverse yaw – the tendency for the aircraft to want to yaw right while banking left.

The wing flaps are a slotted design to provide maximum lift for minimum drag. Flaps are driven electrically via a switch on the instrument panel.

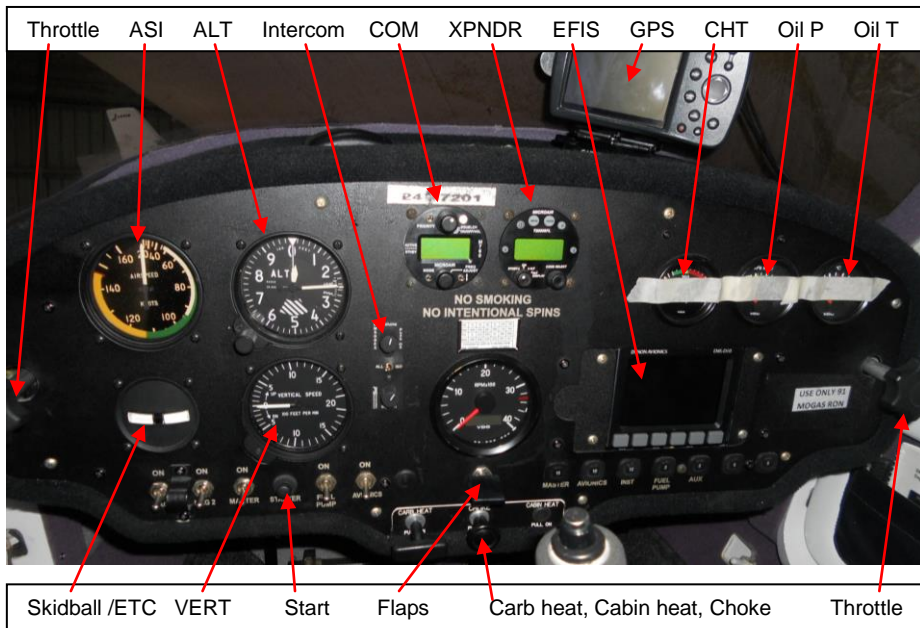
The aircraft uses a steerable nose wheel for ground operations – the rudder pedals are permanently connected to the nose leg so that it moves in concert. Main wheel brakes (non differential) with a lockable park brake are provided.

The aircraft is equipped with an elevator trim system to minimise pilot loads in different modes of flight. The system works by applying spring loads to the elevator control, holding it in place. The trim is very positive and if necessary the aircraft can be landed using the trim as the primary pitch control.

## 7.4 INSTRUMENT PANEL

The J120-C may be customised with several different instrument panels. The primary instruments are fitted in front of the pilot while radio equipment is located centrally. A typical layout is shown below – note that several optional instruments are fitted to this particular aircraft. While the type, number and arrangement of the instruments in a given aircraft will vary the general arrangement will be as shown:

- Throttles at either side of the panel
- Radio, transponder, near centre, GPS attached on top of panel
- Ignitions & start switches located in front of the pilot
- Pull controls for carburettor heat, cabin heat & choke in the centre of the panel at the bottom.
- Compass on the wing carry-through beam above the windscreen.
- Switch for the electric flaps in the centre of the panel near the bottom.
- “No Smoking” & “No Intentional Spins” placards on panel face.
- Fuel gauge attached to translucent tank inside cabin



## 7.5 FLIGHT INSTRUMENTS

### 7.5.1 Powerplant Instrument Markings

Instrument	Red Line Minimum Limit	Green Arc Normal Operating	Red Arc/Line Maximum Limit	Yellow Arc Precautionary Range
Tachometer	-	-	3300 RPM	-
Cylinder Head Temperature	-	Up to 180°C (356°F)	200°C (392°F)	180°C - 200°C (356° - 392°F)
Oil Pressure	80 kPa (11 psi)	220 - 525 kPa (31 - 76 psi)	525 kPa (76 psi)	80 - 220 kPa (11- 31psi)
Oil Temperature	15°C (59°F)	80 - 100°C (176° - 212°F)	118°C (244°F)	100°C - 118°C (212 °- 244°F)
Fuel Pressure	5 kPa (0.75psi)	5 - 20 kPa (0.75 - 3 psi)	20 kPa 3 psi	-
Voltage	-	10.5 - 15 Volts	-	-

Table 2.5



### 7.5.2 EFIS & EMS LIMITATIONS DISPLAY

Where aircraft are equipped with EFIS or EMS displays, they are programmed to display limitations and alarms etc as a part of their installation into the aircraft. These limitations must be displayed for the aircraft to comply with its certification basis. If adjustments are required to the displays the work must be carried out before further flight by an authorised person with reference to the user manuals for the instruments, and the following lists give the minimum information which must be displayed.

### 7.5.3 Required EFIS limitation displays:

- Never exceed speed,  $V_{NE}$  (Red line speed, top of yellow arc)
- Maximum structural cruising speed,  $V_C$  (Top of green arc, bottom of yellow arc)
- Maximum Flap Extension speed,  $V_{FE}$  (Top of white arc)
- Stall speed with full flap,  $V_{S0}$  (Bottom of white arc)
- Stall speed clean,  $V_{S1}$  (bottom of green arc)

### 7.5.4 Required EMS Displays:

- RPM Red line
- Maximum continuous CHT (Top of CHT green arc, bottom of yellow arc)
- Maximum Take-Off CHT (Red line for CHT, top of yellow arc – no more than 5 minutes)
- Maximum continuous Oil Temperature (Top of oil temp green arc, bottom of yellow arc)
- Maximum Take-Off Oil Temperature (Red line for oil temp, top of yellow arc)
- Minimum Fuel Pressure (start of green arc)
- Maximum Fuel Pressure (end of green arc)
- Minimum Idle Oil Pressure (Redline & start of yellow arc)
- Minimum Flight Oil Pressure (end of yellow arc, start of green arc)
- Maximum Oil Pressure (End of green arc)
- Minimum System Voltage (Bottom of green arc)
- Maximum System Voltage (top of green arc)

#### Note

**The display of these limitations are required for the aircraft's certification. It does not comply with the certification basis if these limits are missing or modified.**

## 7.6 Engine

Manufacturer: Jabiru Aircraft Pty Ltd  
Model: Jabiru 2200-B

## 7.7 Propeller

### 7.7.1 Jabiru Fixed Pitch Wooden Propeller

Manufacturer: Jabiru Aircraft Pty Ltd  
Model: C000262-D60P42  
Type: Wooden, Fixed Pitch  
Number of blades: 2  
Diameter: 1524 mm (60 in)  
Pitch: 1067 mm (42 in)  
Max RPM: 3300



### **7.7.2 Jabiru Fixed pitch Composite Scimitar Propeller**

Manufacturer:	Jabiru Aircraft Pty Ltd
Model:	4A482U0D
Type:	Composite, Fixed Pitch
Number of blades:	2
Diameter:	1524 mm (60 in)
Pitch (typical)	965 mm (38 in)
Max RPM:	3300

### **7.8 Fuel**

Grade:	Avgas 100LL Avgas 100/130 MOGAS with minimum Octane Rating of 95 RON <sup>1</sup> may be used. Do not use fuel additives such as Octane Boosters.
--------	--

### **7.9 Engine Oil**

Jabiru Aircraft approves lubricating oils of any brand name conforming to specifications MIL-L-6082 for straight mineral oil and MIL-L-22851 for ashless dispersant oil.



### **7.10 Placards**

The following placards are required, and are to be located in the proximity indicated. Each placard is to contain wording conforming with the illustrations. The shape and layout of production items may vary between individual aircraft. Consult the manufacturer for individual aircraft placard variations.








7.10.1 Cockpit Placards General

<p>Warning Placard P/No. 5A092A0D</p>	 <p>Fitted on the rear Face of the Forward Wing Spar Carry-through Beam in the Cabin Ceiling.</p>
<p>LSA Placard P/No. 5A060A0D</p>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>THIS AIRCRAFT WAS MANUFACTURED IN ACCORDANCE WITH LIGHT SPORT AIRCRAFT AIRWORTHINESS STANDARDS AND DOES NOT CONFORM TO STANDARD CATEGORY AIRWORTHINESS REQUIREMENTS.</p> </div> <p>Fitted on the rear Face of the Forward Wing Spar Carry-through Beam in the Cabin Ceiling.</p>
<p>No Intentional Spins. P/No. 5A072A0D</p>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>NO INTENTIONAL SPINS</p> </div> <p>Fit to Instrument Panel</p>
<p>No Aerobatics, No Operations in IMC. P/No 5A141A0D</p>	<div style="border: 2px solid black; padding: 5px; text-align: center;"> <p><b>AEROBATIC MANOEUVRES ARE PROHIBITED FLIGHT OPERATIONS IN IMC ARE PROHIBITED</b></p> </div> <p>Fit to Instrument Panel</p>
<p>Owners Manual P/No 5A075A0D</p>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>PILOT OPERATING HANDBOOK</p> </div> <p>Fitted to Inside of RH Door above the Door Pocket.</p>
<p>No Smoking P/No. 5A035A0D</p>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>NO SMOKING</p> </div> <p>Fit to instrument panel.</p>
<p>Door Open LHS P/No 5027094</p>	<div style="border: 2px solid black; padding: 5px; text-align: center;">  </div> <p>Fitted to the Outsides of LH Door Above the Door Catch Lever</p>



<p>Door Open RHS P/No 5028094</p>	<div style="text-align: center;">  </div> <p style="text-align: center;">Fitted to the outside of RH Door Above the Door Catch Level</p>																												
<p>Fuel Contents P/No. 5090064</p>	<div style="text-align: center;">  </div> <p style="text-align: center;">Fitted to centre of front face of fuel tank between seats</p>																												
<p>Compass Card P/No. 5123024</p>	<div style="text-align: center;"> <table border="1" data-bbox="471 480 818 663"> <tr> <td>For</td> <td>N</td> <td>30</td> <td>60</td> <td>E</td> <td>120</td> <td>150</td> </tr> <tr> <td>Steer</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>For</td> <td>S</td> <td>210</td> <td>240</td> <td>W</td> <td>300</td> <td>330</td> </tr> <tr> <td>Steer</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <p style="font-size: small;">Correction for radio on in standby mode Date <span style="float: right;">P/N 5123024</span></p> </div> <p style="text-align: center;">Fit in compass card holder attached to compass.</p>	For	N	30	60	E	120	150	Steer							For	S	210	240	W	300	330	Steer						
For	N	30	60	E	120	150																							
Steer																													
For	S	210	240	W	300	330																							
Steer																													
<p>Baggage P/No. 5A037A0D</p>	<div style="text-align: center;"> <div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p><u>BAGGAGE COMPARTMENT</u></p> <p>18KG MAXIMUM BEHIND EACH SEAT BACK</p> <p>TOTAL BAGGAGE CAPACITY – 36KG</p> </div> </div> <p style="text-align: center;">Fit to right side fuselage wall immediately below window.</p>																												
<p>Baggage P/No. 5111154</p>	<div style="text-align: center;"> <div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p><u>BAGGAGE</u></p> <p>LOAD BEHIND SEATS ONLY</p> <p>DO NOT LOAD AFT OF THIS POINT </p> <p>REFER TO SECTION 6 OF AIRCRAFT FLIGHT MANUAL WHEN LOADING TO DETERMINE AIRCRAFT TRIM.</p> </div> </div> <p style="text-align: center;">Fit to inside of fuselage on right side just below rear quarter window. Locate vertical line in line with rear of fuel tank.</p>																												



<p>Loading Limitations P/No 5118024</p>	<div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <p style="text-align: center;"><u>LOADING LIMITATIONS</u></p> <ol style="list-style-type: none"> <li>1. Maximum Gross weight of aircraft is not to exceed 500 kg.</li> <li>2. All baggage must be stowed either on the passenger seat, or on either side of the fuel tank below the level of the seat backs.</li> <li>3. Pilots must use Load &amp; Trim Sheet given in Section 6 of the Flight Manual to check trim.</li> </ol> </div> <p style="text-align: center;">Fitted on inside of fuselage of RHS of cabin below rear quarter window.</p>
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Table 2.15.1

▪ **Cockpit Controls**

<p>Trim Position P/No. 5024094 (1 OFF)</p>	<div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: 80%; text-align: center;"> <p>NOSE DOWN    NEUTRAL TRIM    NOSE UP    BRAKE ON</p> </div> <p style="text-align: center;">Fit to centre console beside of elevator fwd stop, above trim lever.</p>
<p>Fuel Tap Position P/No 502319N</p>	<div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 60%; text-align: center;"> </div> <p style="text-align: center;">Fitted on the centre console beside the Fuel Selector Valve</p>
<p>Carby Heat P/No 5A030A0D</p>	<div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%; text-align: center;"> </div> <p style="text-align: center;">Fitted to lower central section of instrument panel.</p>

Table 2.15.2




▪ **External Fuselage**

<p>Static Port P/No 5043094</p>	<div style="border: 2px solid black; padding: 5px; margin: 10px auto; width: 60%; text-align: center;"> <p><b>STATIC VENT KEEP CLEAR</b></p> </div> <p style="text-align: center;">Attach to LHS of Vertical Fin in line with Static Tube</p>
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<p>Fuel Grade- Wing Tanks P/No 5091064</p>	<p style="text-align: center;"><u>FUEL</u> AVGAS 100LL 65 LITRE CAPACITY EARTH ON POST</p> <p style="text-align: center;">Attach to fuselage adjacent to Fuel Filler Cap.</p>
<p>Nose Wheel Inflation. P/No. 5A017A0D</p>	<p style="text-align: center;">INFLATE NOSE WHEEL TO 28 psi (193 kPa)</p> <p style="text-align: center;">Attach to left side of nose wheel spat.</p>
<p>Main Wheel Inflation. P/No. 5A018A0D</p>	<p style="text-align: center;">INFLATE MAIN WHEEL TO 33 psi (228 kPa)</p> <p style="text-align: center;">Attach to outsides of main wheel spats</p>
<p>Engine Oil P/No. 5A008A0D</p>	<p style="text-align: center;">ENGINE OIL AEORSHELL W100 – SUMMER AEROSHELL 15W50 – WINTER OR EQUIVALENT AIRCRAFT GRADE DETERGENT ENGINE OIL DO NOT USE AUTOMOTIVE GRADE OILS</p> <p style="text-align: center;">Attach to inner face of door in top engine cowl.</p>
<p>Dipstick Inside P/No. 5A007A0D</p>	<p style="text-align: center;">DIPSTICK INSIDE</p> <p style="text-align: center;">Fit to outside of oil door in upper engine cowl.</p>
<p>Door Lean. P/No. 5A013A0D</p>	<p style="text-align: center;">DO NOT LEAN ON DOOR</p> <p style="text-align: center;">Fit to top of doors.</p>
<p>Wing Bolt Tightening P/No 5039094 Qty 8 Required</p>	<p style="text-align: center;"><b>DANGER DO NOT TIGHTEN</b></p> <p style="text-align: center;">Attach to the fuselage and wings beside each wing, and lift strut attachment fitting.</p>



<p>Earth on Post P/No. 5A066A0D</p>	<p style="text-align: center;"></p> <p style="text-align: center;">Attach to upper wing skin beside fuel filler earth post.</p>
<p>No Step P/No. 5A006A0D Qty 2 required.</p>	<p style="text-align: center;"></p> <p style="text-align: center;">Fit to top of main wheel spats</p>
<p>Earth on Exhaust P/No. 5029094</p>	<p style="text-align: center;"></p> <p style="text-align: center;">Attach to the lower fuselage on the pilot's side immediately above the exhaust outlet pipe.</p>

**Table 2.15.3**



## 8. HANDLING AND SERVICING

### 8.1 INTRODUCTION

This section of the manual provides information on how to handle and service the Jabiru J120-C.

### 8.2 GROUND HANDLING – TAXIING

When taxiing, it is important that speed and use of brakes be kept to a minimum. All controls must be utilized (see Figure below) to maintain directional control and balance; this is particularly important in windy conditions but is good practice at all times. Using the controls in this manner makes it less likely for a gust of wind to catch the aircraft and deflect or flip it.

The carburettor heat control knob should be pushed full IN (that is, NOT selected) during all ground operations unless heat is absolutely necessary.

Taxiing over loose gravel or cinders should be done at low engine speed to avoid abrasion and stone damage to the propeller.

DO NOT accelerate over loose gravel or cinders or propeller damage will result

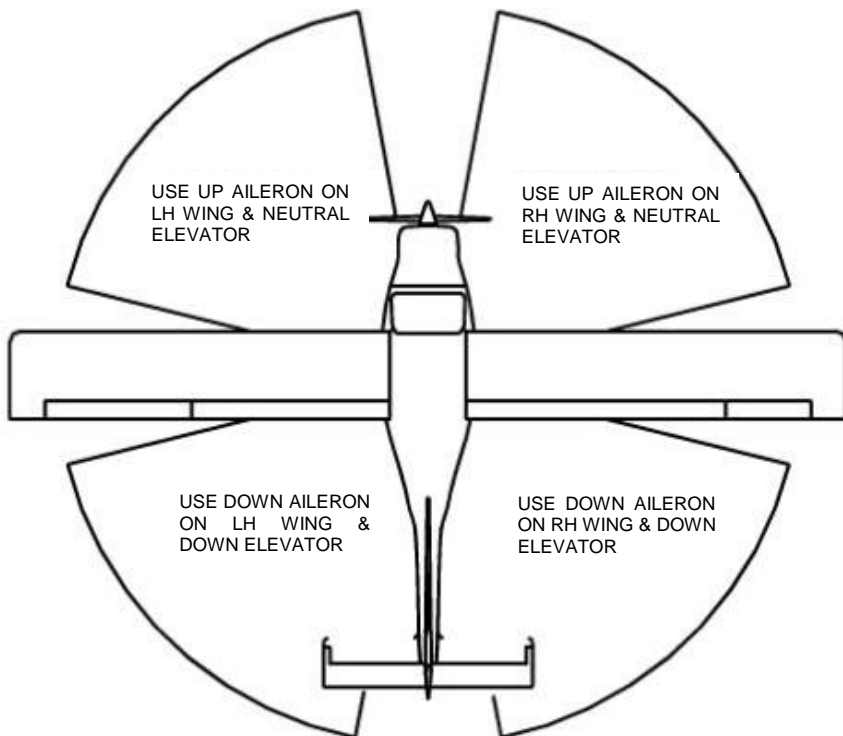


Figure 8-1 – Use Of Controls During Taxi



### 8.3 TOWING INSTRUCTIONS

The Jabiru J120-C is a relatively small and light aircraft and should be towed by hand only. The recommended method is to grasp the propeller immediately beside the spinner and tow the aircraft forwards from there. Alternatively the aircraft may be pushed backwards by pressing against the front of the horizontal tail close beside the fuselage.

#### WARNING

*Do not push on control surfaces*

### 8.4 Securing The Aircraft

#### 8.4.1 TIE-DOWN INSTRUCTIONS

The J120-C is equipped with 3 built-in tie-down points: 1 under the tail and another under each wing at the top of the wing strut. To secure the aircraft ropes must be tied from each of these to hard-points on the ground.

In very exposed conditions or where strong winds are predicted it is recommended that the aircraft be secured by a fourth point at the nose leg. Pass a rope around the nose leg within the nose leg housing and attach to a hard-point on the ground. Nose and tail ropes should not have slack but must not be too tight.

#### NOTE

*Always leave sufficient slack in the wing ropes so that the ropes would not be over-tight if a tyre deflated overnight.*

#### 8.4.2 Control Locks

In Australia it is a requirement that an aircraft anti-theft device be fitted. For the J120-C this consists of a small padlock which is passed through a throttle shaft, preventing high power settings being applied.

It is recommended that the crew harnesses are looped around the control yoke while the aircraft is unattended to prevent the controls blowing in the wind.

#### 8.4.3 Security

Whenever an aircraft is unattended it is recommended that valuables be removed or placed out of sight if possible. Ensure that all cabin doors are locked.



## 8.5 SERVICING

### 8.5.1 Fuelling

- a. Ensure the aircraft is parked on level ground with the handbrake OFF – to enable it to quickly be pushed clear in an emergency.
- b. Connect the main bowser earth wire to the tip of the engine exhaust
- c. Stand on a small ladder or similar so that the fuel level is clearly visible through the filler.
- d. Connect the earth wire of the pump nozzle to the earth point on the fuel filler BEFORE removing the tank filler cap.
- e. Remove the filler cap and fill the tank. Allow for expansion of the fuel: do not over-fill tanks.
- f. Re-fit the filler cap.
- g. Repeat the process for the second wing tank.
- h. Use a fuel tester to take samples from each wing tank and from the header tank. The sample points for the wing tanks are on the underside of the wing near the fuselage while the test point for the header tank is inside a small fairing under the tail of the aircraft aft of the sound curtain.
- i. Inspect each fuel sample for contaminants. Verify that the correct fuel is being used by the colour of the sample (Blue for AVGAS 100LL, green for AVGAS 100/130)
- j. Disconnect the earth cables. Stow the cables, step ladder, fuel hose and any other equipment securely away from the apron.

#### WARNING

- *Never fuel in an area that is enclosed or where fumes could reach ignition point. DO NOT SMOKE or allow open flames or sparks in the vicinity. Never add fuel while the engine is running.*
- *Use only approved fuel containers and never transport fuel in an unsafe manner.*
- *Always check for fuel contamination. Contamination is a major cause of engine failure. The best place to avoid contamination is at the source. Once your fuel is in the container a very hazardous potential exists. Use a clean safety approved storage container. Do not overfill the container - allow for expansion.*
- *The engine is designed for use with aviation gasolines and unleaded MOGAS which has an Octane Rating of 95 RON or higher. Be sure to use products of at least the standard shown in Section 8.6.*
- *Always earth the aircraft through the Earthing Point provided at the fuel filler before removing the fuel cap.*
- *Before first flight of the day, and after each refueling, use a sampler cup and drain a small quantity of fuel from the fuel tank sump quick drain valve -check for water, sediment and contamination.*





### 8.5.2 Fuelling – Alcohol Content Test

As the use of Ethanol in MOGAS becomes more widespread it has become difficult to be sure of a fuel's Ethanol content. Jabiru Aircraft recommend the following test be carried out before a new batch of MOGAS is used.

The test uses the principle of phase separation of a water/fuel sample and agitating the sample to induce phase separation. If alcohol is present, the alcohol combines with the water and separates out of the gasoline.

- a. Using a clear jar of about 100-200 ml capacity (ideally a long and narrow jar) add about 10% by volume of water and mark the level of the water on the jar;
- b. Add a sample of the fuel to be tested to the jar so that the relative volumes are about 10% water, 90% fuel;
- c. Shake the sample vigorously and then allow the sample to settle;
- d. Check the level of the "water";
- e. If the level is the same as previously marked on the jar, no alcohol is present in the fuel and the fuel is acceptable for use;
- f. If the level of "water" increases, alcohol is present in the fuel.

At the time of writing Jabiru Aircraft are delivered with an OEM fuel tester marked with graduations for use in assessing alcohol content.

### 8.5.3 Engine Oil

- a. Ensure the aircraft is parked on level ground.
- b. Where possible, shut down and allow the engine to sit for at least 5 minutes before measuring oil level.
- c. Open the oil door on the upper cowl. Remove the dipstick from the engine and wipe clean with a clean rag.
- d. Re-fit the dip-stick to the engine. It must be screwed in fully.
- e. Remove dip-stick & check the level indicated. Ensure the oil level is between the marks.
- f. If required, top up the sump with fresh oil of the same brand and grade. Note that approximately 300ml are required to raise the level from the bottom mark to the top. A small funnel must be used to avoid spilling oil. Alternatively, partially insert the dipstick so that the lower end is in the engine filler tube and the upper end standing proud of the cowl. Place the neck of the oil bottle against the stick and pour carefully: the oil will cling to the dipstick and be guided into the engine. If required, use a rag or similar as a wind shield to prevent oil being blown away from the stick.

#### NOTE

*For short flights (up to 1.5 hours) it is recommended to maintain the oil level at the lower dipstick mark as this reduces oil temperatures and the rate of oil use. Oil use varies between aircraft however: ensure that oil is sufficient for the intended flight.*



## 8.6 APPROVED FUEL GRADES & SPECIFICATIONS

- Avgas 100LL
- Avgas 100/130
- MOGAS with minimum Octane Rating of **95 RON** may be used but is not recommended (the fuel specification placard; P/No 5091064, does not explicitly state 'MOGAS' because it is not recommended).
- Do not use fuel additives such as Octane Boosters.

### WARNING

***For the reasons noted below Jabiru Aircraft do not recommend using MOGAS. It is important to realise that due to the lower QA standards, even following best practice it is still possible for a particular tank-full of MOGAS to be unsuitable or unsafe for use. Jabiru Aircraft may choose to void any warranty for engines which have been damaged due to "bad" MOGAS. Operators who choose to use this fuel do so at their own risk.***

### CAUTION

***Using a fuel which is not recommended may have detrimental effects on airworthiness, maintenance and safety.***

- a. Compared to AVGAS the chemical, delivery and storage quality control requirements for MOGAS are much less stringent. Because of this, there is no practical way for an operator to know that any given volume of MOGAS bought through normal sources will be compatible with use in a Jabiru Aircraft Engine.
- b. A large amount of testing using MOGAS has been carried out by Jabiru Aircraft under controlled conditions and this has shown that MOGAS can be a suitable fuel. However, experience in service where conditions are not controlled has shown it to be inconsistent and inherently risky – contributing to many different service difficulties.
- c. Do not mix AVGAS with MOGAS. The two fuels are chemically distinct and the qualities of a mixture impossible to predict. Refer to Jabiru Service Letter JSL007 for more information.
- d. Alcohol levels in MOGAS must be monitored. Operators must test each batch before use to ensure alcohol levels are within limitations. Do not trust that the fuel is what the seller claims.
- e. Further information on fuels is given in Jabiru Service Letter JSL007. Any operator considering using MOGAS must read, understand and follow the requirements it contains.



### 8.6.1 Fuel Containing Alcohol

#### WARNING

*For the reasons noted below Jabiru Aircraft do not recommend using any fuel containing Ethanol. Operators who choose to use this fuel do so at their own risk.*

#### CAUTION

*Using a fuel which is not recommended may have detrimental effects on airworthiness, maintenance and safety.*

- Early J120-C aircraft were equipped with fuel tanks sealed using a compound which is soluble in alcohol. Using a fuel containing alcohol in these tanks will damage the sealant, leading to fuel leaks. Later aircraft use a sealant which is compatible for use with fuels containing up to 10% Ethanol. Refer to Jabiru Service Letter JSL007 for details on how to determine which sealant is which.
- An operator planning to use any MOGAS must determine which sealant is used in their aircraft and take measures to ensure only appropriate fuels are used.
- Fuels containing alcohol are inherently unsuitable for use in aircraft due to the way they absorb moisture from the air and change over time.
- Further information on fuels – including Ethanol content – is given in Jabiru Service Letter JSL007. Any operator considering using MOGAS or an Ethanol blend fuel must read, understand and follow the requirements it contains.

### 8.7 APPROVED OIL GRADES & SPECIFICATIONS

Jabiru Aircraft approves lubricating oils of any brand name conforming to specifications MIL-L-6082 for straight mineral oil and MIL-L-22851 for ashless dispersant oil.

Straight mineral oil must be used during the first 25-50 hours of operation for new and overhauled engines, or until the oil consumption has stabilised. After the first oil change it is recommended that ashless dispersant oil be used.

#### 8.7.1 Engine Oil Viscosity Grade:

The following chart is intended to assist in choosing the correct grade of oil and must be considered as a guide only. Multiviscosity grades can also be used.

Average Ambient Temperature	Mineral Grades	Ashless Dispersant Grades
Above 35° C (95°F)	SAE 60	SAE 60
15° C to 35° C (59° to 95°F)	SAE 50	SAE 50
-17° C to 25° C (1° to 77°F)	SAE 40	SAE 40

Equivalence of SAE and commonly used Commercial Grade designations:					
SAE:	20	30	40	50	60
Commercial:	55	35	80	100	120



## 8.8 BRAKES

The brakes of the J120-C use automotive brake fluid. Refer to the aircraft Technical manual for details of appropriate brake fluid specifications.

### WARNING:

*The JABIRU uses automotive brake fluid (DOT 3 or DOT 4). DO NOT use Aircraft hydraulic fluid (mineral based) or damage to the brake system will result.*

## 8.9 CLEANING & CARE

Keeping the aircraft clean is important. Besides maintaining the appearance of the aircraft, cleaning makes inspection and maintenance easier.

**Transparencies:** These should be cleaned carefully with plenty of fresh water and a mild detergent, using the palm of the hand to feel and dislodge any caked dirt or mud. A sponge, soft cloth or chamois may be used but only as a means of carrying water to the plastic. Rinse thoroughly then dry with a clean, moist chamois. DO NOT rub the plastic with a dry cloth as this builds up an electrostatic charge, which attracts dirt. Oil and grease may be removed by using a soft cloth moistened with mineral turpentine.

### CAUTION

*DO NOT use gasoline, alcohol, Buzene, Acetone, Carbon Tetrachloride, fire extinguisher fluid, de-icer fluid, lacquer thinner or glass window cleaning spray.*

*These solvents will soften and craze the Plastic.*

*DO NOT use a canvas cover on the windshield or windows as the cover may scratch the plastic.*

**Interior Surfaces:** Interior surfaces should be cleaned with a soft cloth, fresh water and a mild detergent. Volatile substances such as those mentioned in the previous section must never be used.

**Exterior Surfaces:** The exterior surfaces, under normal conditions, require a minimum of polishing and buffing.

### CAUTION

*DO NOT polish or buff the aircraft within the first 2 weeks after delivery from the factory as surface treatments take up to 14 days to properly cure.*

Generally, the exterior surfaces can be kept bright by washing with water and a mild soap or detergent, followed by a rinse with water and drying with a cloth or a chamois.

Remove stubborn oil and grease with a cloth moistened with mineral turpentine, then wash with water and a mild soap, rinse and dry as stated before.

After the curing period the aircraft may be waxed with a good quality automobile wax. A heavier coating of wax on the leading edges of the wing, tail and on the engine nose cap will help reduce abrasion encountered in these areas.

### CAUTION

*DO NOT use Silicon based cleaning materials as Silicon is absorbed into the composite materials and may affect reparability.*

**Aluminium surfaces:** The aluminium surfaces require a minimum of care, but should not be neglected. Wash and clean as detailed for exterior surfaces above.



**CAUTION**

*JABIRU aircraft are designed for minimum maintenance. However, special attention should be applied when the aircraft has been used in extremely corrosive conditions, e.g. beach landings with sand and salt. Always ensure the aircraft is thoroughly hosed and washed immediately after such use. Pay particular attention to wheels and external controls. Always hose down wheels & spats after landings in mud or sand to ensure brakes, wheels & spats are free of dirt build-up.*

**Engine & Engine Compartment:** The engine should be kept clean since dirty cooling fins and baffles can cause overheating of the engine. Also, cleaning is essential to minimise any danger of fire and provide easy inspection of components. Recommended cleaning procedure is lightly spray with degreasing fluid – after sealing coils and starter motor. WIPE clean with brush and cloth.

**CAUTION**

*DO NOT hose engine. Electrical components may be damaged by moisture. Ensure electrical components are protected against moisture. Caustic cleaning solutions should not be used.*

**Propeller:** Wash with soap and water, rinse with clean water and dry with cloth or chamois.

**CAUTION**

*Do not use a wax based substance as this would make it almost impossible to refurbish the prop if needed at a later stage.*



## 9. SUPPLEMENTS

### 9.1 FLIGHT TRAINING SUPPLEMENT

There is no separate FTS for the J120-C. Refer to the normal and emergency procedures detailed above for handling & operating recommendations.

### 9.2 INFORMATION FOR THE OWNER

#### 9.2.1 IMPROVEMENTS OR CORRECTIONS

In the interests of product development, we encourage owners to make suggestions related to design improvements. However, the final decision on their adoption or otherwise rests with JABIRU AIRCRAFT Pty Ltd.

Any issues or corrections required of Jabiru publications are requested to be passed on to Jabiru in writing to incorporation in subsequent revisions. Emails to [info@jabiru.net.au](mailto:info@jabiru.net.au) are recommended.



### 9.2.2 CONTINUED OPERATIONAL SAFETY REPORTING

The owner/operator of a LSA is responsible for notifying the manufacturer of any safety of flight issue or significant service difficulty upon discovery. The following proforma may be used:

Date:	
Aircraft Model	
Aircraft Registration	
Aircraft S/No.	
Engine S/No.	
Details of item:	
Name of Reporter:	
Preferred Contact Details of Reporter	

### 9.2.3 OWNER CHANGE OF ADDRESS NOTICE

Each owner/operator of a LSA is responsible for providing the manufacturer with current contact information where the manufacturer may send the owner/operator supplemental notification bulletins. The following proforma may be used & sent to Jabiru Aircraft at [info@jabiru.net.au](mailto:info@jabiru.net.au) or the contact details given in Section 0.3.

Aircraft Model	
Aircraft Registration	
Aircraft S/No	
Previous Owner:	
New Owner:	
Contact Details of New Owner	



### 9.3 SUPPLEMENTS

This section consists of a series of supplements, each being self contained and providing details and procedures associated with the fitment of optional and special purpose equipment.

Each supplement contains a brief description, and where applicable, operating limitations, emergency and normal procedures, and the effect on aircraft performance. The data contained in a supplement adds to, supersedes, or replaces similar data in the basic POH when operating in accordance with the provisions of that supplement.

The Log of Supplements shows the CASA Approved Jabiru Aircraft Supplements available for the J120-C at the date of publication of this POH. The Log of Supplements page can be utilised as a Table of Contents for this section. A check mark (✓) in the Install column indicates that the corresponding supplement is incorporated in the POH.

It is the owner's responsibility to ensure that new Jabiru Aircraft Supplements received after receipt of the POH are recorded on the Log of Supplements page.

In the event that the aircraft is modified at a non Jabiru Aircraft facility through an STC or other approval method, it is the owner's responsibility to ensure that the proper supplement, if applicable, is installed in the handbook and the supplement is properly recorded on the Log of Supplements page as amended from time to time.

### 9.4 LOG OF SUPPLEMENTS – JABIRU AIRCRAFT SUPPLEMENTS

Applicable to aircraft serial number J120-C \_\_\_\_\_

Install	Doc. No.	Title	Date