

Fly- og vedlikeholdshåndbok for Jabiru J 170 UL med Jabiru 2200 85 HK motor

Publication JP OM28



Importør/Leverandør: Jabiru Scandinavia A/S
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Tilleggsopplysninger gitt av importør/leverandør Jabiru Scandinavia A/S ved Paul Garstad vedr. Jabiru J 170 UL, Owners Manual, datert 12.06.2007:

Jabiru J160-J170 ble i 2005 opprinnelig bygget som et sertifisert fly med korte eller lange vinger, med en tomvekt på ca. 292 kg, med maksimum take-off vekt mellom 540-600 kg. De første ca. 40-50 flyene er spredt over hele verden. Etter fabrikkbesøk i 2005 fikk jeg fabrikken til å regne på muligheten for å slanke dette fine flyet ned til våre krav på netto vekt 275 kg og maksimums vekt på 450 kg.

Våre første Jabiru J170 viste seg dessverre å fortsatt være noen kilo for tunge, men fra nå av har vi fått en nettovekt som holder 275 kg.

Vedlagte Owner`s Manual har vi måtte endre en del småting i teksten, 1 x 35 liters Wingtank + headertank 5 liter. (Tidligere 65 liter i cabinen). Dekktrykk redusert til 30 psi hovedhjul og 20 psi nesehjul. Propell opp fra 60 x 42 til 60 x 44.

WARNING

This is a single engine light aircraft.

It should be flown with a view to the engine ceasing at any time and appropriate precautions taken.

Accidents in light aircraft can result in serious injury, and even death.

IT IS THE PILOT'S RESPONSIBILITY TO BE FULLY ACQUAINTED WITH THIS MANUAL AND TO BE CURRENT IN EMERGENCY PROCEDURES BEFORE FLIGHT.

IN ADDITION, IT IS THE PILOT'S RESPONSIBILITY TO ADVISE INTENDING PASSANGERS OR OTHER USERS OF THIS STATEMENT AND OF THE APPROPRIATE SAFETY PRECAUTIONS.

We have also included some specific warnings here, in a preface, as they are vital to your safety and the safety of others.

GENERAL SAFETY WARNINGS

1. FUEL

- ✓ Never handle 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.
- ✓ Never refuel an aircraft if fuel could be spilled on hot engine components (this should not be a problem with the JABIRU due to the location of the fuel tank and filler).
- ✓ 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 gasoline. It is **NOT** approved for use with Automotive grade fuel. Be sure to use products of at least the standard shown in Paragraph 1.3.3 of this Manual.
- ✓ Always earth the aircraft through the Earthing Points provided at the fuel filler and the nose leg.

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Section: 0

COVER PAGE

DETAILS OF MANUFACTURER

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AIRCRAFT TYPE & MODEL

Type: Jabiru

Model: J 170 UL

APPROVAL PAGE

Nationality and Registration Marks	Australia
Manufacturer	Jabiru Aircraft Pty Ltd
Designation of Aircraft	J 170 UL
Registration Number	LN-YND
Aircraft Serial Number	067

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AMMENDMENT RECORD SHEET

Ammendment No.	Paragraph(s) Affected	Signature	Date of Incorporation

Incorporation of a General Amendment should be certified by inserting the date of incorporation & signature in the appropriate columns. All amendments should be embodied consecutively.

INTRODUCTORY PAGE

This Owners Manual is provided by Jabiru Aircraft Pty Ltd as a guide to the operation of the Jabiru J 170 UL aircraft. As the J170UL is an experimental amateur built kitplane, the characteristics, performance, limitations and other information may vary between individual aircraft. As part of the flight program, **The Owner** must verify the characteristics, performance limitations and other information is relevant to their particular aircraft and amend any guidance figures that are provided in this Manual.

Jabiru Aircraft Pty Ltd accepts no responsibility for the guidance data and information provided in this Manual.

This Owner`s manual applies only to the particular aircraft identified by the registration marking and serial number on the Approval Page and contains the airworthness limitations and essential operating data for this aircraft.

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Special operations requiring additional limitations and instructions are listed in the “Supplements Section” and this section shall be consulted before undertaking any such operations. For operating information not included in this manual, reference should be made to the appropriate operations or manufacturer`s manuals.

The Owner`s Manual shall be carried in the aircraft on all flights. The pilot in command of the aircraft shall comply with all requirements, procedures and limitations with respect to the operation of the aircraft set out in the Owners manual for the aircraft.

Amendments shall be issued by Jabiru as necessary and will take the form of replacement pages, with the changes to the text indicated by a vertical line in the margin together with the amendment date at the bottom of the page. Interim/Temporary amendments may be issued in the same manner and are to be inserted as directed. These amendments will take precedence over the stated affected page. It is the owner`s responsibility to incorporate in this manual all such amendments. This aircraft has been qualified on the basis of the equipment fitted at the time of qualification.

REVISIONS

Revisions to this Manual will be distributed to all JABIRU Service Agents and to owners of aircraft registered with JABIRU AIRCRAFT Pty Ltd.

Revisions should be examined immediately upon receipt and incorporated in this Manual.

NOTE: It is the responsibility of the owner to maintain this Manual in a current status when it is being used for operational purposes.

Owners should contact JABIRU AIRCRAFT Pty Ltd whenever the revision status of their Manual is in question. A revision bar will extend the full length of new or revised text and/or illustrations added on new or presently existing pages. This bar will be located adjacent to the applicable revised area on the outer margin of the pages.

All revised pages will carry the revision number and the date on the applicable page.

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DEFINITIONS

AIRFIELD PRESSURE ALTITUDE	The Airfield Pressure Altitude is that altitude registered at the surface of the aerodrome by an altimeter with the pressure subscale set to 1013 millibars.
INDICATED AIRSPEED (IAS)	Indicated airspeed, which is the reading obtained from an airspeed indicator having no calibration error.
TAKEOFF SAFETY SPEED	The Takeoff Safety Speed is a speed chosen to ensure that adequate control will exist under all conditions, including turbulence and sudden and complete engine failure, during the climb after takeoff.
LANDING SAFETY SPEED	The Landing Safety Speed is the speed chosen to ensure that adequate control will exist under all conditions, including turbulence, to carry out normal flare and touchdown.
NORMAL OPERATING SPEED	This speed shall not normally be exceeded. Operations above the Normal Operating Speed shall be conducted with caution and only in smooth air.
V _A – MANOUVERING SPEED	Maximum for manoeuvres involving an approach to stall conditions or full application of the primary flight controls.
KCAS – KNOTS CALIBRATED AIRSPEED	Indicated airspeed corrected for position and instrument error and expressed in knots. KCAS is equal to KTAS in standard atmosphere at sea level.
KIAS – KNOTS INDICATED AIRSPEED	The speed shown on the airspeed indicator and expressed in knots.
KTAS – KNOTS TRUE AIRSPEED	The airspeed expressed in knots relative to undisturbed air which is KCAS corrected for altitude and temperatures.
V _{FE} – MAXIMUM FLAP EXTENDED SPEED	The highest speed permissible with wing flaps in the prescribed extended position.
V _{NO} – MAXIMUM STRUCTURAL CRUISING SPEED	The speed that should not be exceeded except in smooth air, and then only with caution.
V _{NE} – NEVER EXCEED SPEED	The speed limit that may not be exceeded at any time.
V _{S1} – STALLING SPEED	The stall speed or minimum steady flight speed at which the airplane is controllable in a specified configuration.
V _{SO} – STALLING SPEED LANDING CONFIGURATION	The stall speed or minimum steady flight speed at which the airplane is controllable in the landing configuration at the most forward centre of gravity.
V _X – BEST ANGLE OF CLIMB	The speed which results in the greatest gain of altitude in a given horizontal distance.
V _Y – BEST RATE-OF-CLIMB	The speed which results in the greatest gain of altitude in a given time.

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METEOROLOGICAL TERMINOLOGY

OAT – OUTSIDE AIR TEMPERATUR	The free static air temperature. It is expressed in either degree Celsius or degree Fahrenheit.
STANDARD TEMPERATUR PRESSURE ALTITUDE	Standard Temperature is 15 °C at sea level pressure altitude and decreases by 2 °C for each 1000 feet of altitude. The altitude read from an altimeter when the altimeter's barometric scale has been set to 1013 mb.

ENGINE POWER TERMINOLOGY

BHP – BRAKE HORSE POWER	The power developed by the engine.
RPM – REVOLUTIONS PER MINUTE	Engine speed.
STATIC RPM	The engine speed attained during a full-throttle engine run-up when the airplane is on ground and stationary.

AIRPLANE PERFORMANCE AND FLIGHT PLANNING TERMINOLOGY

MAXIMUM CROSSWIND VELOCITY	The velocity of the crosswind component for which adequate control of the airplane during takeoff and landing was actually demonstrated during the certification tests. The value shown is limiting.
USEABLE FUEL	The fuel available for the flight.
UNUSABLE FUEL	The amount of fuel that cannot be safely used in flight.
LPH – LITRES PER HOUR	The amount of fuel (in litres) consumed per hour.
NMPL – NAUTICAL MILES PER HOUR	The distance (in nautical miles) which can be expected per litre of fuel consumed at a specific engine power setting and/or flight configuration.
G	The acceleration due to gravity.

WEIGHT AND BALANCE TERMINOLOGY

STATION	Stations are the centre of gravity on the item being considered, such as the crew, baggage or contents of the fuel tanks.
C.G. – CENTRE OF GRAVITY	The point at which an airplane, or equipment, would balance if suspended.
C.G. LIMITS	The extreme centre of gravity locations within which the airplane must be operated at a given weight.
EMPTY WEIGHT	The weight of a standard airplane, included unusable fuel, full operating fluids and full engine oil.
USEFUL LOAD	The difference between ramp weight and the basic empty weight.
MTOW – MAXIMUM TAKEOFF WEIGHT	The maximum weight approved for the start of the takeoff run.

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Section: 1

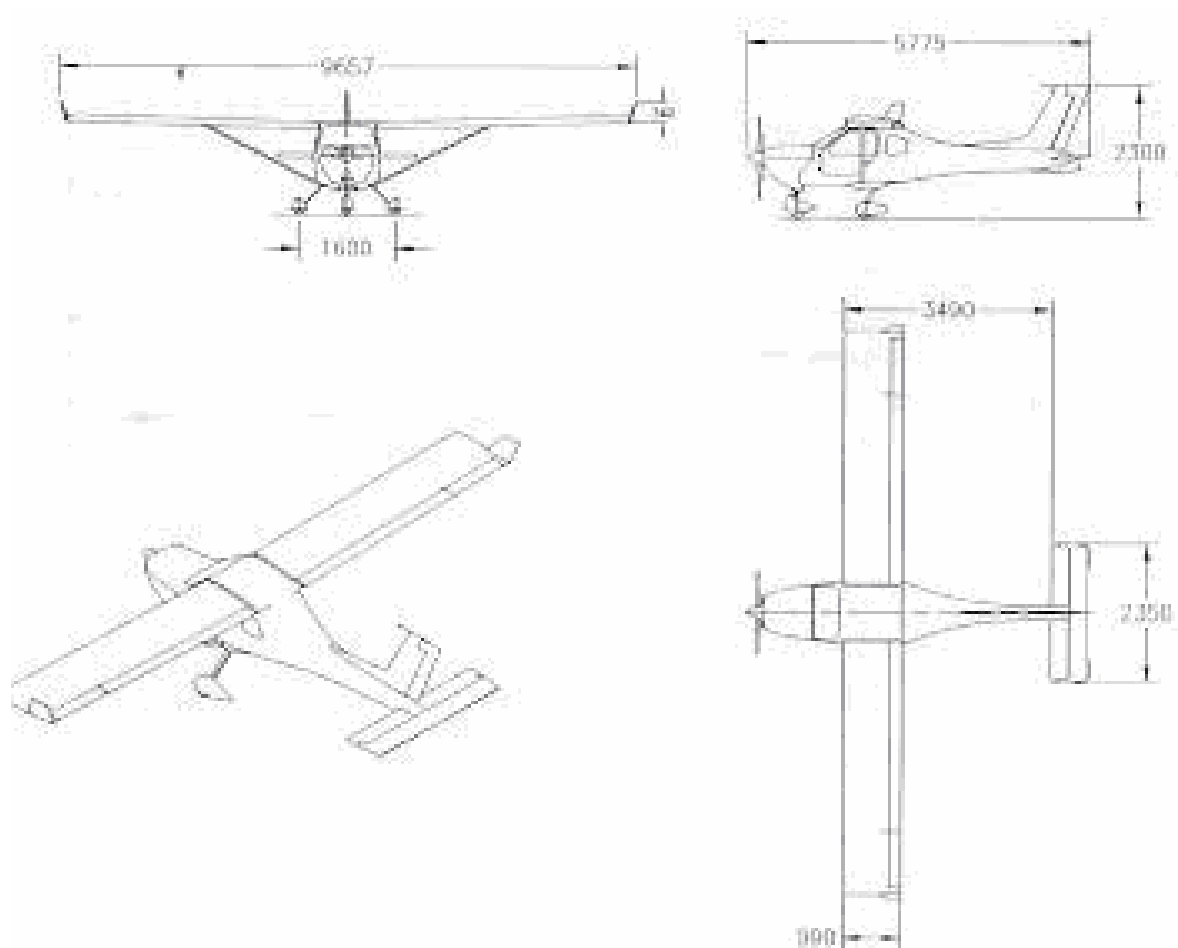
GENERAL

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1.1 THREE VIEW DRAWING

Ground Turning Radius: 6.4 metres

1.2 DESCRIPTIVE DATA

1.2.1 ENGINE

Manufacturer: Jabiru Aircraft Pty Ltd
Aero Engines Division
Type: 2200 Air Cooled

1.2.2 PROPELLER

Manufacturer: Jabiru Aircraft Pty Ltd
Type: Fixed Pitch Wooden Dwg No.
C000242-D60P42
Diameter: 60 inches (1524 mm)
Pitch: 42 inches (1067 mm)

1.2.3 APPROVED FUEL TYPES AND GRADES

100 LL or 100/130 grade aviation gasoline.

MOGAS with Octane Rating of 95 and above may also be used where aviation grade fuel is not available.

NOTE: MOGAS containing Ethanol (or any other alcohol) **MUST NOT** be used as it will damage the fuel tank sealant.

1.2.4 FUEL CAPACITY

Wing Tanks: 2 x 35 litres
Header Tank: 5 litres

Useable fuel: 1 litre

1.2.5 APPROVED OIL GRADES

Oils developed and branched for use in air cooled aircraft piston engines (eg. Aeroshell 100 plus)

In cold climates:

- Aero OIL W Multigrade 15W – 50 or Equivalent Lubricant Complying with:
- MIL-L-22851C
- Lycoming Soec301F
- Teledyne Continental Spec MHF-24B

1.2.6 OIL CAPACITY

Sump capacity is 2.3 litres

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1.2.7 TYRE INFLATION PRESSURE

Standard 4" Wheel Size, 450 kg UL

Main Wheels: 30 psi

Nose: 20 psi

Section: 2

LIMITATIONS

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Section: 2

LIMITATIONS

2.1 INTRODUCTION

Section 2 includes operating limitations, instrument markings and basic placards necessary for the safe operation of the airplane, its engine, standard systems and standard equipment. Observance of these operating limitations is required. The aeroplane shall be operated so that the limitations and instructions included in this section are observed.

2.2 TYPE OF OPERATION

- VFR by Day
- No aerobatics, including Spins

2.3 AIRSPEED LIMITATIONS

Airspeed limitations and their operational significance are shown below.

	SPEED	KIAS	REMARKS
V _{NE}	Never exceed speed	131	Do not exceed this speed in any operation
V _{NO}	Maximum structural speed	104	Do not exceed this speed except in smooth air, and then only with caution
V _A	Manoeuvring speed	94	Do not make full or abrupt control movements above this speed
V _{FE1}	Maximum flap extended speed – 1 st Stage flaps	74	Do not exceed this speed with 1 st stage flaps down
V _{FE2}	Maximum flap extended speed – 2 nd Stage flaps	69	Do not exceed this speed with 2 nd stage flaps down

Airspeed indicator Markings and their operational significance are shown below.

MARKING	KIAS Value/Range	SIGNIFICANCE
White Arc	35 -69	Full flap operating range. Lower limit is max. weight V _{SO} in landing configuration. Upper limit is max. speed permissible with flaps extended.
Green Arc	49 – 104	Normal operating range. Lower limit is Takeoff safety speed. Upper limit is max. structural cruising speed.
Yellow Arc	104 – 131	Operations must be conducted with caution and only in still air.
Red Arc	131	V _{NE}

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2.4 WEIGHTS and LOADING

Maximum takeoff weight: 450 kg

Maximum landing weight: 450 kg

2.5 CENTRE OF GRAVITY LIMITS

Forward: 180 mm AFT of Datum up to and including 450 kg

Aft: 282 mm AFT of Datum

Datum: Right Side Wing Leading Edge

Leveling Means:

- Longitudinal: Spirit Level placed on Left Side Lower Door Sill
- Lateral: Spirit Level Placed Across Front Door Sills

2.6 POWERPLANT LIMITATIONS

Instrument	Yellow Arc	Green Arc	Red Radial Line/Arc
Tachometer			3300 RPM
Oil Temperature		50 – 118 °C	118 °C
Oil Pressure	80 – 220 kPa	220 – 525 kPa	80 kPa
Cylinder Head Temperature		75 – 175 °C 167 – 347 °F	175 °C 347 °F

Minimum Oil Temperature before takeoff:

- Needle must be seen to move off the stop before takeoff

Minimum Oil Pressure:

- In level flight or climb 220 kPa
- In descent 80 kPa

Maximum Cylinder Head Temperature: 175 °C (347 °F)

Maximum RPM for all operations: 3300 RPM

Full Throttle Static RPM:

- Not above 3000 RPM
- Not under 2800 RPM

2.7 OTHER LIMITATIONS

2.7.1 AUTHORIZED MANOEUVRES AND ASSOCIATED LIMITATIONS

Aerobic manoeuvres, including spins, are not approved.

2.7.2 SMOKING

Prohibited

2.7.3 MAXIMUM AIR TEMPERATURE FOR OPERATIONS

40 °C for takeoff at gross weight

2.7.4 FLIGHTS WITH DOORS REMOVED

Prohibited

2.7.5 MAXIMUM PERMISSABLE NUMBER OF OCCUPANTS

Two (including Pilot)

2.7.6 MAXIMUM CROSSWIND VELOCITY

14 knots

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2.8 PLACARDS


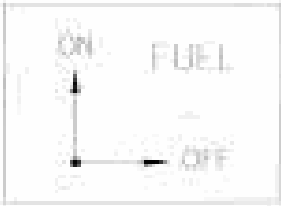
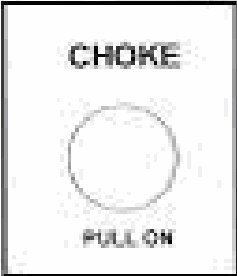
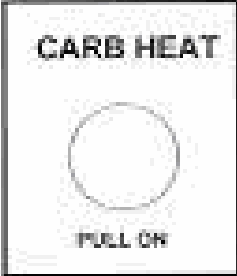
Cockpit Placards General

<p>Warning Placard P/No 5A015A0D</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>WARNING</p> <p>- Users of this aircraft do so at their own risk. - This aircraft must be flown in accordance with the Owners Manual. - Repairs, including spares and MODIFIED - Servicing to BEHOLDERS - Engine level of full power exceeds 85 dB(A) Ear protection should be worn.</p> <p>— AIRCRAFT KIT LTD, JABIRU, QLD Designed & Manufactured in Australia by JABIRU AIRCRAFT PTY. LTD. BUNDABERG, QLD 4670.</p> </div> <p>Fitted on the rear Face of the Forward Wing Spar Carry-through Beam in the Cabin Ceiling</p>
<p>Owners Manual P/No 5036194</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>FLIGHTOWNERS MANUAL</p> </div> <p>Fitted to inside of RH Door above the Door Pocket.</p>
<p>Door Open LHS P/No 5027094</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>OPEN ←</p> </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="border: 1px solid black; padding: 5px; text-align: center;"> <p>OPEN →</p> </div> <p>Fitted to the outside of RH Door Above the Door Catch Lever</p>
<p>Door String Placard P/No 5026094</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>PULL TO OPEN</p> </div> <p>Fitted on Inside of both Doors Above Door Handle.</p>
<p>Fuel Contents Appropriate to Fuel Tank Fitted</p>	<p>Fitted on the Forward Side of the Fuel Tank for Fuselage Tanks, Fitted to right glasses of wing fuel tanks.</p>
<p>Loading Limitations P/No 5098154</p>	<div style="border: 1px solid black; padding: 5px;"> <p>LOADING LIMITATIONS</p> <ol style="list-style-type: none"> 1. Maximum Gross weight of aircraft is not to exceed 450 kg. 2. All baggage must be stowed either in the passenger seat, or on either side of the fuel tank below the level of the seat backs. 3. Pilots must use Load & Trim Sheet given in Section 6 of the Flight Manual to check trim. </div> <p>Fitted on inside of fuselage of RHS of cabin between Door and Rear Window.</p>

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Cockpit controls

<p>Trim Position P/N: 5024094</p>	 <p>Fitted on the Top of the Main Beam Beside the trim control</p>
<p>Fuel Tap Position P/N: 5023194</p>	 <p>Fitted on the Main Beam in front of the Fuel SELECTOR Valve</p>
<p>Choke Cable P/N: 5051094</p>	 <p>Fitted at the base of the choke cable</p>
<p>Carb Heat P/N: 5026194</p>	 <p>Fitted at the base of the CARB Heat Cable. Note: This placard may be incorporated into the fascia of the instrument panel.</p>

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External Fuselage

Static Port P/No 5043004	STATIC VENT KEEP CLEAR
Electrical Earthing P/No 5078004	EARTH ON NOSE LEG

Fuel Grade- 65L Fuselage Tank P/No 5091004 LOFF	KEEP CLEAR FUEL TANK 100 LITRE CAPACITY EARTH ON POST
Wing Bolt Tightening P/No 5039004 Qty 8 Required	DANGER DO NOT TIGHTEN

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EMERGENCY PROCEDURES

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3.1 INTRODUCTION

Section 3 provides checklists and other procedures for coping with emergencies that may occur. Emergencies caused by aeroplane malfunction are rare if power preflight inspections and maintenance are practiced. En-route weather emergencies can be minimized or eliminated by careful flight planning and good judgement when unexpected weather is encountered. However, should an emergency arise, the basic guidelines outlined in this section should be considered and applied as necessary to correct the problem.

3.2 AIRSPEEDS FOR EMERGENCY OPERATION

Engine Failure After takeoff	57 – 60 KIAS
Manoeuvring Speed (at all weights)	104 KIAS
Maximum Glide Distance, Still Air	57 KIAS
Precautionary Landing Approach with Engine Power (Full Flap)	55 KIAS ¹
Landing Approach Without Engine Power:	
Landing Flaps Up	60 KIAS
Landing Flaps Down	52 KIAS

Note¹ A slightly higher speed may give better distance over the ground if gliding into wind; a slightly lower speed if gliding downwind.

3.3 OPERATIONAL CHECKLISTS

3.3.1 ENGINE FAILURES

ENGINE FAILURE DURING TAKEOFF RUN

1	Throttle	Idle
2	Brakes	Apply
3	Ignition Switches	OFF
4	Master Switch	OFF

ENGINE FAILURE IMMEDIATELY AFTER TAKEOFF

1	Airspeed	60 KIAS
2	Fuel Shutoff Valve	OFF
3	Ignition Switches	OFF
4	Wing Flaps	As required
5	Master Switch	OFF

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ENGINE FAILURE DURING FLIGHT

1	Airspeed	Best Glide Angle 57 KIAS ¹
2	Carburettor Heat	ON
3	Fuel Shutoff Valve	ON
4	Fuel Pump	ON
5	Ignition Switches	ON

Note ¹ A slightly higher speed may give better distance over the ground if gliding into wind; a slightly lower speed if gliding downwind.

AIRSTART & LIMITATIONS

In the event that the engine is stopped during flight, it may be restarted by application of the 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 (8:1:1) engine & therefore airstarts when the propeller has stopped rotating, without use of starter, are unlikely before reaching V_{NE} .

Therefore, the following procedures address only airstarts by use of the Starter Motor.

IMPORTANT: DO NOT depress starter button while propeller is rotating.

1	Ignition Switches	OFF
2	Cabin	Clear
3	Increase angle of attack & reduce speed (up to & including a stall) until propeller stops rotation	
4	Establish Glide	57 KIAS
5	Fuel	ON (left & right)
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 rotation before each restart attempt	

Note: The engine cools quickly with the propeller stopped. Choke may need to be used to start.

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3.3.2 FIRES

FIRE DURING START ON GROUND

- 1 Cranking
CONTINUE to get a start that would suck the flames and accumulated fuel through the carburettor and into the engine.

If engine starts,

- | | | |
|---|--------|---|
| 2 | Power | 1500 RPM |
| 3 | Fuel | OFF & allow engine to empty carburettor |
| 4 | Engine | Inspect for damage |

If engine fails to start,

- | | | |
|---|-------------------|--|
| 5 | Cranking | CONTINUE in an effort to obtain a start. If no start in 15 seconds, shut off fuel & continue to crank for another 15 seconds |
| 6 | Fire Extinguisher | Obtain (have ground attendants obtain if not installed) |
| 7 | Engine | SECURE
A Master Switch OFF
B Ignition Switch OFF
C Fuel Pump Switch OFF
D Fuel Shutoff Valve OFF |
| 8 | Fire | Extinguish using fire extinguisher, wool blanket, or dirt. |
| 9 | Fire Damage | Have authorized people inspect, repair damage or replace damaged components or wiring before conducting another flight |

ENGINE FIRE IN FLIGHT

1	Throttle	CLOSED
2	Fuel Shutoff Valve	OFF
3	Ignition Switches	OFF
4	Master Switch	OFF
5	Fuel Pump Switch	OFF
6	Cabin Air	OFF
7	Airspeed	57 KIAS (if fire is not extinguished, increase glide speed to find an airspeed which will provide an incombustible mixture)
8	Forced Landing	Execute (as described in Emergency Landing Without Engine Power)

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ELECTRICAL FIRE IN FLIGHT

1	Master Switch	OFF
2	All Other Switches	OFF
3	Vents/cabin air	OPEN
	If fire appears out and electrical power is necessary for continuance of flight:	OFF
4	Master Switch	ON
5	Fuses	CHECK for faulty circuit DO NOT reset or replace
6	Radio/Electrical Switches	ON. One at a time, with delay after each until short circuit is localized
7	Land as soon as possible to inspect for damage	

CABIN FIRE

1	Master Switch	OFF
2	Vents/Cabin Air	OPEN
3	Land as soon as possible to inspect for damage	

3.3.3 FORCED LANDING

EMERGENCY LANDING WITHOUT ENGINE POWER

Note that a landing with the engine stopped the lack of propeller wash over the elevator will reduce it's effectiveness. The pilot should expect the aircraft's response to the elevator to be different to normal.

1	Airspeed	57 KIAS (flaps up) Approach 52 KIAS (Flaps down)
2	Fuel Shutoff Valve	OFF
3	Fuel Pump	OFF
4	Ignition Switches	OFF
5	Wing Flaps	As required
6	Master Switch	OFF
7	Touchdown	Slightly Tail Low
8	Brakes	As required

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PRECAUTIONARY LANDING WITH ENGINE POWER

1	Airspeed	60 KIAS
2	Wing Flaps	1 st Stage
3	Fuel Pump	ON
4	Selected Field	FLY OVER. Note terrain and obstructions
5	Radio and Electrical Switches	ON
6	Wing Flaps	FULL (on final approach)
7	Airspeed	57 KIAS
8	Touchdown	Slightly Tail Low
9	Ignition Switches	OFF
10	Brakes	As required

DITCHING

1	Radio	Transmit MAYDAY on area frequency, giving location and intentions
2	Heavy Objects	SECURE
3	Approach	High winds, heavy seas: INTO wind. Light winds, heavy swells: Parallel to Swells
4	Wing Flaps	FULL
5	Power	Establish 50 ft/min descent at 45 KIAS
6	Touchdown	Level attitude
7	Face	Cushion at touchdown with folded coat or cushion
8	Aeroplane	Evacuate through cabin doors. If necessary, breakout windows and flood fuselage to equalize pressure so doors can be opened
9	Lifevests	Inflate

LANDING WITH A FLAT MAIN TYRE

1	Wing Flaps	FULL
2	Approach	Normal
3	Touchdown	GOOD TYRE FIRST. Hold aeroplane off flat tyre as long as possible with aileron control

3.3.4 **ELECTRICAL POWER SYSTEM MALFUNCTION**

If fuse blows, unload the circuit and replace fuse. If it blows again, continue to next airport and rectify.

If main fuse fails, land at the next airport and replace. Run engine; if the fuse again fails, rectify before continuing flight.

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3.3.5 *MAXIMUM GLIDE*

For Minimum Rate of Sink: 57 KIAS

For Maximum Distance in Still Air: 57 KIAS

To maximize distance achieved into wind, increase glide speed by approximately 1/3 of wind velocity.

Glide performance will be improved (if time permits) by stopping propeller windmilling. This can be achieved by slowing below 50 knots.

3.3.6 *RECOVERY FROM AN INADVENT SPIN*

Aerobatic manoeuvres, including spins, are prohibited. While inadvertent spins are unlikely, should this occur, proceed as follows:

1	Throttle	IDLE
2	Ailerons	NEUTRALISE
3	Rudder	Opposite direction of spin and HOLD ON
4	Just AFTER rudder reaches the stop, move the control stick FORWARD far enough to break the stall	
5	HOLD these control inputs until rotation stops. Full down elevator may be required at aft centre of gravity loadings to assure optimum recoveries.	
6	As rotation stops, neutralize rudder and make a smooth recovery from the resulting dive	

3.4 OTHER PROCEDURES

3.4.1 *CARBURETTOR HEAT*

This system serves to prevent the formation of ice within the carburettor, where it primarily forms on the throttle plates in such a manner as to obstruct the airflow, with resultant eventual engine stoppage. Vaporization of the fuel & expansion of air through the carburettor cause a cooling of the mixture, which can be as much as 15 degrees C below the temperature of the ambient air. This permits moisture in the air to condense and form ice. The first indication of icing is a RPM drop or a drop in manifold pressure. Progressive icing will cause obstruction of the carburettor, which manifests itself in the form of a rough running engine. During this time the smaller volume of air aspirated has richened the mixture. Ice can form more rapidly with partial throttle, due to the lower pressure in the carburettor. At full throttle, the danger is lessened somewhat. Therefore,

carburettor heat is not to be used during takeoff or climb, also because it creates a small power loss.

IMPORTANT

During descent & approach, the carburettor heat should be used because low power settings create low pressure in the induction manifold. In case of go-around, turn the carburettor heat OFF. Prolonged use of carburettor heat with more than 80 % power applied could provoke detonation.

When using Carburettor Heat, pull knob to FULL ON. DO NOT use partial Carburettor Heat.

Carburettor icing can occur when on the ground, particularly when the aircraft and engine have become damp overnight. Check carburettor heat during power check as normal, prior to lining up on runway close the throttle completely, if a low tick over or engine stoppage occurs ice is present so burn it off with twenty seconds of heat and then test again prior to takeoff.

3.4.2 IGNITION MALFUNCTION

A sudden engine roughness or misfiring is usually evidence of ignition problems. Switching from both ON to alternately switching each system OFF will identify which system is malfunctioning. Switch to the good system and proceed to the nearest airport for repairs.

3.4.3 LOW OIL PRESSURE

1 A rapid drop from normal indicated pressure to indication "0"

Action Observe for smell of oil

Open cabin air vents

Observe for signs of spilt oil on cowls, windscreen, wing struts

If strong smell of oil and appearing on airframe, reduce power to minimum to sustain level flight and proceed to nearest landing area

Be prepared to make an emergency landing enroute, should the engine fail

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2	Gradual reduction in oil pressure below observed normal position:
Action	Observe oil temperature indications
	If oil temperature is higher than normal indications and all other functions are normal, proceed to the nearest landing area, land and check oil levels and external oil system for leaks
	If oil level is low, top-up to full mark on dipstick
	Allow engine to cool, start engine, run to full power and recheck oil pressure
	If oil pressure readings are normal, proceed with flight, observing both oil pressure and temperature readings
	If, after the run-up check, the oil pressure remains low, have the engine checked by an authorized person

Section: 4

NORMAL OPERATIONS

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Section: 4

NORMAL OPERATIONS

4.1 INTRODUCTION

Section 4 provides checklists and other procedures for the conduct of normal operations.

4.2 SPEEDS FOR NORMAL OPERATION

The following speeds are based on a maximum weight of 450 kg and may be used for any lesser weight.

Takeoff:

Initial Climb Out, 1 st Stage Flap	55 KIAS
Short Field Takeoff, 1 st Stage Flap at 50 feet	50 KIAS
When clear of obstacles, retract flaps and climb at	70 KIAS

Climb, Flaps UP:

Normal	70 KIAS
Best Rate of Climb, at low altitude	70 KIAS
Best Climb Gradient at low altitude	70 KIAS

Landing Approach:

Normal Approach, Flaps Full	52 KIAS
Short Field Approach, Flaps Full	50 KIAS

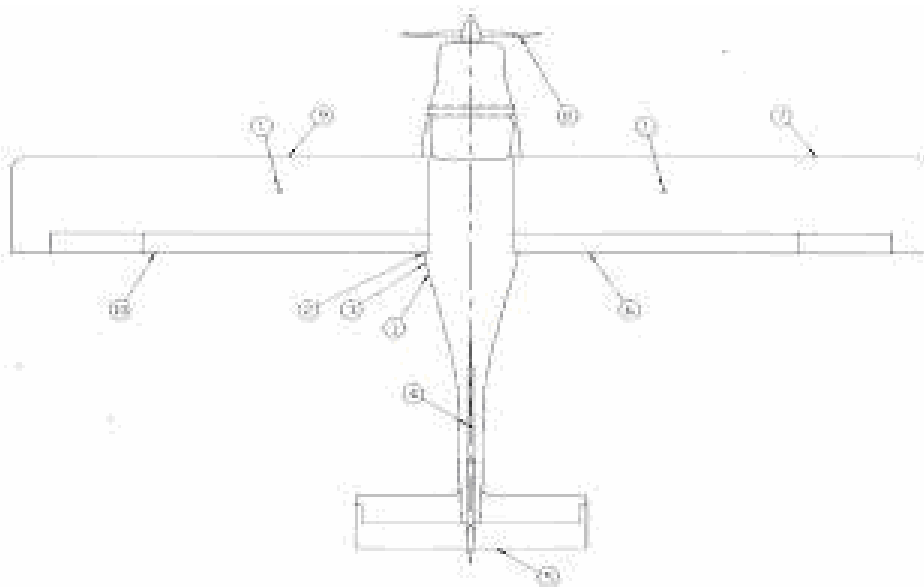
Bulked Landing:

Apply full power, allow speed to increase to	55 KIAS
Retract Flap to 1 st Stage when clear of obstacles	
Then retract flap fully and continue to climb at or above	70 KIAS
Maximum Recommended Turbulent Air Penetration Speed	94 KIAS
Maximum Demonstrated Crosswind Velocity	14 KIAS

4.3 CHECKLISTS & PROCEDURES

4.3.1 PREFLIGHT INSPECTION

Prior to flight, the aircraft should be inspected in accordance with the following checklists and in the sequence shown in the following diagram:



NOTE

Visually check airplane for general condition during walk-around inspection. In cold weather, remove even small accumulations of frost, ice or snow from wing, tail and control surfaces. Also, make sure that control rods and cables are free of ice and move freely.

PREFLIGHT INSPECTION CHECKLISTS

1)	FUEL	Remove Fuel Cap(s)
1	Fuel Quantity – Wing Tanks	IF FITTED: CHECK level in tank by dipstick
1	Fuel Quantity – Fuselage Tank	CHECK level in tank visually. Ensure aircraft is parked on level ground
2	Water Check	Before first flight of the day & after each refueling, use sampler cup & drain small quantity of fuel from each fuel tank sump quick-drain valve & check for water & sediment
3	Fuel Filler Cap(s)	CHECK secure

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2) CABIN

1	Owner`s Manual	AVAILABLE IN THE AIRCRAFT
2	Control Lock	REMOVE Seatbelt fastening
3	Ignition Switches	OFF
4	Master Switch	OFF
5	Fuel Shutoff Valve(s)	ON (left & right)
6	Seatbelts and Shoulder Harnesses	CHECK condition and security
7	Aileron Cable Mountings & Rod Ends	CHECK for free rotation & excessive movements, bolts secure & anchors on rear of seats secure
8	Elevator Cable Mounting & Rod End	CHECK for free rotation & excessive movements, bolt secure & anchor on Main Beam secure
9	Rudder & Nose Wheel Steering Push Rods & Rod Ends	CHECK for security & free movement
10	Flap Control	CHECK free movement & bolts secure
11	Throttle & Carburettor Heat Controls	CHECK for full & free travel
12	Brake Lever	CHECK for free travel & pressure

3) LEFT UNDERCARRIAGE

1	Mount Bolts	CHECK security
2	Tyre	CHECK inflation& wear

4) STATIC SOURCE

1	Static Source	CHECK for blockage
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5) EMPENNAGE

1	Tail Tie-down	DISCONNECT
2	Control Surfaces	CHECK freedom of movement & security
3	Rudder, Elevator & Trim Cable	CHECK freedom of movement & security

6) RIGHT WING – TRAILING EDGE

1	Aileron	CHECK freedom of movement & security
2	Flap	CHECK security
3	Control Rods & Cables	CHECK aileron & flap control bolts & nuts & flap control rod for freedom of rotation & excessive movement

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7) RIGHT WING

1	Wing Tie-down	DISCONNECT
2	Main Wheel Tyre	CHECK for proper inflation & wear or damage
3	Wing Strut Mount Bolts (top & bottom)	CHECK for security

CAUTION: Wing Strut attachment bolts must be free to rotate. DO NOT TIGHTEN. Ensure nut just bears on washer.

4	Wing Root Mount Bolts	CHECK for security
5	Pitot Tube	REMOVE cover & check opening for blockage

8) NOSE

1	Propeller & Spinner	CHECK for nicks & security
2	Cowl	REMOVE & CHECK security of engine components & systems, particulary mounts, spark plugs, wiring, fuel lines, baffles, CHECK for oil leaks
3	Engine Oil Level	CHECK and top up if necessary. Clean up any spill & pins located
4	Cowl	REPLACE & CHECK clips fastened & secure pins located
5	Front Wheel	CHECK for proper inflation & wear or damage

9 LEFT WING

1	Main Wheel Tyre	CHECK for proper inflation & wear or damage
2	Wing Strut Mount Bolts (top & bottom)	CHECK for security

CAUTION: Wing Strut attachment bolts must be free to rotate. DO NOT TIGHTEN. Ensure nut just bears on washer.

3	Wing Root Mount Bolts	CHECK for security
4	Wing Tie-down	DISCONNECT

LEFT WING – TRAILING EDGE

1	Aileron	CHECK freedom of movement & security
2	Flap	CHECK security
3	Control Rods & Cables	CHECK aileron & flap control bolts & nuts & flap control rod for freedom of rotation & excessive movement

4.3.2 BEFORE STARTING ENGINE

1	Preflight inspection	COMPLETE
2	Seatbelts & Harness	ADJUST & LOCK
3	Fuel Shutoff Valve (left & right)	ON
4	Radio/intercom	OFF
5	Brakes	TEST & SET

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4.3.3 *STARTING ENGINE – COLD ENGINE*

1	Carburettor	COLD
2	Choke	ON
3	Throttle	CLOSED
4	Fuel Boost Pump	ON
5	Propeller Area	CLEAR
6	Master Switch	ON
7	Ignition Switches	ON
8	Start Button	PRESS
9	Note: If the engine is cranking below 300 RPM, it will not start	
	As soon as engine is running, throttle back to an idle speed of 1000 – 1200 RPM	
10	Check all engine instruments for function	
11	Choke	CLOSED

IMPORTANT: Check the engine oil pressure. If you do not see oil pressure within 10 seconds, shut down the engine immediately and determine the cause.

4.3.4 *STARTING ENGINE – HOT ENGINE*

Proceed as for cold engine above, but eliminate the choke operation 2. Instead, throttle slightly open.

4.3.5 *WARM-UP and FUNCTIONAL CHECK*

Warm-up the engine with a fast idle of 1100 – 1300 RPM until the oil temperature reaches 50 degrees C. During this phase, the cooling of the cylinder head is insufficient due to reduced airflow across the cylinders. It is therefore advisable not to shorten the warm-up time by running the engine at higher RPM. The aeroplane should be pointed into wind to allow additional cooling air. As soon as the oil reaches 50 degrees C, it is possible to do the run-up.

4.3.6 *BEFORE TAKEOFF*

1	Brakes	CHECK
2	Cabin Doors	CLOSED & LATCHED
3	Flight Controls	FREE & CORRECT
4	Flight Instruments	SET
5	Fuel Shutoff Valve (left & right)	ON
6	Elevator Trim	NEUTRAL
7	Flaps	SET FOR TAKEOFF
8	Ignition Check	Throttle to 2000 RPM. Hold this engine speed for 10 sec. Switch OFF No. 1 Ignition and watch for RPM drop. Switch ON the No. 1 Ignition & switch OFF the No. 2 Ignition watching for the RPM drop. RPM drop should not exceed 100 RPM on either

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system. If drop is excessive, shut down & determine the reason. Switch No. 2 ignition ON

Note: During the check with one system only, the active sparkplug may tend to load up slightly To clean plugs, run the engine with both ignitions for a few seconds, then recheck the second system.

9	Power Check	Throttle 2850 RPM. Open the throttle fully & slowly to check the maximum RPM being produced. Wind conditions may effect, but as an average 2850 RPM should be seen.
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Note: If the RPM is found to be more than 150 RPM lower than normal, the engine should be examined to determine the reason.

10	Idle Check	Throttle back to idle position & check that the engine runs smoothly. With too low an idle speed, or rough running, the cause must be located & corrected to avoid the potential
11	Carburettor Heat Check	Throttle up to 2000 RPM. Pull out the Carburettor Heat Control & look for an RPM drop. Return the Carburettor heat Control to full IN or cold position

4.3.7 TAKEOFF

1	Wing Flaps	1 st Stage
2	Carburettor Heat	COLD
3	Throttle	FULL...OPEN
4	Elevator Control	LIFT NOSE WHEEL AT 25-30 KIAS and wait for aircraft to fly itself off (at around 55 KIAS)
5	Climb Speed	70 KIAS
6	At top of Climb, Fuel Booster Pump	OFF

Short Field Takeoff

1	Wing Flaps	1 st Stage
2	Carburettor Heat	COLD
3	Brakes	APPLY
4	Throttle	FULL OPEN
5	Brakes	RELEASE
6	Elevator Control	SLIGHTLY TAIL LOW
7	Climb Speed	50 KIAS (until all obstacles are cleared)
8	Wing Flaps	RETRACT slowly increasing speed to 70 KIAS

4.3.8 ENROUTE CLIMB

1	Airspeed	70 KIAS
2	Throttle	FULL OPEN

NOTE: During climb, monitor the cylinder head & oil temperatures to avoid exceeding their limits. The aircraft has been tested to ensure adequate cooling in climb, therefore any excessive readings may indicate a malfunction. Should this occur,

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decrease the rate of climb in order to increase the airspeed for improving cooling.

4.3.9 CRUISE

1	Power	Not above maximum continuous power of 3300 RPM, 2800-2900 normal.
2	Elevator Trim	ADJUST

4.3.10 BEFORE LANDING

1	Seatbelts & Harnesses	ADJUST & LOCK
2	Carburettor Heat	As required
3	Fuel Booster Pump	ON

4.3.11 LANDING

Normal Landing

1	Airspeed	55 KIAS
2	Wing Flaps	FULL DOWN (below 70 KIAS)
3	Touchdown	MAIN WHEEL FIRST
4	Landing Roll	LOWER NOSE WHEEL GENTLY
5	Barking	MINIMUM REQUIRED

Short Field Landing

1	Airspeed	50 KIAS
2	Wing Flaps	FULL DOWN (below 70 KIAS)
3	Power	REDUCE to idle as obstacle is cleared
4	Touchdown	MAIN WHEEL FIRST
5	Brakes	APPLY AS REQUIRED
6	Wing Flaps	RETRACT when convenient for better braking

Baulked Landing

1	Throttle	FULL OPEN
2	Carburettor Heat	COLD
3	Wing Flaps	Retract to ½ DOWN
4	Airspeed	50 KIAS until clear of obstacles
5	Wing Flaps	Retract to 1 st STAGE until clear of obstacles then retract fully and continue climb at or above 70 KIAS

4.3.12 AFTER LANDING

1	Wing Flaps	UP
2	Fuel Boost Pump	OFF
3	Carburettor Heat	Full IN or COLD

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4.3.13 SECURING AIRPLANE

1	Radio/Intercom	OFF
2	Ignition Switches	OFF
3	Master Switch	OFF
4	Controls	LOCK with seatbelt
5	Fuel (left & right)	OFF

4.4 OTHER PROCEDURES

4.4.1 FUELING

SAFETY WARNINGS

- Never prepare fuel in an area that is enclosed or where fumes could reach ignition point. DO NOT SMOK or allow open flames or sparks in the vicinity. Never add fuel while the engine is running.
- Never refuel an aircraft if fuel could be spilled on hot engine components (this should not be a problem with the JABIRU due to the location of the fuel tanks and fillers).
- 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 exist. Use a clean safety approved storage container. Do not overfill the container – allow for expansion.
- The engine is designed for use with **aviation gasoline**. MOGAS of 95 Octane or above may be used if AVGAS is not available. Be sure to use products of at least the standard shown in Section 1. **DO NOT** use any fuel which contains alcohol (such as Ethanol).
- Always earth the aircraft through the Earthing Points provided at the fuel fillers.
- 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 valves – check for water, sediment and contamination.

4.4.2 TAXIING

When taxiing, it is important that speed and use of brakes be kept to a minimum and that all controls be utilized (see Taxiing Diagram, Figure 4.1) to maintain directional control and balance.

The carburetor 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.

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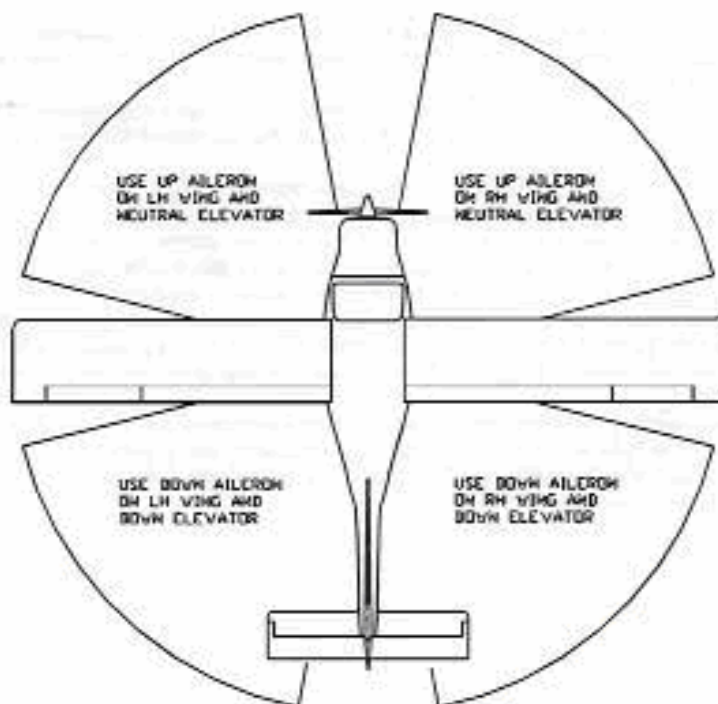


Figure 4.1 – Taxiing Diagram

4.4.3 PROPELLER CARE

Full throttle runups over loose gravel are especially harmful to propeller tips. When takeoffs must be made over a gravel surface, it is very important that the throttle is advanced slowly. This allows the airplane to start rolling before high RPM is developed, and the gravel will be blown behind the propeller rather than pulled into it. When unavoidable small nicks appear in the propeller, they should be immediately corrected.

4.4.4 CROSSWIND TAKEOFF

Takeoffs into strong crosswinds are normally performed with the minimum flap setting necessary for the field length, to minimize the drift angle immediately after takeoff. With the ailerons partially deflected into the wind, the airplane is accelerated to a speed slightly higher than normal, and then pulled off positively and smoothly to prevent possible settling back to the runway while drifting. When clear of the ground, make a coordinated turn into the wind to correct for drift.

4.4.5 CRUISE

Normal cruising is performed between 75 and 90 % power. Continuous cruise should not be above 3300 RPM. Flights should be planned at 15 litres per hour with 45 minutes reserve, with appropriate allowances for wind conditions which will assist in determining the most favourable altitude and power setting for a given trip.

4.4.6 CROSSWIND LANDING

The limiting crosswind velocity of 14 knots has been demonstrated at FULL Flap. However, in strong crosswind conditions use the minimum flap consistent with the strip length available. Use the Wing Low technique right through to touchdown and land on Mains first.

4.4.7 BAULKED LANDING

In a baulked landing (go-around) climb, the wing flap setting should be reduced to the First Stage immediately after full power is applied and the aircraft has accelerated to a safe climb speed. Upon reaching a safe airspeed, the flaps should be slowly retracted to the full up position, whilst allowing the aircraft to accelerate to the best climb speed.

4.4.8 NOISE ABATEMENT

Increased emphasis on improving the quality of our environment requires renewed effort on the part of all pilots to minimize the effect of airplane noise on the public.

As pilots, we can demonstrate our concern for environmental improvement by application of the following procedures:

- 1 At altitudes under 2000 feet, avoid flying in close proximity to houses or over parks and recreation areas
- 2 During approach to or departure from an airport, climb after takeoff and descend for landing should be made so as to avoid prolonged flight at low altitudes near noise sensitive areas

4.4.9 VISIBLE MOISTURE

Where flights are likely to include operations in visible moisture or rain, the use of RAIN-X window treatment is recommended. RAIN-X is available from JABIRU as part No. PM0900.

4.4.10 STOPPING THE ENGINE

To stop the engine, turn OFF the ignition switches and turn OFF the Master Switch. Carburettor Heat should be returned to the Full IN or cold position.

4.4.11 STARTING THE ENGINE FROM EXTERNAL POWER SOURCE

Where it is necessary to start the engine from an external power source:

Remove Top cowl

Place jumper leads directly on battery terminals, ensuring positive to positive and negative to negative

Start as for normal operation

Stop engine, remove jumper leads, refit cowl

WARNING

- Wheels must be chocked
- Ensure propeller is clear
- Ensure qualified person is in the operator seat
- Do not attempt to refit cowl with propeller running

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PERFORMANCE

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5.1 STALLING

5.1.1 STALL SPEEDS

(In KIAS and power off conditions)

Flap Setting	Zero	Stage 1 Takeoff	Stage 2 Landing
600 kg LSA Maximum Takeoff & Landing Weight	49 KIAS	43 KIAS	39 KIAS
450 kg UL	45 KIAS	39 KIAS	35 KIAS

5.1.2 NATURE OF STALL WARNING

Configuration	Stall Warning	
Power Off	Clean	Audible Warning horn 5-8 knots before stall
	Flap Stage 1	
	Flap Stage 2	
Power Full	Clean	Audible Warning horn 5-8 knots before stall
	Flap Stage 1	Audible Warning horn 5-8 knots before stall
	Flap Stage 2	

5.2 TAKEOFF & LANDING DISTANCES

Takeoff safety speed is $1.3 V_{SI}$	55 KIAS
Landing Approach speed (Full Flap)	52 KIAS

The unfactored, sea-level takeoff distance to 50° at NIL wind or slope, on a short dry grass surface, is 350 metres. The sea-level takeoff strip length exceeds the landing strip length.

Takeoff and Landing Distance is therefore 350 metres times 1.3 = 455 metres. This distance is established using the normal technique described in paragraph 4.3.7

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This distance must be increased by a distance increment of 115 metres for each one thousand feet (1000') of pressure altitude.

5.3 MAXIMUM CROSSWIND FOR TAKEOFF & LANDING

14 Knots

Section: 6

WEIGHT , BALANCE & EQUIPMENT LIST

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6.1 Introduction

This section contains basic weight and center of gravity information necessary to ensure correct loading of the aircraft and comprises Empty Aircraft Limitations, Aircraft Weight and Loading System Pages. These documents, separately approved by the Civil Aviation Safety Authority or an Aircraft Weight Control Officer, are to be carried in the Flight Manual at all times.

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6.2 Aircraft Empty Weight Record

Registration No.	
Aircraft Model	
Serial Number	
Date of weighing	
Empty Aircraft Weight (kg)	
Empty Aircraft Arm (mm aft of datum)	
Aircraft Moment (kg.mm)	
Trim Sheet Index Units	
Fixed Ballast Installed In aircraft at Time of Weighing (kg)	
Ballast Station (mm aft of Datum)	

Notes:

- empty aircraft includes Full Engine oil and unusable fuel (1 kg)

.....
Weight Control Officer

.....
Date

6.3 Loading System

6.3.1 GENERAL

The load and trim system is provided in the trim chart, which is shown at Figure 6-2. The chart is a graphic representation of the weight and balance calculations for the aircraft. An example is plotted in Figure 6.3. The chart at Figure 6-2 is a blank chart for your calculations.

The aircraft is loaded correctly, only if **BOTH** the **zero fuel** and the **takeoff** cases fall inside the boundary line on the graph.

The chart is based on an aircraft "EMPTY WEIGHT TRIM INDEX" which is calculated using the following formula:

$$\text{Empty Weight Trim Index} = \frac{\{(\text{Aircraft Empty Weight}) \times (\text{Empty Weight Arm})\}}{1000}$$

Example Trim Index Calculation

$$\begin{aligned} \text{Aircraft Empty Weight} &= 270 \text{ kg} \\ \text{Aircraft Empty Weight Arm} &= 170 \text{ mm aft of datum} \\ \text{Empty weight Trim Index} &= (270 \times 170)/1000 = 45.9 \end{aligned}$$

The Chart performs two functions. The vertical scales on the Right hand side of the chart provides a graphical method to calculate the operating weights of the aircraft, while the horizontal scales and the Crew Index chart at the top of the chart provide a graphical method to calculate the CG positions.

6.3.2 Baggage Zone Definition

The J 170 has 1 baggage zone, in the area immediately behind the seats as defined below. Baggage placed outside this zone will not be accounted for correctly by the trim sheet; CG calculations must be used. Care must be taken to avoid loading above the tops of the seat backs. Zone A equates approximately to the position of the high-profile fuselage fuel tank.

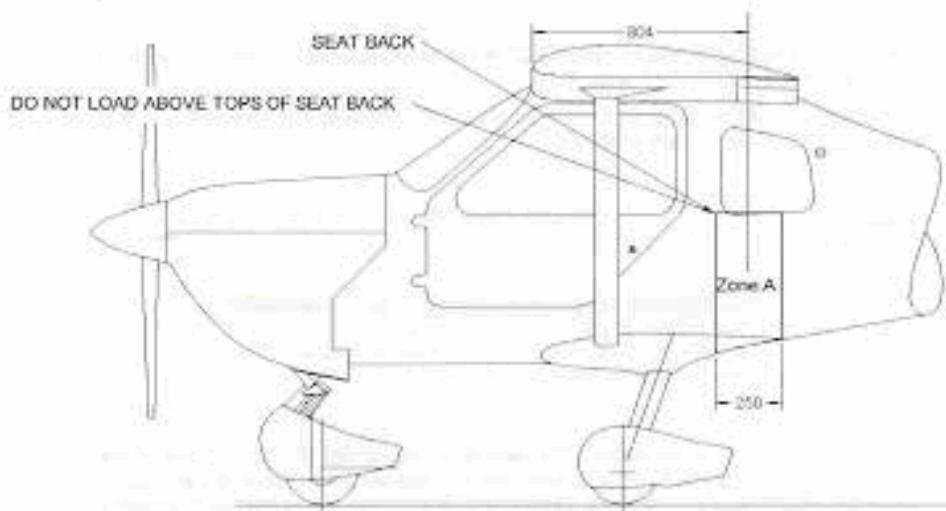


Figure 6.1 – Baggage Zones

6.3.3 Calculating the Aircraft Operating Weights

- 1-1 Use the Aircraft Empty Weight obtained from Page 6-2 of this Flight Manual, or the latest aircraft weighing records to enter the vertical “Aircraft Empty Weight Scale” on right side of the chart.
- 1-2 Move horizontal 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 “Zone A Baggage Weight” Scale
- 1-5 Move vertically downward one line on this scale for each 10 kg of weight that is placed in baggage Zone A and mark a point
- 1-6 Move horizontally to the left from the point made in step 1-5 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 1-6), move vertically downward one line for each 10 litres of fuel being carried at the takeoff condition. Mark this “Takeoff Fuel Point” on the scale.
- 1-9 Move horizontally to the left, and mark a “Takeoff Fuel Weight Line” across the “Aircraft Trim Condition” graph.

6.3.4 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 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 A" scale and mark this point in the "Baggage Zone A" ladder.
- 2-6 Calculate the weight that will be placed Baggage Area "A" and round this value to the nearest 10 kg.
- 2-7 Move horizontally to the right from the point marked in Step 2-5 one line for each 10 kg of load calculated (i. e. 60 kg = 6 lines) and mark a point at this location.
- 2-8 Drop a vertical line down from the point marked in Step 2-10 to insert a sloping line in "Fuel Chart", and mark a point at this position.
- 2-9 Continue the Vertical Line began in Step 2-11 down to intersect with the "Zero Fuel Weight Line" drawn in Step 1-9, 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 "Takeoff Fuel Box", one line for each 10 litres of takeoff fuel, and mark this point.
- 2-11 Move vertically downward from the takeoff fuel point marked in Step 2-13 to intersect with the "Takeoff Fuel Weight Line" marked in Step 1-9. Mark this point the "Takeoff Condition".

6.3.5 Allowable Loading Conditions

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

For reference, the example below shows two 65 kg people, 10 kg Baggage Zone A and 30 litres of fuel. The aircraft's starting index Unit is 46 at 270 kg.

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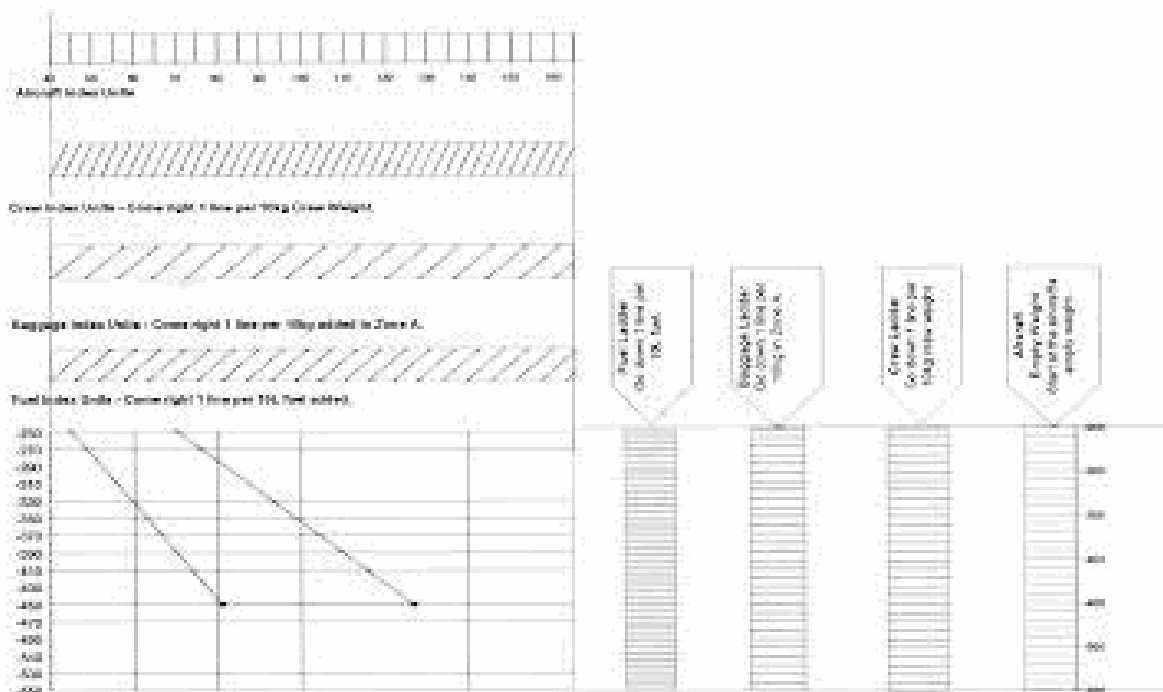


Figure 6-2 Aircraft load and Trim Chart

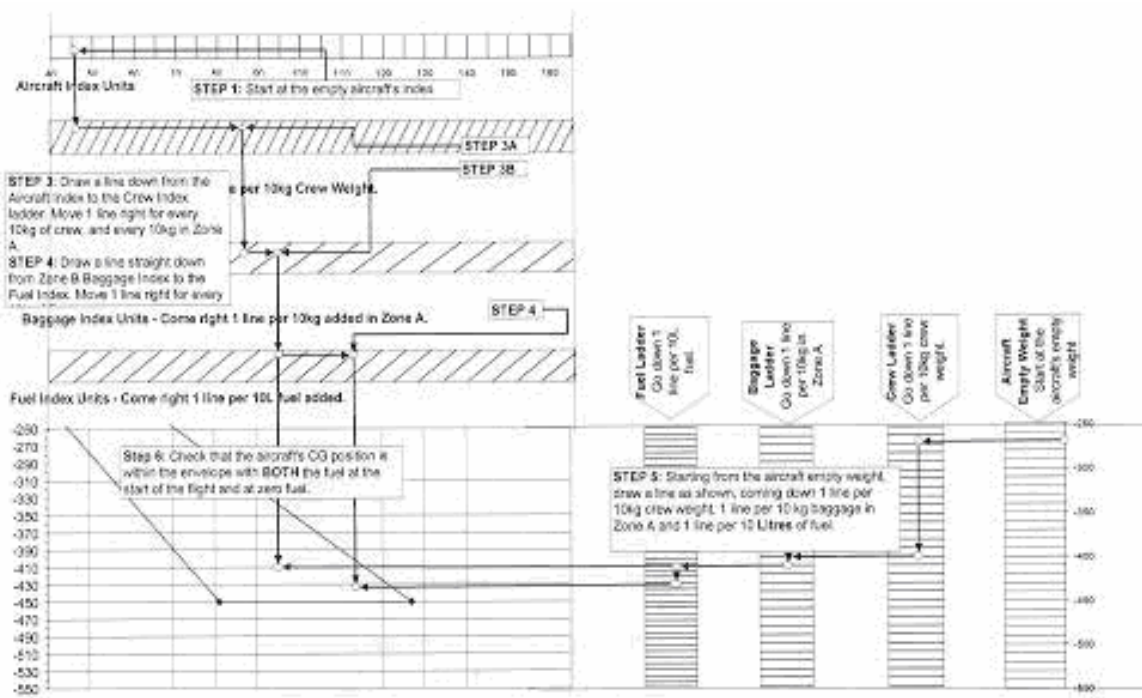


Figure 6-3 Example Trim Sheet

6.4 Weight Limits

Maximum takeoff weight: 450 kg (992 lbs)

Maximum landing weight: 450 kg (992 lbs)

6.5 Center of Gravity Limits

6.5.1 Operational Aircraft Center of Gravity Details

Forward Limit: 180 mm aft of datum up to & including 450 kg

Aft Limit: 282 mm aft of datum at all weights

Datum: Wing Leading Edge

Leveling Means

Longitudinal: Spirit Level placed on the trim control lever decal

Lateral: Spirit level placed across the fuselage forward of the firewall on cowl location rubbers.

Arm for Front Seat Station: 304 mm aft of datum

Arm for Baggage Zone A: 804 mm aft of datum

Fuel Station: 812 mm aft of datum

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6.6 Aircraft Equipment List

Items listed in the following table were fitted to the aircraft at manufacture and were included in the aircraft basic weight.

Generic Item	Specific Item Description
Engine	Jabiru 2200, serienr.: 22A2355
Propeller	Jabiru Fixed Pitch Wooden P/No C000262-D60P43
Flight Instruments	
Airspeed Indicator	
Altimeter	
Slip/Skid	
Compass	
Stall Warning System	
Engine Instruments	
Tachometer	
Oil Pressure Gauge	
Oil Temperature Gauge	
Cylinder Head Temperature Gauge	
Communication Equipment	
VHF Transceiver	Becker AR 4201
Headsets x 2	
Transponder	Microair T2000 SFL. Serienr.: 2640
Intercom	PM 501
Miscellaneous Equipment	
Seat Cushions	
Door Map Pockets	
Sound Curtain	
Seat Belts	
Electrical Storage Battery	
Fixed Ballast	As detailed on Weight Sheet