LAA TYPE ACCEPTANCE DATA SHEET
TADS E03
JABIRU ENGINES

Issue 1	Initial issue	07/09/2020	JP
Issue 2	Addition of LAA Mod 14932 CAMit Flywheel Clamp, LAA Mod 13832 Solid Lifter Conversion, and Jabiru CS01 Cold Start Kit as a Standard Options. Added AWA/20/14 & AWA/20/15 to Section 2.7	15/06/2022	BS

This TADS is intended as a summary of available information about the engine type and should be used during the overhaul, operation and permit revalidation phases to help owners and inspectors. Although it is hoped that this document is as complete a summary as possible, other sources contain more complete information, e.g. the manufacturer's website.

Section 1 contains general information about the engine type and its variants.

Section 2 contains information about the engine type that the LAA considers mandatory and must be complied with.

Section 3 contains advisory information that owners and inspectors should review to help them maintain the engine in an airworthy condition. If due consideration and circumstances suggest that compliance with the requirements in this section can safely be deferred, is not required or not applicable, then this is a permitted judgement call. This section also provides a useful repository for advisory information gathered through defect reports and experience.

Section 1 - Introduction

1.1 UK distributor

Contact: Skycraft Ltd

Address: Riverside House
Bloodfold Farm
Ravens Bank
Holbeach
Lincolnshire
PE12 8SR

Tel: 01406 540777
Email: Via the Skycraft website
Website: https://skycraft.ltd

Manufacturer contact information:

Address: Jabiru Aircraft Pty Ltd
PO Box 5792
Bundaberg West QLD 4670
Australia

Tel: +61 (0)7 4155 1778
Website: https://jabiru.net.au/

1.2 Description

Jabiru Aircraft Pty Ltd is an Australian owned family business located in Bundaberg, Queensland. It was founded in 1988 by Mr Rodney Stiff who designed both the Jabiru airframe and Jabiru engine. Exported worldwide, Jabiru Aircraft is one of the leading manufacturers of recreational aircraft in Australia, with over 2000 aircraft and 6500 engines produced to date.

The engines have been in production since 1992 and are non-certified 4-stroke engines ranging in size from 60 to 120 hp. They are air-cooled, horizontally opposed engines of 4, 6 or 8-cylinder configuration. The 8-cylinder engine is no longer in production. The propeller is driven directly by the crankshaft. Ignition is provided by dual transistorised magneto ignition and the fuel system utilises a single Bing carburettor on the 4 and 6-cylinder engines, dual carburettors on the 8-cylinder engine. Models have included variants with solid and hydraulic lifters and roller cams with hydraulic lifters.

Jabiru began the development of their own engine when the Italian-built engine originally used in the Jabiru aircraft was no longer available.

Examples of all of the Jabiru engine model types have been approved for installation in a variety of LAA administered aircraft types.

In 2009, Jabiru produced a Significant Engine Changes document providing a list of the major changes to the 2200 and 3300 engines. The current production J2200 and J3300 engines are termed 'Generation 4' engines.

Model	Capacity, configuration and power output	Remarks
J1600 Engine Models		
J1600	1600cc 4-cylinder 60 hp @ 3300 rpm 54 kg	Initial Jabiru design engine, only one example in the LAA fleet.
J2200 Engine Models		
J2200J	2200cc 4-cylinder 80 hp @ 3300 rpm 62.3 kg	Certified to CASA CS-22 Subpart H. CASA TC No 160-2.
J2200B	2200cc 4-cylinder 80 hp @ 3300 rpm 62.3 kg	Installed in certified Jabiru J160-C aircraft. CASA TC No VA-515. Engines with s/n 22B001 and above meet ASTM F2339.
J2200C	2200cc 4-cylinder 80 hp @ 3300 rpm 62.3 kg	Certified to CASA CS-22 Subpart H. CASA TC No VE-501. Engines with s/n 22C001 and above meet ASTM F2339.
J2200A	2200cc 4-cylinder 80 hp @ 3300 rpm 62.3 kg	Engines with s/n 22A1845 and above meet ASTM F2339.
J2200 Gen 4	2200cc 4-cylinder 80 hp @ 3300 rpm 62.3 kg	Current production 'Generation 4' engine.
J3300 Engine Models		

J3300L	3300cc 6-cylinder 120 hp @ 3300 rpm 83.5 kg Maximum continuous: 2850 RPM Operation between 2850 & 3300 RPM allowed for up to 10 minutes	Engines with s/n 33L001 and above meet ASTM F2339. Apart from RPM limitations all other specifications, manuals, continuing airworthiness data are as for other 3300 models.
J3300A	3300cc 6-cylinder 120 hp @ 3300 rpm 83.5 kg Maximum continuous: 3300 RPM	Engines with s/n 33A722 and above meet ASTM F2339.
J3300 Gen 4	3300cc 6-cylinder 120 hp @ 3300 rpm 83.5 kg	Current production 'Generation 4' engine.
J5100 Engine Models		
J5100	5100cc 8-cylinder 180 hp @ 3000 rpm Maximum continuous: 3000 RPM 117 kg	Not currently in production.

CAMit Engines

It is understood that the Jabiru engines were produced for Jabiru by a company called CAMit PTY Ltd based in Queensland, Australia. After producing engines and after-market parts for the Jabiru engines, CAMit began production of their own version of the 2200 and 3300.

Although many parts for the CAMit engine are interchangeable with the equivalent Jabiru engine, their engines were substantially different regarding some of the component's design, the lubrication system, valve train operation and metallurgy utilised.

CAMit ceased producing engines and components in 2016. In the UK, Kevin Hyam of CAMit Aero Engines UK Ltd provides support for the CAMit engines.

Section 2 Mandatory information for owners, operators and inspectors

At all times, responsibility for the maintenance and airworthiness of an aircraft rests with the owner. A condition stated on a Permit to Fly requires that: *"the aircraft shall be maintained in an airworthy condition".*

2.1 Lifed Items

LAA Technical Leaflet TL 2.23 Engine Overhaul Life and Operating 'On Condition' provides a large amount of information on dealing with engine life for engines installed in LAA administered aircraft.

The Jabiru Service Bulletins & Advisory Notices and Manuals sections of their website should also be checked for amendments and revisions to the Maintenance Manuals and other technical

documentation detailing the manufacturer's recommended time limits for the engine and associated components.

Jabiru Service Bulletin JSB 001-01 provides information on the manufacturer's recommended engine Time Before Overhaul (TBO) periods.

Jabiru state in their documentation that whenever a Jabiru engine is running, that time should be counted towards the total engine time run. Whilst there is no legal requirement for the engine hours to be recorded in this way (airframe, engine and propeller hours are normally taken as take-off to touch down), failure to comply with the Jabiru statement, may cause complications with any warranty claim.

2.2 Operator's manual

Operating procedures for Jabiru engines are included in the relevant engine maintenance manual:

1. J2200 & J3300 Maintenance Manual (JEM0002-9)
2. J5100 Instruction & Maintenance Manual (JEM5101-3)

The Manuals section of the manufacturer's website should be checked for revisions to the above manuals.

2.3 Maintenance Schedule

Regular maintenance is the key to stress free flying. Jabiru engines are generally fitted to LAA administered aircraft that are maintained either in accordance with the manufacturer's maintenance schedule, the CAA Light Aircraft Maintenance Schedule (LAMS) CAP411 or the LAA Generic Maintenance Schedule, further details of which can be found in LAA Technical Leaflet TL 2.19: The LAA Generic Maintenance Schedule. The CAA and LAA produced maintenance schedules were originally written around the maintenance requirements of traditional aircraft engines rather than those produced by Jabiru.

It is recommended that the applicable maintenance schedule found in the engine type's maintenance manual is consulted for both routine maintenance and when carrying out maintenance on a Jabiru engine.

Maintenance manuals for the Jabiru engines are available here:

1. J2200 & J3300 Maintenance Manual (JEM0002-9)
2. J5100 Instruction & Maintenance Manual (JEM5101-3)

The Manuals section of the manufacturer's website should be checked for revisions to the above manuals.

Some aircraft may have mandated maintenance requirements and/or schedules which are stated on the aircraft's Operating Limitations document and these must be followed.

More information on maintenance schedules can be found in the Aircraft Maintenance section of the LAA website.

Jabiru publish a number of Engine Parts Books for the various engine models and it should be noted that some are also model variant and by serial number:

Engine Model	Engine Parts Book	Engine Variant	Applicable S/N	Date
J2200A, B & J	2200 EPB	Hydraulic lifter	22A225 & on	Jun 2001
J2200	JEM2203-7	Solid lifter	2068 & on	May 2013
J2200	JEM2206-2	Roller cam hydraulic lifter	3596 & on	Aug 2014
J3300	JEM3303-3	Hydraulic lifter	33A961 & on, including 33A927, 33A928, 33A947, 33A948, 33A949, 33A950	Nov 2011
J3300	3300 EPB	Solid lifter	All s/n unless otherwise stated	Jun 2001
J3300	JEM3303-4	Roller cam lifter	33A2539 & on	Nov 2015
J5100	5100 EPB	5100 Series	All s/n	n/a

The Manuals section of the manufacturer's website should be checked for revisions to the above manuals.

2.4 Airworthiness Directives

Jabiru engines are not certified so there are no applicable Airworthiness Directives.

2.5 Mandatory Permit Directives

Up until 31 January 2012, when the publication ceased to be amended, CAP661 listed the Mandatory Permit Directives issued by the CAA.

The CAA now provides links to current MPDs on the CAA MPD Listing page of their website.

At this time, no CAA MPDs have been issued against Jabiru engines but obviously this can change and therefore the above CAA MPD list should be checked regularly.

The LAA website should be checked for MPDs that are non-type specific in LAA Technical Leaflet TL 2.22: Non-Type Specific MPDs.

2.6 CAA Mandatory Requirements for Airworthiness CAP747 and Civil Aircraft Airworthiness Information and Procedures (CAAIP) CAP562

CAA publications CAP747 and CAP562 contain information that may be relevant to LAA administered aircraft and should be checked for applicability.

In particular, for engines operating beyond the manufacturer's recommended life, CAP747 Generic Requirement No 24: 'Light Aircraft Piston Engine Overhaul Periods' should be read alongside LAA Technical Leaflet TL 2.23: Engine Overhaul Life and Operating 'On Condition'. Generic Requirements can be found in CAP747: Section 2 'Mandatory Information'.

2.7 LAA Required Modifications (including LAA issued AILs, SBs, etc)

Airworthiness Alert	Description	Applicability
AWA Oct 09	Lean mixture due to incorrect carburetor jetting. Further information in Jabiru Service Bulletin JSB 018-2	2200A s/n 1883 & on 2200B all s/n 2200J s/n 754-775 3300A s/n 722 & on 5100 s/n 24 & on
AWA/14/10 Update 1	Jabiru 2200 series rotor arm pattern parts warning	2200 Series all s/n
AWA/20/14	Jabiru Engine Overhauling – Important Build Issues	All models
AWA/20/15	Flywheel Attachment Bolts In-Service Life and Changes to Bolt Locking Method	All models

2.8 Additional Engine Operating Limitations to be Placarded or Shown by Instrument Markings

Notes:

- Refer to the engine manufacturer's latest documentation for the definitive parameter values and recommended instruments.
- Where an instrument is not fitted, the limit need not be displayed.
- Data stated on the aircraft's Operating Limitations document must be displayed by means of cockpit placards or instrument markings.

Where the engine manufacturer's operating data shows an operating limitation then a means to monitor that parameter must be installed, except when otherwise agreed with LAA Engineering. It may be acceptable to install temporary instrumentation for the flight test programme.

The Jabiru operating limitations are published in the relevant maintenance manuals and installation manuals:

1. J2200 & J3300 Maintenance Manual (JEM0002-9)
2. J2200 Installation Manual (JEM2202-10)
3. J3300 Installation Manual (JEM3302-8)
4. J5100 Instruction & Maintenance Manual (JEM5101-3)
5. J5100 Installation Manual (JEM5103-1)

The Manuals section of the manufacturer's website should be checked for revisions to the above manuals.

A more restricted operating limitation may be imposed through an aircraft's Operating Limitations or Certificate of Clearance which will take precedence over any other limitation, e.g. if a particular propeller is not approved for an engine's maximum RPM.

Section 3 Advice to owners, operators and inspectors

3.1 General

The Jabiru engine is well supported by the manufacturer and their technical information and continuing airworthiness data is available free of charge via their website. In addition, UK support is provided by Skycraft Ltd.

3.2 Standard Options

The following options may be installed without reference to LAA Engineering (except for aircraft that previously held a Certificate of Airworthiness or aircraft with more than 2 seats, in which cases an email request should be made to LAA Engineering in the first instance), subject to an LAA Inspector checking the installation against the relevant installation instructions and confirming that it is compatible with the airframe/engine installation. The inspector must sign a PMR statement* in the engine and/or airframe logbook prior to flight with the option fitted.

1. For Jabiru 2200 and 3300 engines with 1/4" and 5/16", but not 3/8", bolt crankshafts, LAA Modification 14932 CAMit Flywheel Clamp. To be installed only by Kevin Hyam*. Continued Airworthiness Instructions: once in service the 6 cap screws should be initially torque checked at 5, 15 and 30 hour intervals, and thereafter every 50-100 hours.
2. For Jabiru 2200 and 3300 engines LAA Modification 13832 Solid Lifter Conversion. To be installed only by Kevin Hyam*. Continued Airworthiness Instructions: valve clearances to be closely monitored for the first 25 hours with valve clearance (and head bolt torque) checks at 5, 10, 25, and then every 50 hrs post modification.
3. Jabiru CS01 Cold Start Kit installation.

* Note that in signing the PMR for Standard Options #1 and #2, the LAA Inspector is not signing for the actual modification to the engine by Kevin Hyam. The Inspector is signing to confirm that the modification is compatible with the airframe/engine installation, that any other work/reassembly associated with the modification has been completed satisfactorily, and that the aircraft is fit for flight.

3.3 Manufacturer's Information (including Service Bulletins, Service Letters, etc)

Jabiru provide free access to the continuing airworthiness data for their engines which can be found in the Service Bulletins & Notices section of their website.

The UK Jabiru distributor, Skycraft Ltd, also provides links to the Jabiru Service Bulletins on their website at Jabiru Engine Service Bulletins, although the Jabiru factory website should be the initial port of call for information.

Links are included to various documents in these TADS but owners and inspectors should check on the Jabiru website for revisions and amendments.

In the absence of any over-riding LAA classification, inspections and modifications published in the manufacturer's continuing airworthiness data should be satisfied according to the recommendations therein. It is the owner's responsibility to be aware of and supply such information to their inspector.

3.4 Special Inspection Points

1. Jabiru Engine Installations

The installation of a Jabiru engine is detailed by the manufacturer in the following Installation Manuals:

a. J2200 Installation Manual (JEM2202-10)

b. J3300 Installation Manual (JEM3302-8)

c. J5100 Installation Manual (JEM5103-1)

The Manuals section of the manufacturer's website should be checked for revisions to the above manuals.

2. Jabiru Engine Overhaul

Owners of LAA administered aircraft may elect, at their own discretion, to continue to use an engine beyond the engine manufacturer's recommended Time Before Overhaul (TBO). The extent of the inspection and checks required in order to be reasonably satisfied that an engine should be allowed to remain in service beyond the manufacturer's recommended TBO, depends on a number of factors, not least the known history of the engine and its planned usage.

CAA Generic Requirement No 24 in CAP 747: Mandatory Requirements for Airworthiness covers the subject of Light Aircraft Piston Engine Overhaul Periods. Although this GR is primarily concerned with engines installed in aircraft holding a Certificate of Airworthiness, its inspection requirements do provide useful guidance as to what inspections and checks might be appropriate when considering the operation of an engine beyond the manufacturer's recommended TBO on an LAA administered aircraft.

3. Who Can Overhaul a Jabiru?

Work carried out on Jabiru engines that is outside permitted 'pilot maintenance' (LAA Technical Leaflet TL 2.05: Pilot Maintenance refers) must be checked and signed for by a suitably approved LAA inspector. Clearly any major engine work carried out by the owner would fall into this category. To check inspector suitability, refer to the inspector's card and current LAA Inspector Approval Scheme notes.

4. Jabiru Engine Propeller Strikes/Engine Shock Load Inspection

Inspection procedures to be followed following a propeller strike are detailed in the applicable engine Maintenance Manual which can be downloaded from the Jabiru website in the Manuals section.

3.4 Operational Issues

1. Safety Spot references

The following Safety Spot articles are relevant to Jabiru engines:

Light Aviation issue	Subject
None currently indexed	n/a

2. Non-Aviation Fuel

Jabiru 2200 and 3300 engines in LAA administered aircraft may be cleared for use (dependent on engine serial number) with unleaded Mogas fuel in accordance with the

requirements detailed in the LAA Technical Leaflet TL 2.26: Procedures for Use of E5 Unleaded Mogas to EN228 and the following check lists:

a. Jabiru 2200A Mogas Inspection Check List

b. Jabiru 3300A Mogas Inspection Check List

The LAA no longer advises approval for Ethanol-free Mogas due to the majority of Mogas including 5% Ethanol.

Jabiru also issued Service Letter JSL007-7 providing guidance of fuel type.

Note: In the maintenance manuals, further information is provided on recommended fuel types for specific engines:

a. Paragraph 3.7: J2200 & J3300 Maintenance Manual (JEM0002-9)

b. Paragraph 3.4: J5100 Instruction & Maintenance Manual (JEM5101-3)

3. Previously Reported Operational Issues

The items below were previously highlighted in the LAA SPARS inspector notes as potential issues:

a. Exhaust studs loosening leading to gasket failure or exhaust gas blow-by
b. Ignition coil to magnet gap setting
c. Over filling of oil due to hard to read dipstick, apparent oil consumption when it is blowing out into overflow bottle
d. Carburettor connection to rubber mounting
e. Blow by oil due to glazed barrels
f. Rotor arms loosening on shaft, recommended check after each 100 hours
g. Rich mixture on cylinder number one, if present, drop main needle jet
h. Tacho calibration – most VDO tacho's require calibration
i. Low usage and winter inhibiting. Failure to inhibit the engine during periods of disuse can lead to corrosion in bores and can cause broken pistons and/or rings
j. Excessive tappet adjustment – may be a soft adjuster screw
k. Check air filter is clean and properly installed
l. Check full and free movement of throttle and choke linkages
m. Check full and free movement of hot air selector and that the carburettor heat flap opens and closes
n. Difficulty in starting is most likely due to inadequate cranking speed, as a high cranking rpm is required to operate ignition system. Use a high current type battery and keep resistance of battery cables and connections to a minimum

3.6 Standard Modifications

The following Standard Modifications have been approved on the type. The Standard Modification leaflet associated with each modification (published on the website) must be followed and an LAA/MOD 1 form completed and return to LAA Engineering in each case (see also LAA Technical Leaflet TL 3.06: Using an LAA Approved Standard Mod).

Standard Mod no.	Issue	Description	Applicability
SM13017	1	Thermostatic oil cooler adapter	Jabiru 2200A & 3300A

---------- END ----------

Please report any errors or omissions to LAA Engineering: engineering@laa.uk.com