

CZAW SPORTCRUISER

Issue 11			
Revision A	Addition of landing light factory option. Addition of LAA mandatory modification MOD-338-014. Pitch Trim Servo Speed Controller.	Dated 11/04/11	JV
Revision B	Addition of optional nose gear reinforcement modification and note on pitch trim switches with autopilot installations.	Dated 03/10/11	JV

Section 1 - Introduction1.1 UK contact

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1.2 Description

The Sportcruiser is a two seat low wing aircraft of all riveted aluminium structure, manufactured in kit form by CZAW in the Czech Republic.

Note that these TADS apply only to the CZAW Sportcruiser supplied as a kit by Sprite Aviation. They do not currently apply to any Sportcruiser versions produced by Czech Sport Aircraft/Pipersport.

The fuselage is of conventional stressed sheet metal skin construction, with longerons, frames and stringers. It includes an integral fin. A one-piece canopy is fitted over the cockpit, hinged at the front, allowing straight-forward access to the side-by-side seating arrangement. The horizontal tail is mounted at the base of the fin trailing edge. The one-piece elevator has a trim tab on the trailing edge. The entire tailplane is easily removable.

The wing is a two-piece unit. Each wing panel has a main forward spar and a trailing edge spar, which are bolted to centre section carry-thru spars in the fuselage. The wing panels are fitted with single-slotted flaps and ailerons. A fuel tank is fitted on each inboard wing section, forward of the main spar. The aircraft has a fixed tricycle undercarriage. The main undercarriage is a one-piece glass-fibre/epoxy cantilever spring, while the cantilever sprung noseleg is made up 4130 steel tube.

The principal airframe structure is 6061-T6 aluminium alloy and 4130N steel alloy. The cockpit flying controls are 4130 steel, with 6061-T6 pushrods and bellcranks used throughout the airframe.

A Rotax 912-ULS engine is generally fitted to this type using the standard installation given in the construction manual. The standard propeller fitted is a three bladed ground adjustable Woodcomp Klassic 170/3/R, which uses moulded glassfibre blades and a conventional two-piece aluminium hub. The Woodcomp Klassic propeller has been used on many previous LAA aircraft in this category. The 'Effic' model propeller differs in its blade profile and has a reinforced leading edge. The 'Effic' model is not LAA accepted due to problems with leading edge detachment. Woodcomp variable pitch propellers are also frequently fitted: SR3000/2W 1740mm diameter or SR3000/3

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1720 mm diameter. Note that the only propeller(s) approved for an individual aircraft are those listed on the aircraft's Operational Limitations sheet or in the PTL/1 (Propeller Type List) for the type.

The Jabiru 3300A engine has also been accepted using an installation designed by F.Sayyah. This installation uses a Sensenich Ez-pitch two bladed ground adjustable propeller (see Section 3.2).

The Sportcruiser is an SEP Aeroplane (colloquially known as 'Group A'), not a microlight.

The UK prototype aircraft G-CZAW was built from an early kit, serial number 3785. At the time this kit was supplied, the aircraft was still under progressive development. Many cosmetic changes have been incorporated since the early kits were issued. Many of the more significant changes were made in response to issues raised by the LAA during the initial type evaluation. G-VIIZ is serial number 3837. Significant differences incorporated in the subsequent kits from serial number 3833 onward, which include all subsequent kits known to have been imported into the UK, are as follows:

- Wider cockpit (approximately 2").
- Firewall moved approximately 4" forward and engine mount shortened by equal amount, for increased legroom and make provision for adjustable rudder pedals.
- Revised flying control stop arrangements.
- Revised box section flap control torque tube arm.
- Revised flap control actuating pin.
- Revised canopy surround of carbon fibre construction rather than steel tube/aluminium construction.
- Revised canopy latch, changing from twin cable-operated latches (similar to CH601 XL) to a single over-centre latch operated by a torque tube and levers.
- Adjustable three-position rudder pedals to suit pilots of different stature, operated by a lever which disengages four sprung locking pin from gates on each of the four rudder pedals which are individually adjustable.

Section 2 – Mandatory information for owners, operators and inspectors**2.1 Fast Build Kit 51% Compliance**

The LAA has accepted the content of the fast build kit as described in Sprite Aviation letter to LAA dated 3.4.07. Note that it is essential that the kit is not supplied with any further work carried out by CZAW, so that the inspector is able to inspect the individual components and 'open' assemblies and so that the builder is tasked with assembling these major assemblies as part of the 51% rule 'major portion' requirements.

2.2 Build Manual

A build manual is provided by CZAW.

2.3 Build Inspections

Build inspection schedule 2.

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Inspector approval codes A-A or A-M or K. Inspector signing off final inspection also requires 'first flight' endorsement.

2.4 Flight Manual

An operator's manual is from CZAW including flight manual information. Revision 3 is the earliest revision accepted by LAA.

2.5 Mandatory Permit Directives

None applicable specifically to this aircraft type.

Also check the LAA website for MPDs that are non-type specific (TL 2.22).

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

A number of mandatory modifications were developed on the UK prototype, G-CZAW. CZAW undertook to incorporate productionised versions of these modifications into all Sportcruiser airframe kits from serial no 3833 onwards (i.e. not just aircraft destined for UK customers). The configuration of these productionised modifications is described below. Some early Sportcruisers are without these modifications and so care should be exercised if attempting to transfer older extant aircraft onto the UK register later.

The following mandatory requirements apply:

MOD-338-001 Elevator Control Stops

The aft stick travel must be limited by contact with the forward end of the aileron torque tube. The forward travel must be limited by the elevator stop shown in Section 5.4 of the Build Manual.

MOD-338-002 Aileron Control Stops

The aileron travel must be limited by the adjustable stops shown in Section 7.9 of the Build Manual (Rev 0).

MOD-338-003 Rudder Control Stops

Rudder Control Stops must be fitted.

MOD-338-004 Flap Actuation Lever

The box section lever, with 8mm 4130 pin must be fitted, as shown in Section 7.8 of the Build Manual (Rev 0). When installed, the pin must make contact with the flap root rib no more than 20mm outboard of the box section.

Note: This gap is greater on the UK prototype (G-CZAW), but the root diameter of the pin is increased to 10mm, to compensate.

MOD-338-005 Tailcone Trimming

The tailcone must be trimmed as shown in Section 9.8 of the Build Manual (Rev 0) to give adequate clearance to the elevator pushrod.

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The braced forward tailplane bracket and the extended length aft fuselage longerons shown in the drawing in Appendix C must be fitted.

MOD-338-007 Elevator Horn Reinforcement

The original two-piece elevator horn must be reinforced in accordance with CZAW Mandatory Service Directive SD-SC-001.

MOD-338-008 Main Landing Gear Leg

The main landing gear may only be painted white or silver, unless temperature monitoring tapes are fitted and a maximum surface temperature of 55°C observed.

MOD-338-009 Fuel Vapour Return Line

A fuel vapour return line must be fitted in accordance with Rotax installation manual to route fuel vapour back to the top of the port fuel tank.

MOD-338-010 Fuel Pressure Gauge

A fuel pressure gauge must be fitted (only applicable to Rotax 912-ULS installations).

MOD-338-011 Digital Flap control

The 'digital flap control' which provided incremental flap angle changes which was factory-supplied for a short period is not approved by the LAA due to concerns over reliability of the digital flap system. The standard switch arrangement allows continuously variable flap positions as required.

MOD-338-012 ASI markings and placards – Corrections

The ASI markings and Airspeed limitation placards must reflect the airspeed limitations (Vne, Vfe and Vno) shown in section 2.9 of this TADS and POH revision 3, which differ from those in previous editions of the POH.

MOD-338-013 Alternative Propeller Bolts

For improved fatigue resistance, propeller bolts in kit are replaced by longer length M12.9 8mm diameter cap-head bolts passing through plain holes in the propeller drive flange with self-locking nuts on the back face, rather than screwing bolts into tapped holes in drive flange. Not applicable to SR3000 type propeller which has a different mounting arrangement.

MOD-338-014 Pitch trim servo speed reduction

When operating the aircraft at moderate to high speeds, an unintended continuously running pitch trim servo may result in an unacceptably high pitch change rate. It is therefore necessary to install a pitch trim servo speed controller adjusted such that the running time for full range travel is increased to 22 seconds ± 3 seconds. Acceptable speed controllers are the Ray Allen resistive unit (part no. SPD-1) – as provided by Czech Sport Aircraft - or the Maplin pulse width modulator unit (part no. WC76H).

2.7 Additional engine operating limitations to be placarded
(or shown by instrument markings)

(Refer to the engine manufacturer's latest documentation for the definitive parameter values.)

With Rotax 912-ULS engine:
Maximum CHT: 135°C

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Max Coolant Temp: 120°C (with 50/50 Glycol/water coolant)

Oil Temp Limits: 50°C to 130°C (Normal 90-110°C)

Oil Pressure: 2-5 Bar

Minimum Fuel Pressure: 0.15 bar

2.8 Control surface deflections

Ailerons (original)	Up: 28° ±2° Down: 18° ±2°	Ailerons with revised gearing (April 08 kits on)	Up: 20° ±2° Down: 15° ±2°
Elevators	Up: 25° ±2° Down: 25° ±2°	Short chord Elevator (July 08 on)	Up: 28° ±2° Down: 25° ±2°
Elevator tab	Up: 25° ±2° Down: 25° ±2°		
Elevator tab with longer horn	Up: 16° ±2° Down: 12° ±2°	Elevator tab on short chord elevator	Up: 22° ±2° Down: 26° ±2°
Rudder	Left 30° ±2° Right 30° ±2°		
Flap	Down 0° - 15° ±2° - 30° ±3°		

2.9 Operating Limitations and Placards

(Note that the wording on an individual aircraft's Operating Limitations document takes precedence, if different.)

1. Maximum number of occupants authorised to be carried: Two
2. The aircraft must be operated in compliance with the following operating limitations, which shall be displayed in the cockpit by means of placards or instrument markings:
 - 2.1 Aerobatic Limitations
Aerobatic manoeuvres are prohibited.
Intentional spinning is prohibited.
 - 2.2 Loading Limitations
Maximum Total Weight Authorised: 600 kg
CG Range: 405 mm to 570 mm aft of datum.
Datum Point is: the wing leading edge at rib 4.
 - 2.3 Engine Limitations (Rotax 912-ULS)
Maximum Engine RPM: 5800
Maximum continuous engine RPM: 5500
 - 2.4 Airspeed Limitations
Maximum Indicated Airspeed (V_{NE}): 138 knot IAS
Max Indicated Airspeed Flaps Extended: 70 knots IAS
Maximum Indicated Airspeed, Rough Air (V_{NO}): 108 knots IAS
Maximum Manoeuvring Speed (V_a): 88 knots IAS

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2.5 Other Limitations

The aircraft shall be flown by day and under Visual Flight Rules only.
Smoking in the aircraft is prohibited.

Additional Placards:

"Occupant Warning - This Aircraft has not been Certificated to an International Requirement"

A fireproof identification plate must be fitted to fuselage, engraved or stamped with aircraft's registration letters.

SR3000 propeller (if fitted) to be operated in accordance with SR3000 Operator's manual.

2.10 Maximum permitted empty weight

N/A.

Section 3 – Advice to owners, operators and inspectors3.1 Maintenance Manual

The operator's manual includes basic maintenance details. Where further information is required, refer to LAMS. For engine and propeller, refer to manufacturer's maintenance instructions.

3.2 Standard Options

One piece elevator tab horn (Drg No.ST0421N) as alternative to MOD-338-007.

A custom installation of a Jabiru 3300 engine has now been accepted by LAA designed by F.Sayyah. This is not an option offered by CZAW. The LAA should be contacted prior to commencing a Jabiru 3300 installation.

An improved design of elevator trim tab horn has been approved as shown on drawing SC-AF-MOD 1 by A.Palmer dated 28.1.09. This improved horn reduces the sensitivity of the elevator trimmer and makes the aeroplane more easily trimmed in flight. This improved horn is available for retro-fit from the UK agent. This modification is not applicable to the smaller elevator installation.

The alternative aileron bellcranks as shown on drawing SC0330N which result in reduced aileron deflections and has been accepted and results in improved control harmony.

The smaller elevator modification developed by CZAW to improve the control harmony of the Sportcruiser.

Facet fuel pump 40106 is approved as an alternative to 40105 where sufficient fuel flow rates cannot be achieved to meet the minimum required.

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Aveo strobe/navigation lights may be installed in the wing tips in accordance with CZAW/Sprite Aviation instructions.

Kuntzlemann strobe lights may be installed in the wing tips and on the fin in accordance with CZAW instructions.

The factory-installed leading edge cut-out in the outer portion of the wing is acceptable for the installation of a landing light.

Note that autopilot installations are not standard options at the current time and require a modification application to be submitted in each case.

The LAA has approved the installation of the BRS-6 1350 Softpack LSA ballistic recovery system as an option during initial build, subject to certain constraints. It is advisable for builders to contact LAA Engineering for further information prior to fitment. It is not currently approved for retrofitting to in-service aircraft: a modification application must be submitted if a retrofit is desired.

The interchangeable alternative noseleg assembly supplied by Pipersport, part number SG 0250N is accepted on the amateur-built CZAW Sportcruiser. When this nose leg is fitted, annual Safety Directive SD-SC-005 is not applicable. To prevent damage in the removal/re-fitting process, it is recommended that the top grease nipple be removed from the existing noseleg before leg removal, and the top grease nipple be temporarily removed from the new noseleg prior to fitting it to the aircraft, and then replaced once the leg is mounted. After fitting the new nose leg, the top opening on the front portion of the spat must be extended forward by approximately 5mm to allow free castering movement of the nosewheel spat about the fixed part of the nose leg.

The Palmer/Sayyah modified/strengthened noseleg assembly is accepted on the amateur-built CZAW Sportcruiser. The modification involves the welding of a doubler section to the top face of the noseleg (ref LAA Mod 13089). Aircraft with this modification fitted are subject to Safety Directive SD-SC-005.

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

The following bulletins are highly recommended by the LAA (unless mandated above); the indicated compliance level is as recommended by the factory.

<i>Ref</i>	<i>Date</i>	<i>Description</i>	<i>Factory compliance status</i>	<i>Applicability</i>
SC-SL-001	28.05.08	Replacement of various rivets in the fuselage		Specific s/n
SD-SC-001	18.09.07	Elevator horn reinforcement (see LAA MOD-338-007)	Mandatory	Specific s/n
TB-SC-001-R1	02.10.07	Flaps control system (see LAA MOD-338-011)		Aircraft with digital display flap control system
SD-SC-002	10.01.08	Propeller Effic 170/3/RF – Metallic leading edge	Mandatory	Specific s/n

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SD-SC-003	14.01.08	Replacement of propeller gearbox	Mandatory	Aircraft fitted with Rotax 912ULS engines Specific s/n
SD-SC-004	07.02.08	Faston electrical connector	Mandatory	Specific s/n
SD-SC-005	09.06.08	Nose landing gearleg – Shimmy	Mandatory	All aircraft with original CZAW noseleg design
SD-SC-006	14.08.08	Fuel cell finger strainer – Incorrect sealant used	Mandatory	Specific s/n

3.4 Special Inspection Points

Check the composite main landing gear legs for signs of surface cracking following any heavy landing and at each 50 hour check.

Check the noseleg for signs of being bent back following any heavy landing and at each 50 hour check.

Due to the significant number of cracked exhausts found on this type, it is recommended that the exhaust system is checked daily. Further information on this subject can be found in the [May 2010 Safety Spot](#) article published in *Light Aviation*.

3.5 Special Test Flying Issues

The aircraft has very light elevator forces. Excessive friction in the elevator control system can cause the aircraft to be divergent in pitch when hands-off, following a departure from the trimmed condition. Check that the aircraft demonstrates positive pitch stability at initial flight test and subsequent annual flight tests.

Where an auto-pilot (pitch) system is installed, to eliminate the possibility of pitch trim runaway (at least when the auto-pilot is engaged), the activation of the pitch trim system must require the operation of a pitch trim enabling switch, in addition to the standard pitch trim operating trim.

----- END -----

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