

ZENAIR ZODIAC CH-601 XL

Issue 6 Addition of mod/162B/004 and MPD 2008-006 Dated 3/9/09

1. UK contact

Gary Johnson e-mail 'THEHIGHFLYER@aol.com'

2. Description

The Zenair CH601 XL is a small two-seat low-wing aeroplane of all riveted aluminium construction, manufactured by Zenair in Canada and Czech Aircraft Works in the Czech Republic and supplied in standard or quick-build kit form through Lewis Aviation Sales. The LAA acceptance of the type at present only covers the kit as supplied by CZAW. The only engine model currently approved in the UK for use in the CH601 XL is the Rotax 912-ULS. The use of the Jabiru 3300A engine is also under consideration. Accepted propellers with the 912-ULS engine are the Kremen SR2000 1700mm diameter, Woodcomp Varia 170-2-R 1700mm diameter and Woodcomp Klassic 170-R.

The CH601-XL is an SEP Aeroplane (colloquially known as 'group A category') with a maximum gross weight of 560 Kg. It is not eligible as a microlight in the UK.

3. Fast Build Kit 51% Compliance

The technical leaflet TL.11 shows the contents of the accepted fast build kit. Note that it is essential that the fuselage turtle-decks and the closing skins for all flying surfaces are supplied in un-riveted condition so that the inspector is able to inspect the 'open' assemblies and so that the builder is tasked with riveting these skins in place as part of the 'major portion' requirements.

At this time, use of the CZAW 'builder assist program' is not acceptable pending agreement over the extent of work which can be done with commercial assistance without compromising the 'major portion' rule.

4. Drawings and Build Manual

Drawings – CZAW supplied version of Zenair CH601-XL drawings
Construction Manual 'Building your own Zenair CH601 XL'

5. Maintenance Manual

Nil. In the absence of a manufacturer's schedule for the airframe, refer to LAMS schedule. For engine consult engine manufacturer's schedule.

6. Flight Manual

None available, but see 'Flight Testing of Zenair CH601XL' by Barry Tempest

7. Mandatory Permit Directives

None applicable specifically to this aircraft type, but note

ZENAIR ZODIAC CH-601 XL

MPD: 1998-019-R1 Flexible Fuel Tubing Applies to all aircraft
MPD: 2008-006 Structural integrity (MOD 162B/004 is the 'fix' for this MPD)

8. LAA Mandatory Modifications / Bulletins

Two modifications were required by the LAA for acceptance of the type in the UK, as follows:

MOD-162B-001	Full span elevator trim tab 890mm long (was 416) CZAW drawing 6-T-6CZ refers
MOD-162B-002	Elevator bias spring per CZAW drawing 6-BO-4CZ (subsequently deleted by MOD/162B/004)
MOD/162B/003	Engine frame cracking problems - inspection
MOD/162B/004	Addition of aileron mass balances, wing attachment reinforcements, reduced elevator trim range, removal of elevator bias spring, reduction of cg range and introduction of max zero fuel weight and additional warning placards.

Additional mandatory bulletins issued by LAA:

MOD/Prop/04-005	Mandatory change to Woodcomp Klassic Propellers to Replace any Blades Prior to serial number 600
MOD/162/008	Zenair 601 Fuel Cocks (Andair fuel cock to be fitted if stops or detents not satisfactory with existing fuel cock)

Letter to owners dated 5.11.03 stating that a vapour return line must be fitted to the fuel system if unleaded Mogas fuel is to be used. This returns the excess fuel and vapour to one of the two fuel tanks. Returning it to the fuel supply pipe downstream of the tank outlet is not acceptable.

9. Service Bulletins

- Nil known for airframe. Zenair's newsletter 'Zenair News' provides advice on building and operating Zenairs of all kinds, but Zenair have not promulgated service bulletins.
- For Rotax 912 series engines, there are many Rotax service bulletins dealing with a variety of important safety topics. Copies of the bulletins applicable to individual engines by engine serial can be downloaded directly from the Rotax website at <http://www.rotax-aircraft-engines.com> More information is available on www.skydrive.co.uk

10. Standard Options

6-WO-1CZ	Landing lamp
6-BO-1CZ	Optional installations
6-BO-3CZ	Dual rudder pedals and brakes
6-CO-1CZ	Canopy lock
6-EO-10CZ	Adjustable prop control
6-GO-1CZ	Optional wheel fairings

ZENAIR ZODIAC CH-601 XL

6-GO-2CZ	Tailwheel Undercarriage Option
6-EO-3CZ	Woodcomp Varia propshaft extension
6-EO-4CZ	Propshaft Extension
6-GO-3CZ	Fibreglass undercarriage mounting and fuselage stiffeners
6-GO-4CZ	Fibreglass undercarriage mounting and fuselage stiffeners
6-GO-5CZ	Fuselage skin stiffeners
6-TO-1CZ	Optional aileron trim

11. Special Inspection Points

- Elimination of undue friction in rudder control system and nosewheel steering. In order for the rudder to self-centre in flight and for the aircraft to meet normal directional stability requirements, it is essential to avoid undue friction in the rudder controls. This involves attention to the lubrication of the system, avoiding over-tight fits and the correct setting up of the rudder cable tensions, which should be carried out with the aircraft jacked up so that the nosewheel is off the ground to simulate the flight case.
- Elimination of undue friction in the elevator control system. In order to achieve positive pitch stability is important to avoid undue friction in the elevator controls. This is achieved through proper attention to lubrication, avoiding over-tight fits and correct elevator cable tensions.
- The throttle spring on the carburettor must be adjusted so that the system does not have a strong tendency to spring to 'full throttle' when the throttle knob is released, or require a strong pull to keep it in the closed position.
- If Rotax engine fitted, Rotax 912 series installation checklist to be completed (apart from flight test section) as part of final inspections prior to applying for Permit to Fly.
- Corrosion problems have been reported in service with some airframes which had not been fully primed prior to assembly of the components. Inspect airframe for signs of corrosion developing and ensure that structural integrity has not been compromised. Treat any corrosion before it becomes widespread, if necessary by replacing corroded parts with new.
- Cracks have been found in service of the engine mounts of CH601 type aircraft at its attachment to the firewall, in the mount itself under the engine and of the brackets behind the firewall which support the engine mount bolts. Inspect these areas regularly for any signs of cracks developing. See also MOD/162B/003 regarding this problem.

12. Operating Limitations and Placards

Maximum number of occupants authorised to be carried: Two
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:

Aerobatic Limitations

- Aerobatics prohibited.
- Intentional spinning is prohibited.

Loading Limitations

- Maximum Total Weight Authorised: 560 Kg
- CG Range: 300mm to 455mm aft of datum point.
- Datum Point is: The leading edge of the wing at the root.
- Maximum loaded weight, excluding fuel and wing baggage: 494 Kg

ZENAIR ZODIAC CH-601 XL

Engine Limitations

Maximum Engine RPM: 5800 rpm.

Maximum continuous engine RPM: 5500

Airspeed Limitations

Maximum Indicated Airspeed: 140 kts

Maximum Normal Operating Limit: Vno: 90 KIAS

Maximum Indicated Airspeed with flaps extended: 65 kts

Other Limitations

The aircraft shall be flown by day and under Visual Flight Rules only.

Smoking in the aircraft is prohibited.

Additional Placard

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

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

The following warning placards must be fitted in the cockpit in full view of the pilot:
"To avoid exceeding aft centre of gravity limit of 455 mm AOD, particularly when flown with two crew, minimum weight of baggage may be carried in rear baggage compartment, typically less than 5 Kg. Heavy baggage must be carried in wing baggage lockers."

"The aircraft demonstrates a strong nose-down pitch when the flaps are lowered, which the elevator trimmer is not powerful enough to trim out. With full flaps, it may be necessary to hold a rearward stick force of approximately 6-10 Lbs to maintain the desired attitude & speed."

"This aircraft has light stick forces in pitch and particular care is required to avoid inadvertently overstressing it when manoeuvring at airspeeds above Va (86 KIAS)"

If Woodcomp Varia propeller installed, cockpit placard to be fitted, worded as follows:

NO COARSE PITCH STOP FITTED. DO NOT OPERATE BEYOND 15 TURNS FROM FULL FINE PITCH

13. Additional Engine operating limitations/Placard requirements

Maximum CHT: Rotax 912-UL: 150°C

Rotax 912-ULS: 135°C

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

Oil Temp Limits: 912-UL : 50°C to 140°C (Normal 90-110°C)

912-ULS: 50°C to 130°C (Normal 90-110°C)

Oil Pressure 2-5 Bar (maximum 7 Bar at cold start-up)

Minimum Fuel Pressure: 0.15 bar

Maximum Fuel pressure 0.4 bar

ZENAIR ZODIAC CH-601 XL

14. Maximum Permitted Empty Weight

<u>Model</u>	<u>Engine</u>	<u>Max empty weight</u>
CH601-XL	Rotax 912-ULS	375 Kg

15. Special Test Flying Issues

Rotax 912flight test schedule if Rotax engine fitted
 VP prop schedule if VP propeller fitted
 Special check on directional and longitudinal stabilities / control circuit frictions.

16. Significant Airworthiness Approval Notes

LAA-162-492	912-ULS engine, propellers as above, nosewheel undercarriage
LAA-162-492 supplement 1	912-ULS engine, propellers as above, tailwheel undercarriage

17. Control surface deflections

Ailerons	Up: 10.5-12.5 degrees Down: 10.5-12.5 degrees
Elevators	Up: 27-32 degrees Down: 25-30 degrees (total 52-62 degrees)
Rudder	Left 20-22 degrees Right 20-22 degrees (total 40-44 degrees)
Flap	Down 23-24 degrees (not 29-31 degrees as shown on drawings)
Elevator tab	Up and down 30 degrees

Approved:

F.R. Donaldson
 Chief Engineer

----- END -----