



## LS4-a VH-XOK INFORMATION FOR PILOTS

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The LS4a XOK is a 15 metre, single seat, Standard Class, “T-tail” sailplane. More than 1000 LS4s were produced by Rolladen-Schneider Flugzeugbau GmbH between 1980 and 2003. The LS4-a variant has larger water ballast bags and a strengthened landing gear system.

### 1. GENERAL INFORMATION/SPECIFICATIONS

VH-XOK	Serial No.
Wing Span	15 metre.
Length	6.7 metre
Height	1.32 metre
Wing Area	10.5 M2
Aspect ratio	21.4
Empty Wt.	259 Kg
Max Gross weight	525 Kg
Max wing Loading	50 Kg/M2
Aerofoil	Modified Wortmann
Glide Ratio	40: 1 at 54 Kts
Radio	Xcom VHF
Water Ballast	170 Litres

#### 1.1 Undercarriage Warning.

The glider is **not** fitted with an undercarriage warning.

#### 1.2 Flight Computer

The LS4 is fitted with an [LX-NAV LX8000](#) flight computer. Consult the manual for instructions on its use.

### 1.3 Wheel Brake

- A. The wheel brake is operated by “heel brake” pedals, located in the rudder pedal assembly. The wheel brake is very effective – pilots must use due care when applying the wheel brake to avoid tipping the glider onto its nose. If the pilot is unfamiliar with this brake arrangement, some pre-flight practice is recommended.
- B. Pilots must also ensure the wheel brake is not “ON” at touchdown.

### 1.4 Canopy

- A. Ensure proper caution and care is exercised in relation to the canopy.
- B. The canopy is opened by levers on either side of the cockpit – pulling the levers **back** locks the canopy. Care is needed to ensure the pilot’s left hand does not open the canopy as the airbrakes are closed.
- C. The canopy “emergency jettison” is operated by a separate **RED** coloured knob on the right side canopy frame.
- D. Under no circumstances should the canopy be forced closed – if it’s difficult to close, check for obstructions (ie Seat Belt).

### 1.5 Water Ballast

The glider is able to carry up to 170 kilograms of water ballast in its two wing tanks. Refer to the [Water Ballast](#) section below for details of loading and operation.

### 1.6 Tools

- A. There are no specific tools for the LS4 glider.
- B. There is a “ratchet” socket drive with the trailer to operate the “scissor jack” arrangement installed in the trailer fittings to lift the fuselage.
- C. The fuselage can be lifted to allow the wheel to be retracted before the fuselage is placed in the trailer. Care **must be exercised** to ensure the forward fuselage will clear the trailer when lowering the fuselage after the wheel has been extended after rigging.

### 1.7 Seat Back

The pilot seat back is readily adjustable by spring-loaded pins in the lower seat back. Pilots must ensure the seatback is firmly secured in position before flight. Seat-back slope adjustment is also available using an adjuster on the right-side cockpit wall.

## 1.8 Batteries

### A. Main Batteries

Provision is made to secure two batteries in the luggage compartment behind the pilot's head. The necessary switches and fuses are located on the Instrument Panel.

### B. Tail Battery

XOK is capable of carrying a tail fin battery. It is necessary to remove the tailplane to gain access to the battery box at the top of the fin. The supply fuse for this battery is also near the battery box. **There is no battery for this duty** to deter use.

## 1.9 Ground Handling Equipment

The ground-handling equipment for XOK includes a wing walker, a tail dolly and tow bar. The tow-bar is not designed for reversing the glider (risk of tow-bar folding up).

## 1.10 Release

XOK is fitted with a Tost nose release only.

## 2. RIGGING

### 2.1 Control Connections.

The airbrake and aileron connections on the LS4 are achieved with "L'Hotellier" couplings. These **must** be cleaned and lubricated at 50 hour intervals. If the aircraft is derigged, remember to clean the couplings and re-lubricated them prior to reconnection – and amend the Maintenance Release accordingly.

The "L'Hotelliers" are difficult to access for cleaning, lubrication, securing and dismantling. Particular care **must** be exercised to ensure these connections are clean (too much grease is as bad as not enough), secure and properly locked.

The LS4 "L'Hotelliers" are locked with **Wedekind Sleeves**, which provide for an aluminium sleeve to be screwed over the wedge which secures the L'Hotellier **in the latched position**.

### 2.2 Tail Plane Attachment.

The tailplane is attached with the traditional "LS" fitting. The elevator is auto-connect. The large "NUT" must be secured firmly – **but not overtightened**. An aluminium tool is provided (in the pilot seat pocket) for this purpose.

### 3. HANDLING NOTES

#### 3.1 Ground Handling

- A. Secure the control stick with the harness while ground handling to prevent wear and tear in the gliders control system.
- B. Attach the “wing walker” to the LEFT / RIGHT wing – NOTE: this wing walker is hinged on the trailing edge and secured at the leading edge. DO NOT FORCE THESE FITTINGS – IF IT’S TOO TIGHT MOVE THE WING WALKER OUTBOARD.
- C. Ensure the canopy is secured (closed and locked) while ground handling.

#### 3.2 Flight Preparation.

##### A. Minimum Cockpit Load 62 Kg

Pilot Wt.	Add Ballast
46 – 50 Kg	7 Kg
51 – 57 Kg	5 Kg
58 – 61 Kg	2 Kg

One trim weight corresponds to 5Kg of pilot weight.

- B. **Ballast Weights** - 3 Lead (Red coloured) ballast weights are provided. These are secured in the nose of the glider, forward of the rudder pedals.

**One trim weight corresponds to 5Kg of pilot weight.**

##### C. Maximum Cockpit Load - 104 Kg

- D. **Radio batteries** – Installed and connected.

#### 3.3 Take-Off

- A. Daily Inspection completed, Maintenance release completed.
- B. Ground handling equipment removed.
- C. Pre Take-Off checks completed.
- D. Tow cable weak-link - Winch and Aerotow - 600 Kg.
- E. Elevator authority in the initial phase of the take-off ground run is sluggish. Pilots must avoid applying too much “down” elevator in order to prevent the nose touching the ground when the elevator (quickly) becomes effective.
- F. The wheel brake is a “heel” brake operated by a bar on the bottom of the rudder pedals. The brake is effective – pilots must use caution in order to avoid touching the nose on the ground.

### 3.4 Speeds

Stall speed no water ballast	Approx. 35-38 Kts
Tall speed with water ballast	Approx. 43-46 Kts
Vne, sea-level - 6500 feet	151 kts
Vne, 6500 - 9800 feet	144 Kts
Vne, 9800 – 19700 feet	123 Kts
Manoeuvring Speed – Va	103 Kts
Max Winch tow Speed,	76 Kts
Max Aerotow peed,	103 Kts
Max, Landing Gear Extension	151 Kts
Max, Airbrake Extension,	151 Kts
Best Glide Angle	49 – 54 Kts
Wet Wings	Increase landing speed by 5 Kts.

### 3.5 Tyre Pressure

Main wheel	300 – 340 kPa(43 – 50 psi)
Tail wheel	250 – 340 kPa(36 – 50 psi)

## 4. WATER BALLAST SYSTEM

XOK is fitted with 2 water ballast bags, each of 85 litre capacity. Separate controls on the right side of the cockpit control the dump valves. It is important that the two valves are operated together when dumping water to avoid an imbalance in weight. Water is dumped at the rate of approximately 1 litre/sec through each dump valve.

### 4.1 To Load Water Ballast.

- A. Determine volume to be loaded.
- B. Open respective DUMP VALVE (L or R) in the cockpit.
- C. Lay respective wing on the ground.
- D. Remove (suck) residual air from the ballast bag.
- E. Connect hose and funnel to dump orifice.
- F. Fill the desired amount of water from a water container. **(Under no circumstances connect a mains water supply. Use a maximum of 1 metre head of water).** Disconnect funnel occasionally to release residual air.
- G. Close dump valve.
- H. Repeat for the other wing, adding same amount of water.

### 4.2 To Dump Water Ballast

- A. OPEN both dump valves simultaneously.
- B. Water will be dumped at a rate of approx 1 litre/second through each dump valve.
- C. If aileron is needed to maintain level flight, stop dumping.
- D. Check “heavy wing” dump valve is open.
- E. Be prepared for ground loop on landing.

### 4.3 Water Ballast Volume

<b>Pilot Weight</b>	<b>Max. Water Ballast</b>
104 Kg	161 Litres
100 Kg	165 Litres
46 – 95 Kg	170 Litres

## 5. XCOM VHF RADIO

### 5.1 Controls / Display

A separate Operating Manual is provided (in the Briefing Room) for the Xcom VHF Radio.

### 5.2 Radio Power Supply

- Supply protection 3 amp fuse.
- Radio connected via Avionics Bus.