LS7 WL, VH-XJB
INFORMATION FOR PILOTS

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The LS-7 is a T-tail, Standard Class, single seat sailplane with winglets. It is capable of carrying water ballast in the wings and tailfin. It has a retractable, sprung landing gear and upper wing surface airbrakes. The LS7 was designed by Walter Lemke and produced by Rolladen-Schneider GmbH. Carbon fibre was used extensively in its construction. The LS7 was manufactured from 1988 to 1993 with 164 aircraft produced.

1. GENERAL INFORMATION/SPECIFICATIONS

VH- XJB	Serial No. 7069
Wing Span	15 m (49.21 Ft)
Length	6.66 m (21.84 Ft)
Height	1.33 m (4.36 Ft)
Wing Area	9.73 m^2 (104.8 Ft^2)
Wing Aspect Ratio	23.1
Empty weight	235 Kg
Max Gross Wt	486 Kg (1071 Lbs)
Max Wing Loading	50 Kg/m^2 (10.2 Lbs/Ft^2)
Aerofoil	Wortmann modified.
Glide Ratio	43:1 at 57 Kts
Electronic Audio Vario	Borgelt B100
Mechanical Vario	Winter
Radio	Xcom VHF Radio
Air Speed Indicator	Small Winter
Altimeter	Winter
Water Ballast	50 L (each) wing bags / 5.5 L tail tank

1.1 Undercarriage Warning

This aircraft is not fitted with an undercarriage warning.

1.2 Flight Computer

The LS4 7 is fitted with an LX-NAV LX8000 flight computer. Consult the manual for instructions on its use.

1.3 Air Brakes

A. The airbrakes have an over-centre lock to lock them closed.
B. There is another over-centre lock to lock them fully open.
C. The airbrakes should be unlocked when hangared.

1.4 Wheel Brake

A. The wheel brake is operated by "heel brake" pedals located in the rudder pedal assembly. The wheel brake is very effective.
B. Care must be exercised to ensure the wheel brake is not (unconsciously) on at the point of landing – Ensure your heels are not applying the brake.
C. The wheel brake should be operated cautiously to avoid tipping the glider onto its nose.

1.5 Canopy

A. The canopy is hinged at the front and opens upward and is secured in the "**closed"** position by 2 levers, one either side of the canopy.
B. The right-hand side lever also act as "canopy jettison" levers.
C. **To OPEN canopy**
   i. Pull both levers back to unlock.
   ii. Push canopy up from the back.
D. **To Jettison Canopy**
   i. Pull both handles back to the stops.
   ii. The right-hand side lever has longer travel and requires additional force to reach the stop.
E. **Do not force the canopy closed.** If it is difficult to close, there is something obstructing it (Pee tube, Seat Belt etc).
F. **Do not lift the canopy by the vent window opening, use the handles provided.**

1.6 Pee Tube

The glider is fitted with a "Pee Tube". If you use this, please flush it after the flight.

1.7 Water Ballast

A. The water ballast system consists of a "bag" in each wing and tail tank.
B. Consult the "Water Ballast" chart to determine the maximum water ballast which may be carried.
C. The ballast tanks, including the tail tank, are "bottom" filled.
D. Hoses, funnels etc for filling are stored on a board in the main hangar.
E. It is necessary to withdraw air from the wing bags before filling.

F. For each 10 Kg of pilot weight above 70 Kg, 1 litre of water may be added to the tailfin tank.

1.8 Tools

A. Tail Plane Attachment Nut Tool,
   i. Located in cockpit sidewall pocket.
   ii. Used to secure the Tailplane attachment Nut.
   iii. Do not use excessive force.
B. Water Ballast Tool
   iv. Located in cockpit sidewall pocket.
   v. May also be used to undo / tighten pilot seatback attachment screw (when shifting seat back).

1.9 Seat Back

The pilot seat back is adjustable – control on right side of cockpit wall. The seat back also has several location points, enabling pilots to move the seatback forward or back to achieve the optimum position.

1.10 Winglets

A. The LS7 is fitted with "winglets".
B. To remove winglets:
   i. Remove the "tape" on the top side and bottom side of the wings to allow access to the winglet securing pins.
   ii. Push the winglet securing pins out.
   iii. Place winglet pins into the holes in the winglet.

Side-slipping with winglets is PROHIBITED.

1.11 Trailer

A. **XJB** trailer is a "Cobra style" copy, of the clamshell configuration.
B. The trailer is fitted with brakes and a standard 7 pin plug for lights etc.
C. The spare tyre is located under the trailer floor, immediately behind the axle.
D. The Tailplane and winglets are stowed in the "lid" of the trailer.
E. Wing dollies and a fuselage dolly carry the wings and fuselage respectively.
F. An extendable track, to allow the fuselage to be lowered to ground level, is included in the trailer. This extendable track is fitted with a jack, to allow the height to be adjusted.
G. It is normally necessary to extend this jack to prevent the underside of the nose of the glider fouling on the trailer as the fuselage is removed.
H. The wing and fuselage dollies should be secured in the trailer when the trailer is empty.

2. PILOT HANDLING NOTES

2.1 Ground Handling

A. Secure the control stick with the seat belt harness while ground towing to minimize elevator deflection and component wear.
B. Use Wing-walker, Tail-dolly and tow bar.
C. Avoid handling the ailerons. The foam sandwich is pressure sensitive and is easily deformed.
D. Ensure the canopy is closed and locked for all ground-handling activity.

2.2 Flight Preparation

A. Minimum Cockpit Load is 70 Kg.
   i. Ballast weights can be fitted in the nose ahead of the rudder pedals.
   ii. 1 X 2.5 Kg ballast weight = 5 Kg of Pilot weight.
B. Maximum Cockpit load is 112 Kg.
C. Batteries installed and connected.

2.3 Takeoff

CHAOTIC checks completed.

Controls, full and free movement.
Harness, Secure
Airbrakes, closed and locked.
Outside, Wind, Obstructions, Crew, Options
Trim, set neutral.
Instruments, Set,
   a) LX8000 - ON
   b) Data Logger: ON
   c) Radio: On
Canopy, Closed and locked.

2.4 Speeds

Stall Speed (approx) 70 Kg pilot	30 Kts
Stall Speed (approx) 100 Kg pilot	31 Kts
Stall Speed (approx) Max AUW	36 Kts
Safe Speed Near the Ground	55 Kts + ½ wind speed
Aerotow Speed (no Water Ballast**)**	Min 54 Kts
Aerotow Speed (with Water Ballast)	Min 65 Kts
Max Aerotow Speed	103 Kts
Winch Tow Speed	Max, 76 Kts
Rough Air Max	103 Kts
Vne	146 Kts

2.5 Thermalling speeds

The LS7 performs better at higher than normal thermalling speeds when compared to other standard class gliders.

2.6. Stall / Stall Recovery

- Slight tail shudder prior to entry.
- Stall Speed @ maximum weight, 486 Kg in straight flight, 36 Kts
- During pronounced yawing, the forward facing wing will stall first, due to winglets. Spinning may result.
- Standard spin-recovery actions – opposite rudder, elevator nose down until glider recovers.

NOTE: Sideslip with winglets fitted is prohibited.

2.7 Flying In Rain

- Flight in rain will result in a considerable decrease in performance.
- Increase speeds by 5 – 6 Kts, including approach and landing speeds.

2.8 Landing Gear

- Rapid operation eases retraction.
- Operating handle in forward position, Gear Up.
- Operating handle in rearward position, Gear Down.
- When winch launching, retract landing gear **only** after tow cable is released.

2.9 Weak Link

- Aerotow - 500 Kg
- Winch Tow 750 Kg (Recommended)

2.10 Demonstrated Crosswind Performance

- During aerotow 11 Kts.
- During winch launch 16 Kts

3. TECHNICAL DETAILS

3.1. Speeds (IAS)

Vne, sea level – 6500 ft	146 Kts
Vne, 6500 Ft – 9800 ft.	139 Kts
Vne, 9800 Ft – 13100 Ft	132 Kts
Vne, 13100 Ft – 19700 Ft	118 Kts
Vne, 19700 Ft – 26200 Ft	105 Kts
Vne, 26200 Ft – 32800 Ft	93 Kts
Vra, Max. Rough Air Speed	103 Kts
Vw, Max Winch-tow speed	76 Kts
Vt, Max Aerotow speed	103 Kts
Vl, Max gear extension speed	146 Kts
Max Airbrake extension speed	146 Kts

3.2 Mass

Maximum T/O weight, with water ballast	486 Kg (1071 Lbs)
Maximum T/O weight, without water ballast	389 Kg (858 Lbs)
Maximum Landing weight	
Maximum Wing Water Ballast	100 Kg (220 Lbs)
Maximum Tail-fin ballast	5.5 Kg (12 Lbs)
Maximum Cockpit Load	120 Kg (265 Lbs
Minimum Cockpit Load	70 Kg (154 Lbs)
Ballast Weights	1 X 2.5 Kg weight = 5 Kg of pilot weight

3.3 Tail Tank Limits

For each 10 Kg of pilot weight above 70 Kg, 1 litre may be added to the tail-fin tank

Pilot weight, Kg	Tail tank, litres
80	1
90	2
100	3
110	4

3.4. Flight Load Limits

- At 103 Kts 5.3 G positive, 2.65 G negative.
- At 146 Kts 4.0 G positive, 1.5 G negative.

3.5. Launch Method Weak Link

- Aerotow; 550 Kg
- Winch Launch; 825 Kg (Maximum); 750 Kg recommended in Club use.

3.6 Tyre Pressure

Main wheel	300-340 KPa (43-50 PSI)
Tail wheel	340 kPA (36-50 KPa)

4. DAILY INSPECTION

4.1 Cockpit

A. Main Wing Pins, Secure
B. Instruments
C. Electrics, Radio Batteries installed / Connected / Secure.
D. Harness condition / security
E. Parachute / cushions available.
F. Canopy: attachment, locking mechanism, cleanliness
G. Cockpit Cleanliness.
H. Controls, Full, free and correct sense.
I. Thermometer (near landing gear handle) functioning, normal.

4.2 Left Wing; General Condition.

A. Gap Tape.
B. Airbrake box, Cap, extension, closing damper
C. Aileron, condition, gap tapes, secure.
D. Wingtip skid, condition, security
E. Water Ballast drains, clear.

4.3 Rear Fuselage

A. Rear Static Ports, clear.
B. Tailboom, condition, Tail skid / wheel assembly, Tyre Pressure.
C. Tailplane, security, gap tapes
D. Pitot Head, secure (lower)
E. Total Energy Head (upper), secure.
F. Water ballast drain, clear

4.4 Right Wing, General Condition

A. Gap Tape.
B. Airbrake box, Cap, extension, closing damper
C. Aileron, condition, gap tapes, secure.
D. Wingtip skid, condition, security
E. Water drains (root and tip) clear

4.5 Forward Fuselage

A. Forward Static Ports, Clear
B. Main Wheel, Tyre condition , Pressure,
C. Nose Release
D. Belly Release
E. Water ballast drains, clear

4.6 Cockpit

Maintenance Release completed.

5 WATER BALLAST SYSTEM

5.1 Filling Sequence

Fill in the following sequence

A. Tail tank
B. Left Wing
C. Right Wing

5.2 OPEN" water dump valve - shift cockpit dump lever to the rearward position. If the tail-fin tank is to be used, fill this tank first.

5.3 Connect tail-fin tank tube and funnel to tail-fin tank dump valve.

A. Move rudder left or right, observe valve with opening below rudder).
B. Place "Funnel" at the top of the rudder.

5.4 Fill tail-fin tank to the required amount, refer Loading Chart. Markings on the translucent right rudder gap seal tape = 0.5 Litre each.

5.5 Use water level in fill tube to fill to the desired amount. The **upper RED marking correspond to maximum amount.**

5.6 "CLOSE" water dump valve – shift cockpit dump lever to forward position. Remove tube and funnel from tail-fin dump valve.

5.7 To Fill Left Wing bag

A. Open "left" wing dump valve through Baggage Compartment.
B. Suck residual air from the left wing bag - close dump valve before stopping sucking – using hose connected to the under-wing dump valve.
C. When air is removed, lay the left wing down, **open dump valve** and supply ½ total wing water ballast via funnel, held **maximum** 1 metre above the wing.
D. Close "left" wing dump valve and remove tube and funnel.

5.8 To Fill Right Wing bag

A. Open "right" wing dump valve through Baggage Compartment.
B. Suck residual air from the right wing bag - close dump valve before stopping sucking – using hose connected to the under-wing dump valve.
C. .When air is removed, lay the right wing down, **open dump valve** and supply ***the other ½*** of total water ballast amount via funnel, held **maximum** 1 metre above the wing.
D. Close "right" wing dump valve and remove tube and funnel.

5.9 Warnings

A. Unequal water ballast amounts may promote ground-looping.
B. Check for proper water dump operation – Tail-fin dump **must** open before wing dump valves to prevent rearward movement of C of G.

5.10 Water Dumping

Water is dumped at a rate of approx 150 Litres in 4 Minutes.

To dump, OPEN cockpit dump lever – move lever to the most rearward position.