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4. Insert the right wing panel spar fork into the fuselage and support the outer end of the wing with a stand, if available.

NOTE: The wing stand must not obstruct the movement of the flap !

5. Insert the left wing panel spar root and line up main rigging pin bushings. Insert and lock the main pins. Only at this point, and not before, may the wing-panel end be unsupported.
   If the aircraft is still supported in a fuselage cradle, it is recommended that the landing gear be extended at this point and rigging completed with the aircraft resting on the gear.

6. After cleaning and lightly lubricating the elevator studs and sockets, the horizontal tail is pushed on to the fin from the front. Each elevator half must be guided into the elevator actuator. The plastic seal covering the elevator gap must be placed on top of the elevator actuator. Use sheet-alloy tool Schleicher-No. 99.000. 4657 for this procedure by placing it between the seal and the elevator actuator. Push the tail completely aft until the hexagon socket head bolt near the leading edge will engage. The bolt must be fully and firmly tightened; it is secured by a spring ball catch, where the ball engages in the grooves on the side of the bolt head.

7. The winglets must be installed into their pockets in the wing tips, (Darlington or Maughmer winglets must be safetied by a M5-thread screw and additionally) adhesive tape must be used as safety! (Use minimum 15mm wide white tape, for example "Tesaflex" No.4163 or 3M-Scotch 35 white, Vinyl Electrical Tape 10828). For temperatures above 25°C (77°F) or extreme low temperatures use textile reinforced tapes (for example Tesaband 4651 white or an equivalent medical tape).

NOTE: For wings with integrated (wet surface) water tanks the ventilation port at the winglet root is not taped over!

Technical Data:	(U.S. Customary units)	
Span	15.00	ft
Fuselage length	6.50	ft
Height (fin and tail wheel)	1.30	ft
Maximum take-off weight (mass)	500.00	lbs
Wing chord, mean aerodynamic	0.643	ft
Wing area	9.00	ft^2
Height of winglet, 1. version or	0.27	ft
according to "Darlington" or	0,45	ft
according to "Maughmer"	0,40	ft
Wing loading, maximum	55.56	lbs/ft^2

5. Check full and free operation of all controls through full deflections. Hold controls firmly while loads are applied to control surfaces. A competent person should assist you when doing this check.

6. Check ventilation opening and optional Pitot tube in fuselage nose.

7. Check inflation and condition of tires:
   Main wheel: 2.3 bar ± 0.2 bar (33 psi ± 3 psi)
   Tail wheel: 2.5 bar ± 0.1 bar (36 psi ± 2 psi)

8. Check condition and operation of tow hook(s). Release operating freely? Release checks done?

9. Check wheel brake for operation and fluid leaks. With airbrakes fully extended, the brake pressure from the main brake cylinder should be felt through spoiler handle.

10. If installed, check connections to wing and fuselage water ballast tank ventilation lines (not applicable for integrated water ballast tanks!).

11. Check battery voltage to be > 12 V.

12. Check both upper and lower wing surfaces for damage and water ballast openings for dirt.
    For integrated wing water ballast tanks only: Check ventilation port at the wing tip to be clean as well as the cover on the upper outer wing surface for proper seating watertight taping!
    Are the Winglets undamaged, safetied and taped?

13. Ailerons and flaps:
    Check condition and full and free movement (control-surface clearances). Check external linkage fairings for clearance.

4.5.9 Aerobatics

WARNING: **Aerobatics** are only allowed **without** water ballast on board !

Aerobatics are not yet tested in flight with **Darlington-** or **Maughmer-Winglets installed. Aerobatics** are therefore **not approved** in that configuration!

In accordance with JAR-22.3 some simple aerobatic manoeuvres may be permitted for the Utility Category, provided they are demonstrated by appropriate substantiation in the course of type approval tests.

With central and forward C.G. positions the ASW 27 cannot be held in a spin. A steady spin is only possible with aft C.G. positions and is therefore not a suitable aerobatic manoeuvre.

For aerobatic flying an additional flap setting WK A (+10°) is installed so that the full speed range up to VA = 215 km/h (116 kts; 134 mph) can be utilized while still maintaining aerodynamic efficiency.

All approved manoeuvres can be safely executed well within the maximum g-load value of 5.3 g without the use of a g-meter. Installation of a g-meter will however improve the manoeuvering from an aerodynamic point of view.

NOTE: As the ASW 27 is a very high performance glider with rapid speed build up it is imperative that aerobatic manoeuvres are only performed by qualified pilots who have received proper training.

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1.1 Introduction

This Maintenance Manual was produced because the safety and airworthiness of an aircraft depends to a large measure also on the careful maintenance of all its components. Its airworthiness can be assured only if the ASW 27 is maintained and operated in the manner laid down in the Manuals.

1.2 Description of the Sailplane

The ASW 27 is a single-seater mid-wing glider with trailing edge flaps, T-tail unit, retractable and sprung landing gear with hydraulic disc brake, and including water ballast system. The triple-paddle dive brakes with spring loaded sealing caps extend on the top surface only. Automatic control connections for elevator, aileron, flap and airbrake controls have been developed for this design.

The components are made from hybrid composite laminate. This means that several fibre materials are used together. For the construction of the ASW 27 besides the well known GRP (Glass fibre reinforced plastic) also SRP (Synthetic fibre reinforced plastic) and CRP (Carbon fibre reinforced plastic) are used.

1.2.1 Wings

The 2-part wing is of GRP/CRP hard foam sandwich construction. The I-section spar consists of carbon fibre caps with GRP/hard foam web. The wings are assembled in the fuselage by means of a tongue-and-fork joint and two cylindrical main pins.
The ASW 27 has detachable winglets, which have a tongue spar stub which fits into an appropriate gap at the wing tip. They are safetied by a specified elastic tape, (Darlington and Maughmer winglets are additionally safetied by a M 5 x 14 DIN 963 screw).

1.4 Specification

Wings

Span	15.00 m	(49.22 ft)
Mean aerodynamic chord	0.643m	(2.22 ft)
Wing area	9.00 m²	(96.88 ft²)
Aspect Ratio		25
Dihedral (hinge line of TE flaps)		3.25°
Sweep back, 25%-chord line		
(both inner wing tapers)		0°
(outboard wing taper)		+3.64°
Flap positions	-2.5°, 0°, +12°, +19.5°, +24°, +47°	
Airfoil section		
inner wing taper (until 4.6125m)	DU 89-134/14	
outer wing taper	DU 92-131/14MOD	

Winglets

	1. Version	Darlington	Maughmer
Height	0,27 m	0,45 m	0,4 m
Sweep back of leading edge	30°	30°	sickle type
Airfoil section	DU 94-086	DU 94-086M4	PSU94-097

Fuselage

Length (Weighing position)	6.5 m	(21.33 ft)
Height at T-tail incl. tail wheel	1.30 m	(4.27 ft)
Cockpit width (inside)	0.66 m	(2.17 ft)
Cockpit height	0.81 m	(2.66 ft)

Vertical Tail

Height above tail boom top edge	1.20 m	(3.94 ft)
Surface area	0.95 m²	(10.23 ft²)
Airfoil Section	DU 86-131/30	

7.1 Special Inspection Procedures

After Hard Landings

1. Check landing gear mountings at the top of the front main bulkhead !
2. Check landing gear wheel fork, as well as toggle strut, A- and horizontal struts for distortion !
3. Are the rubber buffers in the landing gear springing still serviceable ?
4. Check tail wheel mountings !
5. Examine spar fork and tongue for white areas !
6. Inspect wing mounting drag pins on fuselage !
7. Check drag spar cross tubes and bulkheads in the fuselage !
8. Re-establish wing bending frequency and compare with the value shown in the last inspection report ! If they differ by more than 5 %, contact Messrs. Schleicher! For correct fuselage support positions see Fig. 3.0-1.

After Ground loops

1. Inspect the tail boom at the fuselage-to-fin junction and the horizontal tail mountings at the fin !
2. Check wing mounting drag pins on fuselage !
3. Inspect drag spar cross tubes and bulkheads in fuselage !
4. Examine horizontal partition in fuselage (between front and rear main bulkhead) !
5. Check horizontal floor between front and rear main fuselage bulkheads !
6. Check front wing root rib !
7. Check winglet and winglet connection to wing tip !

After landings in high crops or high grass

1. Check flap control circuit! Check control deflections for ailerons and flaps, as levers inside fuselage or wings may have been bent.

2. Check winglet and winglet connection to wing tip!

After Flying with Water Ballast

After de-rigging the aircraft, briefly raise the tips of the wings and check whether water originating from the ballast bags accumulates behind the root ribs.
If water is found there, the water bags and the valves should be checked for leaks. Seeping or leaking valves must be overhauled in accordance with Section 2.4 without fail.

When integrated (wet inner wing surface) water ballast tanks are leaking or leaking is suspected, the manufacturer A. Schleicher must be contacted.

Do not forget to dry the wings out ! **Always** store the aircraft with valves **open** !

When a fuselage water tank is installed, check if water has gathered behind the landing gear box inside the fuselage.
When water is found check all hose clamps, hoses and valve for leaks.

Trial Filling of Water Bags

In the course of the annual C of A inspection, a test filling of the water ballast system should be carried out. During this test, special attention should be paid to water seepage from the bags and to dripping valves.
Also check the proper opening of both valves, see section 2.4, in order to avoid unequal water flow when draining, which may lead to an asymmetric wing load after a while.

Record of revision

Revisions number	Affected Section	Affected Page(s)	Revisions Date	Date inserted	Ref. / Signature
A	0 / 12	0.5; 12.8	03.11.97	03.11.97	Juw ,
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