Record of Revisions:

Rev. No.	TN 4	
Section and Page(s) Affected	0.4, 0.5 1.4, 1.5 4.5, 4.9 4.11, 4.17 4.33, 4.34 4.35, 4.43 4.45, 8.4	
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0.2 List of Effective Pages

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	6.6	Nov. 90		8.4	09.09.92
	6.7	Nov. 90		8.5	Nov. 90
	6.8	Nov. 90		8.6	Nov. 90
	6.9	Nov. 90		8.7	Nov. 90
	6.10	Nov. 90		8.8	Nov. 90
	6.11	Nov. 90	9	9.1	Nov. 90
				9.2	Nov. 90

1.3 Warnings, Cautions and Notes

The following definitions apply to warnings, cautions and notes used in the Flight Manual:

"WARNING"	means that the non-observation of the corresponding procedure leads to an immediate or important degradation of the flight safety.
"CAUTION"	means that the non-observation of the corresponding procedure leads to a minor or to a more or less long term degradation of the flight safety.
"NOTE"	draws the attention on any special item not directly related to safety, but which is important or unusual.

1.4 Descriptive Data

The ASW 24 E is a high performance powered single-seater sailplane the design of which was orientated to the FAI Standard Class specification.
The ASW 24 E is suitable for record breaking and competition flying. Not least, its pleasant flying characteristics make the ASW 24 E suitable for use for the pilot experienced in powered soaring.

The ASW 24 E is a shoulder wing glider with stabilised T-tail (tailplane-plus-elevator) and sprung, retractable landing gear with hydraulic disc brake and a retractable 24 hp (17,6 kW) power-plant which allows self-launching up to a take-off mass of 460 kg (1014 lbs).

As power-plant a ROTAX 275 single cylinder two-stroke engine is used which drives a wooden two-bladed propeller (mt-propeller, Straubing) by a toothed wheels reduction gear.

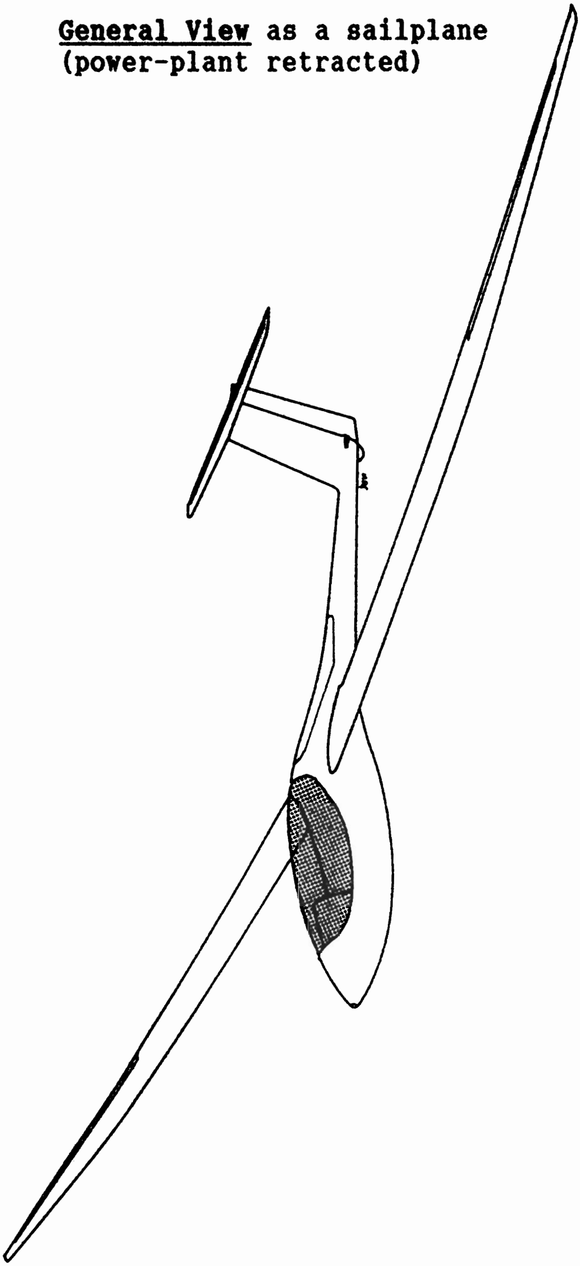
Optional operation of the ASW 24 E with 0,3m (about one foot) high winglets is approved.

Technical Data:	(metric system)
Span	15.00 m
Fuselage length	6.55 m
Height (Fin and Tail Wheel)	1.30 m
Max.Take-Off Mass	500.00 kg
Max. Take-Off Mass, Self-Launch	460.00 kg
Wing chord (mean aerodynamic)	0.71 m
Wing area	10.00 m^2
Height of winglet	0.30 m
Wing loadings - min.	34.5 kg/m^2
Wing loadings - max.	50.0 kg/m^2
Engine Performance	24.0 HP, 17,6 kW
Propeller Diameter	1.40 m
Reduction Rate Engine/Propeller	3 in 1

Technical Data: (British system)

Span	49.21 ft
Fuselage length	21.49 ft
Height (Fin and Tail Wheel)	4.27 ft
Max. Take-Off Mass	1102.31 lbs
Max. Take-Off Mass, Self-Launch	1014.13 lbs
Wing chord (mean aerodynamic)	2.33 ft
Wing area	107.64 ft^2
Height of winglet	11.81 in
Wing loadings - min.	7.07 lbs/ft^2
Wing loadings - max.	10.24 lbs/ft^2
Engine Performance	24.0 HP, 17,6 kW
Propeller Diameter	4.59 ft
Reduction Rate Engine/Propeller	3 in 1

Figure 1.4-1 <u>General View</u> as a sailplane (power-plant retracted)



"Use the handbook recommended speeds, remembering that the sink rate will be high, especially with any spoiler deployed."

2. Do not extract the engine below 1000 ft (≈330 m) agl over landable terrain and commit to a landing if unable to find lift.

What this sums up to is if you are at 1000 ft (≈330 m) agl, have a landable field nearby. If the engine is out, try to start until you are 800 ft (≈250 m] agl then commit to a landing. If the engine is stowed and you drop below 1000 ft (≈330 m) agl, do not extract the engine. Climb out or commit to a landing."

This is so far the abstract of an important article of Pete Williams.

4.2 Rigging and De-Rigging

To rig: The ASW 24 E can be rigged without use of rigging aids by three people, or by two people if a fuselage cradle and wing trestle are used.

Note: Exchange the winglets for the wingtip _only after_ rigging the wings to the fuselage!

1. Clean and lubricate all pins, bushings and control connections.

2. Support fuselage and keep upright. If the wheel is lowered, check that the landing gear is securely locked down.

3. Insert right wing spar fork into fuselage and support the wing tip with a trestle, if available. While rigging, the airbrake paddles should be retracted but not locked and the ailerons slightly raised.

4. Insert left wing spar root and line up the main pin bushings. Insert and lock main pins. Only now - and not before - may the wing weight be relaxed. If the aircraft is still supported in a fuselage cradle, it is recommended that the landing gear should be extended at this stage, and rigging completed with the aircraft standing on its wheel.

5. After cleaning and lightly lubricating the elevator studs and sockets, the tailplane is pushed onto the fin from the front. Each half-elevator must be guided into the elevator connections. The elastic lip seal covering the elevator gap must be placed on top of the elevator control tongue. Now push the tailplane home until the hexagon socket head bolt at the leading edge will engage its thread. The bolt must be fully and firmly tightened. It is secured by means of a spring ball catch, whose ball must engage in the grooves on the side of the bolt head.

- Connect the fuel line joints (with integrated self locking valve) to the matching joints in the baggage compartment after refueling

10. Optional, the winglets may be exchanged for the wingtips, must be safetied (twisting DZUS-fastener) and taped.

To **de-rig:** proceed in the reverse order of rigging. We would add the following suggestions:

1. Drain all water ballast. Ensure that all the water has emptied out by putting down alternative wingtips several times.

2. Drain all fuel from the wing fuel tank(s) into the fuselage tank. To do so switch the toggle switch in the instrument panel into "manual" position.

3. If the tailplane is very firmly located in its rear seating, it will be more easily dismantled by two people alternately pushing it forwards by the tips very carefully.

4. Do not forget to disconnect the water ballast tank vent tubes before de-rigging the wings! (Older optional design).
   If applicable also disconnect the the vent line(s) of the wing fuel tanks and the fuel supply line as well as the line to the magnetic valve.
   If installed, exchange winglets for wingtips and safety (twisting DZUS-fastener).

4.3 Daily Inspection

Before commencing flying operations, the aircraft must be thoroughly inspected and its controls checked; this also applies to aircraft kept in the hangar, as experience shows them to be vulnerable to hangar-packing damage and vermin.

1- Open canopy and check canopy jettison.

- Main pins home and secured?

- Check positive control connections - ailerons, elevator and airbrakes - in fuselage/wing mounting area.

- Check cockpit and control runs for loose objects or components.

- Check full, free and stress-free operation of all controls.
  Hold controls firmly at full deflection while loads are applied to control surfaces.

- Check ventilation opening and pitot tube in fuselage nose.

- Check condition and operation of the towing hook(s). Release control operating freely ? Don't forget release checks!

- Check wheel brake for operation and leaks. With airbrake paddles fully extended the resilient brake pressure from the main brake cylinder should be felt through the brake handle.

- If installed check connections of the wing fuel tank(s).
  Fuel line joints, ventilation line joints and electric connection for the magnetic valve (only if this is installed in the left wing).
- Check usable fuel quantity to be minimum three liters, = 0.8 US gal,prior to a self-launch
- Check ports for wing fuel tank ventilation on lower side of wing root ribs (only if the ventilation is not connected to the fuselage tank ventilation).
- Check battery voltage >12V (no load) and for >11V during extension of the power-plant.
- Fully extend the power-plant.

2- Check both upper and lower wing surfaces for damage.
- Check ventilation ports of the water ballast system at the wingtip (upper surface) for dirt and/or free flow.

3- Ailerons:
Check condition and full and free movement (control surface clearances). Check linkage fairing for clearance.
- If installed: Are the winglets undamaged and safetied?

4- Airbrake paddles:
Check condition and control connections. Check both sides have good over-center lock.

5- Check inflation and condition of tires:

Main wheel	:	2.8 bar +/- 0.2 bar (= 41 psi +/- 3 psi)
Tail wheel	:	2.5 bar +/- 0.1 bar (= 35,6 psi +/- 1,5 psi)

- Inspection of extended Power-plant

WARNING: If the power-plant is equipped with a manual starter the propeller must <u>never</u> be turned backwards.

- Check all screw connections and their locking devices; in particular, the connections between engine, power unit pylon, extending spindle and fuselage. Screws or bolts secured with spring washers or Loctite are marked with red signal paint. If this signal paint is damaged it might indicate a loosening of the screw connection which should then be freshy secured.

- By pushing against the propeller shaft from the front, check the rubber elements of the engine mounting for cracks in the rubber blocks.

- Inspect/check cable stays and their fixtures in the engine well.Check engine well doors.

- Inspect engine support and silencer for secure seating. The spring mountings can be checked by shaking the silencer.

- Check operation of throttle, choke and propeller brake.

- Any kinks in Bowden cables, pulls, fuel pipes and hoses?

- Inspect hoses (especially fuel hoses) and all components for signs of chafing.

Again, the ASW 24 E with only 24 hp is primarily a sportive sailplane and therefore needs the self-restriction and the carefull thinking of the pilot. The bigger ASW 22BE is much more tolerant to weightand comfort equipment.

NOTE: ! With winglets installed low speed performance is slightly improved. Therefore winglets are recommended for selflaunching despite the take-off mass is increased by 0,3 kg (0.66 lbs.).

For all power-plant operations a check list is provided in the cockpit wall stowage, which gives the following instructions in an abbreviated text.

4.5.1.1. Extending the Power-Plant

- Push master switch button (circuit breaker) in left fuselage wall console.
- Green light must now be ON!

- Push and hold the rocker switch on the control stick in upper position until the power-plant is fully extended.

- A buzzer makes sure that the stops are reached. Also the gear noise of the extension/retraction spindle is no more heard.
  If the rocker switch is held too long, the circuit breaker may jump out.
  After some seconds of cooling down , it may be pushed in again.

4.5.1.2. Starting the Engine on the Ground

WARNING: A test-run of the power-plant must - <u>under no circumstances</u> - be performed without the sailplane being totally rigged and safely blocked. Also a competent person (securely strapped in) must sit in the cockpit.
With powered sailplanes of similar configuration manufacturers have reported severe accidents from tests with the motorglider not totally rigged and not safely blocked. Remember that the static thrust of the ASW 24 E power-plant is ≈70 kp = ≈155 lbs.

- Push fuel shut-off valve placed in the left cockpit side console into OPEN position (button in forward position) and safety by turning clockwise.

- Put the ignition switch placed low in the left cockpit console into ON (upper) position. To do so, the handle of the switch has to be pulled (this is the safety against unintended operation!)

- Push the throttle lever into 50% power setting (about 2 cm = 4/5 inches from rear stop).

- If the engine is cold, pull the choke into ≈50% back position.

Even with rearmost C.G. position, about half of maximum aileron deflection can still be applied, with rudder centralised, to maintain the aircraft in straight stalled flight. It would, of course, be more appropriate to control the aircraft by means of rudder alone, and to leave the ailerons centered.

Violent applications of rudder or aileron would result in a spiral dive, spinning or side slipping, depending on C.G. position.

If winglets are installed, stall warning as well as transition into stalled attitude are more distinctly noticeable.

CAUTION: Height loss due to incipient spin from straight or circling flight depends largely on the all-up flying weight!

! Height loss from straight flight after prompt recovery action –
≈ 20 m (65,5 ft) !!

! Height loss from circling flight –
up to 100 m (328 ft) !!

More specifically, the following would apply:

C.G. Position	Rudder & Aileron Co-ordinated	Rudder & Aileron Crossed
rearmost	steady spin, pitch oscillations*	steady spin getting steep
centre	spin, leading to spiral dive	spin, leading to side slipping
foremost	≈ half turn of spin, leading to spiral dive	side slipping

* Beware there is a tendency to enter an opposite spin in tubulence after self-recovery from a flat spin phase!

Wing drop from circling flight is not noticeably more violent than from straight flight.
If the engine is running in idle setting, the wing dropping and spinning characteristics are much the same as if the power-plant is retracted.
At full power the stabiisation due to gyro-effect of the high reving power-plant reduces wing dropping and spinning tendecies considerably.

For operation with winglets installed no significant change of spin behaviour has been observed.

4.5.4 Approach

4.5.4.1. Approach to land, power-plant retracted

Make the decision to land in good time and, disregarding the loss of performance, lower the wheel at not less than 150 m ≈ 500 ft agl.
For the remainder of the circuit, maintain about 95 km/h = 51 kts (yellow triangle on ASI scale).
The ASW 24 E should be trimmed to between 90 and 100 km/h = 48,5 and 54 kts. In turbulence, the approach speed should be appropriately increased.
The double-paddle air brakes are normally effective in controlling the glide angle.
Side slipping with the ASW 24 E is very effective and may therefore also be used for controlling the glide angle.
If the ASW 24 E is operated with winglets installed, in side slips greater yaw angles associated with lower bank angles are observed. Associated negative rudder control force gradients and rudder lock can be easily overcome by moderate pedal forces or by easing the control stick into a more neutral position.

NOTE: ● Side slipping should be practised from time to time at a safe height!

NOTE: ●● The ASW 24 E has a higher landing speed than the pure sailplane ASW 24 because of the higher wing loading. The surface of the landing field must therefore be smoother and longer than used for "pure" soaring flight.

4.5.4.2 Approach, power-plant extended

This configuration should be principally avoided as it is regarded as an emergency situation.
First it is possible that during a crash landing the approved loads according to JAR-22 requirements are considerably exceeded.

If the ASW 24 E breaks up during a crash the pilot is endangered by the extended power-plant behind and above him.

Second, the high rates of sink with the power-plant extended and the engine idling and the airbrakes opened are beyond normal operating experience.
In an emergency if the power-plant is retracted even partially and if the propeller is not vertical and the propeller brake not used it is a better proposition for the pilot.

Recommendation:
- Pull throttle lever back
- Switch ignition OFF
- Press rocker switch
- Check airspeed

If still possible:
- SHUT-OFF the fuel valve
- Switch OFF master switch

4.5.5 Landing

Before landing, water ballast must be jettisoned.

In an emergency (e.g. abandoned take-off), structural strength will prove adequate to a landing at maximum all-up weight.

Remember to round out in time to allow a clean 2-point touch-down.

Do not fly into icing conditions with a wet aircraft. In this context, see also para 4.5.7. above.

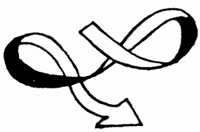
4.5.9. Aerobatics (only approved with power-plant retracted and without winglets installed)

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

As a steady spin is only possible with aft C.G. positions, the spin is not a suitable aerobatic manoeuvre. This is because with central and forward C.G. positions the ASW 24 E cannot be held in a spin.

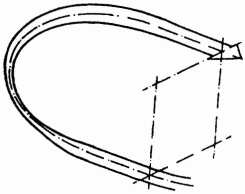
The following manoeuvres have been demonstrated and are approved:

Lazy Eight:



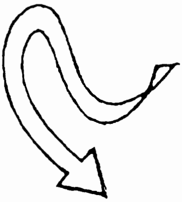
This manoeuvre may be flown at entry speeds of 160 km/h = 86 kts and more at the point of intersection. It is, however, easier to fly this manoeuvre at an entry speed of about 190 km/h = 103 kts, and it will also look better. A woollen thread on the canopy is very useful to avoid side slipping.

Chandelle (climbing):



This manoeuvre is a steep 180° climbing turn (a very good exercise for control coordination).
Recommended entry speed is 200 km/h = 108 kts or ≈125 mph.
After picking up speed the sailplane must be levelled and at the same time aileron must be applied and the stick eased back. After 90° change of direction, 60° bank and 30° pitch-up attitude should be gained.
Now apply opposite aileron and ease the stick foward or slightly push over. The manoeuvre is completed when the ASW 24E flies in opposite direction and level at ≈100km/h (54 kts or 62 mph) at higher altitude and offset to the side.

Stall Turn:

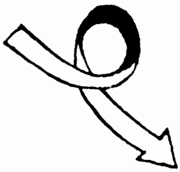


For the stall turn the recommended entry speed is also V_A = 205 km/h = 110,5 kts. While pulling up vertically full rudder must be applied at the latest by the time the indicated air speed has reduced to 135 km/h = 73 kts to ensure a clean Stall Turn and not fall into a slipping tail slide.

Steep turns:

In a steep turn at 75° bank the minimum speed is 140 km/h = 75,5 kts and a pull of 4 g is imposed. It is therefore recommended that steep turns should be carried out with not more than 60 to 70° of bank at about 160 km/h = 86,5 kts to avoid flow separation at the wing (High Speed Stall).

Loop (positive):



A positive loop may be flown at an entry speed at the lowest point from 180 km/h = 97 kts, but a speed of 200 km/h = 108 kts is recommended.
The required g-load is well below the permissible maximum value of 5.3 g.

Winglets improve the flight performance only for the low speed range but not at very high speeds. They also increase the directional stability. Both qualities are not desirable for aerobatics. Therefore, winglets were not tested and consequently not approved for aerobatics.

8.4 Ground Handling / Road Transport

(1) Parking

The ASW 24 E is equipped with plastic seals of all control gaps as serial standard. For parking the sailplane all controls should be set to neutral!

Parking of the aircraft in the open can be recommended only if forseeable weather conditions remain suitable. It should be seriously considered whether the secure picketing, covering, and cleaning of the aircraft before the next flight may not demand more effort than de-rigging and re-rigging would have done.

For tying-down the wings, trestles (perhaps from the trailer) should be used which ensure that the ailerons cannot be stressed by the picketing ropes.

NOTE: ● ● ● Parking in the open without protection against weather or light will reduce the life of the surface finish. Even after only a few weeks without intensive care the polyester paint finish can become brittle and develop cracks.

If the aircraft is parked in the hangar for protracted periods, it is recommended to cover only the perspex canopy with a dust cover, as dust covers retain moisture in wet weather for long periods. Moisture can impair the dimensional stability and even the strength of all fiber reinforced composites.

For this reason, protracted periods of <u>parking with water ballast on board</u> are also not advised!

For longer parking periods, also inside hangars as well as during road transport of the sailplane, the winglets must be derigged. Because of flutter safety reasons they have to be built extremely lightweight and therefore may be easily damaged during rough ground operation.

When parking, carefully remove any remainders of provisions (chocolate, sweets etc.), as experience shows this would attract vermin which could cause damage in and to the aircraft.

(2) Road Transport

Messrs. Alexander Schleicher GmbH & Co. can supply dimensioned drawings of the ASW 24 E which will provide all the measurements needed for building a closed trailer.
They can also supply the names and addresses of reputable trailer manufacturers.
Above all, it is important to ensure that the wings are supported in properly shaped and fitted wing cradles, or at the very least, that the spar ends are securely supported as closely as possible to the root ribs.
Re-inforced points of the fuselage are the main wheel (but remember the suspension springing !), and tail wheel; also possibly the drag spar pins (make up support seatings from plastic material like Nylon!), and the area under the canopy arch between C.G.-tow release and the lap strap area.

WARNING: In no case must the elevator actuator on the top of the vertical tailplane be loaded or fixed in any way, even not by soft foam cushions etc.
When designing or adapting the trailer, free movement and sideways clearance of the elevator actuator has to be regarded.

Record of Revisions

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TN-No. 2	12.6	behind the Maintenance Instructions	30.01.92	30.01.92	Juw
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6.3 Weighing Record

The weighing results must be stated in a weighing record which includes a list of equipment fitted at the time, and which must be incorporated in the aircraft service record map.

6.4 Basic Empty Mass and Moment

According to JAR 22.29 the following configuration of the powered sailplane defines the empty mass:
The whole powered sailplane including:

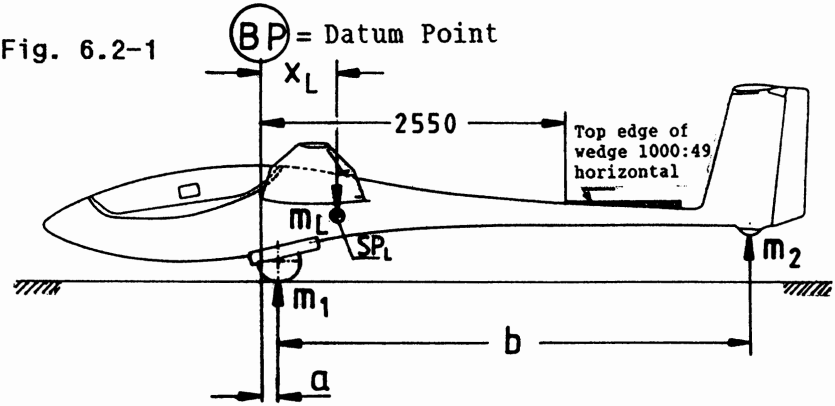
- unremovably installed ballast
- unremovably installed equipment
- unusable fuel
- hydraulic fluids

but not:

- pilot and parachute
- other easily removable load (fuel, barograph, cameras, food supply, special seat cushions and water ballast in the wings)

The empty mass determined during the last weighing is registered in the "Mass (Weight) and Balance Form", see chapter 6.2 of the **Flight Manual**.

Fig. 6.2-1



Formula: $X_L = \frac{m_2 * b}{m_L} + a$ aft of Datum

$m_L = m_1 + m_2$

The sailplane must be prepared for weighing as follows:

1. Power-plant retracted
2. Landing gear extended
3. Flight instruments fitted and canopy closed
4. With seat backrest, and seat cushion or equivalent in place
5. Aircraft log book and Flight Manual in place
6. Without fin mounting ballast (battery) if supplied
7. Without removable trim ballast in the front cockpit if supplied
8. Without parachute
9. Without oxygen bottle if supplied
10. Without barograph in the rear engine compartment
11. Without winglets (if installed) but with detachable wingtips fitted.

When the fuselage is turned back, check the wheel box whether any brake fluid has leaked out from the reservoir via the vent tube, wipe up any spilt fluid and if necessary clean with spirit. Afterwards check the brake fluid level !

Ground Transport

The wings may be supported at the spar stubs near the root rib, the root ribs themselves and wingtips.
If installed, derig winglets first.

2.12 Tow Release Couplings

The tow release coupling fitted at the C.G. is model TOST "Europa G 73". (Data Sheet No:60.230/2). Model TOST "Europa G 72 or G 88" may be used as a replacement tow release coupling.

The tow release coupling fitted at the fuselage nose is model TOST "E 72" or "E 75" or "E 85". (Data Sheet No:60.230/1).

The replacing of tow release couplings is described in Section 10.4.

2.13 Additional Equipment and Installation

For further equipment as for example ELT, barograph turnpoint cameras etc. airworthiness requirement JAR-22.597 is applicable.

2.11 Jacking Points and Ground Transport

Jacking Points

For wing bending frequency tests, the aircraft must be jacked up so that the main wheel springing should not distort the results.

Jacking points for the wing bending frequency tests are:

1. In front of the tail wheel
2. Front part of fuselage in the region of the lap belt anchoring points, on a support trestle.

The jacking points are also illustrated in Fig. 3.0-1.

The wings may be supported on trestles positioned in the area of the root ribs and at approx. 2/3ds span. The trestles should be padded, or cushioned with foam rubber or similar resilient underlay. When jacking up wings, avoid stress or damage to control surfaces and linkage fairings.
The fuselage may be propped up in the cockpit region by means of suitable supports.

Before inverting the fuselage, remove the canopy. The instrument pod should be either fixed in place or hinged up to its fullest extent.

The elevator actuator must be protected from damage. A wooden block of appropriate height must be laid under the fin-stabilizer attachment area.

Horizontal Tail

Span	2.55 m	(8.37 ft)
Surface area	0.90 m²	(9.67 ft²)
Aspect ratio		7.11
Airfoil Section		DU 86-137/25

Elevator

Surface area	0.21 m²	(2.26 ft²)

Airbrake Paddles

(Schempp-Hirth type - on top surface only)

Length	1.10 m	(3.61 ft)
Surface area (both together)	0.37 m²	(3.98 ft²)
Max. Height above wing top surface	0.18 m	(0.59 ft)

Aileron

Span	3.00 m	(9.84 ft)
Surface area (of one aileron)	0.25 m²	(2.69 ft²)

1.4 Specifications

Wings

Span	15.00 m	(49.22 ft)
Wing area	10.00 m²	(107.64 ft²)
Aspect Ratio		22.50
Dihedral (spar top surface)		3.25°
Sweepback (both inner wing tapers)		0°
(outboard wing taper)		+0.78°
Airfoil section		DU 84-158

Winglet

Height	0.30 m	(11.81 in.)
Area	0.03 m²	(0.33 ft²)
Aspect Ratio		≈2.5
Sweep back (leading edge)		30°
Airfoil section		DU 86-084/18

Fuselage

Length	6.55 m	(21.49 ft)
Height at T-tail incl. tail wheel	1.30 m	(4.27 ft)
Cockpit width (inside)	0.64 m	(2.1 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

Rudder

Surface area	0.27 m²	(2.91 ft²)

1.2.4 Power-plant

The power-plant is installed in the fuselage tail-cone directly behind the rear main bulkhead. A one cylinder two-stroke engine drives a two-bladed propeller via a reduction gear. By a rocker switch in the cockpit the power-plant can be retracted and extended by an electrically driven spindle.
When the power-plant is retracted the engine compartment is aerodynamically faired and covered by neatly fitting doors.

1.3 Primary and Secondary Structures

Primary structures include:

- wing spars and root ribs
- wing shells
- fuselage tail boom from wing mounting area to fin
- fin and horizontal stabilizer
- all rigging fittings and control linkage parts

Secondary stuctures are:

- all tail units and control surfaces
- fuselage in the cockpit area
- all doors, airbrakes and fairings.

1.2.1 Wings

The 2-part wing is of GRP/SRP hard foam sandwich construction. The I-section spar consists of carbon fiber 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 fuselage is connected to the wings by 4 lift and drag pins.

If the ASW 24 is equipped with detachable winglets, these are installed by inserting the two steel pins into the wing end rib, and safetied by a DZUS-fastener.

1.2.2 Fuselage

The fuselage shell construction employs hybrid materials technology. The mixture of glass, carbon and aramide fibers provides a light, rigid structure capable of protecting the pilot even in the case of an accident. The additional stiffening provided in the cockpit area further increases pilot safety.
The fin is made up from GRP/SRP hard foam sandwich so as not to impede signal transmission from the VHF radio aerial.

1.2.3 Tail Unit and Aileron

The stabilizer of the horizontal (stabilizer-plus-elevator) T-tail unit is of GRP/SRP/CRP sandwich construction. The elevator is a GRP/SRP skin, the rudder is of GRP/SRP/sandwich construction and the aileron is again a GRP/SRP skin.

14. The water ballast bags and valves must be checked for leaks and proper operation (see section 10.5).

15. The wing bending frequency should be measured and compared with that shown in the latest inspection report. For such a test the fuselage must be rigidly supported in two supports in order to obtain comparable values. For the positions of the supports, see Fig. 3.0-1 !
If installed, the winglets must be exchanged for the wingtips!

16. Compare equipment and instrumentation with that shown in the equipment list.

17. After repairs or changes in equipment fitted, the empty mass and C.G. position should be redetermined by calculation or weighing, and recorded in the Mass And Balance Form, in section 6.2 of the Flight Manual.

18. Check all control surface gaps for correct sealing. It is important that the proper sealing of the gap under the elastic fairing strip is ensured by the Teflon tape. This is especially important at the upper wing surface and the top surface of the horizontal tail. Air flowing through the control surface gaps can initiate flutter!

19. The elastic fairing strip at the upper and lower wing surface gaps and at the horizontal tail top surface must have a good, lightly tensioned seating on the surfaces of the controls. Raised strips impair performance. Further information on paragraphs 18 and 19 will be found in section 12.6 of Maintenance Instruction A.

7. All controls including the airbrakes must be checked for satisfactory operation, and their deflections measured.

8. If any control linkage does not move freely over the whole range of its movement, investigate and remedy the cause.

9. The condition of the main landing gear and tail wheel including tires (tail skid with its wear plate respectively) and of the brake linings and brake disc must be checked.

10. Examine the pitot and static sources in the fuselage and fin for blockages and leaks.

11. Check condition and proper functioning - and, if appropriate, permitted service life span - of all instruments, and VHF transceiver.

12. The condition and proper functioning of the TOST tow release coupling fitted at the C.G. and the tow release coupling fitted at the fuselage nose should be checked. The release actuating cable must have free movement and some play when the tow release coupling is closed and locked, so that they are not under any tension. Also check if the tow release coupling TBO is still o.k. for another year.

13. The canopy jettison release must be operated and examined for corrosion and burrs etc., if necessary, rectified and in any case freshly lubricated !