ALEXANDER SCHLEICHER GMBH & CO. SEGELFLUGZEUGBAU
D-6416 POPPENHAUSEN/WASSERKUPPE

FLIGHT MANUAL

for glider Model

ASH 25

Model	:	ASH 25
Serial No.	:	25022
Registration	:	F-CGKT
Data Sheet No.	:	L-364
Date of Issue	:	Nov. 1987

Pages identified "LBA-App." in the **original german manual** are approved by the German Federal Civil Aviation Authority (LBA) as shown below:

.....(Signature)

.....(Authority)

.....(Stamp)

8. Dez. 1989 (Original Date of Approval)

This sailplane is to be operated in compliance with informations and limitations contained herein.

The translation has been done by best knowledge and judgement. In any case the original text in German is authoritative.

Annexe 1

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RÉPUBLIQUE FRANÇAISE

Cet intercalaire doit obligatoirement être inséré devant la page de garde d'un manuel de vol en langue anglaise

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Référence : Instruction du 13/11/2009 relative à la langue des manuels de vol

0.1 Record of Revisions

Any revision of the present manual, except weighing data established from time to time, must be recorded in the following table "Record Of Revisions" (pages 0.2/0.3) and in case of approved Sections endorsed by the LBA.

The new or amended text in the revised page will be indicated by a black vertical line in the left margin, and the Rev.No. and the Date will be shown in the box at the bottom left of the page.

Record of Revisions

Rev No.	TN 1	TN 5	TN 6	TN 11
Section and Pages Affected	0.2, 0.4, 0.5, 1.5, 4.5, 4.7, 5.2, 5.3, 7.3, 7.11, 7.14, 7.15	4.8, 4.10, 4.11, 7.7, 7.14	0.2, 0.3, 0.4, 0.5, 2.6, 2.10, 4.3, 5.5, 6.1 - 6.6, 7.13 - 7.15, 8.5 - 8.8	0.2 - 0.5, 1.4, 1.5, 2.3 - 2.5, 2.7, 2.9, 2.10, 4.2, 4.4, 4.7, 4.8, 4.14, 4.15, 5.4, 8.4
Rev. Date	08.04.88	10.10.90	28.02.91	10.07.95
Approval				
LBA-Approved on Date	20.07.89	17.10.90	26.06.91	14.07.95
Date of Insertion of Pages	29.07.89	01.11.90	29.06.91	29.07.95
Ref. / Signature	/mm	/mm	/mm	/mm

Record of Revisions

Rev No.	TN 14	TN 17		
Section and Pages Affected	4.4 - 4.5	1.4, 1.5, 2.10, 4.15, 4.16		
Rev. Date	27.03.98	08.12.00		
Approval				
LBA-Approved on Date	06.11.98	07.03.01		
Date of Insertion of Pages	19.11.98	18.03.01		
Ref. / Signature	/mm	/mm		

0.2 Index of Effective Pages

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		0.5	27.03.98
		0.6	25.11.87
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0.3 Table of Contents

SECTION 1

1.1 Introduction

This Flight Manual has been compiled in order to give pilots and instructors all the information they need for operating the ASH 25 safely and appropriately, and for getting the full benefit from the performance it offers.

This Manual includes all data required to be available to the pilot as laid down in the Design Standards JAR-22. In addition, we have provided a number of data and notes on operation which, our experience as manufacturers suggests, may be of use to the pilot.

1.2 Type Certification Basis

This glider of type designation ASH 25 was type approved by the German Federal Civil Aviation Authority (LBA) in accordance with Joint Airworthiness Requirements for Sailplanes and Powered Sailplanes JAR-22 incl. amendments to 13.09.1982 and including Amendment 22/84/1.

The Type Approval Certificate has been issued with No. 364, under Airworthiness Category "U".
U stands for Utility and refers to sailplanes used in normal gliding activities.

1.3 Special Annotations

Passages in this manual which are of special importance for flight safety or handling have been emphasized by being prefixed by one of the following annotations:-

"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 Description and Technical Data

The ASH 25 is a high performance two-seater glider of the FAI Open Class specification. Its performance equals that of single-seater gliders and makes it suitable for record breaking and competition flying. We would stress the opportunity it offers for introducing inexperienced pilots to high performance gliding, and to train them on this type. Not least, its pleasant flying characteristics make the

ihre angenehmen Flugeigenschaften für den Einsatz in leistungsorientierten Vereinen.

Die ASH 25 ist ein Schulterdecker mit gedämpftem T-Leitwerk und gefedertem Einziehfahrwerk mit hydraulischer Scheibenbremse. Der Flügel verfügt über Hinterkantenklappen, die über die ganze Spannweite laufen und eine Profiloptimierung bezüglich des Widerstandes über der Fluggeschwindigkeit erlauben. In der Landestellung schlagen diese Klappen so aus, daß bei guter Steuerbarkeit ein hoher Widerstand entsteht, der zusammen mit den Bremsklappen auf der Flügeloberseite sehr kurze Landeanflüge erlaubt.

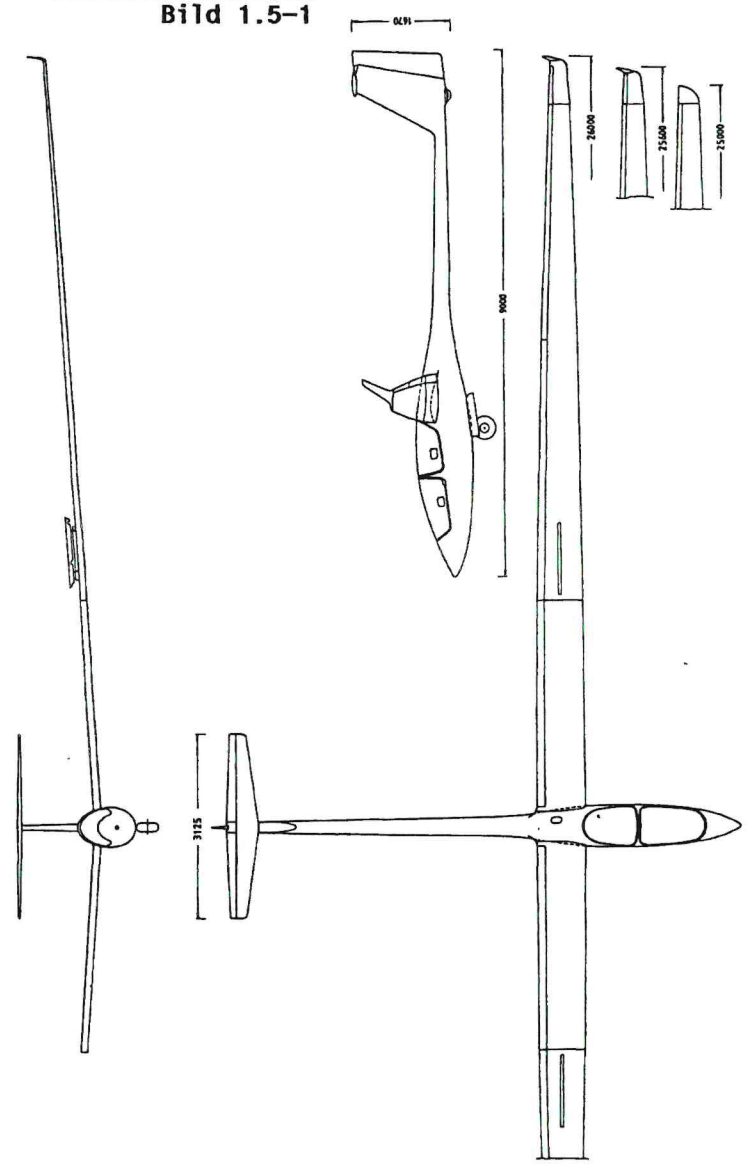
Durch die TM 17 wird die Spannweite durch eine ansteckbare Flügelverlängerung mit Winglet erhöht.

Technische Daten:

Spannweite	25,0 m	25,6 m	26,0 m
Rumpflänge	9,0 m	<	<
Höhe (LW/Heckrad)	1,7 m	<	<
max. Abflugmasse	750 kg	<	<
Winglethöhe	---	0,35 m	0,53 m
Flügeltiefe (mittl. aerodyn.)	0,687 m	0,683 m	0,680 m
Flügelfläche	16,31 m^2	16,46 m^2	16,62 m^2
Flächenbelastungen			
min. zweisitzig	33,0 kg/m^2	33,2 kg/m^2	33,2 kg/m^2
max. zweisitzig	46,0 kg/m^2	45,6 kg/m^2	45,1 kg/m^2

1.5 Dreiseitenansicht

Bild 1.5-1



ASH 25 suitable for use in performance-orientated clubs.

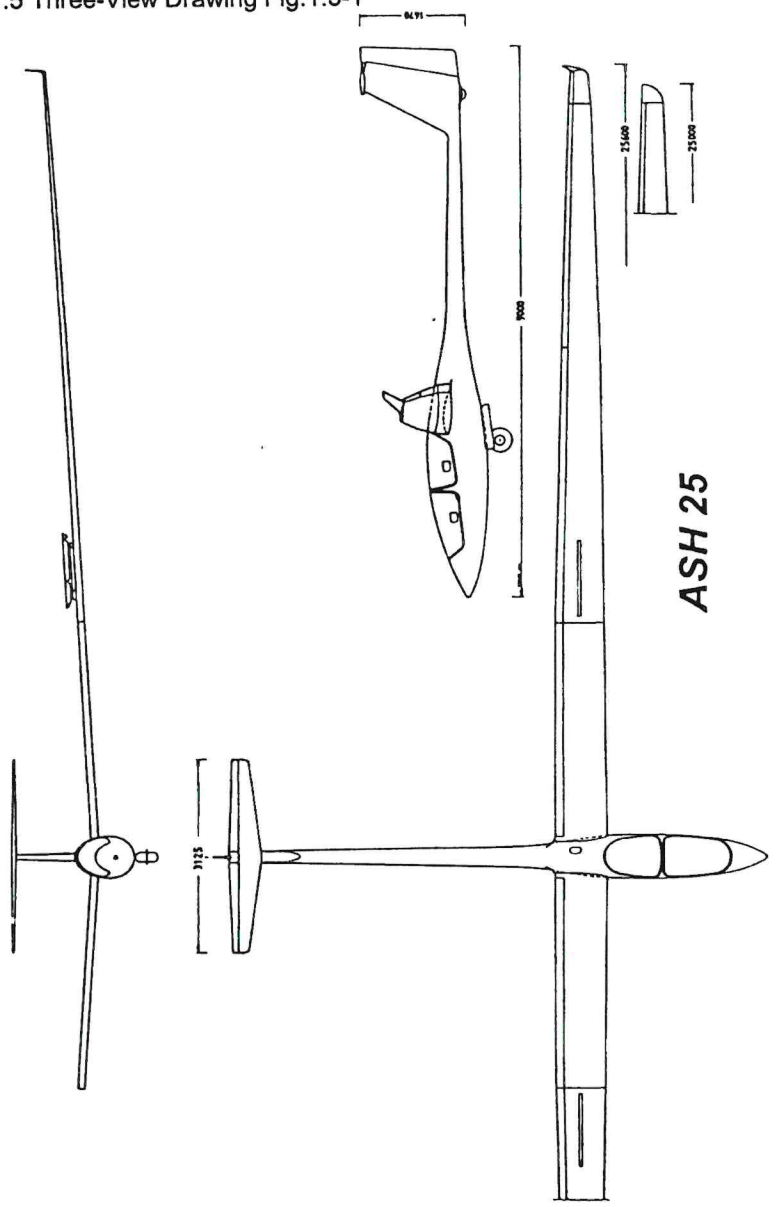
The ASH 25 is a shoulder wing glider with damped T-tail and sprung, retractable landing gear with hydraulic disc brake. The wing is equipped with trailing edge flaps extending over the full span, to allow a choice of optimum wing camber in relation to drag throughout the speed range. With landing flap selected the deflection of these flaps will generate high drag combined with good control which, together with the airbrake paddles on the upper wing side, permits very short landing approaches.

Upon accomplishment of the Technical Note 11 the span is increased by means of attachable wing tip extensions with winglets.

Technical Data:

Span	25.00 m **(82 ft)**	25.6 m **(84 ft)**
Fuselage length	9 m **(29.5 ft)**	
Height (Fin and Tail Wheel)	1.7 m **(5.5 ft)**	
Max. take-off mass	750 kg **(1654 lb)**	
Winglet height	0.35 m **(1.15 ft)**	
Wing chord:		
(mean aerodynamic)	0.687 m **(2.25 ft)**	0.671 m **(2.20 ft)**
Wing surface	16.31 m^2 **(175.5 ft^2)**	16.46 m^2 **(177.2 ft^2)**
Wing loading:		
minimum single-seated	33 kg/m^2 **(6.75 lb/ft^2)**	
maximum two-seated	46 kg/m^2 **(9.42 lb/ft^2)**	45.6 kg/m^2 **(9.34 lb/ft^2)**

1.5 Three-View Drawing Fig.1.5-1



SECTION 2

2.1 Introduction

This Section contains operating limitations, instrument markings and cockpit placards required for the safe operation of the ASH 25, its original equipment, systems and facilities initially fitted.

The operating limitations stated in this Section and in Section 9 are LBA-approved.

2.2 Air Speeds

Air speed limitations and their operational significance are shown below:-

	Speed	IAS kmh and (kts)	Remarks
V_{NE}	Never exceed speed	280 (151)	Do not exceed this speed in any operation and do not use more than 1/3 of control deflection

V_{RA}	Rough air speed	**180 km/h** (97 kts)	Do not exceed this speed except in smooth air, and then only with caution. Examples of rough air are lee-wave rotor, thunderclouds etc.
V_A	Maneuvering speed	**180 km/h** (97 kts)	Do not make full or abrupt control movement above this speed, because under certain conditions the sailplane may be overstressed by full control movement

V_{FE}	Max. Flap Extended Speed (if applicable give different flap setting)	WK 1 = 280 km/h (= 151 kts) WK 2 = 230 km/h (= 124 kts) WK 3 = 230 km/h (= 124 kts) WK 4 = 160 km/h (= 86 kts) WK 5 = 160 km/h (= 86 kts) WK L = 140 km/h (= 76 kts) **WK = Flap**	Do not exceed these speeds with the given flap settings.
V_W	Max. winch launching speed	**130 km/h (70 kts)**	Do not exceed this speed during winch or autotow launching
V_T	Max. aerotowing speed	**180 km/h (97 kts)**	Do not exceed this speed during aerotow

V_{LO}	Max. landing gear operating speed	**180 km/h (97 kts)**	Do not extend or retract the landing gear above this speed

2.3 ASI Markings

The following table shows the ASI markings and the meaning of the colors:

MARKING	(IAS) Value or Range km/h and (knots)	SIGNIFICANCE
White Arc	85 - 140 (46 - 76)	Positive Flap Operating Range
Green Arc	96 - 180 (52- 97)	Normal Operating Range (neutral flap setting)
Yellow Arc	180 - 280 (97 - 151)	Maneuvers must be conducted with caution and only in smooth air

Red Line	280 (151)	Max. speed for all operations.
Yellow triangle	90 (49)	Approach speed at max. weight without water ballast

2.4 Masses (Weights)

Max. Permissible Take-Off Mass: - with water ballast	750 kg	(1654 lbs)
Max. Permissible Landing Mass:	750 kg	(1654 lbs)
Max. mass of all non-lifting parts	390 kg	(860 lbs)
Max. mass in the baggage compartment:	15 kg	(33 lbs)

2.5 Center of Gravity

The limits of the C.G. range are as follows:

forward limit	0.19 m (0.62 ft) aft of datum (BP)
aft limit	0.39 m (1.28 ft) aft of datum (BP)

"BP" (German: **Bezugspunkt**) stands in this context for "Reference Datum" which is identical with the wing leading edge at the wing root rib. One example of calculating C.G. positions is given in Section 6 of the ASH 25 Maintenance Manual.

2.6 Approved Maneuvers

This sailplane is approved for normal sailplane operation (Airworthiness Category "Utility").

2.7 Maneuvering Load Factors

Maximum maneuvering load factors:

max. positive load factor	+5.3
max. negative load factor	- 2.65
at an air speed of:	180 km/h (97 kts)

At increasing air speeds, these values will be reduced to:

Maximum positive load factor	+ 4
Maximum negative load factor	- 1.5
at an air speed of:	280 kmh (151 kts)

2.8 Flight Crew

For solo flights the pilot must occupy the front seat.

Pilots weighing less than 70 kg = 155,5 lbs (incl. parachute) must use additional trim ballast weights. Please refer to the mass and balance form in Section 6 and the description of trim ballast plates in Section 7.11.

The minimum front cockpit load is also shown in the Operating Limitations Placard in the cockpit.

2.9 Types of Operation

Flights may be carried out in daylight, in accordance with VFR. Cloud flying is permitted if appropriate instrumentation is fitted (see Point 2.10), without water ballast, and if regulations currently in force are complied with.

2.10 Minimum Equipment

Minimum Equipment consists of:

1 ASI indicating up to 300 km/h = 162 kts in the front instrument panel
1 Altimeter in the front instrument panel
2 4-part seat harness (symmetrical)

Additionally required for instruction:

1 ASI indicating up to 300 km/h = 162 kts in the rear instrument panel
1 Altimeter in the rear instrument panel

For cloud flying the following additional equipment must be fitted:

1 Turn & Slip Indicator
1 Magnetic Compass, and
1 Variometer

Approved equipment is listed in the Maintenance Manual in Section 12.1.

2.11 Aerotow and Winch Launch

The maximum launch speeds are:

for Aerotow	180 km/h	(97 kts)
for Winch Launch	130 km/h	(70 kts)

For both launching methods, a weak link of 750 to 900 daN must be used in the launch cable or tow rope.

Für beide Startarten muß eine Sollbruchstelle von 750 bis 900 daN im Schleppseil eingebaut sein.

Für den F-Schlepp ist die Mindestlänge des Schleppseils von 40 m einzuhalten.

2.12 Hinweisschild für Betriebsgrenzen

Dieses Schild befindet sich im vorderen Führerraum und beinhaltet die wichtigsten Massen- und Fluggeschwindigkeitsgrenzen

Segelflugzeugbau A. Schleicher GmbH & Co. Poppenhausen

Muster: ASH 25 Werk-Nr.:

Datenschild und Trimmplan

		25 m	25,6 m	26 m
Leermasse:	kg			
Höchstmasse:		750 kg		

Mindestzuladung im vorderen Sitz einsitzig:	kg
Höchstzuladung im vorderen Sitz:	kg
Höchstzuladung im hinteren Sitz:	kg
zusammen nicht mehr als:	kg

Höchstgeschwindigkeit für

Windenstart	130 km/h
Flugzeugschlepp	180 km/h
Ausfahren des Fahrwerks	180 km/h
Manövergeschwindigkeit	180 km/h

Sollbruchstelle f. F.- u. W.-Schlepp	750 bis 900 daN
Reifendruck: Hauptrad	3,4 bis 3,6 bar
Spornrad	2,4 bis 2,6 bar

Niedrigere Mindestzuladung ohne Trimmballast in der Seitenflosse siehe Flughandbuch Seite 6.4

For both launching methods, a weak link of 750 to 900 daN must be used in the launch cable or tow rope.
For Aerotow, the tow rope must be not less than 40 m (135 feet) in length.

2.12 Operating Limitations Placard

This placard is fixed in the front cockpit and contains the most important Mass (weight) and Speed Limitations.

Segelflugzeugbau A. Schleicher GmbH & Co. Poppenhausen

Model: ASH 25 Serial-No.:

DATA and LOADING PLACARD

	25 m		25,6 m	
	kg	lbs	kg	lbs
Empty Mass (Weight):				
Max. Mass (Weight):	750 kg	1654 lbs		
Min. Front Seat Load Solo:	kg	lbs		
Max. Front Seat Load:	kg	lbs		
Max. Rear Seat Load:	kg	lbs		
Max. Total Combined Seat Load:	kg	lbs		

MAXIMUM PERMISSIBLE SPEEDS:

Winch Launch W/L:	130 km/h	70 kts
Aerotow A/T:	180 km/h	97 kts
Operating Landing Gear:	180 km/h	97 kts
Maneuvering Speed:	180 km/h	97 kts

Weak Link for A/T and W/L: 750 to 900 daN / 1685 to 2023 lbs

Tire Pressure Main Wheel:	3,4 bis 3,6 bar	(48 to 51 psi)
Tail Wheel:	2,4 bis 2,6 bar	(34 to 37 psi)

Reduced minimum cockpit load
without trim ballast in the fin:
see flight manual - Page 6.4

SECTION 3

3.1 Introduction

This section contains check lists, summarising procedures recommended in the case of emergencies, in the form of brief headings.
This is followed by a more detailed description.

EMERGENCY PROCEDURES

(1) **To Jettison Canopies**

front seat
- Fully pull out red knob above instrument panel
- push canopy UP

rear seat
- fully pull back both red locking handles
- push canopy UP by the handles

(2) **Bailing Out**

front seat
- push instrument panel UP
- release harness
- roll over cockpit side
- push off strongly
- watch wing and tail!
- pull parachute !

rear seat
- release harness
- get up
- climb over cockpit side
- push off strongly
- watch wing and tail!
- pull parachute !

(3) **Spinning**

(a) apply opposite rudder and at the same time
(b) relax back pressure on stick until rotation stops
(c) centralise rudder and immediately pull out gently from dive.

3.2 Jettisoning of Canopies

Front canopy: Pull jettison knob (red knob above instrument panel) and push canopy away upwards.

Rear canopy: Pull back both the red canopy locking handles and use them to open the canopy. The air stream will break off the canopy rearwards.

3.3 Bailing Out

If bailing out becomes inevitable, first jettison canopies and only then release seat harness.

Front seat pilot: Push instrument panel UP (if this was not done in the course of jettisoning the canopy). Get up or simply roll over cockpit side.

Rear seat pilot: Get up - the brackets at either side of the instrument panel or the canopy arch serve as hand-holds - and climb out.
When jumping, push yourself away from the aircraft as strongly as possible.
Try to avoid contact with wing leading edge or tail surfaces!

3.4 Stall Recovery

In straight or circling flight, relaxing of back pressure on the stick will always lead to recovery.

Due to its aerodynamic qualities the ASH 25 will immediately re-gain flying speed.

3.5 Spin Recovery

(1) Apply opposite rudder (i.e: in the direction opposite to the rotation of the spin), and at the same time
(2) move stick gently forward until rotation stops;
(3) centralise rudder and gently pull out of the dive.

CAUTION: Furthermore, spin recovery will be achieved more quickly if flap deflection is reduced. It is advisable to reduce circling flap setting to neutral flap setting (Flap 3).
Spinning is not noticeably affected by extending the airbrake paddles, but it will increase the height loss when pulling-out, and is therefore inadvisable.

WARNING: For structural reasons, spinning in landing flap setting is strictly prohibited. If a spin should inadvertently develop with this flap setting engaged, the flaps should immediately be reduced to neutral setting (Flap 3), and only then should recovery action be initiated.

3.6 Spiral Dive Recovery

Depending on the aileron position during spinning with forward C.G. positions, that is in this range when the ASH 25 will not sustain a steady spin, it will immediately or after a few turns develop a spiral dive, or a slipping turn similar to a spiral dive.

These conditions will both be terminated by:

(1) applying opposite rudder
(2) applying aileron opposite to bank.

3.7 Other Emergencies

(1) Jammed Elevator

If the flap control is jammed, the ASH 25 is converted into an aircraft with fixed wing profile.
On the other hand, it will not always occur to the pilot in case of need that, with elevator control jammed, the flaps will still afford him some measure of control for improving his position for bailing out or even perhaps obviating the need to do so.

(2) Emergency Landing with Retracted Landing Gear

Emergency landings with retracted landing gear are disadvised in principle, as the capacity for energy absorption of the fuselage is many times less that that of the sprung landing gear. If the wheel cannot be lowered, the ASH 25 should be touched down with landing flap (Flap L) selected, brakes closed as far as possible, at a shallow angle and without stalling on to the ground.

(3) Groundloops

If the aircraft threatens to roll out beyond the intended landing area, the decision should be made not less than 40 m = 140 ft before reaching the end of the landing area to initiate a controlled ground loop.

- If possible, turn into wind!
- When putting down a wing, at the same time push the stick forward and apply opposite rudder!

(4) Emergency Landing on Water

A landing on water by a plastic glider with wheel retracted has been experimentally tried out. The experience gained on that occasion suggests that the aircraft will not skim across the water, but that the whole cockpit area will be forced under the surface.
If the depth of the water is less than 2 m = 6,5 ft, the pilot is in the greatest danger. Touching down on water is, therefore, recommended **only with wheel lowered,** and **only** as a very last resort.

(5) Flying with Defective Water Ballast Drainage

The electric valve operation ensures that, when water ballast is jettisoned, the inboard tanks are drained first. This is necessary for reasons of structural strength.

When jettisoning water ballast in flight, it should be positively ensured that the water is draining from both wings. This should be checked **both** by

visual observation from the cockpit, and by monitoring the upper green LEDs on the switch panel indicating valve position (green - open, red - closed).

If a failure of the valves should cause asymmetric loads, the flight should be terminated with extreme care, maintaining an adequate margin above stalling speed as incipient or full spins with asymmetric ballast load are not permissible. Special care should be taken to avoid turning in the direction of the heavier wing.

Should an inboard valve be defective, the resulting imbalance of load is relatively slight, so that this condition would be preferable to a landing with even, but heavier ballast loading.

If an outboard valve is defective, the matching valve on the opposite side must be closed, and a landing at a higher landing weight is to be preferred. The inboard tanks should, of course, be emptied.

Should it not prove possible to drain the inboard tanks first, the outboard tanks must also be left full, or the flight may only be continued at a greatly reduced maximum speed not exceeding 150 kmh (81 kts), as a ballast load in the inboard tanks alone is not provided for in the structural strength substantiation.

SECTION 4

4.1 Introduction

This Section contains Check Lists for the daily inspection and pre-flight checks. It also describes normal operating procedures. Normal operation procedures associated with the sailplane, if equipped with various ancillary systems and equipment not included as standard equipment, are described in Section 9.

4.2 Rigging and Derigging

Rigging
The ASH 25 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: Wingtip-extension with winglet must be exchanged for the detachable short wingtip only after the wing assembly is done.

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. Set flap lever to Flap Position 1 or 2.

4. Insert left inner wing spar fork into fuselage and support its outer end with a trestle, if available.

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

5. Insert right inner wing spar root and line up main rigging pin bushes. Insert and lock main pins. Only at this point - 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. Do not connect the control linkages in the fuselage yet, as this makes the rigging of the outer wings more difficult.

6. Screw the T-shaped rigging tool for fitting the outer wing into its seating. Unlock the left outer wing airbrake paddle by means of the tool provided.

7. Insert left outer wing into spar socket of inner wing and push in, leaving a gap of 5 to 10 cm = 2 to 4 in.

8. Connect flap control push rod (nearest the trailing edge) and secure.

9. Now push outer wing home, push main pin in to full extent against flight direction and turn clockwise to secure. Unscrew T-tool. The main pin is correctly fitted, if it is flush with the wing surface. When pushing wings home, ensure that the aileron and airbrake push rods do not foul ribs or fittings.

10. At this stage it will be of help to move the trestle outwards somewhat, perhaps near the position of the center flap actuator. This will reduce the loads both on wing and trestle.

11. The rigging of the right outer wing should also

follow clauses 6. to 9., except that the main pin must now be secured by means of an anti-clockwise turn.

12. First connect the aileron and airbrake control linkages in the airbrake boxes and secure, only then connect the six control linkages in the fuselage which are accessible when the access hole cover is removed.

    All quick-release connectors are secured by safety elements such as spring clips (Fig. 4.1) against unintentional release. However it is more convenient the use of the so-called Wedekind safety sleeves (Fig. 4.2). Only at the flap control connection at the wing-to-wing joint, a fixed spring clip because of the limited space secures. In this kind of locking note the following: During assembly of the quick-release connectors, the alu safety sleeve is pushed either back until the wedge may be pushed in entirely, or the spring is removed from the check hole of the wedge. After the careful assembly of the quick-release connectors, check that the spring-loaded safety sleeve secures the wedge again completely. At the wing-to-wing joint a fixed spring clip At the wing-to-wing flap control connections insert the spring clip into the check hole.

    All quick-release connectors must be tested by trying to pull the socket ends of the push rods off the ball heads, applying a force of not less than 5 daN (10 lb), and it must be checked that the safety elements are in their correct position. Flap control connections can be checked in landing flap setting (Flap L) through the airbrake box.

Fig. 4.1

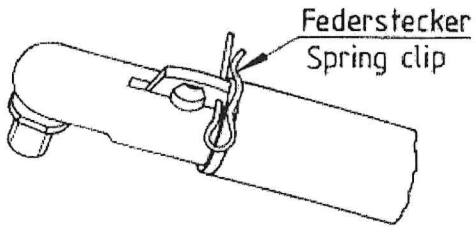
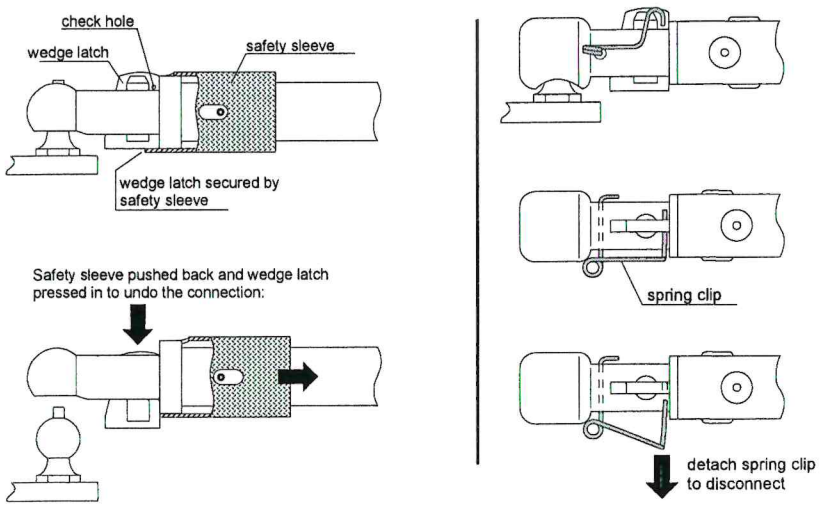


Fig. 4.2



13. After cleaning and lightly lubricating the elevator studs and sockets, the tail plane is pushed on to 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 tail plane home until the hexagon socket head bolt (Allen screw) at the leading edge will engage its thread. The bolt must be fully and firmly tightened; it is secured either by a spring loaded pin which must extend over the bolt head, or by means of a spring ball catch, whose ball must engage in the grooves on the side of the bolt head

14. A considerable performance improvement can be achieved with little effort by taping all gaps between wing junctions with plastic self-adhesive tape (on the non-moving parts only). In addition, the fuselage access whole cover and the fin-tail plane junction should be taped up. The canopy rim must not be taped over,

so as not to impair bail-out.
It is recommended that areas to be taped up should be thoroughly waxed beforehand, so that the adhesive tape can afterwards be cleanly removed without lifting the paint finish.

15. Connect both vent tubes from the inboard wing water tanks to the openings at top of the baggage compartment.

16. Now use the Check List (see the following para. 4.4) to carry out a pre-flight check. Under point 3. "(Control surface clearances at trailing edge min. 1,5 mm = 1/16 in!)", check that the wing control surfaces have that minimum clearance from each other and from the inboard and outboard wing cut-out edges.
This clearance is necessary to ensure that these surfaces do not foul each other or the wing cut-out edges when deformed under load in flight.

De-rigging

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 wing tips several times.

2. When disassembling the tailplane, carefully

push back the locking pin with the sleeve tube of the Allen key supplied to avoid damaging it as the bolt is removed.

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.

4. Prior to de-rigging the outer wings the wingtip-extension with winglet - if fitted - must be removed and exchanged for the detachable short wingtip. When de-rigging the outer wings, at first pull them out only 5 to 10 cm = 2 to 4 in. from the inner wing, to allow disconnection of the flap linkages.

5. Before de-rigging the inner wings from the fuselage, do not forget to disconnect the fuel lines, to retract the propeller, and to disconnect the battery wires above the spar!

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 small animal.

a) Open canopies and check canopy jettison.

b) Main pins home and secured?

c) Check control connections of ailerons, elevator and air brakes through the fuselage access hole cover and through the airbrake boxes.

d) Check cockpit and control runs for loose objects or components.

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

f) Check inflation and condition of tires:

Main wheel	3.5 bar (50 psi)
Tail wheel	2.5 bar (36 psi)

g) Check condition and operation of tow release couplings! Release control operating freely? Do not forget release checks!

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

i) Check both wing upper and under surfaces for damage.

j) Flaps including ailerons:
check condition and freedom of movement (clearances). Also the linkage fairings on control surfaces and wings must be checked for clearance.

- Wingtip-extension with winglet, or short wingtip respectively, correctly assembled and secured? Winglet undamaged?

k) Airbrake paddles:
check condition and control connections. Do both sides have good over-center lock?

l) Check fuselage, especially underside, for damage.

damage.

m) Check that rudder, tailplane and elevator are correctly fitted, and for damage or excessive play.

n) Check the pressure port in the fin: is the tube (pitot/static or TE) properly seated and tight??

o) Check that static ports in the fuselage tail boom are unobstructed.

4.4 Pre-Flight Checks

The following Check List containing the most important points is affixed within easy view of the front seat pilot:

Pre-Flight Checks:

1. Control connections and rigging pins secured?
2. Controls checked for positive connections and full and free deflections?
3. (Control surface clearances at trailing edge min. 1,5 mm = 1/16 in !)
4. Parachute static line connected?
5. Check ballast / C of G !
6. Comply with Mass and Balance Form !
7. Water tank drain and vent openings unobstructed?

Pre-Take-Off Checks:

1. Parachute clipped on?
2. Seat Harness secure and tight?
3. Wheel locked down?
4. Airbrakes closed and locked?
5. Trim set for Take-Off?
6. Flaps set for Take-Off?
7. Altimeter set?
8. Tail dolly removed?
9. Check wind direction!
10. Close and lock canopies!

4.5 Normal Operation and Recommended Speeds

4.5.1 Winch Launch

The C.G. tow release hook in front of the landing gear must be used for winch launch.

Flap settings recommended for winch launching are:

Flap 3 (0°) in gusty conditions and crosswind,
Flap 4 (+6°) in zero wind or steady headwind.

Trim should be set nose-heavy at any C.G. position and both the recommended flap settings. At this trim setting the ASH 25 will assume a gentle climb attitude. Above a minimum safe height the climb should be steepened by applying back pressure on the stick.

A weak link of 750 to 900 daN must be incorporated in the launch cable. Maximum acceptable crosswind component is 20 km/h = 10,8 kts.

NOTE: The wheel should not be retracted during the launch.

CAUTION: Winch launching with water ballast is not recommended at less than 20 km/h = 10,8 kts headwind component. The winch driver must be informed of the total Take-Off Mass.

CAUTION: Before Take-Off, check seating position and that controls are within reach. The seating position, especially when using cushions, must

preclude the possibility of sliding backwards during initial acceleration or steep climb.

WARNING: We expressly warn against attempting any launch by an under-powered winch in a tail wind!

4.5.2 Aerotow

If an aero tow release hook is installed, this should be used preferably for aero towing.
The recommended flap setting for aero towing is Flap 3.
Trim should be set nose-heavy. A tow rope of between 40 m and 60 m = 132 ft and 197 ft long, but not less than 40 m = 132 ft in length should be used.

Experienced pilots should start their take-off run at the most negative flap setting 1. This flap setting affords excellent lateral control. At an indicated air speed of about 50 km/h = 27 kts the flap should be increased to Flap 3 (0°) or, on short take-off runs or when carrying water ballast, to Flap 4 (+6°). For the remainder of the tow, Flap 3 should be selected for reasons of trim loads.

For pilots without experience of flapped aircraft, we recommend setting Flap 3 both during take-off and throughout the aerotow.

For the actual lift-off, the following practise has proved satisfactory:

Try to keep the tail wheel in contact with the ground until the aircraft lifts off. This increases directional stability during the ground run, and helps the glider to lift off at the earliest possible moment.
After lift-off, climb to between 1 m and 2 m (3 and 6 ft) in order to avoid pitch oscillations caused by ground effect and slipstream turbulence from the tug.

NOTE: Inform tug pilot of minimum towing speed.

T/Off Mass	Recommended Towing Speed
550 kg (1213 lbs)	115 km/h (62 kts)
650 kg (1433 lbs)	120 km/h (65 kts)
750 kg (1654 lbs)	125 km/h (68 kts)

Maximum acceptable crosswind component: 20 km/h = 10,8 kts.

4.5.3 Free Flight

Use of Flaps

Flap control allows improved adaptation of the aircraft to suit changing flight attitudes.
Flap settings 1, 2 and 3 are straight flight settings and are the best settings in high speed flight throughout overlapping speed ranges.

Flap settings 4 and 5 are purely for use while

circling. Flap 4 is designed for centering in thermals, and circling in turbulent lift.

Flap 5 should be selected where the thermal warrants tight and steady circling in its core.

The best flap settings at various speeds depend very much on the wing loading. The effect of the all-up weight on appropriate speeds for various flap settings is shown in the diagram in Section 5, para 5.3.3.

As the flap setting will directly influence the amount of lift generated over the whole of the wing, a sudden, jerky operation of the flaps will cause a sudden drop or climb; therefore, care should be exercised in this respect, especially when flying close to the ground, or circling near other gliders.

When circling, remember that the stalling speed will increase compared to that in straight flight at the same flap setting.

As a general guideline, you should expect the stalling speed to increase by 10% at about 30° bank, and by 20% at about 45° bank.

Low Speed Flight and Stalling Behaviour

The ASH 25 behaves normally in slow and stalled flight. With the C.G. position well aft, flow detachment at the fuselage and horizontal tail buffeting will give warning of an impending stall.

At the formost C.G. position, the stall character-

istics become very gentle, as the limited elevator deflection will no longer allow maximum angles of attack to be reached.

At this C.G. position, stall warning through buffeting will not be experienced, but large aileron deflections can be applied without dropping a wing.

Even with rearmost C.G. position, about half of maximum aileron deflection can still be applied, with rudder centralized, 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.

With winglets fitted the minimum speed is slightly reduced, therefore wing dropping with winglets occurs slightly faster.

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

Height loss from straight flight after prompt recovery action

$\approx$ 40 m = 132 ft !

Height loss from circling flight:

up to 150 m = 495 ft !

Dabei gilt im einzelnen:

Schwerpunkt-lage	WK	SR und QR in die gleiche Richtung	SR und QR entgegen-gesetzt
ganz hinten	3-5	Trudeln stationär In der 26m-Version wesentlich steileres Trudeln u. zügiger Übergang in eine Steilspirale	Trudeln stationär In der 26m-Version steileres Trudeln und Übergang in den Kurvenslip
in der Mitte	3-5	Trudeln mit Übergang zur Steilspirale	Trudeln mit Übergang in einen Schiebeflugzustand
ganz vorn	3-5	≈ 1/2 Trudelbewegung, dann Steilspirale	Schiebeflugzustand

Aus dem Kreisflug eingeleitetes Abkippen ist nicht wesentlich heftiger als aus dem Geradeausflug.

Das Trudelverhalten des Flugzeuges mit den 25,6m-Flügelverlängerungen und Winglets ist nicht wesentlich verändert gegenüber der 25m-Version ohne Winglets.

In der 26m-Version fällt das Trudeln eindeutig steiler aus und selbst in der hintersten Flugschwerpunktlage geht die Trudelbewegung nach einer Umdrehung in eine Steilspirale über.

4.5.4 Landeanflug

Rechtzeitig zu einer Landung entschließen und trotz guter Flugleistung spätestens bei 100 m über Grund die Wölbklappenstellung 4 oder 5 wölben und das Fahrwerk ausfahren.

More specifically, the following would apply:

C.G.position	Flap	Rudder & Aileron Coordinated	Rudder & Aileron Crossed
rearmost	3 - 5	steady spin	steady spin
central	3 - 5	spin, leading to spiral dive	spin, leading to slipping turn
foremost	3 - 5	approx. half turn of spin, leading to spiral dive	slipping turn

Wing drop from circling flight is not noticeably more violent than from straight flight.

The above specifications for spin behavior apply likewise for operation of the sailplane with wingtip extension-with-winglets installed.

4.5.4 Landing Approach

Make the decision to land in good time and, notwithstanding the high performance, select Flap 4 or 5 and lower the wheel at the latest at 100 m = 300 ft agl.

For the remainder of the circuit, maintain about 90 km/h = 49 kts (yellow triangle on ASI scale).

The sailplane should be trimmed to between 90 and 100 km/h = 49 kts and 54 kts. In turbulence, the approach speed should be appropriately increased.

Der Rest der Platzrunde wird mit etwa 90 km/h (gelbes Dreieck am Fahrtmesser) geflogen.
Dabei ist das Segelflugzeug auf 90 bis 100 km/h auszutrimmen. Bei Turbulenz ist entsprechend schneller anzuschweben.

Wichtiger Hinweis: Erst wenn man völlig sicher ist, die Schwelle der Landebahn im geraden Endanflug zu erreichen, wird die Landestellung L (+38°) des WK-Handhebels gerastet.

Bei Fluggeschwindigkeiten über 100 km/h steigen die Handkräfte zum Umrasten in Landestellung deutlich an. Aus diesem Grund wird dieser Umwölbvorgang bei Fluggeschwindigkeiten über 100 km/h nicht empfohlen. Die Handkräfte entstehen durch die starke positive Stellung der inneren Wölbklappen. Diese schlagen 38° nach unten aus, während die mittlere Klappe bei +10° stehen bleibt und das äußere Querruder auf -6° ausschlägt. Durch diese starke Verwindung des Flügels nimmt das Eigensinken, besonders bei Fluggeschwindigkeiten zwischen 120 und 130 km/h stark zu.

Durch eine Längsneigungsänderung (ziehen und drükken), kann also der Gleitwinkel in einem weiteren Bereich variiert werden.

Zusätzlich können natürlich wie üblich auch die doppelstöckigen Bremsklappen zur Gleitwinkelsteuerung herangenommen werden.

Anmerkung: Bei starkem Gegenwind wird die Verwendung der WK-Stellung L wegen der Gefahr des Aufsetzens vor der Landebahn nicht empfohlen!

- Wer noch nicht mit Wölbklappen als Landehilfe vertraut ist, sollte bei Gegenwind zunächst nur WK-Stellung 5 zur Landung verwenden.

Wichtiger Hinweis: Das Einfahren von Wölbklappen in Bodennähe ist wegen der Gefahr des Durchsackens nicht ratsam. Dies gilt auch für das Zurückwölben aus WK-Stellung L in Stellung 5 oder 4.
Dieses Zurückwölben aus der Landestellung bei der Gefahr des Zukurzkommens, darf nur mit genügend Sicherheitshöhe (mindestens 40 m) genügend Fahrt (mindestens 95 km/h) und nach Übung in größerer Höhe durchgeführt werden.

4.5.5 Landung

Zur Landung ist der Wasserballast abzulassen.

Für den Notfall (z.B. Startabbruch) ist ausreichende Festigkeit für die Landung mit der zulässigen Maximalmasse nachgewiesen.

Ist in der Landestellung mit größeren Längsneigungen angeflogen worden, ist darauf zu achten, daß rechtzeitig mit dem Ausrunden zu beginnen ist, um eine saubere 2-Punkt-Landung durchzuführen.

CAUTION: Only when you are quite certain of being able to reach the boundary of the landing area in a straight approach should landing Flap L (+38°) be selected.

At air speeds above 100 km/h = 54 kts the control forces required to engage Flap L will noticeably increase. It is, therefore inadvisable to engage landing Flap L at more than 100 km/h. These high control forces are generated by the very positive camber of the inboard flaps. These deflect downwards by 38°, whereas the center section flap remains at +10° while the outboard aileron deflects to -6°. This marked wash-out greatly increases the natural sink of the aircraft, especially at air speeds between 120 and 130 km/h = 65 and 70 kts.

By changing pitch attitude (forward or back pressure) the glide angle can be further varied to a large degree.

In addition, glide path control can, of course, be exercised in the normal way by means of the double-panelled airbrakes.

NOTES:

- In a strong headwind, use of landing flap setting L is NOT recommended, due to the danger of undershooting the landing area !

- If you are not familiar with the use of the flaps as a landing aid, you should initially only use Flap 5 for a landing into a head-wind.

CAUTION: The danger of a sudden drop makes it inadviseable to reduce flap setting near the ground. This also applies to a reduction from landing flap to Flap 5 or 4.
Such a reduction of landing flap when in danger of undershooting must only be employed above a safe height (at least 40 m = 131 ft), a safe speed (at least 95 km/h = 52 kts), and after practising the manoeuvre at greater heights.

4.5.5 Landing

Before landing, water ballast must be jettisoned.

In an emergency (eg: failed launch), structural strength will prove adequate to a landing at maximum all-up flight mass.

If approaching in a steep attitude with landing flap L selected, remember to round out in time to allow a clean 2-point touch-down.

Immediately before touching down, the airbrakes setting may be reduced so as to avoid touching down with wheel brake too firmly applied.

In a crosswind, landing flap setting L is advised as it will help in controlling the crosswind effect.

During the ground run the stick should be held fully back for better directional stability in crosswinds, and to prevent the tail from lifting due to hard application of the wheel brake.

The flaps may be left in landing setting, as the negative aileron deflection will provide adequate lateral control until the aircraft comes to a stop. If Flap 5 was used for the landing, it is advisable to engage Flap 1 after touch-down.

When parking the aircraft, engage Flap 3 in order to save the elastic sealing strips over the wing / control surface gaps from wear.

4.5.6 Flying with Water Ballast

For normal European weather conditions, the wing loading of the ASH 25, flown two-up, is already at its best even without additional water ballast.
If achieved lift is markedly greater than 2 m/s = 400 ft/min, wing loading can be increased up to about 46 kg/m² = 9,4 lbs/ft² by use of water ballast.

NOTE: Remember that ballast load will increase the stalling speeds and take-off runs.

Ensure that the condition of the airfield, the length of take-off run available and the power of the tug permit a safe launch.

Filling of Water Ballast

The outboard tanks must be filled first, both for reasons of structural strength and because of better behaviour in steady circling flight; any balance remaining should then be filled into the inboard tanks.

It is most important to fill only by means of the filling nozzles provided as these are fitted with a strainer designed to prevent contamination of the valves.

Both of the water ballast switches in the cockpit should be set forward (valve open position). Depending on the type of equipment fitted, either the two outer LEDs or all four LEDs will flash green. (See also Section 7.8)

Start by filling the tank of one outer wing with its tip on the ground. The design of the tank vents will allow the wing to vent best in this position. When the tank is full, the filler opening is closed and sealed by means of the stopper with marking tape supplied, as both valves must remain open until the other tank is full. This is an important LBA requirement, to prevent inadvertent draining of

only one tank.
Now the other wing tip is put down while the other outboard tank is filled. The valves should then be closed and the stopper with marking tape removed from the wing whose tank was filled first; with wings level, carry out a balancing test to check that the ballast loads are even. Should one wing prove to be heavier, block the opening of the lighter wing briefly by hand or stopper while opening the valves until equilibrium is achieved.

The inboard tanks should be filled in the same sequence.

WARNING: It is expressly prohibited to use pressurised water (mains, immersion pumps &c) for filling ballast tanks due to possible damage to the wing structure.
It is recommended to fill from slightly elevated containers (on wing or car roof &c). If water under pressure is used, it is essential to interpose an open intermediate vessel (funnel &c), to ensure that the head-of-pressure cannot rise beyond 1.5 m = 5 ft during filling.

If the outboard wings are filled to capacity, it can happen that the tanks slowly drain through the vents while the aircraft is parked. In this case we recommend that the wingtips should be supported level, but on no account to tape up the vents !

The maximum permissible water ballast volume can be calculated as follows:-

750 kg (=1654 lbs)
less - Empty Mass
less - Cockpit & additional Load

= max. water ballast in kg or liters

You will find a table with precise values in Section 6.2

Jettisoning of Water Ballast.

We distinguish between two types of circumstance in which ballast is normally released.

1. Gradual reduction of wing loading: For structural reasons the inboard tanks are drained first. The switch in the center of the switch panel is turned UP and the two green LEDs in the center of the upper row should now flash (depending on the type of equipment fitted: see also Section 7.8).
   Every time any water is let off, it is most important to look at the lower wing surface to visually check that the water is actually draining from the opened valves!
   If the wing loading is to be further reduced, the switch for the outboard tanks (at front left on switch panel) should also be switched UP. Again, check both wings

visually for drainage and do not simply rely on the green LED indication.

2. Rapid ballast jettison: Set both switch levers UP; all of the green diodes (upper row) should now flash. Carry out visual check under wings to ensure that water is draining at an equal rate from all valves! The full tanks will take about 3 1/2 min., ie: approx. 200 seconds, to drain. With two valves open, the loss in mass is about 0.5 kg/s (1,1 lbs/s), with four valves open about 1 kg/s (2,2 lbs/s).

   Should the ballast fail to drain as intended, the valves should be closed immediately (switches down, LEDs flashing red); try again to achieve even drainage by operating the valves again or, if icing is suspected, after descending into warmer air.

   If this fails after several attempts, the situation should be regarded as an emergency, and instructions in Section 3.7, para (5) (Other Emergencies) should be followed.

4.5.7 High Altitude Flights

Flutter tests were carried out at about 2000 m = 6562 ft amsl. As the ASI under-reads at increasing altitude, but since flutter limits for light aircraft are determined by the true air speed, the following limitations apply to flights at greater altitudes:

Altitude amsl	VNE Indicated
0-3000 m (9843 ft)	280 km/h (151 kts)
5000 m (16404 ft)	250 " (135 ")
7000 m (22966 ft)	225 " (121 ")
9000 m (29528 ft)	200 " (108 ")
11000 m (36089 ft)	175 " (94 ")
13000 m (42651 ft)	150 " (81 ")

If these indicated air speeds are observed, the true air speed above 3000 m altitude will remain constant at 325 km/h = 175 kts. Therefore, in spite of a considerably lower airspeed reading, the actual speed achieved relative to the ground will be adequate for penetrating even against strong headwinds at greater altitudes.

WARNING: Flights in icing conditions are not advised, especially if the aircraft is wet before climbing through icing level. Experience suggests that drops of moisture on the surface will be blown back, lodge in the control gaps, and there dry compara

tively slowly.

This may cause the controls to become stiff to operate, or in extreme cases, jam them. A single climb through icing level with a previously dry aircraft, on the other hand, is not likely to impair the use of the controls even if heavy icing-up of wing and tail unit leading edges occurs.

When carrying water ballast, avoid flying above icing level due to the danger of iced-up outlet valves, or in extreme cases bursting of wings due to ice formation.

4.5.8 Flight in Rain

Rain drops, frost and ice impair the aerodynamic qualities and also alter the flying behaviour. Therefore the quoted minimum speeds for straight and circling flight should, in such conditions, be increased by some 10 km/h = 5,5 kts. Air speeds should not then be allowed to drop below these values.

Rain drops should be removed from a wet aircraft before take-off.

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

SECTION 5

5.1 Einführung

Der vorliegende Abschnitt enthält LBA-anerkannte Werte bezüglich Anzeigefehlern der Fahrtmesseranlage und Überziehgeschwindigkeiten sowie zusätzliche andere Werte und Angaben, die nicht der Anerkennung bedürfen.

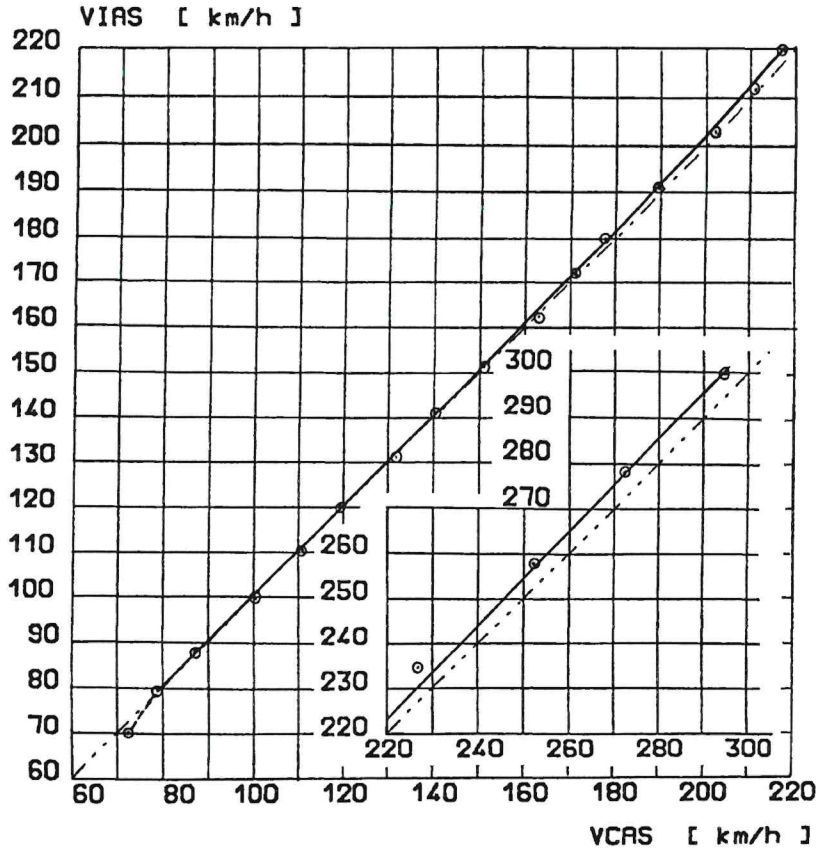
Die Daten in den Tabellen wurden durch Erprobungsflüge mit einem Segelflugzeug in gutem Zustand und Zugrundelegung eines durchschnittlichen Pilotenkönnens ermittelt.

5.2 LBA-anerkannte Daten

5.2.1 Anzeigefehler in der Fahrtmesseranlage

Ab einer Fahrtanzeige über 75 km/h tritt nur ein geringer Anzeigefehler in der Fahrtmesseranlage auf. Die Abweichungen liegen bei ca. 2 bis 3 km/h zuviel Anzeige und bewegen sich damit im Bereich der Ablesefehler bei guten Fahrtmessern.

Anmerkung: Beide Fahrtmesser müssen ihren Gesamtdruck von dem Staurohr in der Rumpfspitze und den statischen Druck von den Bohrungen in der Rumpfröhre beziehen.



V_{IAS} = Indicated Air-Speed
vom Fahrtmesser angezeigte Fluggeschwindigkeit

V_{CAS} = Calibrated Air-Speed
geeichte Fluggeschwindigkeit

5.1 Introduction

This Section contains LBA-approved data relating to ASI indication errors and stall speeds, and also additional data and information which do not require approval.

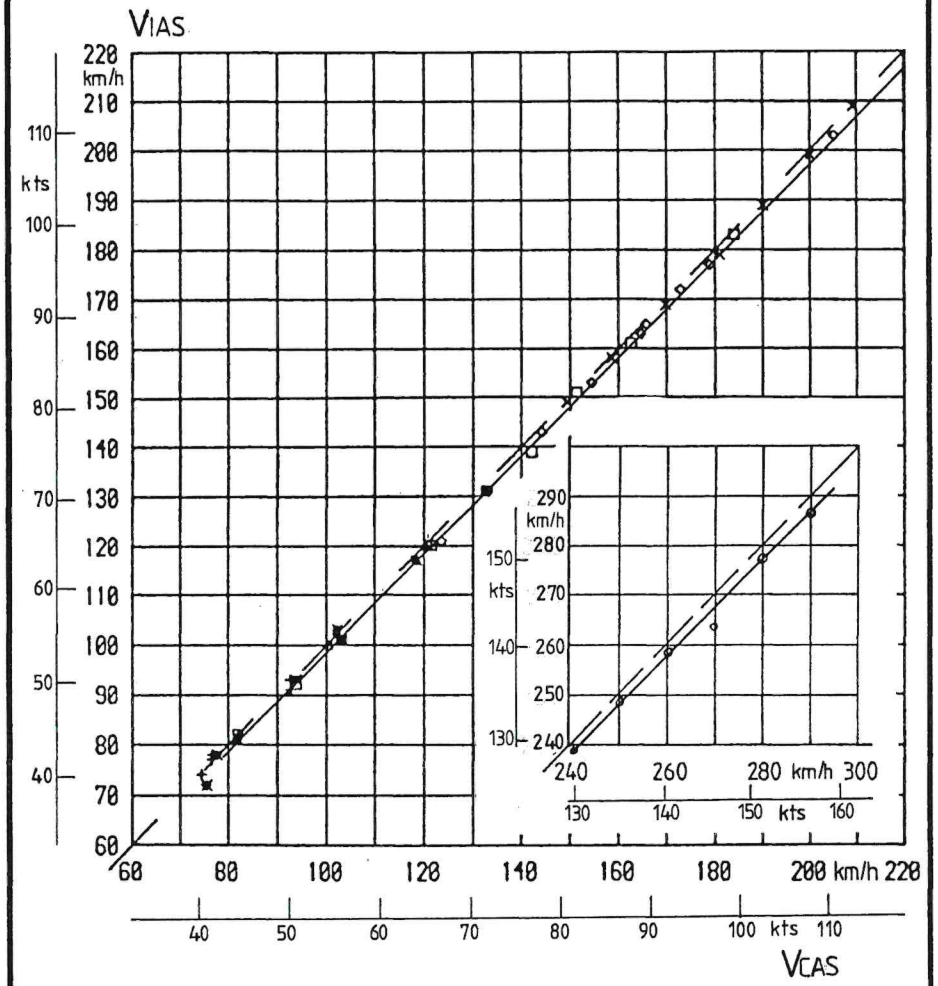
The data in the charts and tables were established by means of test flights with a glider in good condition, and based on average pilot ability.

5.2 LBA-Approved Data

5.2.1 ASI Indication Errors

Upwards of an indication of 75 km/h = 40 kts the ASI will only show a minimal indication error. The deviations are within an underreading of about 2 to 3 km/h = 1 to 1,5 kts, and therefore within the range of acceptable instrument error of a good ASI.

NOTE: Both ASIs must take their pitot pressure from the Prandtl-Tube in the fin, and static pressure from the static ports in the fuselage tail boom.



V_{IAS} = Indicated Air Speed

V_{CAS} = Calibrated Air Speed

5.2.2 Stall Speeds

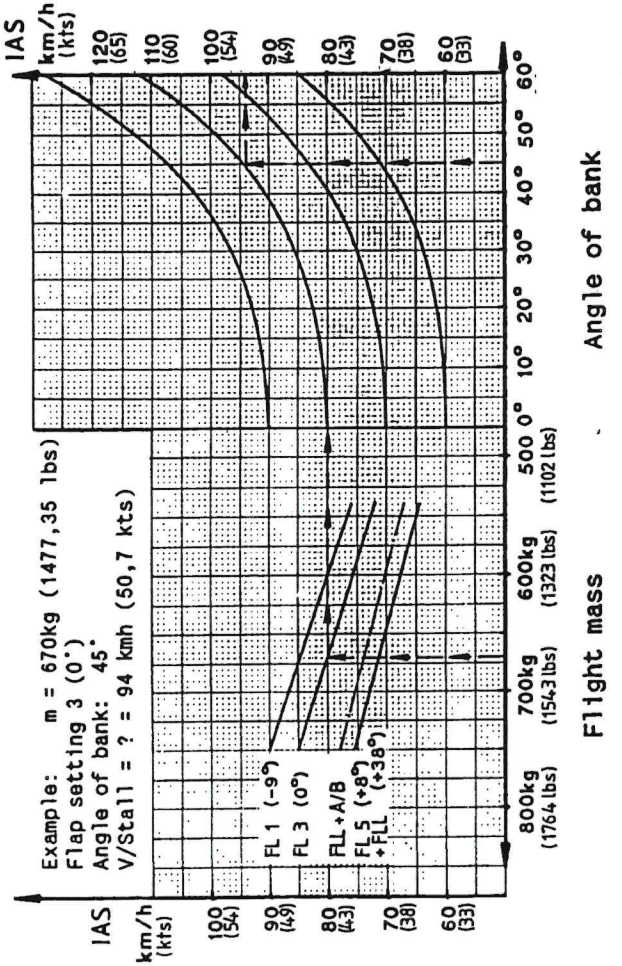
Stall Speeds in km/h (kts) - Indicated Air Speed:-

Flap Setting	All-Up Weight kg (lbs)		
	540 kg (1191 lb)	630 kg (1389 lb)	750 kg (1654 lb)
Flap 1	76 km/h (41 kts)	83 km/h (44.8 kts)	90 km/h (48.6 kts)
Flap 2	75 km/h (40.5 kts)	81 km/h (43.7 kts)	88 km/h (47.5 kts)
Flap 3	72 km/h (38.9 kts)	78 km/h (42.1 kts)	85 km/h (45.9 kts)
Flap 4	66 km/h (35.6 kts)	71 km/h (38.3 kts)	78 km/h (42.1 kts)
Flap 5	65 km/h (35.1 kts)	70 km/h (37.8 kts)	76 km/h (41 kts)
Flap L	64 km/h (34.5 kts)	69 km/h (37.2 kts)	75 km/h (40.5 kts)
Flap L + Airbrake	67 km/h (36.2 kts)	72 km/h (38.9 kts)	78 km/h (42.1 kts)

1. The speeds indicated are valid for the aerodynamically clean aircraft. Wingtip extension with winglets fitted reduce the stall speeds by about 1 km/h (0.54 kts).
2. With C.G. aft, a stall warning in the form of horizontal tail buffeting will commence at about 5 % above stalling speed.
3. Extending the airbrakes increases the stalling speed in level flight by about 5 km/h = 2.7 kts.

4. Lowering the landing gear does not affect the stalling speed.

Stalling Speed Diagrams

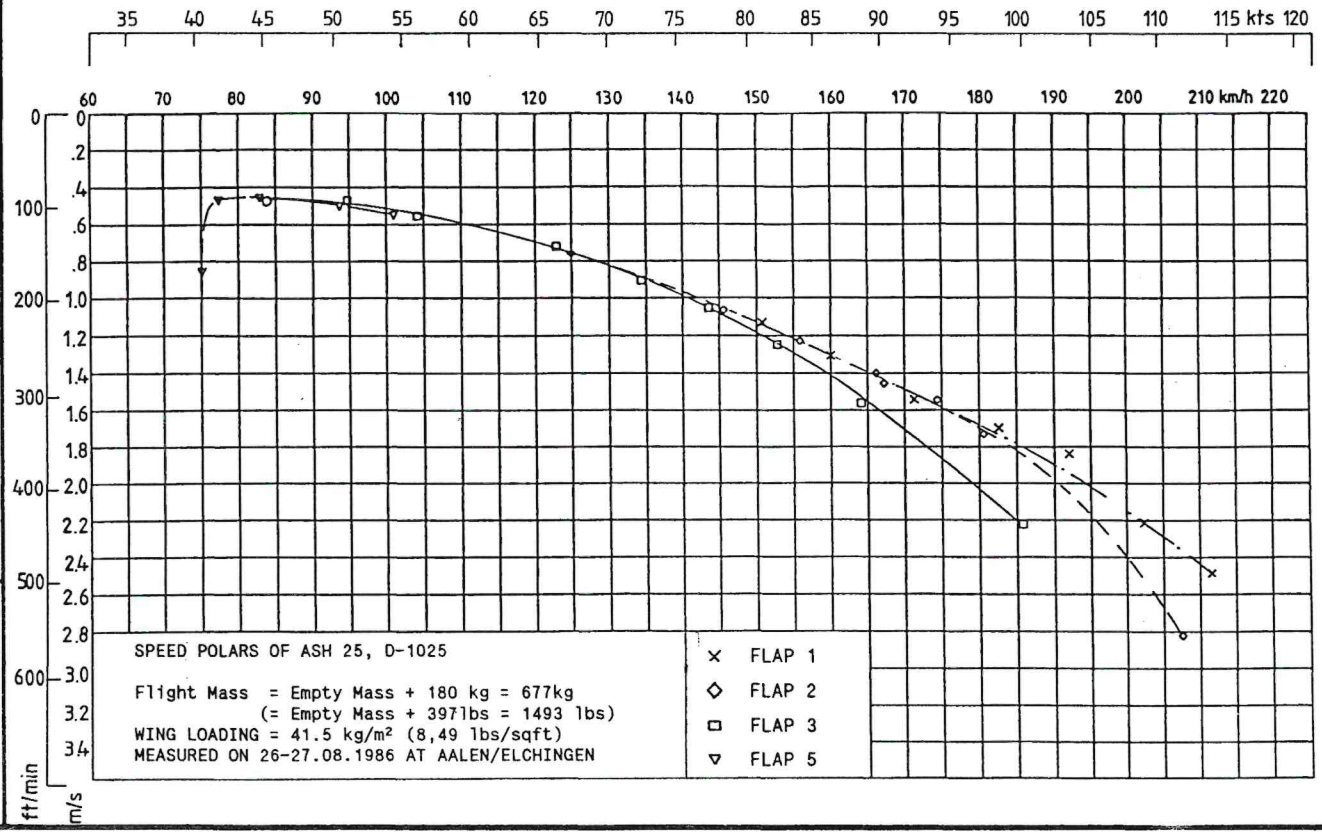


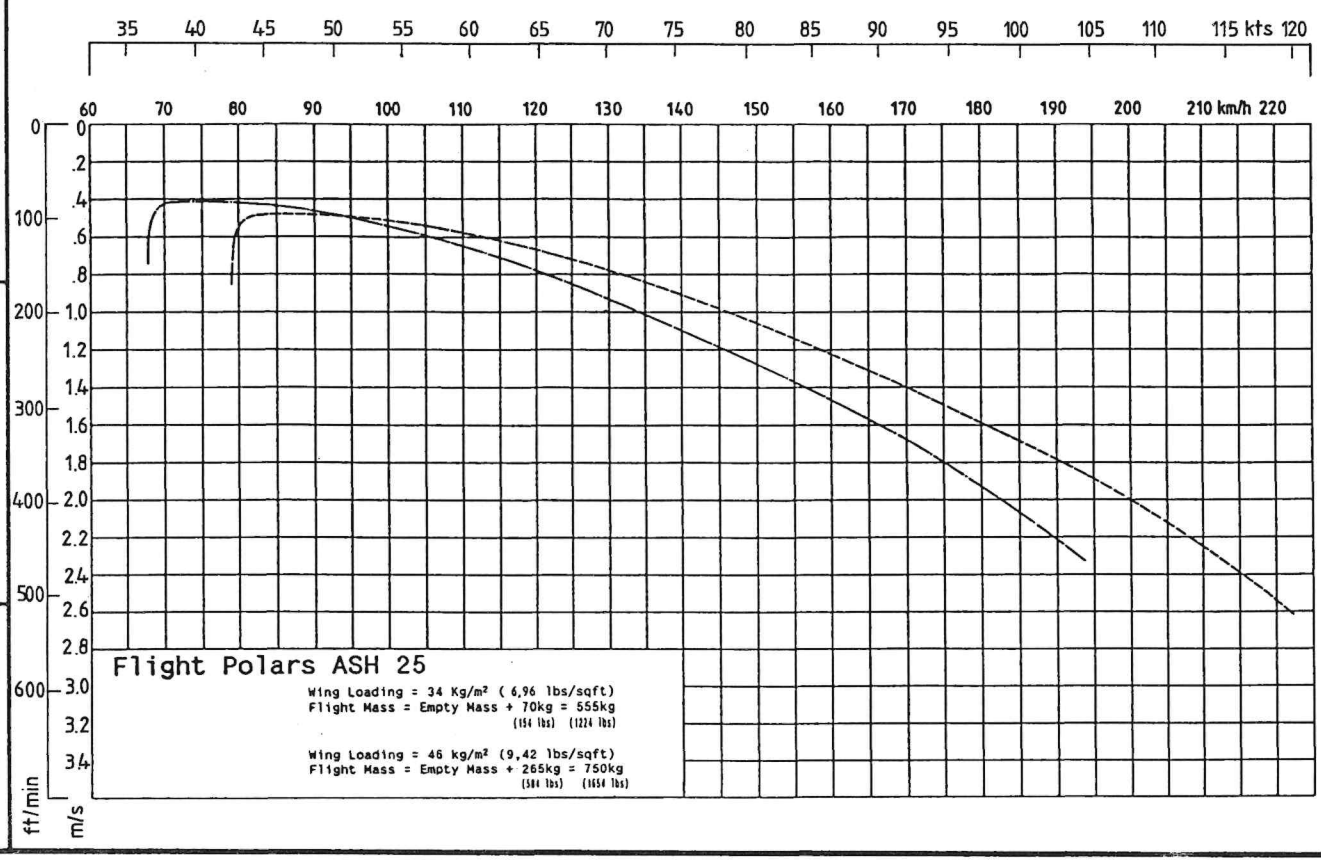
5.3 Additional Information

5.3.1 Demonstrated Crosswind Components

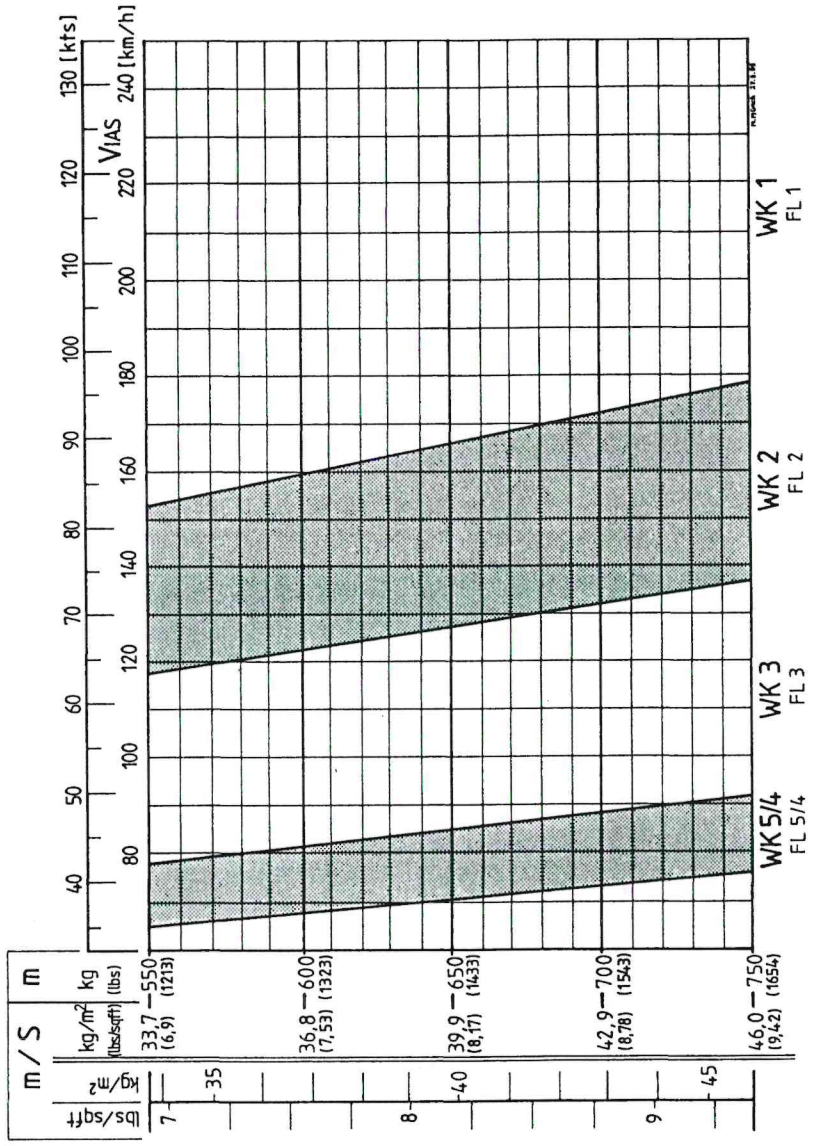
Winch Launch	20 kmh = 10,8 kts
Aerotow	20 kmh = 10,8 kts
Landing	25 kmh = 13,5 kts.

5.3.2 Flight Polars




35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 kts 120
60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 km/h 220
0 100 200 300 400 500 600 ft/min
0 .2 .4 .6 .8 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0 3.2 3.4 m/s
Flight Polars ASH 25
Wing Loading = 34 Kg/m² (6,96 lbs/sqft)
Flight Mass = Empty Mass + 70kg = 555kg
(154 lbs) (1224 lbs)
Wing Loading = 46 kg/m² (9,42 lbs/sqft)
Flight Mass = Empty Mass + 265kg = 750kg
(584 lbs) (1654 lbs)

5.3.3 Recommended Flap Settings for best Performance throughout the Speed Range



SECTION 6

6.1 Introduction

This Section lists the mass and balance range within which the ASH 25 may be safely flown.

Weighing procedure and calculation of permissible C.G. limits, and a list of equipment which must be included in the weighing, are shown in the Maintenance Manual, Section 6.

6.2 Mass and Balance Form

The Mass and Balance Form on Page 6.4 shows the maximum and minimum cockpit loads for both seats, and any additional load still permissible for the baggage compartment.
If the pilot mass is low, then correspondingly more baggage can be loaded, however, it must never exceed the maximum permissible limit.

These mass and balance data must be calculated in accordance with the currently valid weighing data. The data and diagrams needed for establishing these are to be found in the Maintenance Manual, Section 6.

This Mass and Balance Form is valid only for the aircraft bearing the serial number (S.No.) shown on the title page of this manual.

If pilot mass in the front seat is less than the minimum stated in the Mass and Balance Form, this can be rectified by means of trim ballast plates fitted in front of the front seat. See also Section 7.11.

In order to ballast the ASH 25 for an optimum-performance C.G. range also with two up, the glider can be trimmed more tailheavy by fitting either a special battery or suitable trim ballast in the provided battery channel in the fin.
This, of course, will increase the possible minimum load in the front seat, if the glider is then being flown with only one pilot on board.
In such a case always this increased minimum cockpit load in the front seat must be entered in the DATA and LOADING PLACARD of the aircraft.
The lower permissible front seat load without trim ballast (battery) in the fin will be shown only on page 6.4 of this Flight Manual "Mass and Balance Form".

In the cockpit, an additional placard is to be affixed:

REDUCED MINIMUM COCKPIT LOAD
WITHOUT TRIM BALLAST IN THE FIN:
SEE FLIGHT MANUAL - PAGE 6.4 !

Refer also to Section 7.11 in this Flight Manual!

MASS AND BALANCE FORM

Date of Weighing	Empty mass (kg)	Empty mass C.G. mm aft of RP	Cockpit load front seat incl. chute one up (kg) min.	Cockpit load front seat incl. chute one up (kg) max.	Cockpit load rear seat incl. chutes max. with 110 kg (242 lbs) in the front seat	Load in baggage compart. (kg)	Inspector's stamp and signature

Maximum Permissible Loading with Water Ballast

Pilot mass + parachute + baggage	Empty Mass (kg)						
	470	480	490	500	510	520	530
70	180*	180*	180*	180*	170	160	150
80	180*	180*	180*	170	160	150	140
90	180*	180*	170	160	150	140	130
100	180	170	160	150	140	130	120
110	170	160	150	140	130	120	110
120	160	150	140	130	120	110	100
130	150	140	130	120	110	100	90
140	140	130	120	110	100	90	80
150	130	120	110	100	90	80	70
160	120	110	100	90	80	70	60
170	110	100	90	80	70	60	50
180	100	90	80	70	60	50	40

(See table in lbs overleaf!)

* Only if the aircraft has inboard water tanks

(which are an optional extra fitted only if expressly ordered), these 180 Liters are the maximum possible ballast load (180 kg = 397 lbs).

The outboard water tanks (fitted as standard equipment) have a combined capacity of 120 liters.

Pilot mass + parachute + baggage	Empty Mass (lbs)						
	1036	1058	1080	1103	1125	1147	1169
154	397*	397*	397*	397*	375	353	331
176	397*	397*	397*	375	353	331	309
198	397*	397*	375	353	331	309	287
221	397	375	353	331	309	287	265
243	375	353	331	309	287	265	243
265	353	331	309	287	265	243	221
287	331	309	287	265	243	221	198
309	309	287	265	243	221	198	176
331	287	265	243	221	198	176	154
353	265	243	221	198	176	154	132
375	243	221	198	176	154	132	110
397	221	198	176	154	132	110	88

* Refer to p.6.4!

SECTION 7

7.1 Einführung

Der vorliegende Abschnitt enthält eine Beschreibung des Segelflugzeuges sowie seiner Systeme und Anlagen mit Benutzungshinweisen. Details über Zusatzeinrichtungen und -ausrüstung finden sich ferner in Abschnitt 9.

Eine genaue Beschreibung mit Übersichtszeichnungen befindet sich im Wartungshandbuch.

Hier soll vor allem eine Beschreibung der Bedienelemente im Cockpit, deren Anordnung und Beschilderung gegeben werden.

7.2 Flugwerk

Der Tragflügel der ASH 25 ist über die gesamte Spannweite mit Hinterkantenklappen ausgerüstet. Die Klappe, die dem Rumpf am nächsten ist, wird als **Wölbklappe** bezeichnet. Diese Wölbklappe wird von der Quersteuerung nicht verstellt. In der Landestellung schlägt diese Klappe etwa 38° nach unten aus.

Die nächste Klappe wird als **mittlere Flügelklappe** bezeichnet, da sie von einer Flügelhälfte betrachtet in der Mitte liegt. Diese **mittlere Flügelklappe** macht die selben Wölbausschläge wie die **Wölbklappe.** Zusätzlich wird sie von der Quersteuerung mitangetrieben. In der Landestellung schlägt diese Klappe etwa 12° nach unten aus.

Die äußerste Klappe wird als **Querruder** bezeichnet, da sie hauptsächlich von der Quersteuerung angetrie-

ben wird. Zusätzlich wird das **Querruder** auch bei Wölbklappenausschlägen mitverstellt.
In der Landestellung schlägt das Querruder etwa 6° nach oben aus. Dadurch bleibt die ASH 25 in dieser WK-Stellung im Ausrollen nach der Landung gut steuerbar.

Das Flügelprofil verfügt über eine Grenzschichtbeeinflussung durch Blasturbulatoren auf der Flügelunterseite. Die Luft, die durch die Blasnadeln ausgeblasen wird, kommt von den Pitot-Düsen auf der Flügelunterseite und wird direkt in den Blaskanal des Flügels eingeleitet.

7.3 Steuerungsanlage mit Wölbklappen und Trimmung

(1) **Quer- und Höhensteuer**
Diese beiden Steuerungen werden durch die Steuerknüppel betätigt, die für beide Piloten vorhanden sind. An beiden Steuerknüppeln sitzt der Auslöser für die Trimmung. Auf dem vorderen Steuerknüppel zusätzlich die Funktaste.

(2) **Seitensteuer**
Für beide Sitze sind die Seitensteuerpedale auf die Beinlänge des Piloten einstellbar.

(a) Vorderer Sitz:
Pedalverstellung: grauer Knopf rechts des Steuerknüppels

7.1 Introduction

This Section contains a description of the glider, its systems and equipment with instructions for use. Details of various ancillary systems and equipment, not included as standard equipment, can furthermore be found in Section 9.

A detailed description with layout drawings can be found in the Maintenance Manual.

The principal purpose of this Section is to describe the controls in the cockpit, their layout and labels.

7.2 Airframe

The ASH 25 wing is equipped with trailing edge flaps over the whole of its span. The inboard flap is defined as a 'camber changing flap'. This camber changing flap is not affected by the operation of the ailerons. When landing flap setting is selected, this flap deflects downwards by some 38°.

The flap next to it is called the **'center section flap'** as it is located in the center of one half-wing. This **center flap** deflects to the same degree as the **camber changing flap**, but is also actuated by the aileron control. When landing flap setting is selected, it deflects downwards by about 12°.

The outermost flap is called **'aileron'** as it is mainly actuated by the aileron control.

In addition the **aileron** is also deflected in accordance with flap settings.
In landing flap setting, the aileron deflects upwards by about 6°. This helps to keep the ASH 25 fully controllable during the landing run.

The wing is equipped with vortex generators on the lower surface for the purpose of boundary layer control. The air emitted through the jet capillaries is fed from the pitot tube in the fuselage nose through a tube to the wing root rib. The connection to the jet channels in the wing is completed automatically when rigging the wings.

7.3 Flight Controls, incl. Flaps and Trim

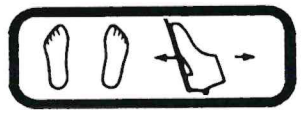
(1) Aileron and Elevator

Both these controls are operated by means of the control columns fitted at both seats. Both sticks are fitted with trim release levers for setting the trimmer; the radio transmit button is mounted on the front seat stick.

(2) Rudder

At both seats, the rudder pedals are adjustable to suit leg length.

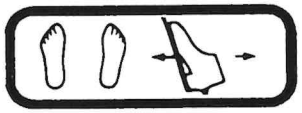
a) Front Seat
Pedal adjustment: grey knob at right of stick.



To move pedals aft:
relax pressure on pedals and pull them back by the knob. Then release knob and apply pressure to pedals to lock in position.

To move pedals forward:
pull knob and push pedals forward with your heels. Release knob and push again to lock in position.

b) Rear Seat
Pedal adjustment: grey ring in front of rear control stick.



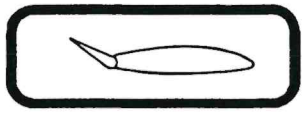
To move pedals aft:
relax foot pressure on pedals, lift grey ring to disengage from location hole and pull pedals back by the ring. Re-engage the catch in the nearest location hole to secure.

To move pedals forward:
lift the grey ring to unlock, push pedals forward with your heels and re-engage the catch in nearest location hole.

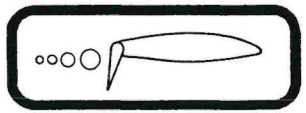
(3) Flap Controls

Flap settings are selected by means of the black handle at the left cockpit wall at either seat. Pivot the handle down to unlock so that it may be moved forwards or backwards.

The flap positions are marked 1, 2, 3, 4, 5 and L above the handle.



Flap in speed flight setting.



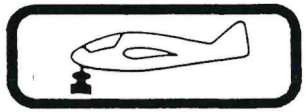
Flap in landing setting.

(4) Trim

To set the trim simply press the trim release lever at either of the two control sticks when flying at the desired air speed.

A trim indicator is fitted at the right cockpit wall at either seat.

The trim can also be adjusted by sliding the trim indicator knob to a desired position, if it is first unlocked by pressing the stick mounted trim release lever.

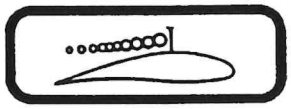


Trim nose heavy

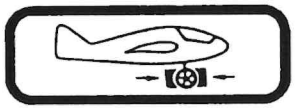
Trim tail heavy

7.4 Airbrakes

The airbrake is operated by either of the blue handles mounted at the left cockpit wall underneath the flap lever.



Pull the blue handle to extend the brake paddles



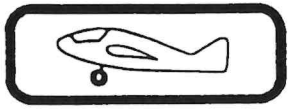
When the airbrake handle is pulled back to its fullest extent, it will also actuate the hydraulic disc brake of the main wheel.

The double-panelled airbrakes extend on the upper wing surface only.

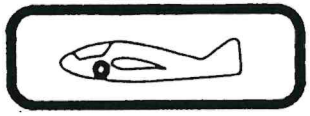
7.5 Landing Gear

The landing gear is extended and retracted, and locked at either position, by means of the black handled lever mounted at the right-hand cockpit wall of the front seat.

If required, a landing gear lever can also be fitted at the rear seat, to allow the rear seat pilot to assist; it will, however, not be possible to lock the wheel up or down by means of this additional lever.



Landing gear extended (lever forward)



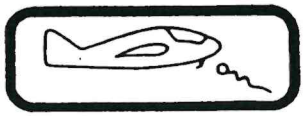
Landing gear retracted (lever aft)

Tire pressures: Main wheel 3.5 bar (50 psi)
Tail wheel 2.5 bar (36 psi).

7.6 Cockpit, Canopies, Seat Harness, and Instrument Panels

COCKPIT
Launch Cable Release

To the left of each control stick you will find the



yellow cable release knob.

Pulling the knob opens the two towing hook releases. (The aero nose towing hook release is only installed on customer request.)
Both release knobs are connected to each other.
To allow the launch cable to be attached, pull the yellow knob back and then just release it to allow the towing hook to close and lock. Do not replace it in its original position by hand.

Seats and Seating Positions.

The front seat is designed to allow tall and medium sized pilots to sit comfortably, and improve their position by means of cushions and an appropriate choice of parachute. For tall pilots we would recommend the use of thin parachute packs of the new type. Very short pilots will have to adjust their seating position by means of a firm cushion so that all controls are within comfortable reach, and that they are prevented from sliding back during initial

all controls are within comfortable reach, and that they are prevented from sliding back during initial take-off (winch launch) acceleration.

The rear seat is designed for tall pilots wearing parachutes which partially act as a cushion. Shorter pilots should use a seat cushion to raise their seating position and improve their view to the outside.

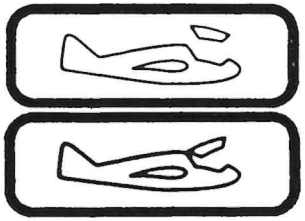
Canopy Operation

The front canopy is locked by means of the two white lever handles fitted to the canopy frame at the right and left.

These levers are marked by these adhesive labels.

The front canopy is opened by pulling both levers inwards and hinging the canopy forward.

The rear canopy is locked down by means of the two red lever handles mounted at either side of the canopy frame.



These levers are marked by these adhesive labels.

The rear canopy is opened by pulling both the red

handles inwards and hinging the canopy aft.

NOTE: If possible, do not leave the aircraft parked with canopies open, because

1. Canopies could be slammed shut by a gust of wind which might shatter the perspex.
2. At certain elevations of the sun they could act as lenses concentrating the sun rays, which might destroy cockpit instruments and equipment.

Experience with the similar canopy system of the ASK 21 has shown that it was possible to leave the rear canopy unlocked before take-off, which could then blow open and break off. Therefore, a safety system has been incorporated in the ASH 25, which only allows the front canopy locking handles to be pushed home if the rear canopy is properly locked first. If the front locking handles can only be pushed back about half-way towards the frame, this is an indication that the rear canopy has not been properly closed and locked. Do not try to force the front levers into the locked position, but lock the rear canopy first.

Seat Harness

The seat harness is anchored in such a way that it cannot jam the control runs underneath the seat pan.
Seat harness straps (including shoulder straps) must be worn at all times, and should be fully tightened.

auch immer kontrolliert werden, ob die einzelnen Gurte auch richtig im Gurtschloß verriegelt sind. Zeitweise empfiehlt es sich auch, zu überprüfen, ob das Gurtschloß unter Last zu öffnen ist.

Lüftung:

Im vorderen Cockpit sitzt die Lüftung im vorderen Haubenrahmen und wird durch den kleinen schwarzen Knopf betätigt.
Ziehen öffnet die Lüftung.

Sie dient auch als Antibeschlaglüftung für die vordere Haube.

Im hinteren Cockpit sitzt eine Luftdüse, die durch Drehen geöffnet und geschlossen werden kann, rechts vom Instrumentenbrett.
Soll die Antibeschlagwirkung der vorderen Lüftung unterstützt werden, wird diese Luftdüse geschlossen.

Instrumentenbretter:

Aus Unfallschutzgründen dürfen nur GFK-Bretter mit dem serienmäßigen Laminierplan verwendet werden.
Geräte, die schwerer als 1 daN sind, müssen zusätzlich zu den Befestigungsschrauben abgestützt werden. Dies geschieht mit Alubändern, die entweder am vorderen Haubengelenk oder an der Verkleidung des hinteren Instrumentenbrettes befestigt werden.

Geräte mit Bedienelementen müssen griffgünstig eingebaut sein und auch mit angelegten Schultergurten

erreichbar sein.
Geräte zur Flugüberwachung - wie Fahrt- und Höhenmesser - müssen im Blickfeld des Piloten angeordnet sein.

7.7 Gepäckraum

Harte Gegenstände dürfen nicht ohne spezielle Befestigung im Gepäckraum vor oder über dem Holm mitgeführt werden !
Sollen zum Beispiel Barograph oder Batterie an dieser Stelle mitgeführt werden, so ist für diese eine vom Hersteller empfohlene Halterung zu verwenden.

Der Gepäckraum darf maximal nur mit 15 kg beladen werden.

Beladung des Gepäckraums max. 15 kg

Der zur Triebwerksaufnahme vorbereitete Motorraum darf nicht als Gepäckraum genutzt werden!

Motorraum darf nicht als Gepäckraum genutzt werden!

Check every time that each individual strap is properly secured in the harness lock. The lock should also be tested from time to time to ensure that it can be satisfactorily released under load.

Ventilation

In the front cockpit the ventilator is located in the front section of the canopy frame and is operated by means of the small black knob. Pull to open.

It also serves as a demister for the front canopy.

The rear cockpit has a ventilator nozzle, which is opened and closed by twisting the rim, to the right of the instrument panel.
This ventilator should be closed if the demisting function of the front canopy ventilator needs to be made more effective.

Instrument Panels

For safety reasons, only GRP panels made in accordance with the factory lamination plan may be used.
Instruments weighing more than 1 daN need further support, in addition to their fixing screws. This can be done by means of aluminium straps fixed either at the front canopy hinge, or to the rear instrument panel cowling.

Instruments with operating controls must be fitted where they are within reach, even when seat harness

meter, must be mounted within the pilots field of view.

7.7 Baggage Compartment

Hard objects may not be carried in the baggage compartment in front or on top of the spar without a suitably designed lashing or anchorage!

If, for instance, a barograph or battery is to be carried in this space, a mounting approved by the manufacturer must be used.

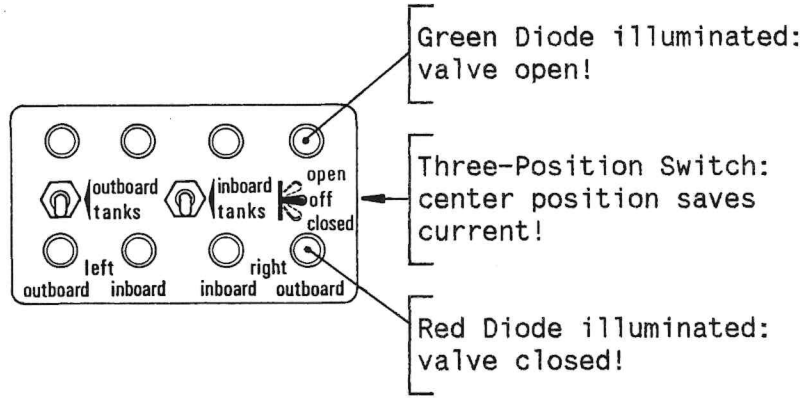
The baggage compartment load must not exceed 15 kg = 33 lbs.

Baggage Compartment Load	**max. 15kg (max.33 lbs)**

7.8 Water Ballast System

The water ballast valves in the wings are operated electrically. A switch panel is fitted for this purpose in front of the front cockpit control stick.

Water Ballast Switch Panel



The LEDs of the inboard tanks will, of course, flash only if ballast tanks have been fitted in the inboard wings. These tanks are not standard equipment and are fitted only if expressly ordered.

The above drawing of the switch panel illustrates the two 3-position switches, one for both the outboard tanks (= valves of the outboard wing tanks) and one for both the inboard tanks (= valves of the tanks in the inner wings).
By combining the switch connection of each left and right outer or inner tank, an inadvertent opening of only one valve, resulting in a one-sided ballast load, becomes impossible.

In addition, the electric switch circuit will allow the opening of the outboard tank valves only after the inboard tank valves are open.
The LEDs (top green = valves open; or bottom red = valves closed) are confirmation signals monitoring the state of the valve via limit switch actuators. If the cockpit switch for the outboard tanks is inadvertently set to 'open' first, the diodes will show red as the valves will not open. If then the inboard tank switch is set to the 'up' position, all the valves will open simultaneously and all upper LEDs will show green.

In order to save current, the switches should be re-set to their center position after operating the valves. This will switch off the LEDs.

7.9 Electrical System

The electrical system is supplied by a 12V battery. As an optional extra one additional battery can be ordered. In that case a main switch is fitted into the front instrument panel which is changing over between the two batteries or switching them both off.
Each electrical appliance is protected by its own fuse. Also in the cables leading to the batteries a fuse is fitted close to each battery.
The water ballast system uses current at 6V which allows the valves to be operated even with a flat battery. The 6V current is induced by an integrated circuit (IC) from the battery voltage.

7.10 Pitot and Static Pressure System

Pitot pressure is obtained from a Prandtl-tube mounted in the fin. Ensure that this Prandtl tube is fully pushed home in its seating in the fin. The inner end of the probe should from time to time be lightly lubricated with Vaseline or a similar lubricant, in order to save the O-ring gaskets from wear.

At the same time, the Prandtl tube provides accurate static pressure which can be used for electrically compensated variometer systems.

Static pressure for the ASI is obtained from the static ports at either side of the fuselage tail boom.

7.11 Miscellaneous Equipment

Removable Trim Ballast

If required, the ASH 25 can be fitted with seatings for lead trim ballast plates which can be bolted into place in front of the front seat (fitted only if expressly ordered). If the glider is equipped with a nose aero tow release coupling (also an optional extra), these trim ballast plates are bolted into place sideways at the tow release fitting.

In this location, a 1 kg (2.2 lbs) lead trim plate has the effect of a pilot weight of 1.3 kg (2.8 lbs).

Thus, a pilot weighing 6.5 kg (14 lbs) less than the minimum front cockpit load must use 5 kg = 11.02 lbs of trim weights.

Trim Ballast (Battery) In The Fin

If trim ballast (battery) is fitted in the fin, the minimum cockpit load in the front seat (for solo flights) is increased to more than 70 kg (154.4 lbs) (incl. parachute). In such a case this increased minimum cockpit load value in the front seat must be entered in the DATA and LOADING PLACARD which is fitted in the cockpit. The lower permissible front seat load without trim ballast (battery) in the fin will be shown only on page 6.4, Mass and Balance Form, of this Flight Manual.

For further details of minimum cockpit load see page 2.10 of this manual.

The foam buffer rod fitted over the battery secures it from above. This plastic foam rod must not be forgotten when changing or replacing batteries. You should also ensure that there is adequate plastic foam seating under the battery to protect it from hard knocks.

Oxygen

The two rear seatings for oxygen bottles are fitted as standard equipment.

The two front bottle fixing brackets are fitted only if expressly ordered.
When installing oxygen bottles, ensure that these bottle fixing brackets fit properly and securely.

NOTE: Fitting of oxygen equipment changes the empty-mass C.G. position!

Emergency Location Transmitter

The location least vulnerable to damage in case of accident is the area between the two drag spar pins at either side of the fuselage.
Therefore, the emergency location transmitter (ELT) should be fitted to the fuselage wall in the baggage compartment area, by means of an appropriate mounting. Since the whole of the airframe except for the fin contains CRP layers - and carbon fiber laminations screen the aerial radiation -, the ELT aerial must be fitted in the canopy area.

SECTION 8

8.1 Introduction

This Section describes recommended procedures for correct ground handling of the aircraft, and its maintenance. It also identifies certain inspection and maintenance requirements which must be followed, if the glider is to retain that new-aircraft performance and dependability.

It is advisable to follow a lubrication plan, and to carry out preventive maintenance based on the special climatic and other flying conditions encountered.

8.2 Glider Inspection Periods

A complete inspection should be carried out annually.

Further details are given in the ASH 25 Maintenance Manual, Sections 4 and 7.

8.3 Modifications or Repairs of the Glider

Regarding repairs and modifications, please see ASH 25 Maintenance Manual, Sections 10 and 11.

It is important that the Aviation Authority concerned should be advised before carrying out any modification of the glider which is not yet officially approved. This would ensure that the airworthiness of the aircraft is not invalidated.

8.4 Ground Handling / Road Transport

(1) Parking

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 flaps cannot be stressed by the picketing ropes. Tie-down holes can be fitted in the wing tips of the ASH 25 on request (only when expressly ordered).

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, which would impair the dimensional stability and even the strength of all fiber reinforced composites. For this reason, protracted periods of parking with water ballast on board are also inadmissible.

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

When parking for protracted periods - even in the hangar -and when transporting the aircraft the wing tip extensions with the winglets must be removed. Tie-down holes can be fitted only in the short detachable wing tips (must be expressly ordered).

(2) Road Transport

Messrs. Alexander Schleicher GmbH & Co. can supply dimensioned drawings of the ASH 25 which will provide all the measurements needed for building a closed trailer. We 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 close as possible to the root ribs.

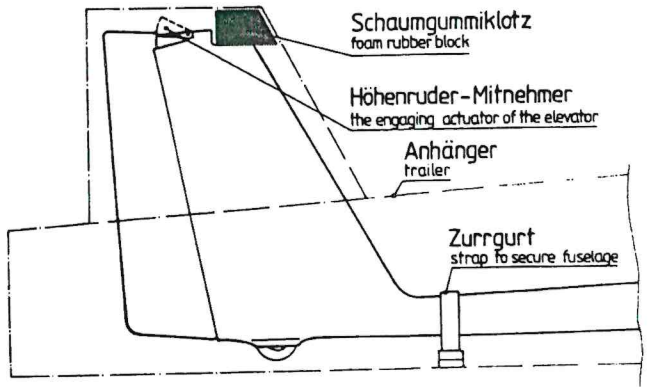
Reinforced points of the fuselage are the main wheel (but watch the suspension springing !) and tail wheel; also possibly the drag spar pins (make up support seatings from plastic material like Nylon!), and under the fuselage the area under the canopy arch.

For an aircraft of this quality and value, an open trailer, even with tarpaulin, cannot be recommended. Only a closed trailer of plastic or metal construction, or with heavy tarpaulin cover, may be considered suitable, which in any case should have light colored surfaces and be well ventilated also while stationary so as to avoid high internal temperatures or humidity.

Road transport with water ballast in the tanks is not permissible!

CAUTION: When transported in a glider trailer, care must be taken that the elevator engaging actuator of the glider (on top of the fin) is not being restricted in its required free movement by any foam blocks inside the trailer.

If for example such a foam rubber block is restricting the free moving of the elevator engaging actuator, with rather long road transports this may lead to a fatigue crack on this part. (See also the Drawing in Section 7 of the Maintenance Manual).
This cause must immediately be removed.
The drawing below shows how to cut and locate a foam rubber block. We think it is also useful to have a strap anchored in the trailer floor in order to secure the tail boom in front of the fuselage- fin-transition. In any case be sure that the elevator engaging actuator is free moving. Even with the stick full back, full upwards deflection of the elevator engaging actuator must be possible.



8.5 Cleaning and General Care

Contrary to the false assumption that plastic materials are impervious to moisture and ultra-violet light we would state emphatically that even modern gliders need care and maintenance.

Moisture

In the long run, moisture will also damage fiber re-inforced laminates, as it will penetrate into the expoxy resin base and cause it to swell, which will partially burst the tight interweaving of the plastic molecules.
In particular, a combination of high temperature and high humidity must be avoided! (As eg: poorly ventilated trailer becoming damp inside, which is then heated by the sun).

Neither the best quality of paint protection on the surfaces, nor the plastic or rubber skins of the water ballast tanks can fundamentally prevent water vapour diffusion; they can only retard the process. If water has entered the airframe and cannot be removed by means of sponge or chamois leather, the aircraft should be de-rigged and dried out, while periodically turning the affected part, in a room which should be as dry as possible, but not too hot.

Sunlight

- especially its UV component - embrittles the white polyester gelcoat and also the perspex canopy. The wax layer on the gelcoat will also oxydize and discolour more quickly if the aircraft is unnecessarily exposed to strong sunlight. There is no paint finish on the market as yet which is suitable for plastic gliders, and would approximate the life-span of the plastic structure of the airframe.

As the white polyester gelcoat is protected by a fairly durable wax layer, it will tolerate being washed down from time to time with cold water, with a little cleaning medium added. In normal use, the wax layer need only be renewed annually with a rotary mop. In moderate European conditions it will suffice if on two occasions a paint preservative is used in addition. In areas subject to long and stronger sun exposure this should be done more often.

For the care of the paint finish, only silicone-free agents should be used (eg: 1 Z-Special Cleaner-D 2 by Messrs. W.Sauer & Co., D-5060 BENSBERG, or Cleaner Polish by Lesonal).

Traces of Adhesive from Self Adhesive Tapes

are best removed by means of benzene (petrol is toxic!) or paint thinners.
After cleaning, renew the wax coating.

NOTE: The signal and decorative markings are built up from nitric or acrylic paint; therefore no thinners must be used and even benzene should not be allowed to act on them for prolonged periods.

The Acrylic Canopy (Plexiglass or Perspex)
should only be cleaned by means of a special cleaner (eg: Plexiklar) or with lots of clean water. On no account should a dry cloth be used for dusting or cleaning.

The Seat Straps
should be regularly inspected for tears, compressed folds or wear, and corrosion of metal parts and buckles. The reliable operation of the release action - even under simulated load - should be tested occasionally.

SECTION 9

9.1 Introduction

This Section contains additional information designed to facilitate safe and effective operation of the glider, if equipped with various ancillary systems and equipment not included as standard equipment.

9.2 List of Ancillary Equipment

- Oxygen installation

9.3 Ancillary Equipment

Oxygen installation

When flying at greater heights while using the oxygen installation, it should be borne in mind that any particular system may only be suitable for a limited altitude range.

The makers' instructions should be complied with.

SHEET: 1 of 1	Technical Note for	Alexander Schleicher GmbH & Co. Segelflugzeugbau D-6416 Poppenhausen

Glider model:

ASK 18, ASK 18B	TN-No. 7
ASW 19, ASW 19B	TN-No. 23
ASW 20/20L, ASW 20B/20BL, ASW 20C/20CL	TN-No. 34
ASK 21	TN-No. 21
ASW 22	TN-No. 6
ASK 23, ASK 23B	TN-No. 7
ASH 25,	TN-No. 4

Subject: New production series tow release couplings for aerotow and winch launch.

Serial number applicability:

ASK 18/18B,	Data Sheet No. L-307,	all serial no.s
ASW 19/19B,	Data Sheet No. L-308,	all serial no.s
ASW 20/20L,	Data Sheet No. L-314,	all serial no.s
ASW 20B/20B1,	Data Sheet No. L-314,	all serial no.s
ASW 20C/20CL,	Data Sheet No. L-314,	all serial no.s
ASK 21,	Data Sheet No. L-339,	all serial no.s
ASW 22,	Data Sheet No. L-351,	all serial no.s
ASK 23/23B,	Data Sheet No. L-353,	all serial no.s
ASH 25,	Data Sheet No. 04.364,	all serial no.s

Compliance: None; applicable to new built gliders and in case of replacement of tow release couplings.

Reason: According to the company TOST they have stopped the previous production series of the tow release couplings "Nose tow release coupling E 72/75" and "Safety tow release coupling G 72/73". These have been replaced by the new tow release coupling productions series "Nose tow release coupling E 85" and "Safety tow release coupling Europa G 88". In order to guarantee a problem-free exchange of the previous productions series against the new one, the new tow release couplings show externally almost no differences.

Action:

1. Where replacement is required or where a corresponding installation location is provided the new tow release coupling production series can be installed instead of the previous ones.

2. When this mod is accomplished, a copy of this Technical Note must be inserted as Annex into the Flight and Maintenance Manual of the glider (Operations Manuals respectively). The accomplishment of this action must be entered into the corresponding table in the manuals (the table headline reads: Additions to.., Amendments to .., Record or Log of Revisions ..).

Notes: The glider owners must regard the "Operating and Maintenance Instructions" for the new production series tow release couplings issued by TOST and giving the service time until the next overhaul !

Poppenhausen, January 17, 1990 ALEXANDER SCHLEICHER GmbH & Co.

i.A. Lutz-W. Jumtow.

The German original of this Technical Note has been approved by the LBA under the date of March 1, 1990 (signature: SCHMALJOHANN). The translation into English has been done by best knowledge and judgement; in any case of doubt the German original is controlling.