



# ASH 25 Mi

# ASH 25

The ASH 25 is an Open Class two-seater with a variable span of 25 m, or with winglets fitted of 25.6 m and 26 m respectively. The Mi-version as self-launching powered sailplane is fitted with a power-plant. The ASH 25 Mi uses a CRP / SRP (Kevlar) monocoque fuselage with roomy safety cockpit. The full-vision plexiglass canopies are hinged fore and aft and offer a comfortable entry for the pilots. The rubber-shock-mounted, retractable landing gear with a big 380 x 150 tire and hydraulic disc brake, the upwards hinging instrument panel in the front seat, and the infinitely variable speed trim, are only some of the many available conveniences.

The 4-part wing with laminar airfoil and boundary layer control on the underside is built as a carbonfiber sandwich. The sophisticated control linkage system gives very good maneuverability and harmless flight characteristics. All control surface hinges use needle bearings or low-maintenance plastic bearings. The actuating levers and bellcranks are fitted with ball bearings or precise uniball-joints. This provides comfortable actuating forces for the pilot and guarantees non-fatiguing flying. With winglets fitted the span is increased to 25.6m and 26m respectively.

The reliable and compact power-plant conception by SCHLEICHER, using a rotary engine, has been equipped with a fuel injection system for the ASH 25 Mi. This together with the new developed propeller (also a Schleicher design) helped to upgrade yet further the so far outstanding performance data . It is not just a self-launcher, the optimized thrust power on ground as well as the good climb values in powered flight must also be pointed out. The advantages of the rotary engine regarding smooth running and low vibration are very effective not only with full throttle but also in the low performance range. This engine unit stands out for simple operation, very low noise emission also in the cockpit, quick assembly and re-assembly, as well as low fuel consumption.

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Our advertising for the start of ASH 25 serial production:

## Two seater of a new dimension

Flying Open Class Competitions in a two-seater? The ASH 25, being the series production version of the AS 22-2, offers outstanding performance and on top of that the advantage of a second pilot.

The new wing - the airfoil was modified in the aileron area and the span was increased to 25 m - demonstrates outstanding performance not only in the high speed range, but also in low speed and -particularly important - in circling flight. The new wing layout allows narrow circle even with high wing loading, as the maximum lift of the entire wing is used also in circling flight.

Being made almost exclusively out of carbon and aramid fibers (Kevlar), this high performance glider offers adequate useful load, sufficient for even two heavier pilots. Likewise the permissible C.G. range was selected such that also different cockpit loads present no problem.

The ASH 25 can be flown two-seated up to a take-off mass of 750 kg (1654 lb.) and in this configuration the water ballast affects the C.G. position only imperceptibly.

But also for weak weather conditions the ASH 25 offers an adequate wing loading with  $m/S = 38 \text{ kg/m}^2$  (two-seated). The experience with the ASW 22 has shown that a glider with an aspect ratio of over 37 requires more wing loading than a 15 m glider.

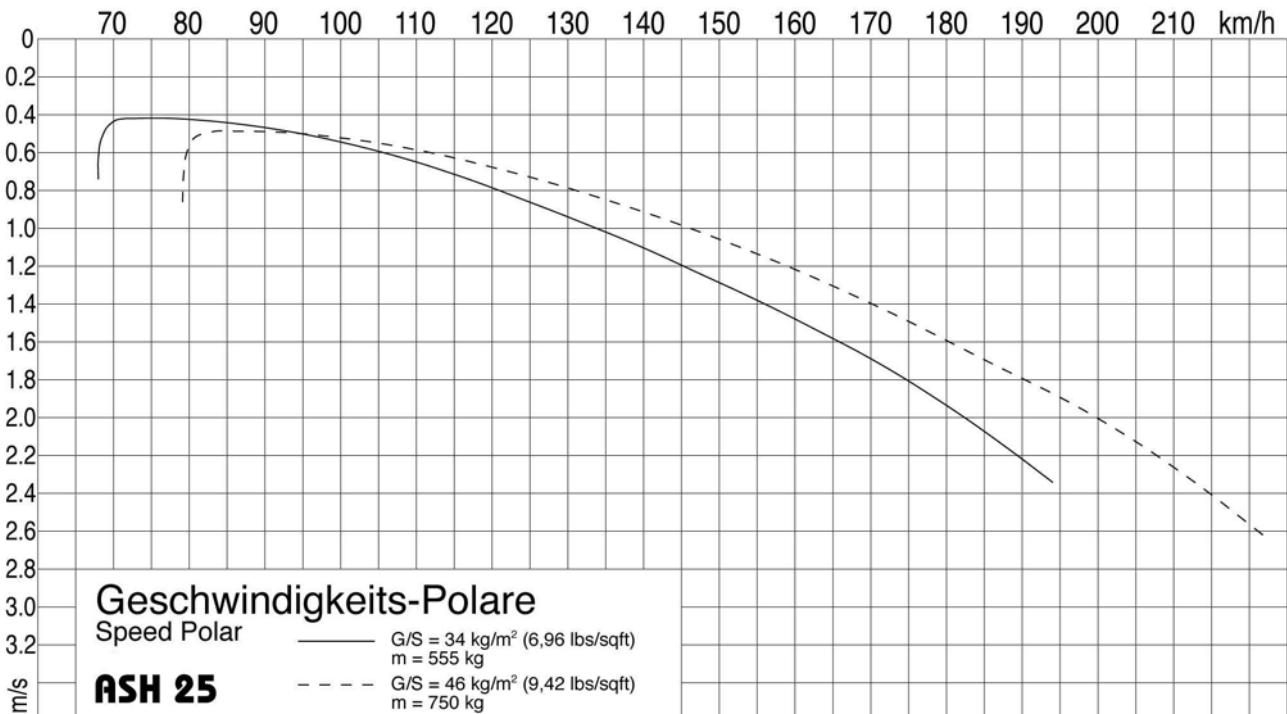
The flight testing of the AS 22-2 has demonstrated that the impressive flight characteristics of the ASW 22 can be transferred to a two-seater. The wing with its HQ17 airfoil and its flap kinematik provides comfortable and safe characteristics; for example this flap mixer system permits extremely steep and easily controllable landing approaches and the stick forces are low. The landing gear, high and sprung, as well as the larger dihedral of the wing help to the good landing characteristics.

Despite of some changes compared to the AS 22-2 fuselage, the fuselage shape of the ASH 25 still discloses the affinity to the fs 31 made by the Akaflieg Stuttgart. This fuselage geometry with its contracted tail boom stands out for relatively low aerodynamical drag. So the goal is achieved: to develop a two-seater which offers comfortable room for two pilots, without any significant performance loss compared to a single-seater.

Today we do not talk any longer about a "new" dimension; it is meanwhile more than 240 ASH 25 aircraft which you may come across all over the world. Today this aircraft is on the top place in the list of wishes of a glider pilot's dream.

This aircraft not only has revived the competitions for the Open Class, but in some gliding clubs it also allowed the training of real competition flying. Only very few of our ASH 25 were involved in serious accidents, so our philosophy of „active safety“ has been confirmed. Some units of our ASH 25 have already exceeded a service life 3000 hours, without technical problems, and meanwhile approach the 6000 hours without any problems. Signs of quality and reliability.

As at the beginning of its design our ASH 25 is now as before up to date, and together with the power-plant system of the ASH 26 E it offers to you a self-launching glider of the future - the ASH 25 Mi.



## DESIGN SPECIFICATION

Glider, midwing configuration with T-tail, flaps, retractable landing gear and water ballast.

### FUSELAGE

CRP / SRP (Kevlar) monocoque fuselage with roomy safety cockpit. Rubber-shock-mounted, retractable landing gear with 380 x 150 tire, retraction mechanism has counter spring for ease of operation. Hydraulic disc brake which is connected to the airbrake lever. In flight adjustable rudder pedals. Optimum cockpit ventilation through intake in the fuselage nose with continuously adjustable outlets, one on the front canopy frame and the others through directionally-adjustable fresh air nozzles for both pilots. TOST C.G. tow release coupling. TOST aero tow release coupling as optional extra on request. Infinitely variable speed trim, lockable by a stick key.

### CANOPIES

The full-vision plexiglass canopies are hinged fore and aft (same system as ASK 21). The two-part canopy system was chosen because it gives the advantage of an excellent fit and tight sealing with all temperatures. On the left side sliding window with additional aircoop. Canopy frame with tongue and groove type sealing.

### INSTRUMENT PANELS

The front instrument panel is made to hinge upwards with the canopy; even when the canopy is open, the instruments are still covered. When the canopy emergency jettison system is operated, the canopy together with the instrument panel coaming can be removed and the instruments are easily accessible. The rear instrument panel is not hinged to the canopy, but offers sufficient leg room for a safe emergency exit.

### WING

Cantilever, four-part wing with new developed laminar airfoil and boundary layer control at the wing underside. The wing surface is a sandwich of carbon fiber / plastics with a hard foam core; wing spars with carbon fiber flanges. Metal dive brakes on the upper wing side (airbrake paddles with spring-loaded caps). Pushrods sealed by bellows. Wing assembly is straightforward with a conventional tongue and fork spar extension secured with two large, easily insertable, cylindrical main pins. Relatively low weight of each wing part. No wing part is heavier than those of 15 m Class gliders.

### WATERBALLAST

Waterballast system with automatic connections. Easy maintenance because of removable waterbags. Filling through two drain outlets under the wing. Ballast capacity: approx. 2 x 60 kg in the outer wing.

### TAILPLANE AND FLAPS

T-tail (elevator with stabilizer). Stabilizer in CRP-sandwich-construction. Vertical fin in GRP-sandwich construction because of the VHF-antenna radiation. All control surfaces & flaps are new-technology sandwiches of Aramid fiber / plastics with a hard foam core; which gives extremely light and stiff control surfaces.

### CONTROL CIRCUITS AND FITTINGS

Aileron, elevator, flaps, and airbrakes are actuated by pushrods running in anti-noise ball-bearings. Automatic elevator connection Quick-closing connectors without loose parts are fitted at the control linkage rigging points. The actuating levers and bellcranks are fitted with ball bearings and precise uniball-joints. This provides the lowest possible actuating forces for the pilot and guarantees comfortable, non-fatiguing flying. The rudder is actuated partly by rods and partly by steel cables. The fittings are welded steel and milled or turned Duraluminium respectively.

### BOARD EQUIPMENT AND ACCESSORIES

Static pressure vents (for the A.S.I.) in the fuselage tail boom left and right. Pitot, static pressure and TE-compensation through 3-way-nozzle (multi-probe) in the fin. For the powered sailplane Pitot in the fuselage nose. VHF antenna in the fin. Flight monitoring instruments as required can be installed in the instrument panels. Threaded bushings at the canopy frame left & right for possible fixing of camera mountings. Seat cushion and storage pocket.

### POWER-PLANT

The development of a new conception for the power-plant has solved many of the so far known problems with retractable engine units. The foldable drive belt makes it possible to install the engine stationary in the fuselage. This has a particularly positive effect for the size of the exhaust silencer. Furthermore, it provides a better mounting bedding of all components of the power-plant. The entire power-plant can be removed after undoing three bolted connections. The C.G. of the power-plant is below the front mounting attachment point which means that in the case of a crash landing the pilot is protected against the propeller tower. The power supply is provided by two batteries with a total of 14 Ah which are fitted in the inner wing.

### ENGINE

Single rotor engine IAE 50R, with liquid cooled housing and with forced air rotor cooling. Electronic fuel injection system and dual electronic ignition, firing 2 plugs with electrical starting and 18 amp Generator.

The rotary engine was developed by the renowned motorcycle manufacturer NORTON, Great Britain, and it is outstanding for its low power-to-weight ratio and its remarkable smooth running. The manufacturer has succeeded in solving typical "Wankel-type" problems. The seals are the latest state of the art technology and through the interior air cooling it was possible to solve the problem of the rotor overheat.

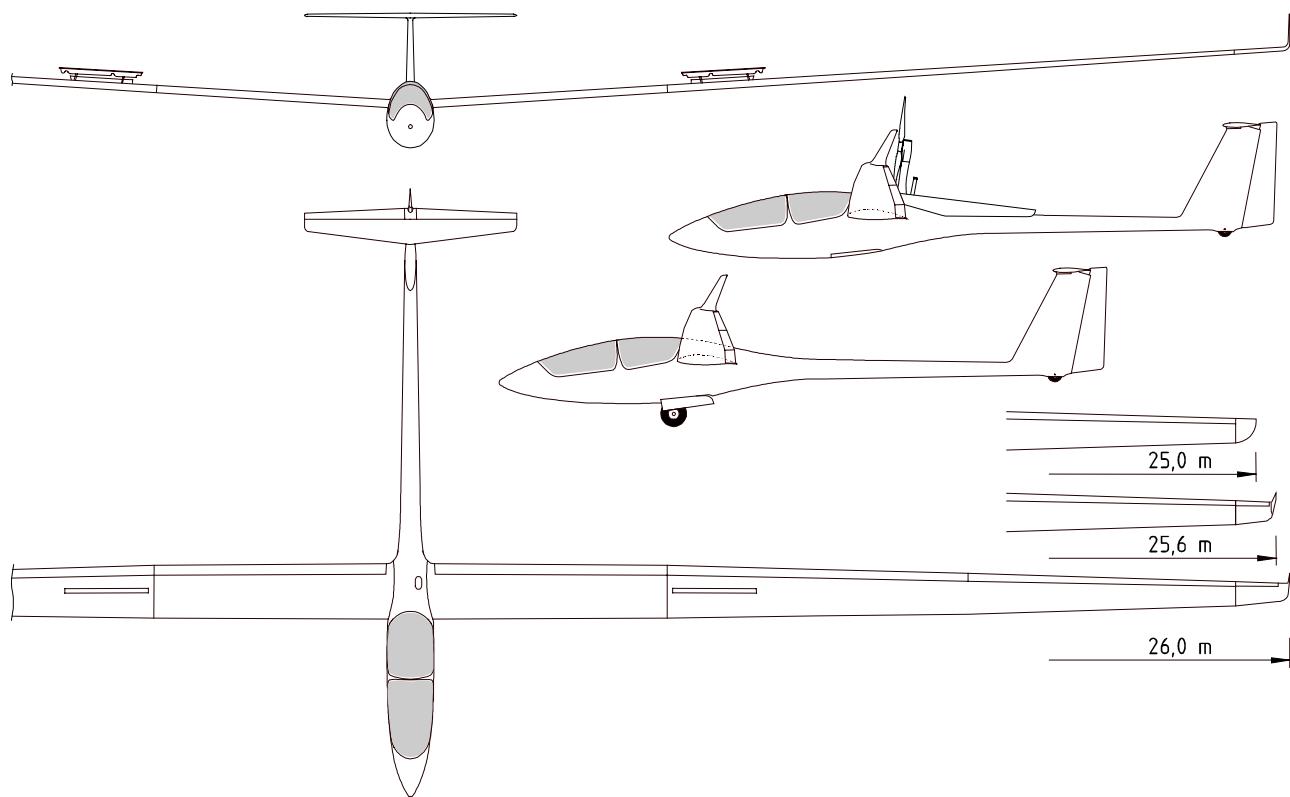
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## TECHNICAL DATA

	ASH 25			with Winglets		ASH 25 Mi			with Winglets		with Winglets			
Span	m	(ft)	25	(82,02)	25,6	(83,98)	26,0	(85,30)	25	(82,02)	25,6	(83,98)	26,0	(85,30)
Wing area	m <sup>2</sup>	(sqft)		16,31 (175,56)	16,46 (177,17)	16,62 (178,89)			16,31 (175,56)	16,46 (177,17)	16,62 (178,89)			
Wing aspect ratio				38,32	39,82	40,67			38,32	39,82	40,67			
Fuselage length	m	(ft)					9	(29,52)						
Höhe (LW u. Heckrad)	m	(ft)					1,7	(5,57)						
Wing airfoils				HQ 17 und DU 84-132/V3 at the wingtip										
Empty mass ( min.equipment)	kg	(lb)		ca. 470 (1036)	ca. 478 (1053)	ca. 484 (1067)	ca. 580 (1278)	ca. 588 (1296)	ca. 594 (1309)					
Max. take-off mass	kg	(lb)		750 (1653,46)			790 (1741,6)							
Waterballast	l	(US gal)		max. 120 (31.7)										
Max. wing loading (2-seated)	kg/m <sup>2</sup>	(lb/sqft)		46 (9,42)	45,6 (9,33)	45,1 (9,23)	48,4 (9,91)	48 (9,83)	47,5 (9,72)					
Min. wing loading (1-seated)	kg/m <sup>2</sup>	(lb/sqft)		~34 (6,96)	~34 (6,96)	~34 (6,96)	~40 (8,19)	~40 (8,19)	~40 (8,19)					
Max. speed	km/h	(kts)		280 (151)			285 (153,7)							
Min. speed	km/h	(kts)		ca. 75 bei 555 kg (40,4 kts at 1224 lbs)			ca. 81 bei 790 kg (43,7 kts at 1741 lbs)							
Min. sink	m/s	(ft/min)		ca. 0,42 bei 34 kg/m <sup>2</sup> (82,67 at 6,96 lb/sqft)			ca. 0,49 bei 48,4 kg/m <sup>2</sup> (96,5 at 9,91 lb/sqft)							
Best glide ratio				> 57 (95 km/h)	~60	~60	> 57 (95 km/h)	~60	~60					

## Engine Unit:

Performance	kW	-	41 (56 HP) at 7750 RPM
Cubic capacity	cm <sup>3</sup>	-	294



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