

STEMME

STEMME S10-VT

the high-performance motorglider



STEMME S10 the high-performance motorglider

The company and its flagship

The STEMME Company was founded in 1984 in Berlin as a joint venture of experienced entrepreneurs to develop new markets in sports aviation. Aircraft production in Berlin was still prohibited by Allied mandate in effect since World War II. It was STEMME for whom the first and only development and production licence was issued – a real adventure at that time.

The next challenge was the development of our first aircraft: the high-end motor glider STEMME S10 is the synthesis of the revolutionary mid-engine – front propeller drive combined with the latest state-of-the-art aerodynamics of sailplane technology. The result was a quantum leap for sports aviation, just as we had intended. To this day the STEMME S10-VT is still unique among all motor gliders worldwide.

A dream comes true

The philosophy

Uncompromised performance, independence, safety and convenience – all this amounts to the underlying philosophy of this dreamship.

The most spectacular proof of its fantastic gliding performance was the sensational world record of Klaus Ohlmann in the Andes of Argentina: 2,463 km (1,331 nm) of pure gliding in 14 hours in December 2000 with a STEMME S10-VT.

Soaring at its best – but power has its own appeal

The unique propulsion system and the twin-undercarriage offer you a fully fledged power plane which enables taxi, take-off and landing without outside help – on any grass strip as well as on the biggest international airports.

The 4-cyl./4-stroke turbo-charged engine (Rotax 914F with 84.5kW / 115HP) delivers ample power to yield convenience and independence equal to any mainstream power plane.

Together with the variable pitch propeller the powerful engine provides for short take-off runs. You can take full advantage of this independence to spend your precious time soaring – not waiting for crew and ground procedures. The convincing performance in powered flight makes the STEMME S10-VT the optimal aircraft for record pilots like Klaus Ohlmann, it enables you to be in the right place at the right time. And good fuel efficiency gives this motor glider a range of 1,700 km (920 nm) with extended fuel tanks.

The STEMME S10-VT boosts you to a sailing paradise even over long distances. Fly the crown of soaring as far as the wings can take you – returning home again after a beautiful day in the sky. The STEMME S10-VT is the aircraft which really allows you to go to new heights.

Safety & sensation... 5-sec-restart

Nothing in life is certain – thermals aren't either. Only this motor glider offers this quick restart procedure: push the nose forward, turn the key and feel the power when the propeller blades extend into the airstream. Easy to handle and safe as there is neither significant drag nor trim change during the restart period. Compare with the situation of a fold-out engine motor glider, in particular when it fails to start. And it's true – you don't need more than 5 seconds to transform the STEMME S10-VT from soaring configuration into powered flight – a record of its own.

Performance... the sailplane

The soaring performance of the S10-VT makes it a member of the top class. With its huge 23 m (75.5 ft) wing-span, it achieves a glide ratio of up to 50:1 at 106 km/h (57 kts). The STEMME S10-VT will give you challenging experiences of thermal soaring as well as in waves, but even weak thermals can be exploited with ease. The wing (state-of-the-art HQ41 profile) is optimized for both – thermal circling and fast forward flight. Six position flaps yield excellent flight qualities for all speeds between VSO at 77 km/h (42 kts) and VNE at 270 km/h (146 kts).



Go to the thermals and riffs – don't wait for them to come to you.

The STEMME S10-VT is the easiest to handle and most good-natured open class sailplane. Decelerating to 75 km/h (40 kts), it banks very gently without spinning. In all flap positions it is easy to control. You can easily follow the lift distribution. For a sailplane of this size, the STEMME S10-VT has a respectable manoeuvrability – taking only four seconds to bank through 90° from one side to the other. There is nothing left to be desired.

Comfort and profession... the side-by-side cockpit

Apart from ideal soaring and power flight performance, the STEMME S10-VT ensures the ultimate pleasure of flying in unparalleled comfort. Easily adjustable rudder pedals and six point adjustment of the seats match the needs of both short and tall pilots, while special seats for very tall pilots are available. The ergonomically designed cockpit provides the pilot with unmatched comfort on even the longest flights. Unique among high performance sailplanes, STEMME pilots enjoy side-by-side seating, a configuration common among power planes and the ideal environment for social, competition or instructional needs.

This seating configuration offers numerous advantages:

- the efficiency and safety of training flight students is improved through clearer verbal communication, a shared cockpit, direct eye contact, direct observation of students' behavior and actions.
- side-by-side is optimal for communication and load sharing between pilots, whether for competition, navigation, flight operations or any flight task. Improved cockpit resource management optimizes overall performance of the flight crew.
- flying side-by-side enables you to show the fascination of flight to passengers in a way that makes them feel more comfortable and safe.
- and last but not least, it's just more fun enjoying a fantastic flight side-by-side.

The handling – uncomparably safe and easy

The 23 m wing span looks really impressive. But the engine and the twin-undercarriage provide a maximum operational independence while taxiing and flying. In any situation the STEMME S10-VT could not be easier to handle. The undercarriage seems to be narrow, but ground handling only requires low speed taxiing on grass strips. For narrow taxiways and hangaring a wing folding system is available, with which a single person can reduce the span from 23 m (75 ft 5.5 in) to 11.4 m (37 ft 4.5 in), which is not more than the span of a normal power plane.

In powered flight as well as soaring, the flight performance could not be better: The STEMME S10-VT is stable in thermals, stall is most docile without total loss of control! You should be an expert to be able to get it into a real spin.



The STEMME S10-VT is the undisputed champion in a wide variety of audiences: with private ownership, partnerships and flying clubs. It is the perfect cross country aircraft, whether soaring or under power. Above all, the S10-VT is a plane which offers the gift of flight in perfect harmony with nature.

STEMME S10 a revolutionary propulsion system

STEMME RETRAC propeller folded



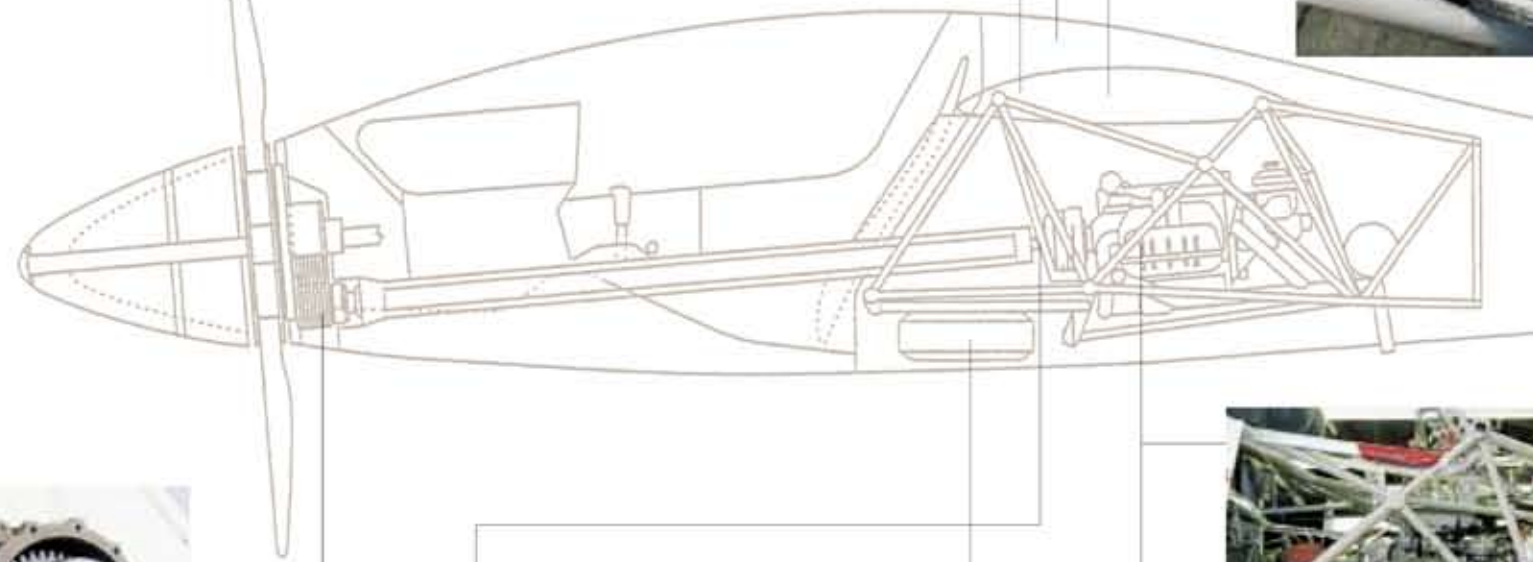
Upper end of special light weight electrical gear drive (left)



Water cooler and exhaust



High precision mixer and control push rods to ailerons, flaps & airbrake



Front gear, opened, for optimized propeller speed and opening for nose cone support



An unconventional gear, to be folded into a minimized fuselage cross section.



Engine without cooler and firewall



Turbo-oil cooler-intercooler (from left to right)

Engine

STEMME decided for a turbocharged FAR 33 certified engine, the Rotax 914F. Its features are impressive: charged for 4.000 m full power to ensure that S10-pilots will not miss the most hot & high air-fields of the world, enabling the pilot to cross the highest mountains. The Rotax 914F produces 85.7 kW (115 HP) and is equipped with watercooled cylinderheads, automatic adjustment by hydraulic valve tappet, electronic dual ignition, intercooler and integrated reduction gear. Air cooling is achieved by air inlet and outlet ducts which are opened automatically by the extension of the nose cone.

Intercooler

The intercooler gives the engine more power over all. You will need this in particular when the conditions are hot & high, and the airstrip short. Finally it heightens the service ceiling ahead of all other motorgliders.

Propeller

The patented propeller consists of the central section and two jointed blades. In gliding configuration the blades are folded into the contour of the fuselage and are covered by the movable nose cone to leave an aero-dynamically clean fuselage.

Start-up readiness is achieved by simply pushing the nose cone forward via its lever with no perceptible change in trim or drag. Therefore a critical situation at low altitude does not emerge from a sudden reduction in gliding performance. The propeller blades extend into the airstream automatically by centrifugal force when the engine is started.

Once the engine has been stopped and the prop has come to a rest, the blades fold inwards automatically by spring loading. As soon as the blades are aligned, the nose cone is retracted enclosing the propeller completely and forming again an aerodynamically clean fuselage. The pitch of the propeller with two positions improves significantly take-off runs and cruising performance.

Undercarriage

The electrically retractable undercarriage is sprung, using two 5 inch wheels with a track of 1.15m (3ft 9¹/₄in) and is fitted with disc brakes. There is a manual override system to lower the gear in the event of electrical failure. The tailwheel is steerable with the rudder. An optional wide-tired landing gear is available (using two 6 inch wheels) for shorter take-off runs on soft grass fields.

Fuselage

A central steel tube framework forms the mountings for the wings, undercarriage and fixed engine, and gives unobstructed access for engine servicing. All control linkages and connections for the wings are located above the horizontal firewall separating them from the engine compartment. Onto this central framework the rear fuselage is bolted as a carbon fibre construction.

Wings

The wings are a special development, which incorporates the very latest technology and aerodynamics, achieving significant benefits in handling and performance – confirmed by more than 160 owners in 2002.

The wings are made of carbon fibre constructions in three sections. Two 45 liter fuel tanks and Schempp-Hirth air-brakes are installed in the central wing section. Optional 60 liter fuel tanks extend the range to 1,700 km (920 nm).



STEMME S10 first-class features



A **panel** which fits all wishes of an advanced instrumentation (and you don't need a second one for the rear seat!).



The **cockpit** is a carbon fibre shell, kevlar-lined for impact safety. Inside width is 1.15 meters (3 ft 9 1/4 in) and the one piece canopy hinges from the front with supporting gas springs. The seat backs have six mounting positions, and are further adjusted for angle.



Easy-to-handle **controls**, dual, for manoeuvring that 23m-ship.



Rear console plus a glance into the "small" **baggage compartment** behind the seat (an optional compartment is available for the tail section).



A comfortable and robust **trailing arm** ensures always good landings.



The "T"-tail has a **dampened elevator**, and the rudder size is ample for good control coordination.



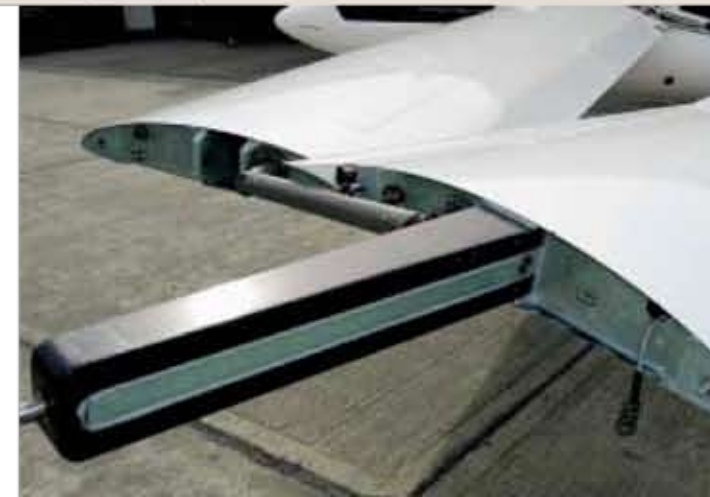
Optional, removable **winglets** improve again the excellent flight characteristics when thermalling, and diminish the sink rate without impairing the spectacular gliding performance in straight flight.



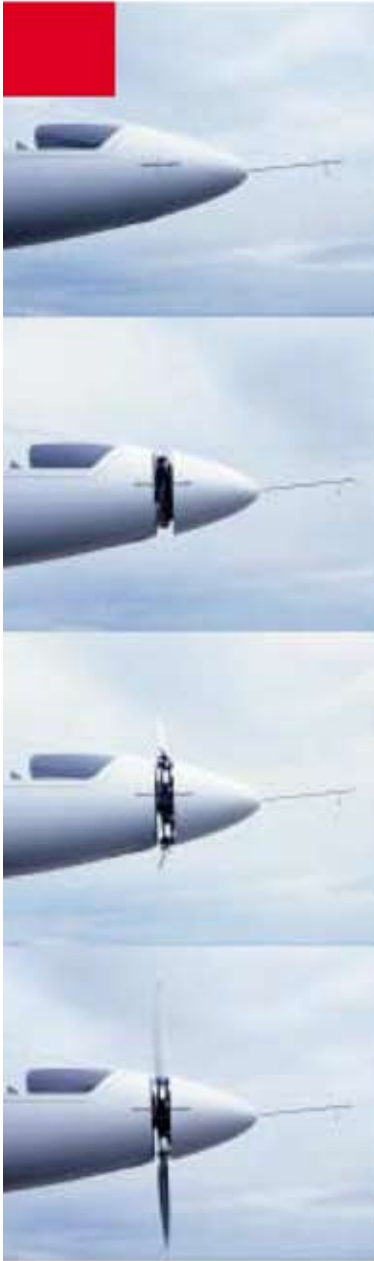
An optional **wing folding system** for taxiing, service, refuelling and lower hangar cost. A single person can reduce the span from 23m (75ft 5.5in) to 11.4m (37ft 4.5in).



Solar panels... providing you with over 30W electrical power during your soaring flight.



STEMME S10-VT technical data



The propeller blades extend into the airstream automatically by centrifugal force when the engine is started.

Dimensions, External

Wing span	23.00 m (75 ft 5 1/2 in)
Wing aspect ratio	29.29
Width, wings folded	11.40 m (37 ft 4 1/2 in)
Length over-all	8.42 m (27 ft 7 1/2 in)
Fuselage max width	1.18 m (3 ft 10 1/2 in)
Height over-all	1.80 m (5 ft 10 1/2 in)
Wheel track	1.15 m (3 ft 9 1/4 in)
Wheel base	5.42 m (17 ft 9 1/2 in)
Propeller diameter	1.63 m (5 ft 4 1/4 in)

Dimensions, Internal

Cockpit width	1.16 m (3 ft 9 1/2 in)
Cockpit height	0.93 m (3 ft 1/2 in)

Areas

Wings, gross	18.70 m ² (201.3 sq ft)
Horizontal tail, gross	1.46 m ² (15.8 sq ft)
Vertical tail, gross	1.51 m ² (16.3 sq ft)

Weights and Loadings

Weight, empty	660 kg (1,455 lb)
Max T-O & landing weight	850 kg (1,874 lb)
Max wing loading	45.5 kg/m ² (9.31 lb/sq ft)
Max power loading	10.06 kg/kW (16.53 lb/hp)

Performance, general

Never-exceed speed (VNE)	146 kt (270 km/h; 168 mph)
Manoeuvring speed	97 kt (180 km/h; 112 mph)
Stalling speed (flaps in landing position)	42 kt (78 km/h; 48 mph)
g-limits	+5.3/-2.65

Performance, powered

Max cruising speed (MSL)	121 kt (225 km/h; 139 mph)
Max cruising speed (FL100)	140 kt (248 km/h; 154 mph)
Max rate of climb (MSL, MTOW)	4.14 m/s (817 ft/min)
Service ceiling	30,000 ft (9,140 m)
T-O run (MSL, ISA, MTOW)	205 m (675 ft)
T-O distance (MSL, ISA, MTOW)	447 m (1470 ft)
Max range with standard fuel (2x45 ltr)	697 nm (1,290 km)
Max range with extended fuel (2x60 ltr)	929 nm (1,720 km)

Performance, unpowered

Best glide ratio at 57 kt (106 km/h; 66 mph)	Up to 50
Min rate of sink at 45 kt (83 km/h; 52 mph)	Down to 112 ft/min (0.57 m/s)

Operational Noise Level, according to

German light aircraft rules LSL, chapter X	71.3 dBA
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S10-VT

All specifications subject to change without notice. See purchase contract and options list for details.
Images may show details which are not part of the standard equipment.