

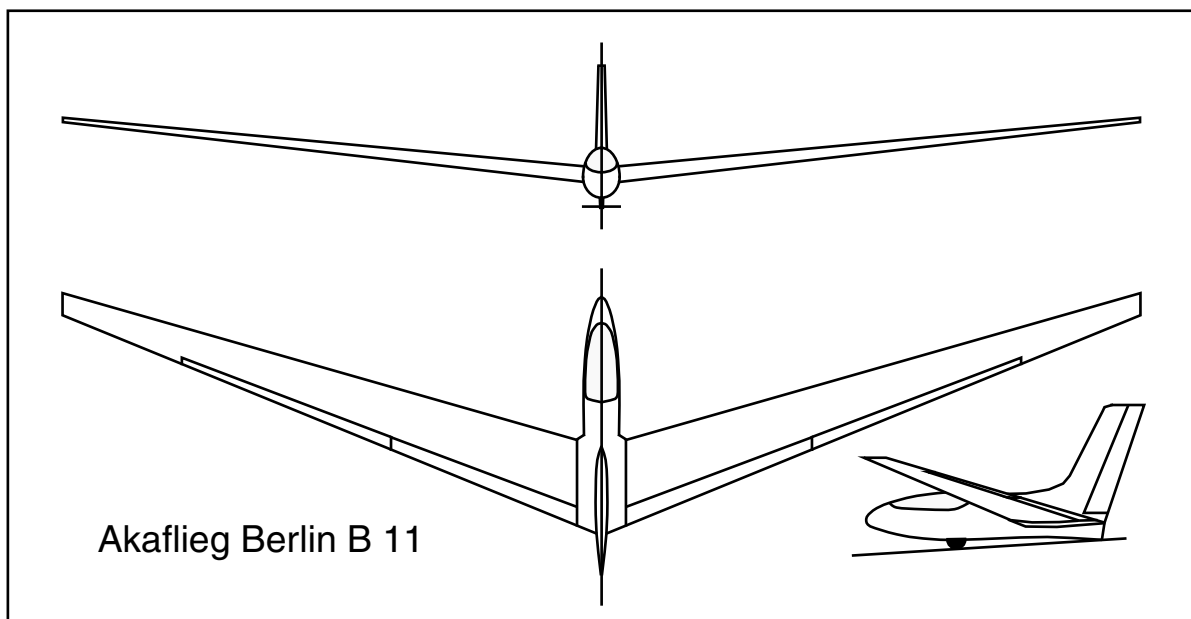
Akaflieg Berlin B 11

The August 1962 issue of *Interavia* contained a wonderful article on sailplane construction¹. The multi-page article, which included a number of photos and diagrams, together with an extensive table of data for many sailplanes, outlined then current trends in construction technologies. Plastics, fiberglass and epoxy were just coming into widespread use at the time.

Perhaps the most fascinating glider depicted was the Akaflieg Berlin B 11, a high aspect ratio tailless design with forward swept wings.

Despite the structural difficulties and lift distribution problems associated with forward swept tailless designs, there are a few advantages to the planform, particularly for full size aircraft:

- A forward swept wing allows the pilot to be placed very close to the CG, while at the same time preventing the wing from obstructing the pilot's view of the ground. This is an important consideration during landing.
- Sweep is related to effective dihedral. Sweep back increases effective dihedral as C_L increases, while sweep forward does just the opposite. This



Akaflieg Berlin B 11	
Dimension	Value
Span	17.325 m, 56' 10"
Wing area	15.8 m ² , 170 ft ²
Taper ratio	0.25
Sweep angle, c/4	18 degrees
Maximum weight	321 kg, 708 lbs.
V, landing	63 km/h, 39 m.p.h.
V, optimum glide angle	80 km/h, 50 m.p.h.
V, maximum	155 km/h, 96 m.p.h.

means swept forward wings need more dihedral. The benefit here is that the wing tips are always high off the ground, free of obstructions.

- Swept back wings tend to drag wing tips during landing, when the angle of attack is high. This tends to drive the designer toward reducing the sweep angle, thus requiring more aerodynamic wing twist to maintain stability, or increasing the dihedral angle, which leads to too high an effective dihedral angle in thermal turns and other high C_L conditions.
- Forward sweep inhibits tip stalling because the air flow tends to move toward the fuselage rather than toward the wing tips.

The Akaflieg Berlin B 11 went through a formal design process, and wind tunnel testing of a two meter span model was carried out², but we know nothing more about this intriguing design. We do think a model would be beautiful in the air, and would very much like to hear from anyone with additional information.

References:

1. From String Bags to Super-Kites, Trends in Sailplane Construction Today. *Interavia*, August 1962.
2. TWITT Newsletter. Andy Kecskes, Ed. No. 26, August 1988.