SF-27

The SF-27 is regarded in Germany as one of the best of the new generation of Standard Class sailplanes that are challenging the long reign of the K-6CR (and now the K-6E) sailplanes. The SF-27 incorporates many noteworthy features, including some first tested in the Zugvogel IIIB and the SF-26 Standard sailplanes, both now discontinued.

Fuselage

The fuselage of the SF-27 is of welded-steel tubing, is extremely light and sturdy, and offers excellent resistance to the rough landings characteristic of cross-country competition. The structure is basically an inverted triangle in the rear which transitions into a square section forward of the wing and up to the nose. Wooden stringers are mounted to the steel tube frame to round out the fuselage cross section appropriately and the entire forward fuselage back to about the center of the wing is covered with a molded-fiberglass shell. Among the more interesting points about the cockpit are such items as the adjustable rudder pedals (adjustment range over eight inches), an extremely comfortable semi-reclining seat that will accommodate either a standard back-pack chute or cushion and still provide adequate room for pilots over six feet three. The seat consists of contoured plywood and fiberglass panels mounted on a rigid steel-tube frame. The entire cockpit is lined with an extremely durable and light synthetic-foam material that is faced with a red nylon-acetate-like material—no more bruised or scratched knees or elbows. The controls and instruments are all very well located, and the visibility forward is excellent, due to the gradual curvature of the full-length blown canopy. The almost complete absence of optical distortion in the forward direction is a result of Mr. Scheibe's careful attention to details and close control of manufacturing tolerances. The canopy is fitted to a frame which is attached to the fuselage by means of a hinge on the left and locks on the right side. The instrument panel is located well aft of the forward end of the canopy thereby permitting ready access to the rear of the instrument panel for inspection or to facilitate installation or removal of any of the equipment or instruments. The large handle on the left side of the cockpit actuates the Schempp-Hirth-type spoilers, and when fully extended, also controls the wheel-brake. As in all of Scheibe's sailplanes the single main wheel is located just forward of the CG and a small pneumatic wheel is neatly faired in the tail which simplifies ground handling. Not to be overlooked are the handles which are welded to the top corner of the fuselage frame just ahead of the all-flying horizontal stabilizer.

Empennage

The construction of the stabilizer and rudder follows conventional practice by using a single spar, a leading edge cap, fabric, and fiberglass tips in order to minimize weight and simplify construction. The all-flying stabilizer is attached to a pair of stubs which project about two inches from each side of the fuselage and can be rigged in about 20 seconds.

Wing Construction

The construction of the SF-27 wing is most interesting, and undoubtedly is the largest single element contributing to the excellent performance of this machine. The structure consists of a full-depth laminated birch box spar located at the 50 percent-chord point. To my amazement I learned that the rib spacing is only 100mm (that's right, only 4 inches) and the ribs are built using stick-and-gusset techniques in order to save weight for where it will do the most good. Can anyone guess where this might be on a wing section that uses the newer Wortmann airfoil for good laminar flow over a wide range of speeds? If your guess is the same as Egon Scheibe's, then you know why he covers al-

Photo by George Kern

An SF-27 fuselage under construction. The typical Scheibe steel-tube structure, with fiberglass nose section, is evident here.

most the entire wing (about 85 percent to be more precise) with a 2.5mm thick Finnish birch plywood skin. This type of construction, combined with epoxy glues and the pride of workmanship Mr. Scheibe's machines show, should stand up very well under the extremely hot, dry conditions in the West and Southwestern parts of the United States. A molded-fiberglass tip section, complete with a neatly faired tip skid completes the wing at the tip ends. Looking at the relatively small area of the wing that doesn't get covered with plywood makes one wonder whether in the long run the few pounds extra weight for a 100 percent-plywood-skinned wing would not pay off. Clearly, it would not provide any significant stiffness from a structural standpoint, but it might preserve the trueness of the airfoil and further stabilize the structure against extreme climatic changes.

Rigging

It is difficult to find much to say about the rigging of the SF-27 because it all went so quickly that I couldn't even get a good collection of photos, despite my having a brand-new automatic-diaphragm 35mm camera with me for the purpose. As mentioned earlier, the main spar is joined by means of a single pin which is stepped; that is, it is of different diameters at each end so that it can be installed about ¾ of its entire length before it engages the bored holes with which it mates at the top and bottom of the main-spar fitting. A convenient T-handle tool is provided for locking or removing the main pin when rigging or breaking down the ship. Attachment of the wing to the fuselage is by means of conventional front and rear attach pins and the aileron pushrod connection locks with a single pin also. The airbrake connector is all that remains to be attached before the molded fiberglass turtledeck fairing is locked in place and the ship is ready to fly. I would