SKYBOLT

Want to build a cheap, simple aerobatic two-placer? Even a novice homebuilder can whip up a Skybolt for a little over $1,000. Text and photography by Robert Hegge.

Watching it tumble through an aerobatic sequence, a clean little multi-hued biplane, you might mistake it for a Pitts two-holer with a skinny nose and a fat tail. It's not. It's a Steen Skybolt, a two-place aerobatic homebuilt that a good scrounger can put together for well under $1,000. (Not counting engine and instruments, of course.)

LaMar Steen, a Denver aeronautics teacher, had two things in mind when he designed the Skybolt: performance and ease of construction. On the prototype, performance is amply supplied by a 180-hp Lycoming O-360, which gives a power loading of just over 20 pounds per horsepower. (Gross weight is 1,650 pounds; empty 1,080.) The airframe will take up to 260 hp; several are under construction with the big engine.

Cruise with 180 hp is about 130 mph. Rate of climb at 7,500 feet is 1,200 fpm.

The Skybolt is a sprightly aerobatic performer. Steen has put his through just about every maneuver there is, including lomcevaks, outside snaps and inverted flat spins. She'll happily loop from straight-and-level at 8,000 feet. Rolls are a cinch—four ailerons, just like the Pitts, with torque tube control linkage. And you won't be pulling the wings off—the Skybolt is stressed to plus nine and minus eight.

Steen describes the takeoff and landing characteristics as "just like a Tri-Pacer." Power-on stall comes gently at about 50 mph; the top wing stalls while the bottom one keeps on flying. Both wings are symmetrical—the upper, swept six degrees *à la* the Great Lakes, is an NACA 63, A015; the lower, which has 2½ degrees of dihedral, is a 0012.

Construction has been kept simple and cheap for home-builders. "All you need is a hacksaw, file, welding torch, and some sandpaper. There's not a machined part in the whole airplane. Steel tubes supply everything," says Steen.

To prove the simplicity of the Skybolt's construction, he turned over the drawings to his students in Denver Manual High School's aerospace program. Twelve months later, they gave him back the prototype. (Steen estimates two years' construction time for the average homebuilder.) Three classes of 17 students did all the welding and complete building of the wing ribs, landing gear and cowl. The school's art department even got into the act, designing the paint scheme in the school colors.

The chromemoly steel fuselage features seven-eighths-inch .035 tubing in the front and rear cockpit stress areas, tapering to three-fourths-inch tubing for the longerons and tail feathers group. The fuselage is cross-braced with five-eighths- and one-half-inch chromemoly. The steel tube landing gear is a conventional T-craft configuration with bungees. The 6:00 x 6 wheels are enclosed by hand-fashioned pants. Wings are conventional ribbed with either built-up or routed-out ribs, depending on the owner's preference.

Sixteen Skybolts are currently under construction in the Denver area.

photography continued on page 58