Kits You Can Build

BERKUT A Rare Eagle

BY STEVE WHITSON

Specifications

Gross weight . . . . . 2,000 lb.
Empty weight. . . . . 1,150 lb.
Useful load . . . . . 850 lb.
Fuel capacity . . . . . 58 gallons
Powerplant . . . Lycoming IO-360 or IO-540 with electronic ignition
Wing span. . . . . 26 ft. 8 in.
Wing area . . . . . 110 sq. ft.
Horizontal stabilizer span . . n/a
Horizontal stabilizer area. . . n/a
Rudder area . . . . . n/a
Height . . . . . 7 ft. 6 in.

Maximum speed,
6000 feet msl . . 247/265 mph
Cruise speed
at 75% . . . . . 239/255 mph
Economy cruise,
8,000 feet msl. . 215 mph true, 7.7 gph, 1512-mile range
Minimum controllable airspeed . . . . . 58 kts
Vne . . . . . 300 kts
G loading . . . . . n/a
Ceiling . . . . . n/a
Rate of climb (sea level at gross weight) . . . . . 2000/3000 fpm

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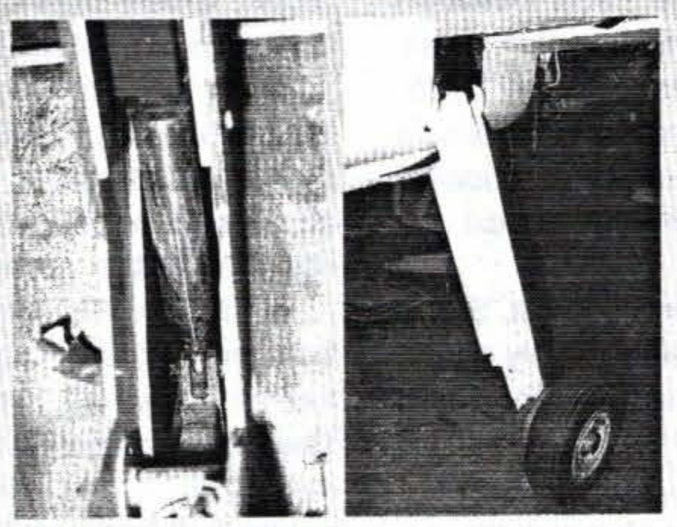
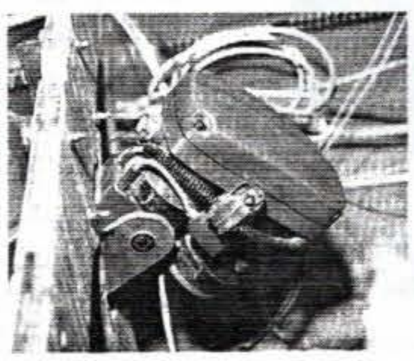
WE'VE ALL STOOD around at airports watching in amusement as the canard-type airplane pilots do their little ritualistic and impending-doom dance while preparing for departure. First, they pick up the nose—which is on the ground when the plane has no occupants. They lower the nosewheel so the plane is now more or less horizontal. Then—and this is the funny part—they heave themselves inside the plane while never letting go, terrified that the altered center of gravity will cause the plane to fall back on its pusher prop. Once happily ensconced, they act as if it were nothing at all. One wonders why the FAA hasn't adopted this plane as a compulsory retirement-age test bed!

The good folks at Renaissance Composites have solved this problem on the Berkut. Using a high-torque 12-volt motor, a redesigned and strengthened nosewheel assembly and a drive mechanism to connect them, the Berkut now rises on its own—and with all occupants aboard. Yes, aboard.



The retractable main gear means speed.

Dave Ronneberg, the Berkut's designer, uses the following procedure for departure: Clear the area, climb aboard while the nose of the plane is on the ground, strap in, start the engine, start the nose rising and taxi away. He says he starts to taxi as soon as he has positive ground clearance, since there's no reason to wait for the nosewheel assembly to extend to its full length. Aside from getting some very



The heavy duty nosegear motor

30M539

Mehran Salamati

By **Sandy Henry**

Pilots are interesting people. They can be male, female, young, old and can have any occupation you can think of. One of these interesting pilots is Dave Ronneberg, originator of the Berkut kitplane. Ronneberg, a professional builder, had built eight Long-EZs and worked on the world-circling Voyager. When Burt Rutan took the Long-EZ off the market, Dave came up with an idea that would answer the wishes of Long-EZ and other canard-type hopefuls—especially those who wanted more room and less construction time but still have a strong, light, composite airplane with a canard design.

In 1985, while sketching airplanes, Ronneberg "stretched" and "widened" a Long-EZ fuselage to give tall pilots 4 more inches of head room. Sam Kriedel saw his sketches and put them on a Cray super computer, generating cross sections and bulkhead shapes. The new plane was named "Berkut" (pronounced "bear-koot") after a rare eagle described by Barry Holstun Lopez in his book, "Of Wolves and Men." "The most exotic sort of wolf hunting involves the use of eagles. It has been seen only occasionally in Europe. Its real home is Kirghizia, in south-central Russia. The specially bred birds—a subspecies of the golden eagle—are trained and flown by nomadic tribesmen. The birds weigh only 10 or 12 pounds but can slam into a wolf's back and bind its nose with such force that the wolf is almost paralyzed. The bird often binds the spine with one foot and, as the wolf turns its head to bite, binds its nose with the other foot, suffocating the animal or holding it down until the hunter kills it. The birds are deceptively strong: There is almost a ton of binding force in each foot, and the blow of a 36-inch wing can break a man's arm. Kirghizian tribesmen still use Berkuts to hunt wolves in Russia on horseback with the aid of dogs."

Tooling for the new Berkut began in early 1989 and the first one flew to Oshkosh in 1991. It was a success. Dave began taking orders on the first day of the 1992 Oshkosh fly-in. When Experimental Aviation, Inc.—the company started by Ronneberg to market the Berkut—dissolved in 1996, former EAI employees formed Renaissance Composites to continue manufacturing the plane, as well as to support Berkut builders. Dave Ronneberg was retained by Renaissance as president.

When we first met Dave at the Spitfire Grill at Santa Monica Airport, he was easy to find. He was the only one in the whole place wearing a Santa Claus baseball cap. It was two weeks before Christmas and he was in the mood! He was also walking gingerly after a recent knee operation. While listening to Dave and Richard Riley, Renaissance's vice president, tell how the Berkut originated, we met Mehran Salamati, who introduced himself as a "Berkut builder." Mehran is a tall, curly-haired cinematographer who sports a Don Johnson-style three-day growth of beard and a quick smile. While he's not yet a household name, you've probably seen his flying photography in many of the latest movies, like "The Jackal."

His enthusiasm about the building project was readily apparent. While he talked, he was showing us the many slides and photos he has taken of other builders' Berkuts flying in formation.

Mehran had looked into different airplanes and was intrigued by the canard design. He had flown trainer Cessnas and a Piper Cherokee and has about 120 hours in his logbook. He saw the Berkut perform for the first time at an airshow and was impressed. He subsequently visited the manufacturing facility at Santa Monica Airport, which led to a demo ride. He said he was absolutely amazed by the Berkut's flight characteristics and how it felt like a high-performance airplane should feel. It was easy to fly, smooth and stable, yet controllable with minimum effort. While flying, he noticed and enjoyed the incredible visibility from the bubble canopy. He didn't stop there. Continuing his investigation, he talked to some Berkut builders and was pleased at what he heard. He returned to Renaissance, talked to Dave and Richard, went through the dollars-and-cents with them and closed the deal.

The kit arrived close to his wedding day. It was "like a wedding gift to ourselves." His wife, Lorie, shares his enthusiasm for the airplane project and is now going through flight ground school. Mehran said he has seen a number of people make the mistake of not sharing a project like this and so miss out on the satisfaction and enjoyment of working on a project with their families.

When the Salamatis started building the kit, part of it was at the company hangar, where Dave was a major source of information.

The kit's instructions come in three sections. Section one concerns the construction of the wings and canard and includes a dozen videos that Dave feels teach better than written words. Section two covers the fuselage, landing gear, bulkheads, inside trunnion (CNC-machined pieces on which the landing gear pivots). This section contains detailed videos also.

Jerry Parrish, another Berkut builder who used to work for Bill Gates (of Microsoft fame), has done the impeccable set of instructions for section three, which covers the strakes, canopy frames, longerons, engine mount, strake ribs and all the accompanying hardware.

Optimistically, Mehran says he is probably 40-percent finished. The entire building project is now at home. He still has all the wiring, insulating and interior to do on the plane. The only modification he has done on the airplane is the manufacture and installation of a removable nosecone to house a movie camera.

A detail photo of the main gear system

odd stares from passersby, there is no mechanical or control problem with this operation.

To test the motor, the folks at Renaissance loaded all the seats in one of the company's test bed planes and put another couple of men on the canard. The nose rose with no binding or undo stress. Dave said the change was made—aside from the obvious sales appeal—because there have been too many incidents of strained backs or other ailments associated with the previous methods of entry and egress. Deplaning is accomplished in the same, although reverse, manner. (This should be good news for the distaff side. Now, women pilots and passengers can wear dresses while flying the Berkut—something they can't do in most GA aircraft!)