

objective of this Long-EZ owner.

BY DON DOWNIE

For very 200-mph airplane should have a retractable landing gear," says Long-EZ builder Ed Kelly. "So I went ahead and developed an electric/hydraulic system to pull up the main gear on my Long-EZ. It was somewhat of a challenge and it took me most of a year, but the final results are satisfying."

When we took air-to-air photos of Kelly's airplane, the retired plumber was celebrating his 70th birthday. He was en route to his home in Bakersfield, California, after attending a fly-in in the midwest. Pat Tomaras was handling the copilot chores, and said she thoroughly enjoyed the trip. As far as Kelly knows, his is the only Long-EZ with retractable gear on all three wheels. Kelly explained that the basic idea for the retractable system came from a farmer friend and a folding system used on farm equipment. The main gear legs fold outward while the stub end of each gear folds in such a manner that one gear leg supports the other. The left gear retracts first; the stub end of the right gear then folds in on top as the gear folds outward into the bottom of the wing. It takes 10 seconds to cycle. The Long-EZ was Kelly's first effort with carbon fiber. He thanks Shirl Dickey for advice on carbon fiber material, and Mike Melvill of Scaled Composites Inc. for suggestions on how to prepare the accompanying resin. Kelly reports that the new gear legs are actually lighter than the original fixed gear. His system uses the same attachment bolts that are on Rutan's original drawings. Two aluminum channels have



to streamline the skin when the gear legs are retracted. "I gained only 5-10 mph with the gear-up modification, but it does make the airplane look really sexy," he commented.

His O-320 engine is "mildly ported and tuned" so that it will develop about 180 hp at full throttle (2900 rpm). During his most recent race, a 90-mile, out-and-back competition put on by Shirl Dickey at Kanab, Utah, Kelly says he was up against the big boys with larger engines. Nonetheless, he won the competition with an average speed of 215 mph. During a similar race at Jackpot, Nevada, he broke an exhaust valve and made a precautionary landing at Wells, Nevada. After a 24-hour bus ride back to Bakersfield, he picked up a trailer and drove back to Wells to tow the plane home. Kelly has added four vortex generators on each side of his engine inlet scoops to reduce excessive temperatures that developed during fullthrottle competitions. Kelly began work on his Long-EZ-the first and only airplane he has built-in 1981 and took three years to complete it. Since completing it, he has logged more than 150 hours. He feels that his plumbing experience helped him complete the project in a professional manner. During WW-II, Kelly was a flight engineer instructor and flight instructor in advanced training on B-29s in Denver, Colorado. Later, he flew pipeline patrol 8 hours a day. He doesn't really have a handle on his total flight hours, but he still flies a tight formation for photos. Does Kelly plan to develop drawings or a kit for this retract system'

The Long-EZ was Kelly's first homebuilt. Changing to retracting main gear was his second homebuilt project.

been added inside the fuselage to pick up the landing gear loads. Retraction is powered by a combination hydraulic/electric power package similar to that used by the Lancair and Glasair. Kelly coupled the power drive into the regular nosegear system so that all three gears cycle in sequence when the switch is opened. Power comes from a 12-volt motorcycle battery.

The installation required cutouts in each wing panel, at a cost of 8 gallons of fuel capacity. A set of doublers was installed in the lower wing skin to retain structural strength.

To signal that the gear is up when the throttle is retarded, there is a cockpit-mounted red/green light indicator as well as a horn wired into the intercom/headset system. Kelly also mentioned that you can feel the increase in drag as the gear extends. He has developed a set of springloaded gear door covers that will work with a piano hinge and a torsion bar to cover the gap. These are yet to be installed, as well as a small fairing





lly demonstrates his gear-up Longhich is 5-10 mph faster with the legs up.

" he said. "I'd rather have someelse do that. I'm more interested ying than in producing kits. ever, I feel that it is a good n that has been proven by more 250 hours of flight time.

f there's someone among your ers who would like to pick up



glad to talk with them. However, as all Long-EZs are not identical, there would be considerable cut-and-fit for the individual builder to adapt a kit."

There's a painting of a green Irish leprechaun on the outboard side of

In transition, the main gear looks like this.

Fully up, the landing gear is well faired into the fuselage and wing.



each vertical fin on this one-of-akind Long-EZ. Funny, but the guy in the painting does look a little like Ed Kelly.

FOR MORE INFORMATION on Ed Kelly's Long-EZ gear retraction system, contact him at 3800 Q Street, No. 8, Bakersfield, CA 93305; call 805/325-9632.

