

g-EZ from Liechtenstein
1000 hour club.

Cozy Mark IV Nose Gear Doors

Sid Lloyd (TX) - After seeing the great looking nose gear doors on the Bearkut airplane, I decided to build a pair for my Cozy Mark IV.

The theory of operation is simple: spring loading pushes and holds the doors open when the nose gear is extended. When retracted, the wheel mechanically presses against the aluminum spring which pulls a piano wire bail up. This bail is attached to the hinges on the gear doors and consequently pulls the doors shut. However, the Cozy MkIV nose wheel sticks out a little so the gear doors have to have a small bubble built into them to accommodate the wheel.

I had installed Bill Oertel's EZ-Lift system and consequently had to make a cut-away section in the wheel well for the electric motor. This created a handy attachment point for the 1/16" 2024 T3 aluminum used for the spring. I purchased the piano wire from a hobby store. All measurements are shown on the diagram. The first set of doors I made took about a day. I didn't make the bubble deep enough and the doors didn't close all the way. The SECOND set I made took only a couple of hours (isn't that always the case???)

Some hints: - Be careful bending the piano wire. It can't make a tight radius bend. I bent it using a table vise and some old sockets of different sizes. I made several before I got the right length and shape. It would be a good idea to make the test ones out of coat hangers.

- I made hinges out of extruded aluminum square tubing which I cut in half. Aluminum channel would work better but I couldn't find the right size.

- I made the doors by taking a piece of foam, cutting it to size, and then hand shaping it to a thickness of 1" at the rear center (measure the amount the tire sticks out from the fuselage carefully; you might get by with 1/2" or 3/4" of clearance), sloping to all sides. This was glassed with two plies BID. Then, a channel (wider than the tire tread) was sanded in the foam all the way down to the glass. The places where the hinges were to be attached were also sanded to glass and filled with flox. A 1/16" aluminum sheet was added to each side, and the bottom was glassed with 2 plies BID. I then cut the sheet down the center creating two doors. Holes, for the hinge attach screws, were drilled into the cured flox and countersunk for a smooth surface.

- The doors were placed over the fuselage bottom and traced. This area was cut out and additional foam was removed from either side to slip the hinge assemblies into.

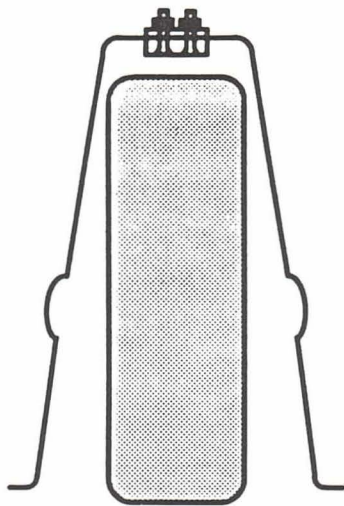
- The hinges were set into a .6 mm plywood board by routing out a channel for a single long hinge pin. I made the hinge pin out of piano wire. This took care of the hinge alignment problem. But, make sure that all holes are drilled through the hinge sides perfectly perpendicular, or the doors may bind.

Good luck. Mine has been working fine and the bottom sure looks better without that wheel well hole with the wheel sticking out. However, this hasn't flown yet!

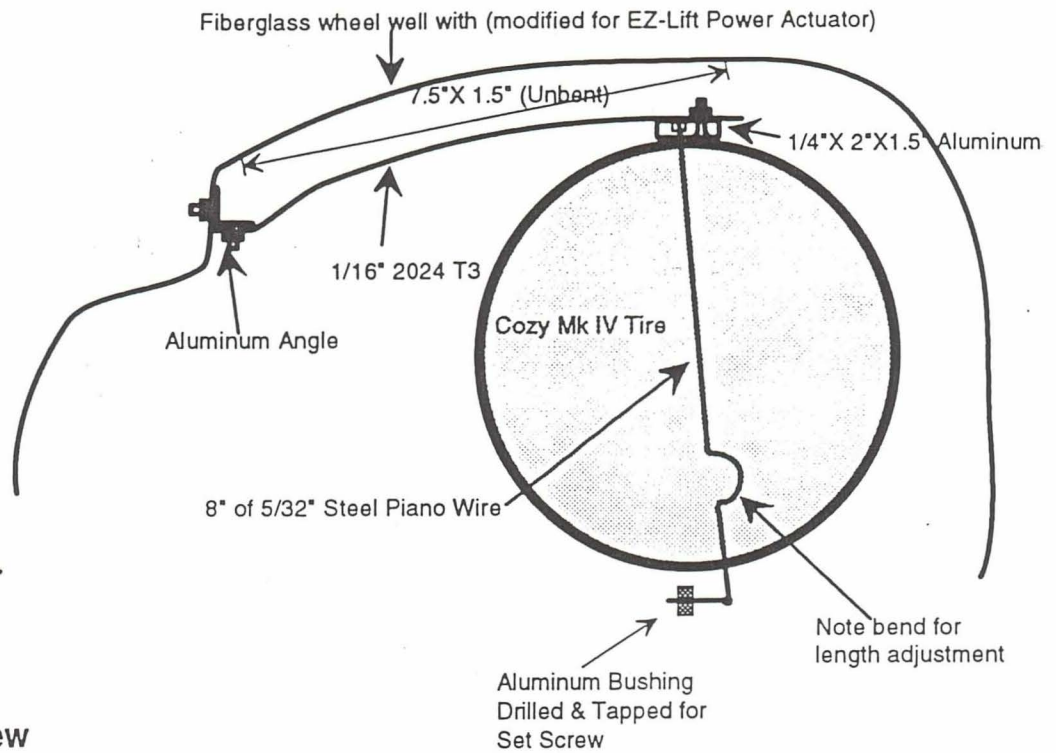
See drawing on the next page.

Cozy Mark IV Nose Gear Door Retraction Mechanism

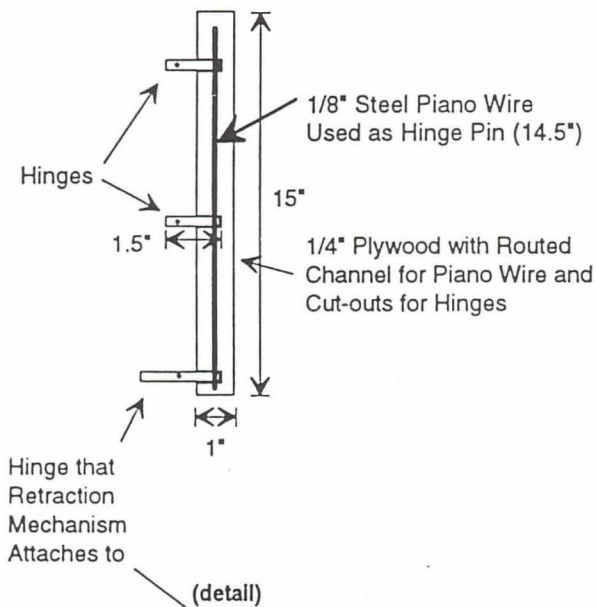
Front View



Side View



Hinge Assembly Top View



Side View of Gear Doors



Top Inside View of Gear Doors

