

Hand Launch Winch

By Gary Warner

Here in Dallas we use "long" zip-starts often, so most of our HLG's have tow hooks on them. I came up with this little HLG winch for those days where throwing gets old (no lift).

The motor is a "Torqmaster 180" from Hobico (gas plane starter motor). The spool holds about 500 feet of line and 10 feet of latex tubing. The static pull is 10 pounds when stalled.



The whole motor (unmodified) is mounted to a shelf board with screws from the under side. The drum is PVC pipe fitted into the existing starter cone housing. The entire cost of the winch is less than \$50 without the battery. Static current stalled is 45 amps with 25 amps the average.



Several versions of the spool were tried before coming up with this arrangement. The ends are plywood (3/32"). The inner sidepiece is flush against the spinner hub. The outer piece is held in place with a "flux ring" off of an old 05 airplane motor. The end of the flux ring is left hanging out by 1/2". Then the end is cut by 1/2" spaces, bend over to capture the outer piece and it's all glued down.



The turn-around is made from a hard wood block, plywood sides and a wheel hub from a gas plane. The hub has a taper and the clearance is very close to the plywood sides to prevent de-railing. A pin with collar retainers make up the axel assembly. It's mounted to a piece of All-Thread using an eye hook for free movement.



The foot pedal is 1/4" aluminum plate that pivots on two bolts and raised with several loose washers. The end of the pedal is bent upwards under the motor to push on the normal switch, meaning the motor is not modified in any way.



The foot fits well on the metal plate and it feels very much like the clubs "full size" winch. This winch does need to be "pedaled" in strong winds or with weak planes. Like the regular club winch, it can hurt a plane if is used too aggressively.

It was a fun project and it's so nice to get that 200'+ launch when lift is poor.



FAQ's

Can you explain why you are using rubber tubing on a winch. All other winches I've seen, use only the string.

My first version did not use the latex tubing. I found that the airplane would lose tension soon after release. This was because the speed of line take-up was just not fast enough with a small drum and relatively low power level of the motor. The latex tubing allows me to load up the winch line and maintain better tension in that phase of the launch between 1/2 second to 3 seconds into the launch.

The feel of the plane's "pull" and rate of "loading" just before letting go, is very close to the club's large winch when I'm using the latex tubing. Without it, the plane would climb very fast and then slow down so much it would risk a "pop off". This is because at 500 feet total line, the line just doesn't stretch enough and the winch just doesn't pull the line in fast enough. If I used monofilament fishing line, instead of braided nylon line, the rubber section might not be as needed. But the braided line was chosen to reduce backlash problems. I have no backlash problems unless things get really out of whack on launch. ...Or if Arnold uses my winch.

Also, would a small 12V starter battery work??

My battery is a bit large, but it was available. You can use any battery that can handle 45 amps and however many launches you want before recharging