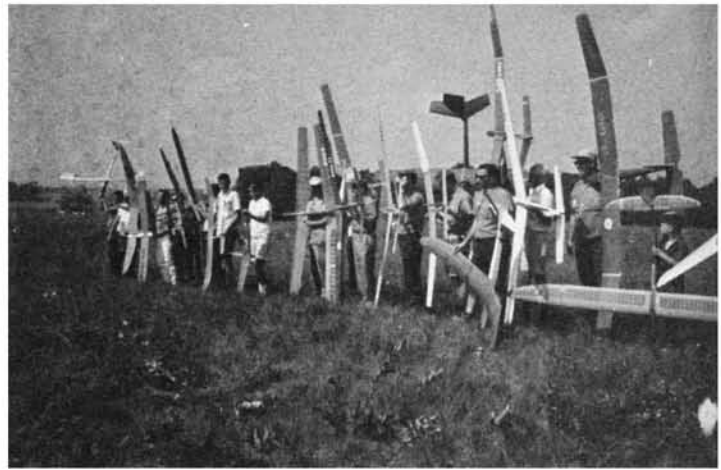


Cox .09, K&B .29 and Fox .35. Rubber bands hold these powerpods on top of wings. Easy to remove for Hi-start launch.

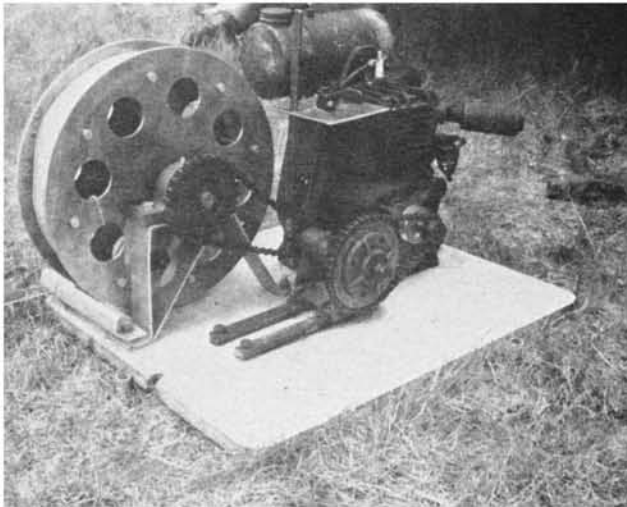


Twenty gliders, 6 to 14 foot, share abundant Maryland thermals in recent contest.

Getting 'em up is the problem . . .

The Hi-Start, Hand Tow, Electric Winch methods!

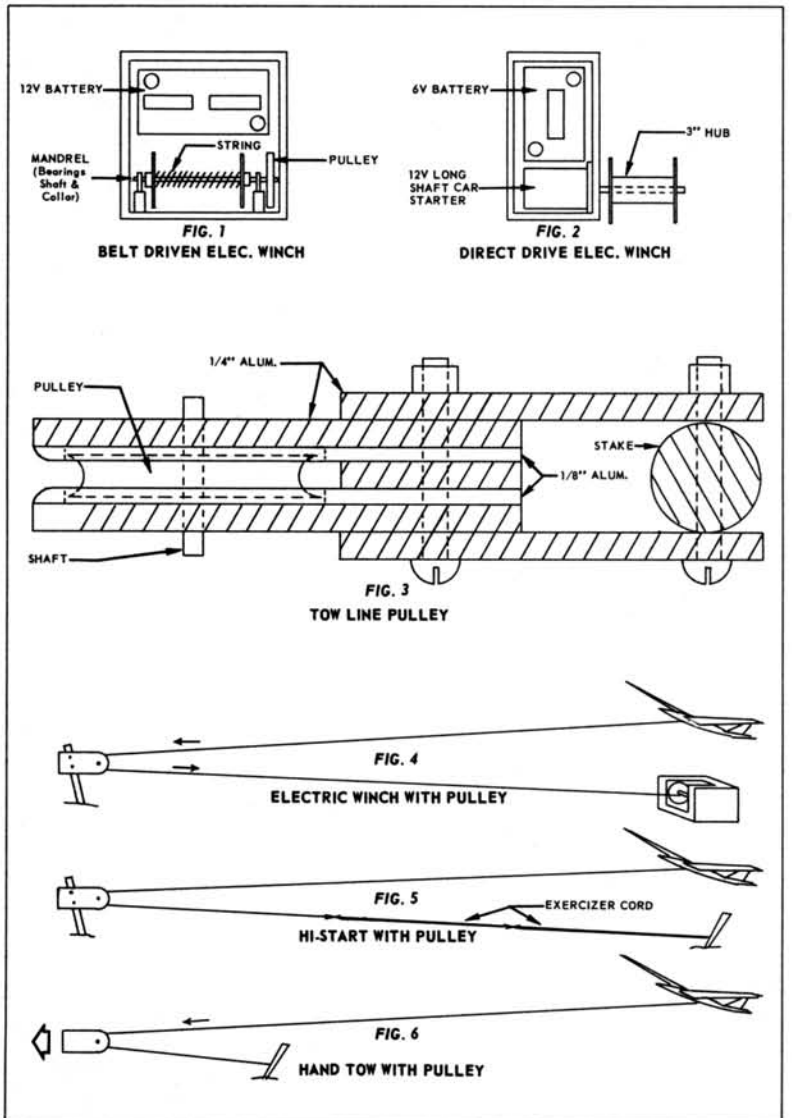
Carl Lorber ON LAUNCHING GLIDERS...



Belt driven electric winch pulls gliders all day without recharge.



Gas powered winch offers unlimited power and flexible speed. Plate bolted to head holds throttle and clutch arm. Keep your arm off that plug!!!



◆ This article was written in an effort to consolidate a lot of miscellaneous information concerning gliders and their launching methods. There are a few terms and special equipment associated with flying gliders that a newcomer to this sport may have difficulty understanding, if he is not lucky enough to live near an active glider club and see this equipment in use. Pictures are seldom shown of equipment at a soaring site, so lets explore the possibilities.

Engine Powered Gliders: This method seems to be by far the most popular launching method for modelers that do not belong to glider clubs. It has the distinct advantage of not requiring a thousand feet of clear ground for a towline. Most football sized fields are adequate for landing and hand launching a powered glider. This opens many flying sites close to home.

Engines can be placed on the nose or on a pod above the wing. Either is removable for slope or towline launching. There are no hard fast rules as to what engine sizes to use on gliders as they differ in size, weight and speed. As a guide we found that an engine with an .049 displacement is quite capable of pulling 2-pound gliders with 6 to 8 foot spans. Myers "Cloud 9" is a good size for an .049. Gliders weighing 3 to 4 pounds with 8 to 10 foot spans do well with an .09, such as the "Kurwi" and the "Clou." A .19 may be used on gliders with 9 to 12 foot spans, weighing 4 to 5 pounds. A .35 engine will pull most any large custom glider such as Dick Sarpolus's "King Kong" and Ray Smith's Osprey. These gliders have 12 to 14 foot spans and weigh 8 to 12 pounds. The engine sizes do not require a throttle control as they are run at full throttle. This will not give the glider a steep nose up climb, but simply pulls the glider along at a speed greater than the normal glide speed causing it to lift. Care must be taken with the elevator control as up elevator will only create a stall, not a steeper climb. Down elevator will produce more speed than the light gliders can handle, causing flutter. If you have room for a .45 or .60 with throttle control, fine, this works well as these engine sizes will create a nice climb on an idling engine with 12 foot, 5 pound gliders. Engine sizes vary as the available horsepower of given displacements vary from one engine to another.

Hi-Start: A Hi-Start consists of 120 feet of rubber (4/6 strands of 1/4" rubber) or exerciser cord and 500-800 feet of 125-pound test cord. Practice tells us that exerciser cord is a better product as the rubber is protected by an elastic cloth that keeps the rubber out of the sun and dust. Exerciser cord has the same initial cost as rubber but will last three to four seasons with a little care.

When launching from a Hi-Start you should practice getting maximum altitude from the first 10 to 20 seconds of the launch. You will find soon that you will be climbing so steep that you will have to back up a little to get a comfortable neck position as your glider

climbs straight above you. After this initial burst of power, the rubber just pulls the glider forward with little altitude gain. One difficulty you might experience with a Hi-Start is getting the towline to come off the tow hook. This is created by the rubber being under tension or the model in lifting the heavy rubber off the ground. This is overcome by flying in the direction of the towline and using down elevator until you see the line come off. If you have a poorly designed towhook the string might not come off at all. If this happens, don't panic, as the line is hooked near the center of gravity and will not pull the glider into the ground and you will have full control. Your best bet is to circle over the string dropping it in a nice circle until you have lost your altitude, then pass over the string on your approach.

It is good practice to store a Hi-Start in such a manner that it is not under tension. Never stretch a Hi-Start back and tie it down until you are ready to fly. An hour or two of this stretched condition in the hot sun will reduce the power of the rubber.

Hand Towing: This system is excellent for light, slow gliders where only a little jogging and a light weight string can get a glider higher than any other method of using a towline. This is because you are not reducing the length of the string during the tow. With 1000-feet of string it is possible to get a glider with a wing loading of 6 to 8 ounces to 800 feet of altitude. If there is a little breeze you will not have to run at all. I have towed gliders up solo using this method, right off the grass with transmitter in hand. For gliders with 8 to 15 ounce wing loadings, the pulley can be used in the same manner as real gliders are towed by car. Stake one end of the string to the ground, next run the string around the pulley and then a thousand feet downwind to the glider. As you run 15 m.p.h. (a full run) the glider will be coming toward you at 30 m.p.h.

Portable Electric Winch: The simplest of these winches is the direct drive electric type. It consists of a 6-volt car battery and a 12-volt car starter with a long shaft. A 2 1/2 to 3" hub is put right on the motor shaft. This system gives just the right speed and torque for gliders in the 4 to 5 pound, 8 to 12 foot span category.

If your interest is with gliders larger than this or if you have a hanger full of gliders that are all sizes and weights, the belt driven electric winch will be your best bet. It consists of a 12-volt car battery, running a 12-volt car starter. This system runs much too fast and must be geared down by means of a 3/4" pulley on the motor shaft and a 4" pulley on the 1/2" diameter string collector shaft. This combination will give a 15 m.p.h. tow speed with 125 pounds of torque on the string. With a 2" pulley on the motor shaft and a 4" pulley on the string collector shaft you will get a 30 m.p.h. tow speed and still have plenty of torque for 12 to 14 foot gliders.

The electric winch launch differs from the Hi-Start method in that it picks up speed as the string collects on the hub and changes the diameter. You may start out with a 25 m.p.h. launch and as you are ready to come off the line you are doing 30 m.p.h. and in a few seconds you are being pulled toward the winch at 35 m.p.h. For this reason you will want a winch operator that understands your signals and can see them from one thousand feet away. A simple way out of this dilemma is a pulley that reverses the direction of the string. This allows the winch operator and the launcher to be at the same end of the field. The towline will come off the glider as soon as the winch is turned off, which is an excellent safety factor if you get in trouble on the line. I have found it no problem to launch solo using this method as I can reach down and turn on the winch, pick up the transmitter and still have to wait 10 seconds for the 2000-feet of string to get tight enough for a launch.

Gas Powered Winch: This type of winch has the advantage of unlimited torque and instantly variable speed. It will tow an A/2 glider on idle and lift a wave soaring glider at 75 m.p.h. Build from a lawn mower engine, and friction clutch with chain drive. It is easy to build and makes an excellent project for a club. Extremely popular at contests where it can lift gliders at the rate of six every fifteen minutes. This particular winch pictured in this article lifted five gliders on one towline at the DC/RC 1969 Symposium. Not the sort of equipment you would like to have sliding around in your trunk if you have it full of glider wings.

Care must be taken when winding in the string after the last flight. Cut the tow ring and drag shoot free from the tow line and feed the line back and forth with just enough tension to avoid tangling. If it is stored under too much tension the string will simply die from fatigue.

Tow Hook Placement: The tow hook placement is not too critical as it can be partially compensated for by elevator control if it is simply put under the leading edge of the wing. Put in the right place to begin with you can climb up the towline using rudder only and have that much less to worry about. ●

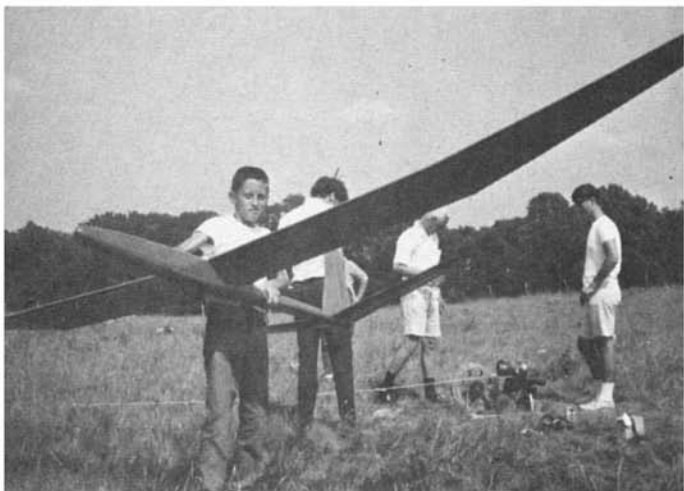


Powered by .60, Antic lifts Zugvogel III piggyback off grass.

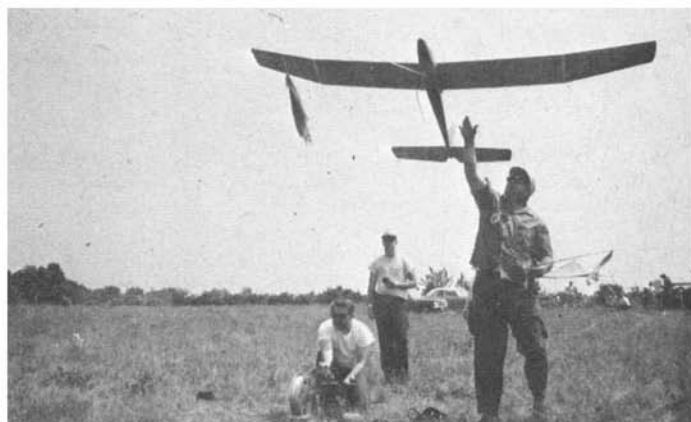


Pulley on stake reverses towline direction. Allows winch operator and glider launcher to be at same end of field. Also makes solo winch launch possible.

On Launching Gliders



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Ray Smith's record holding glider gets professional launch. Note drag cloth is going up, not forward.



Huge 12 foot, 10 pound "King Kong" climbs well on .35 power.



Douglas Smith's fine workmanship is shown in this complete Hi-start that he prepares for sale. Write: Ray Smith, 611 Brantford Ave., Silver Spring, Maryland 20409.

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