

HAND TRIMMING OF

(The following article was written to assist both beginning and "expert" rocketeers who find trimming of Renger or Pop-Pod gliders of standard airplane configuration difficult.)

Due to the challenge of skilfully constructing a glider that can both fly well at low gliding speeds and stay together at high launch speeds, the B/G event is one of the most exciting areas of model rocket competition.

This article is the result of seeing numerous B/Gs death dive, graveyard spiral, stall, and spin, even though the owner followed the directions carefully. The steps that follow are similar to those used in trimming hand-launched gliders (Fig. 1)—an initial trimming in good conditions, a side arm throw to observe the glider for a longer period of time, and 'day-of-contest' trimming.

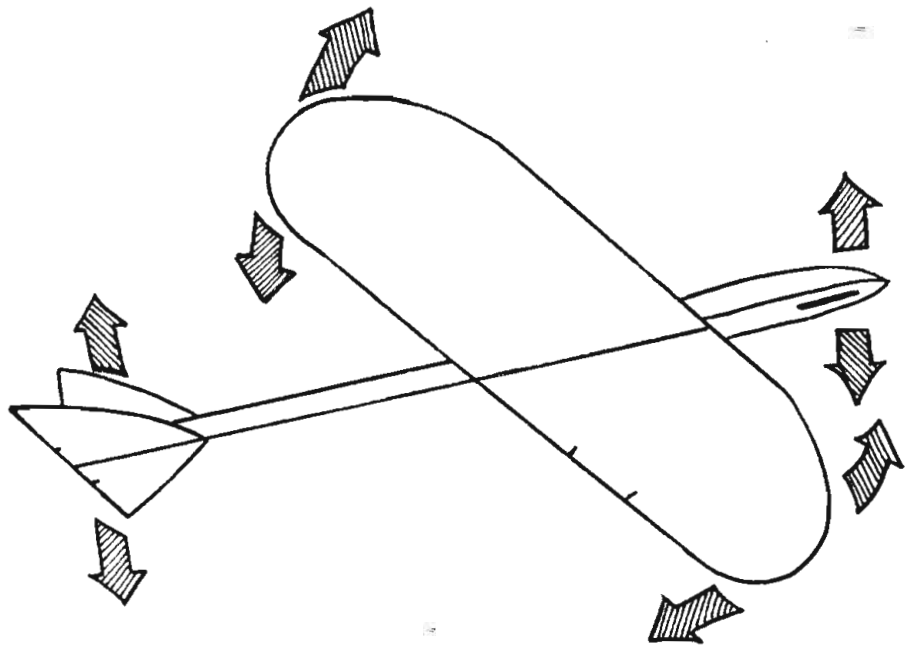


FIGURE 1

For the initial trimming session, locate a large flat grassy area during a calm day with no thermals. A football field will satisfy the first requirement and flying during the early morning or late evening should satisfy the second in most cases. The field should have as few obstructions as possible to prevent damaging the glider. The weather is important, as even a small breeze or thermal can easily take a glider out of sight—something that should only happen in a contest.

With the site and weather taken care of, begin to trim the glider in *pitch* by holding the wing tips by the tips of two fingers (Fig. 2). Add clay to the light (high) end or trim wood from the heavy (low) end until the flat bottom of the wing is horizontal. Now balance the glider in *roll* holding the nose and tail between your fingertips (Fig. 3). The glider will usually be upside-down now. Add clay to the higher wingtip until the wings are horizontal. The glider is now ready for a test flight.

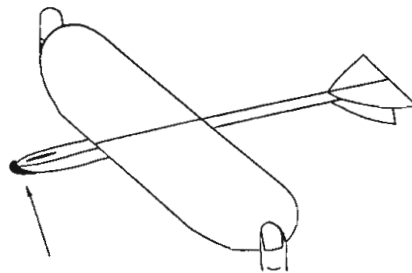


FIGURE 2

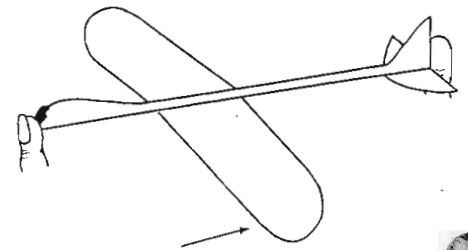


FIGURE 3

by David B Newill

DAVID NEWILL, NAR 6139, is an Air Force lieutenant. He is stationed in Lubbock, Texas, where he flies a T-38, known as the "white rocket". Dave has been the "Model Rocket Tips" Editor for the MODEL ROCKETEER since December, 1972, and he is especially interested in gliders.

Holding the glider below the trailing edge of the wing, give it a slow straight push toward the horizon. The glider should fly in a straight line and land about twenty feet in front of you. If it falls short of this, use the following list for corrections (Fig. 4):

COMPETITION BOOST/GLIDERS

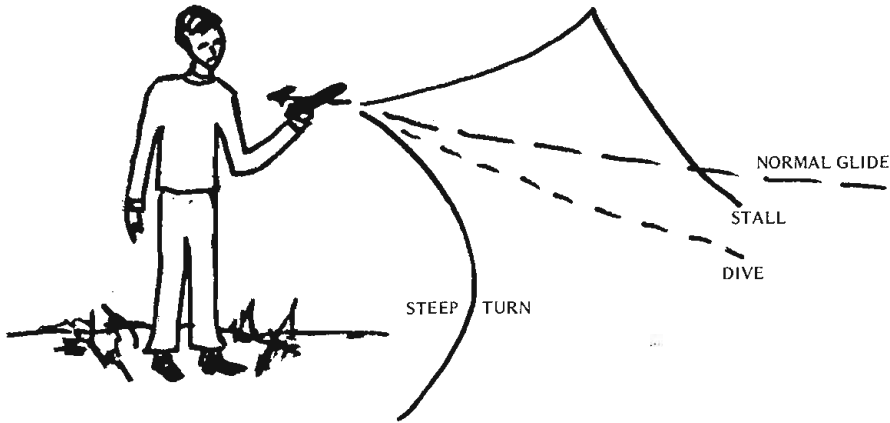


FIGURE 4

Stall—The glider climbs sharply then dives sharply. Add a small amount of clay to the nose and continue test gliding until all traces of the sharp climb are eliminated.

Dive—The glider noses down rapidly. Carefully using a sharp knife, cut two 3/8" slits where the elevator is glued to the body forming two trim tabs (Fig. 5). Moisten the tabs and warp them up 5°. If this does not stop the dive, begin to trim some weight from the nose until a stall appears. Add a small amount of weight to the nose, and the glider is trimmed.

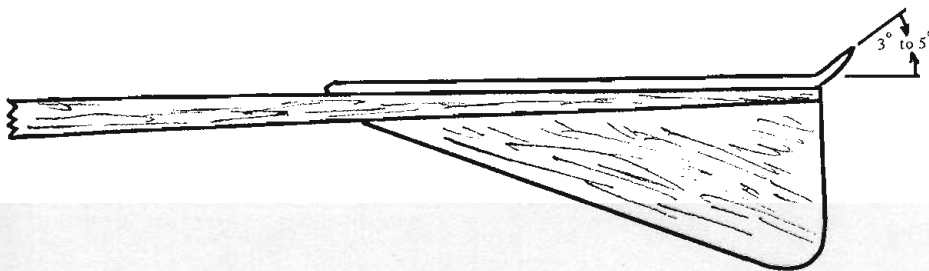


FIGURE 5

Steep turns—The glider turns rapidly and spirals quickly to the ground. Add a slight amount of clay to the outside wing.

Rolls—The glider spins about its long axis. Cut a trim tab into the wing that begins to go down at the start of the roll (clockwise roll—right wing). Moisten, then bend this tab down until the roll is gone (Fig. 6).

Once the glider achieves a flat slow glide in either a straight line or a very slight turn you are ready for the second step.

(NOTE: If you are left handed please reverse all of the following instructions describing the side-arm throw.)

Place the index finger of your right hand against the point where the trailing edge of the right wing joins the fuselage. Grasp the glider body under the wing with the thumb and middle finger. Now using a hard side-arm throw fling the glider with a lifting motion so that it turns away from you in a tight clockwise turn (Fig. 7). If the glider rolls rapidly to the ground try the throw again by placing the finger on the left wing-body corner. The glider will now climb in a tight turn away from you. As it reaches the peak of the climb, the glider should begin a slow glide similar to that of the initial trim glide. If it does not then make the necessary corrections as listed before. At least twelve test glides are necessary to fully trim the glider for maximum performance.

On the day of the competition make a quick side-arm throw just before launch to adjust the glider for the weather conditions. In general, for winds or light rain you will need nose weight. On days with thermals, use some wingtip weight so that the glider will ride the thermals in a large circle.

Although a good deal of luck seems to be included in B/G competition, the author has proven the validity of these basic trimming steps at meets throughout the country with consistently good results.

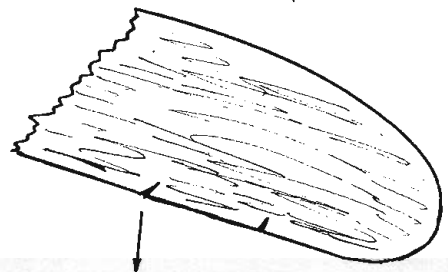


FIGURE 6

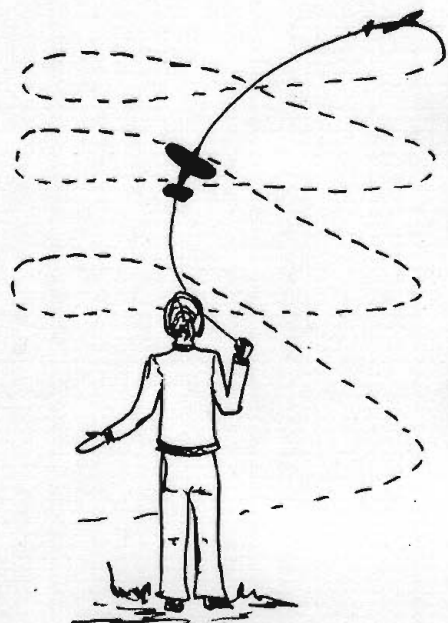


FIGURE 7