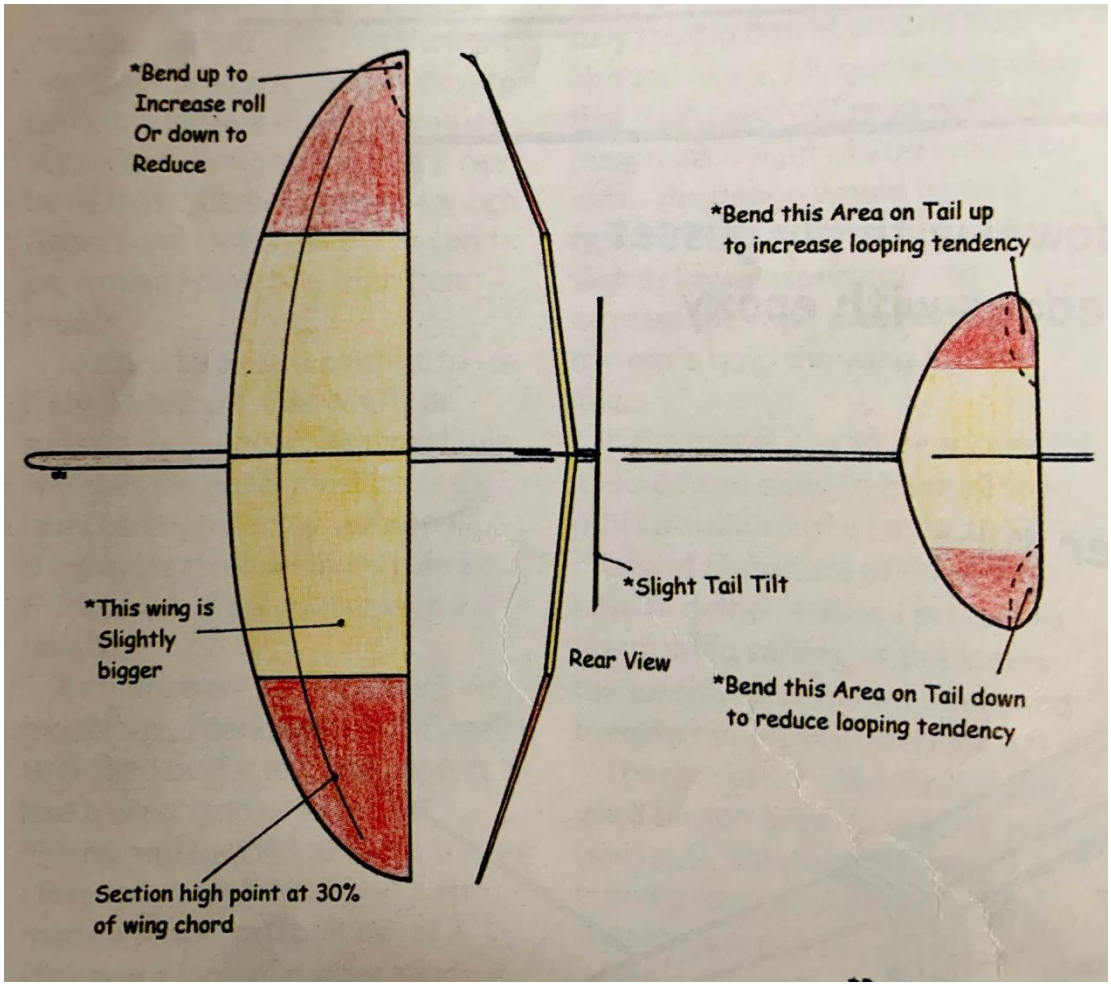
TRIMMING A CATAPULT GLIDER CATAPULTICUS - Richard Fryer



The principles of a catapult glider are the same as they are for an HLG, in that you either launch to the right and glide to the left if you are right-handed, or launch to the left and glide to the right if you are left-handed. The full-size plan shows a typical model set up for a right-hand launch, so reverse the warps etc, if you are sinistral.

The plan shows that the model is asymmetrical, i.e. the left wing is larger than the right by about one inch. This is very important and has the effect of keeping the larger wing (the inboard gliding wing) high in the glide - it also helps the model to roll during the high-powered launch.

Initially trim the model by hand gliding and try to obtain a smooth, flat glide with an open left turn (right turn, if you are left handed).

With the settings shown on the plan, you will need to adjust the rudder by the time-honoured method of breathing hot air onto the rear of the fin, gently bending it in the required direction and then holding it till it cools.

Trim out any stalling tendency by adding weight to the nose, and any diving tendency by reducing nose weight. Do not at this stage adjust the tail, because if the model has been built with the wing and tail at zero incidence, that should be about right for the catapult phase.

Hook the model onto the catapult, take a firm hold of the grip and pull the model back to stretch the rubber approx. 50%, release the model at an angle of about 45% to the horizontal, with a similar amount of bank.

This should result in a safe right hand climbing spiral, with a transition into a left glide as the speed decreases and the rudder takes over. If all is OK, continue to increase the stretch on the catapult until you are launching with maximum power.

As you increase power, you will almost certainly need to trim the power phase of the flight. If the model loops, bend the left hand side of the tail down (looking from above) - if the model climbs steeply then drops its nose as the power runs out and takes a long time to recover, bend the right hand side of the tail up (again looking from above).

The rate of roll is controlled by the fin, so to increase the rate add more left rudder and to decrease it, reduce the amount. It is also affected by the amount of washout on the right wing tip - increase the wash out to increase the rate of roll.

As you sort out the power phase, you will then need to fine-tune the glide. If you follow the above sequence, you will notice that the power phase is trimmed by the fin and tail, and the glide angle by nose weight.

This leaves the glide circle needing a final tweak. With luck it will be spot on, but realistically it will need some sort of adjustment and as we can't use the rudder, try some tip weight. A small piece of 'Blue Tack' added to the side requiring more turn, or alternatively, less turn. The final flight pattern should be a complete turn to the right under power and then a transition to a left glide as the power runs out.

FLYING/TRIMMING MAXIMUS
The plan shows a model set up for a right hand launch, so reverse all settings and instructions, if you are left-handed like me.

-Test glide and add weight to the nose until a smooth flat glide is achieved.

-Bend the rudder in the time-honoured way, by breathing on it and gently twisting it, to give a positive glide to the left.

-Try a catapult launch at 50%.stretch, with both a 45(bank and launch angle, if all looks good continue increasing the power until you get up to maximum stretch.

-The pattern should take the form of a righthand climbing spiral and as the power of the launch fades away, the model should then slow down and glide away to the left.

-If the model loops under power, reduce the wing angle of attack by sanding off some of the wing mount at the wing leading edge - and reduce nose weight to rectify the glide.

-If the model climbs steeply, drops its nose and takes a long time to recover, increase the wing angle of attack by packing the wing mount under the leading edge - and add more nose weight to rectify the glide.

-To increase the rate of roll, add more glide rudder - to decrease the rate of roll, reduce glide rudder.

As you can see, trimming is a matter of compromise - the best launch may not give the best glide - and vice verse. I find the most important phase is the launch, as the glide trim con be altered without unduly affecting the launch.
To fine-tune the glide after achieving a good launch, either add, or reduce, nose weight to cure a stall or dive. To alter the glide circle, tip weight can be added to the side that needs

either increasing or decreasing. Neither of these two methods will affect the launch to any great extent.