

Dreambuilt Designs

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**BUILD YOUR VERY OWN FLYING SAUCER!!
VERY EASY TO CONSTRUCT AND ADJUST FOR FLYING.
THIS LOW COST GLIDER CAN BE A REAL TREAT AT PICNICS AND
GATHERINGS FOR KIDS AND ADULTS ALIKE!**

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Preface

The UFO Glider was inspired by the lifting body experiments of NASA during the development phase of the Space Shuttle. These strange-looking aircraft had no real wings to speak of - they were just shapes that flew. I thought that it would be possible to modify a foam plate so that it flew, yet maintain the single body piece - no attached wings or rudder. While what I ended up with certainly has a wingspan, it was borne out of the fascination of the lifting bodies and the men who made them fly.

This project came to be modified in several different ways by my nephew, who was eight-years old at the time. Sometimes children take an idea and run it into the ground - well, this one ran it into the sky! By playing with the design, he came up with new shapes, and we had them flying out across the yard. Using markers that would adhere to the foam, we were able to decorate them with the insignia of the imaginary "space squadrons" that they served.

Please read the entire project through before starting. This will give a good idea of how it goes together, and will get the imagination fired-up thinking of the options one may wish to try before committing actual materials to the project. When ready to start, the parts list will give a complete bill of materials needed for the project.

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Good luck and have fun!

Jim Morton III

Safety

The purpose of this page is to mention safety. During the course of working on projects, there is always ample opportunity to do harm to oneself, such as being cut, stuck with a needle, burned, etc. This is not to discourage anyone from attempting a project. It is only mentioned so as to heighten awareness of the dangers of some of these operations, and to help keep safety in mind at all times.

During the entire eBook, there will probably be some mention of safety on every page. Safety can never be overstressed, nor should it ever be ignored. Always watch what one is doing, know where one's hands are, and fully understand what is about to happen. Wear the correct safety gear required for each particular operation, such as safety glasses, gloves, etc. where necessary. By following these simple guidelines and using good common sense and judgment, there should be no trouble at all.

Now for the legal stuff:

As I cannot control the skills of anyone following these instructions for this project, I cannot be held liable for any accidents which may occur. The information presented here is for academic study only, and I can only vouch that the methods and materials presented here worked for me on my project. Should you wish to duplicate it, you proceed at your own risk.

BE SAFE & HAVE FUN!

Table of Contents

The chapters in this eBook are as follows:

- [Preface](#) - explains a little about the background of this project.
- [Safety](#) - explains the need for safety on a project such as this, as well as the legal disclaimer.
- [Overview](#) - a brief overview of the entire project. It also mentions any options in building the project.
- [Layout](#) - a step-by-step method to laying out the shape of the glider.
- [Cut and Trim](#) - how the glider is cut out and weighted to balance the aircraft.
- [Flying](#) - how the glider is thrown, and how to correct problems.
- [Parts List](#) - a complete list of all parts and materials needed for the project.

Overview

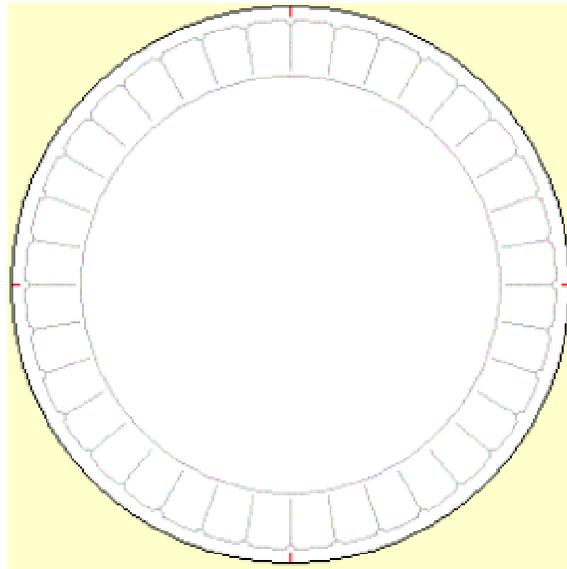
The glider is constructed from a foam picnic plate. The ones I use have 36 "dimples" around the sloped edge of the plate, and now come in several colors. These make the job of laying out the shape very easy, as each dimple represents 10 degrees, and I can easily keep the shape symmetrical.

Make the first glider identical to the one in the plans. Get use to its balance, and flight characteristics. After several flights, you might want to try your hand at designing your own shapes. At the end of the Flying section are a couple of drawings of some of the alternative designs we flew.

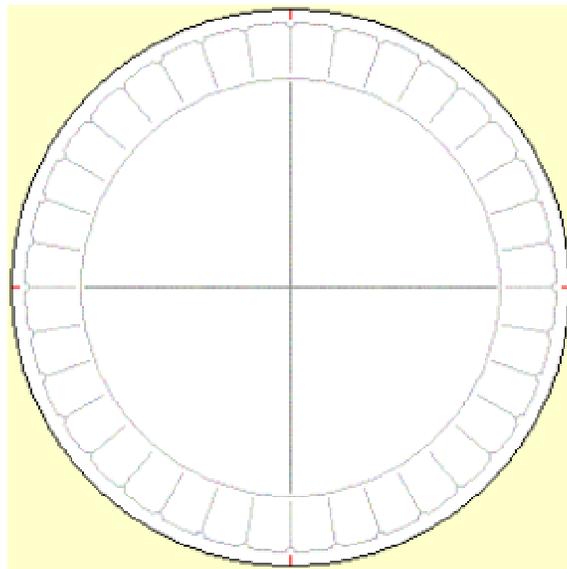
As a hobby knife is used in the construction of the glider, make sure that children have adult supervision during the construction phase. Also, remember to never throw the glider at someone as eye injury could result.

Layout

Laying out the glider shape is first done by very lightly drawing two lines which cross in the center of the plate. This is easily done by counting the "dimples" around the edge (if you are using that type of plate) Since the ones I use have 36 dimples, I make a very light mark, count over nine dimples, make another very light mark, another nine dimples, and another mark. Nine more dimples, and a last mark give me start and stop points for two lines which will cross in the center of the plate.

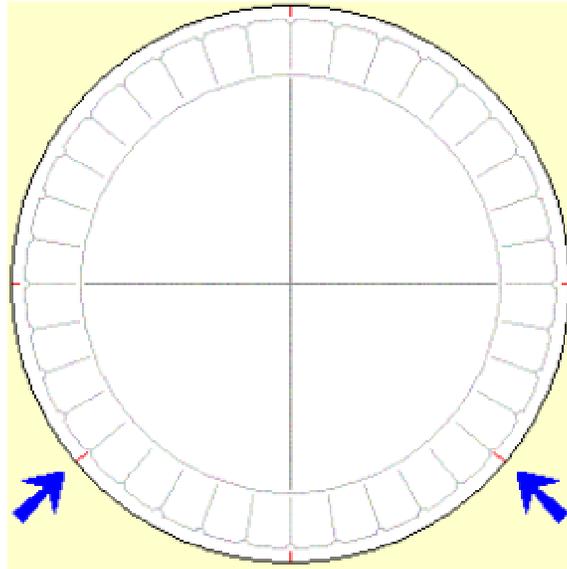


Connect the opposite points together with light lines. The two lines will be the reference points for all lines drawn from this point forward. The lines are drawn lightly so that they may be erased after the aircraft is cut out.

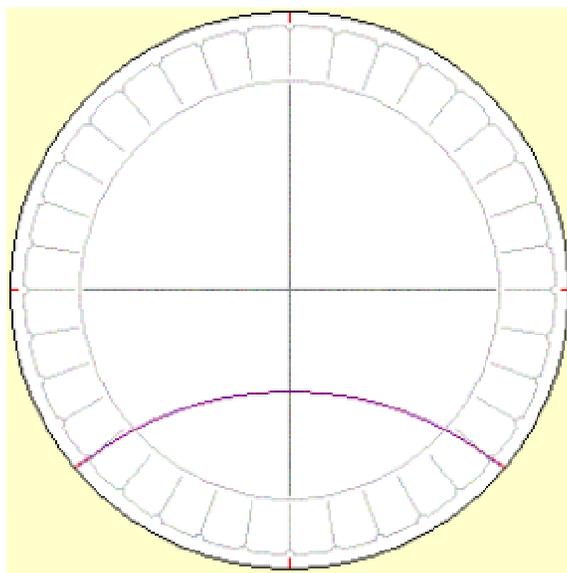


Place the plate so that one line points straight away from you. This will be the centerline of the glider. The other line will then become the guide for the leading edge of the "wings".

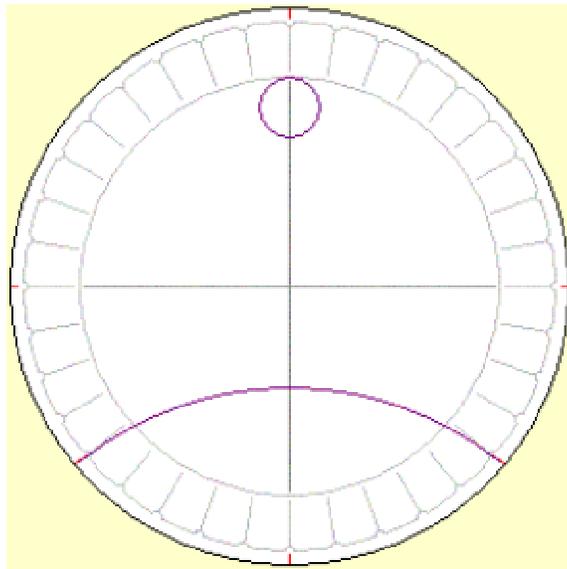
Where the leading edge guide line touches the edge of the plate, count back four dimples and lightly make a mark. This is done on both sides to keep the wings symmetrical.



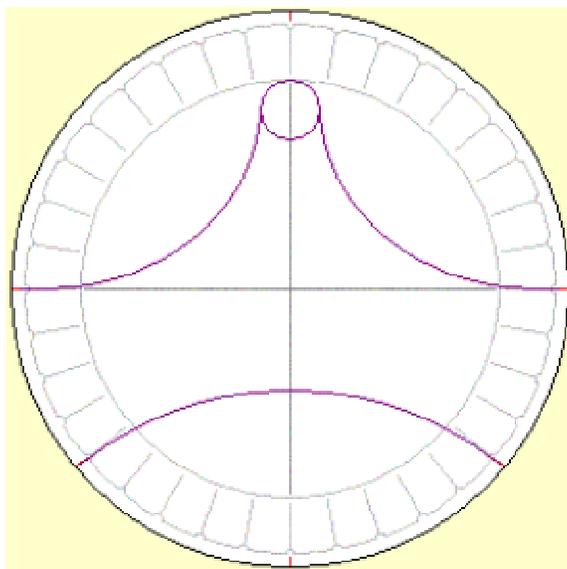
Lightly draw a long sweeping arc to connect the two marks just made. This will form the trailing edge of the glider.



Place a half-dollar piece or a 35mm film canister centered on the centerline all the way forward until it touches the rise of the plate flange. The coin (or canister) is then lightly traced and removed. This will form the nose of the glider.



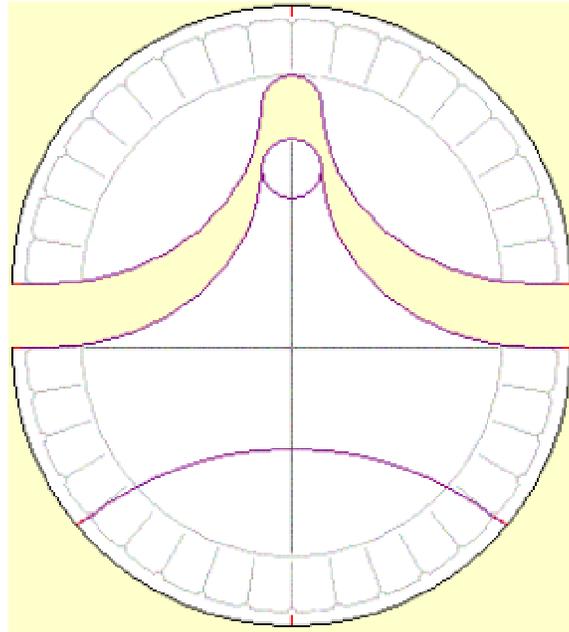
Once again, lightly draw a sweeping curve to connect the edge of the circle just traced to the point where the leading edge line touches the plate edge. Do this to both sides and make both of these curves identical. These are the leading edges of the wings.



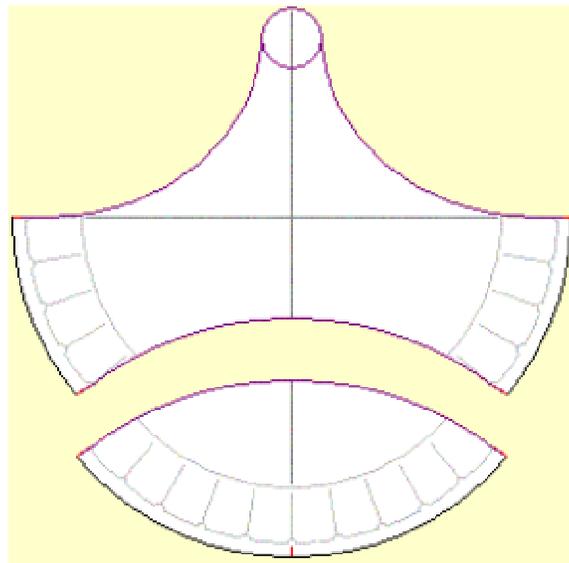
This completes the layout of the glider.

Cut and Trim

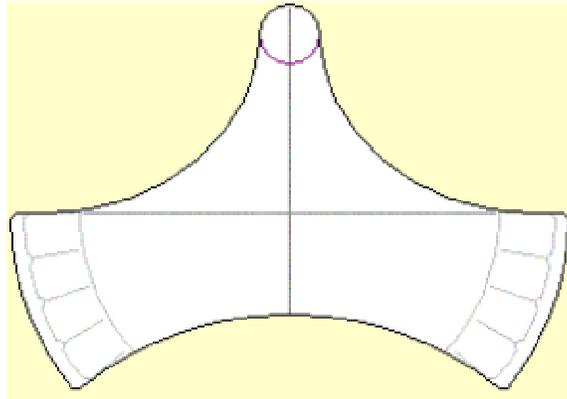
Cutting the glider shape out of the plate is done with a sharp hobby knife. Very carefully trace around the leading edge, around the forward curve of the nose, and the other leading edge. This will separate the forward section of plate from the glider.



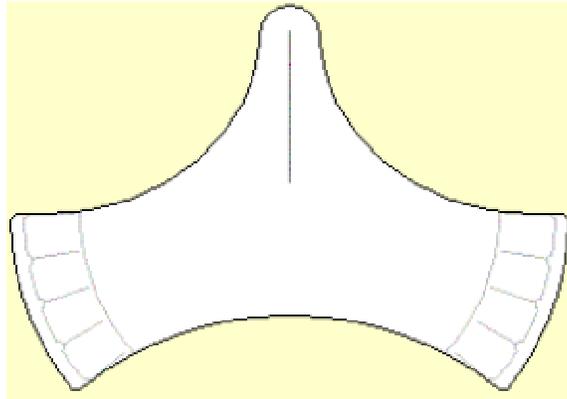
Carefully cut along the long curved trailing edge to separate the rear section of plate from the glider.



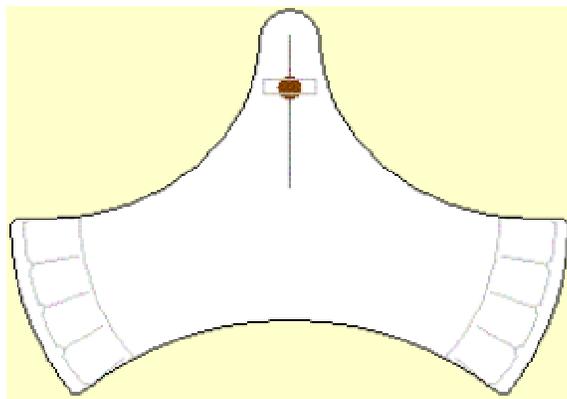
To clean up the design, remove the corners where the leading edges and trailing edge touch the plate edge. This will result in a smooth look to the glider.



After the cutting is done, erase any lines you see on the surface, except for the section of centerline forward of the wing area. This will be used to balance the aircraft for flight.



Center a dime (for the 8 7/8" plate) or a penny (for the 10 1/4" plate) on the centerline, and place a piece of cellophane tape over it. Do not tape it down very securely at first, as most likely it will need to be moved.



Flying

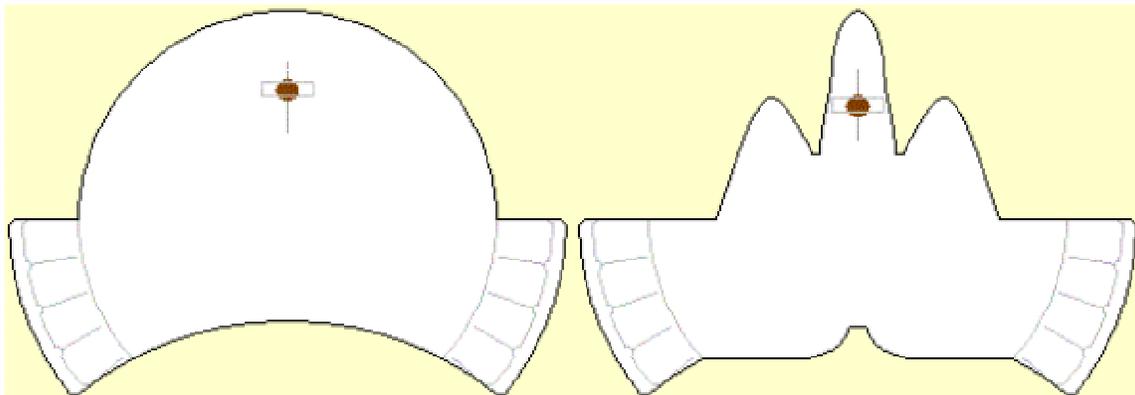
Holding the glider as shown, give it a shove forward, releasing with the thumb and pinky and pushing lastly with the pointing finger. This action takes place fairly fast, so there is no time to think about releasing and pushing - it is just one smooth motion. The glider should be launched straight and level in a clear area to observe its flight action.



If the glider stalls or "porpoises", this means the weight is a bit too far back and should be moved forward. Should the glider nose dive, it means that the weight is too far forward and should be moved back. After a few flights, you should have the weight positioned correctly, so burnish the tape down to securely hold the weight.

Once the glider is flying straight, you can turn it by bending down on the opposite trailing edge to bank the glider. Experiment with getting the glider to fly in the direction you desire.

When the glider behaves as you wish, you can then experiment with your own wing designs. The gliders are very cheap to make, and the sky is the limit!



Parts List

The following is a complete list of the parts and materials needed to complete the project:

- Foam picnic plate (either 8 7/8" or 10 1/4" diameter)
- Dime (for smaller plate) or penny (for larger plate)
- Cellophane tape

The only tools required to build the UFO Glider are a sharp hobby knife and a pencil. Other items which are nice to have, but not absolutely needed once you have built a few gliders are a ruler, small round object to trace for the nose (spool, half dollar, film canister, etc.).

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