

# YATE MEN'S SHED

## Delta-Wing Glider Mk8

A 1:1 scale plan for this cardboard delta-wing free flight glider and an image of the finished model can be found in the accompanying images or on-line at [www.yatemensshed.com](http://www.yatemensshed.com) in the projects area of this site. A delta wing has been used, because it makes for a slow-flying glider that is fun to use. The glider is fabricated entirely from non-metal parts; waste paper, card, cardboard and hardboard materials and has three main components; the Fuselage, the Main wing and the Tail. These three parts slot together and are held together by friction. A white medium PVA wood glue is the only adhesive you will need to make this model. A sharp knife or scalpel will be found useful to cut out the parts. Observe precautions when using sharp knives; For example, never cut towards your hands and when not in use, make sure that young children cannot see or reach knives.

### Materials and techniques used:

1. Fuselage: 4 mm thick double wall cardboard sheet. Double wall cardboard has two layers of corrugation and is stronger than the same thickness of single wall cardboard. Take note of the grain directions indicated on the plan when cutting out the parts.
2. Fuselage Covering: The front part of the fuselage is covered on each side with approximately 1 mm thick card commonly used for cereal boxes and similar products. This covering should be glued to the fuselage using PVA. It improves the robustness of the fuselage without adding much weight.
3. Fuselage nose weight: Approximately 3.3 mm thick hardboard has been used to fabricate a 9 gram nose weight. The nose weight has two pieces, glued either side of the nose using PVA.
4. Rear fuselage tail guides: Short lengths are cut from cocktail sticks and inserted into holes drilled through the tail fin and glued in position using PVA. Tip: Add these guides last after you have finished the rest of the model. The angle of the tail relative to the main wing is very important for this model to fly correctly. Only add these guides once you have test flown your glider and adjusted the angle of the tail for the best glide. While you are adjusting the angle of the tail for best gliding performance, the tail can be temporarily fixed in position using a small pin. Once you are happy with the way the model flies, the position of the tail on the fin can be marked with a pencil and then the permanent guides can be added and glued in position.
5. Main wing: Observing the correct grain direction, the main wing is cut from a single piece of approx. 2.5 mm thick single wall cardboard. The two slots in the main wing should be marked out with a pencil, using the fuselage tabs as a guide. The slots in the main wing need to be slightly narrower than the tabs on the fuselage, so that the main wing will be held in place by friction.
6. Main wing leading edge: The first few millimetres of the top side of the main wing leading edge is rounded off and then covered with ordinary A4 printer paper glued in place using PVA.
7. Tail: The tail is cut out from a single piece of thin 1.5 to 2.0 mm thick single wall cardboard. The slot along the centre line of the tail should be cut slightly narrower than the width of the tail fin so that the tail will be held in place by friction.
8. Cardboard is not waterproof and your glider will be ruined if it gets wet, but you could cover it with Solarfilm to protect it from damp ground conditions and to improve your glider's appearance.

### Flight testing your glider

Choose a dry day with light winds to test your glider outdoors, or use a large unobstructed indoor space away from people and animals. Launch your glider by hand, moving it forward in a straight line and very slightly downwards before releasing it. Adjust the angle of the tail as described above to achieve a gentle and graceful glide. Happy flying!