General Instructions for Building Polyhedron Models

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Instructions

PLEASE NOTE! This material is distributed **without a warranty**. Any corrections would be gratefully received by the author. Contact information can be found on the title page.

This document contains general instructions for building polyhedron models from the plans published on the GNU 3DLDF webpages. Specific instructions for the individual models are included in the plans.

The more recent plans use dashed lines for the edges that are to be scored and solid lines for the ones that are to be cut. They also have markings for holes to be used for stitching the models together. In addition, models that require marking on both sides of the paper or cardboard may have markings for holes that are to be used for marking the reverse.

To use these plans, tape or otherwise attach them to a sheet of Bristol board, cardboard or heavy paper. Then use a cutting knife to cut the *outer* and *score* the inner lines of the plan. The knife must be sharp as Bristol board will dull the blade quickly.

I have been using knives with disposable blades. I've been meaning to try sharpening them but haven't done so yet. I therefore can't say whether this will work. It seems a shame to waste so many blades, which is why I have a jar full of them. They must be good for something.

You will probably have to retape as you cut out bits of the plan.

Make sure you tape the plan down smoothly or you will introduce inaccuracies. *Do not untape it or let it slip until you are done!* You will never get it back where it's supposed to go. However, it is possible to start again, make another portion of the plan and attach the pieces. There's no real need to make the nets in one piece.

Use "removable" tape Ordinary masking tape will damage the paper layer of the Bristol board when it is removed. Be aware that "removable tape" isn't completely reliable, especially if left too long on the drawing. Sometimes it's possible to reuse pieces of it, which avoids wasting large amounts of it.

At the edges of faces where there is no tab, a 'tab traces" is printed, indicating where the tab will lie under it. The dots and/or cross-hairs on the lines through the tabs and their traces indicate positions where holes can be made for sewing the model together.

To ensure accuracy, a carbide scribe or similar device should be used to mark the spots where holes are to be made. Holes can be made using a needle, if the cardboard isn't too thick. A small tack or brad can be driven through thicker cardboard.

Never use a wooden or plastic straight edge to score or cut; you will ruin it by shaving material off the edge. A flat metal angle is best for short lines. I use one made by the company Angulus. It is 7cm × 10cm. For longer lines, a metal ruler for woodworking or one made especially for cutting, i.e., for graphic artists, should be used. Never score freehand! Always score outside of a line, where possible. If an internal line is contiguous with an external line, always score or cut on the outside of the external line, where possible. Sometimes, it may be necessary to compromise. Never score down the middle of a line, unless it's completely unavoidable.

When cutting, the straight-edge can be removed once the cut is deep enough so that there is no danger of the blade slipping out of it. To achieve a clean edge when cutting, ensure that the blade is held perpendicular to the cardboard or paper. With thin paper, this may not make a difference, but it is important for thicker cardboard.

After the glue has hardened, stitches can be picked out and the ends snipped off. If paper is to be glued onto the faces (e.g., watercolor paper), it may not be necessary to remove every last trace of thread.

I recommend using hide glue, which must be soaked in water and heated in a glue pot. However, this may require a larger investment than one may want to make. Other kinds of glue may also be used.

I like to glue watercolor paper onto my models, since Bristol board is not a particularly attractive material. The plans contain templates for cutting out watercolor paper (or any other desired kind of paper) for gluing to the model. The plans for the nets should not be used for this purpose, because the polygons butt up against each other. To cut out individual polygons precisely, there must be gaps between them.