TART Spiral Array Instructions to the Fabricator

This document contains instructions to help understand TART design and the DXF file provided with this document.

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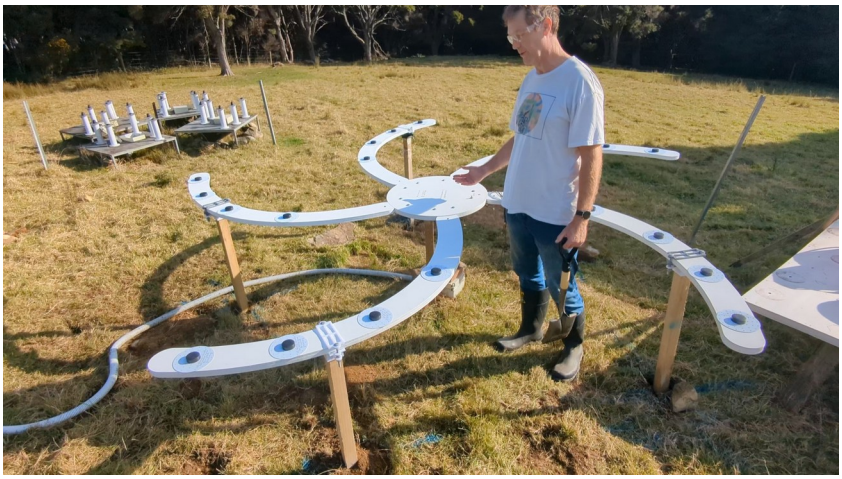

Figure 1: The Spiral TART Array

TART design

This video explains the layer structure of the TART design:https://youtu.be/TuFPHJMHvuQ?si=yuicw4qd4V9sIJbK

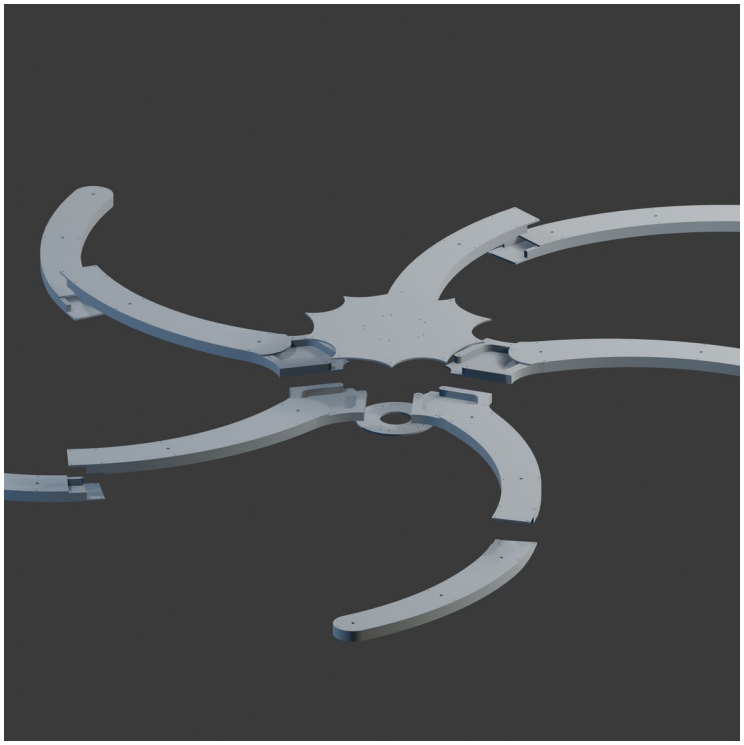

Figure 2: A render of the TART components, viewed from above

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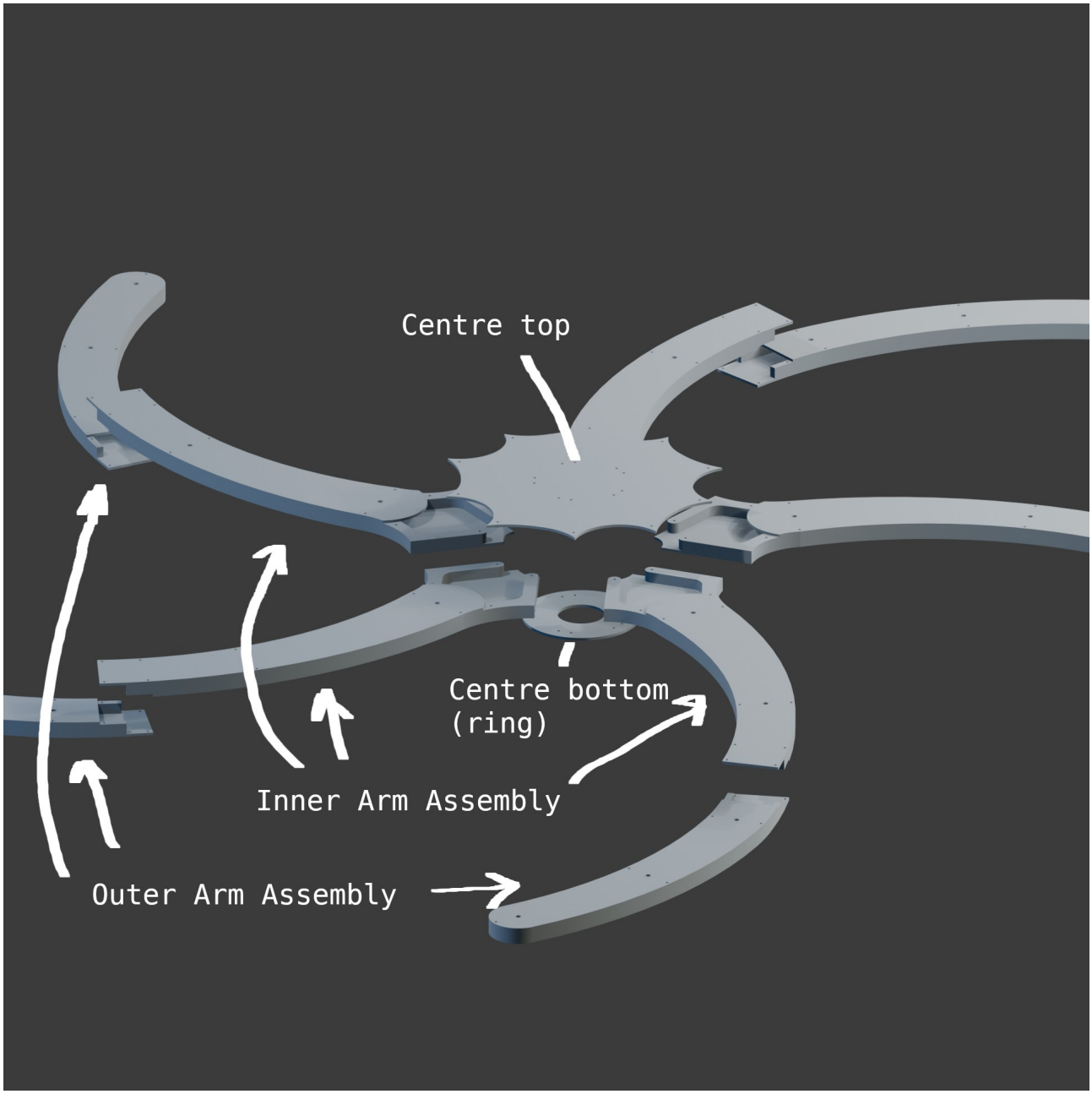
Figure 3: A render of the TART components, viewed from below

Annotated screenshot of assemblies

There are 4 separate types of parts to the TART labelled here.

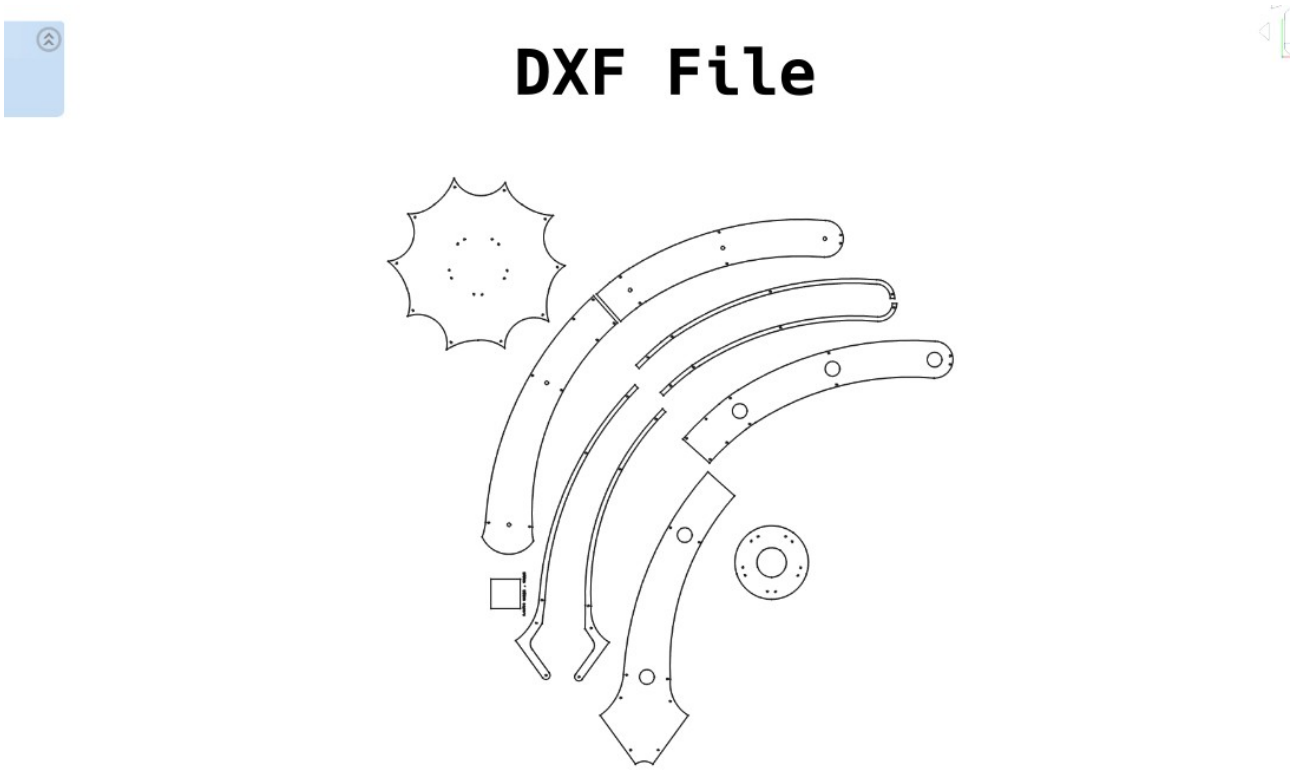
1. Centre top (x1)
2. Inner Arm Assembly (x5)
3. Outer Arm Assembly (x5)
4. Centre bottom, which is just a ring with bolt holes in it (x1)

Each one of these assemblies is bolted together in the final array, but is glued and dowelled together proir to installation form multiple pieces of the plywood.

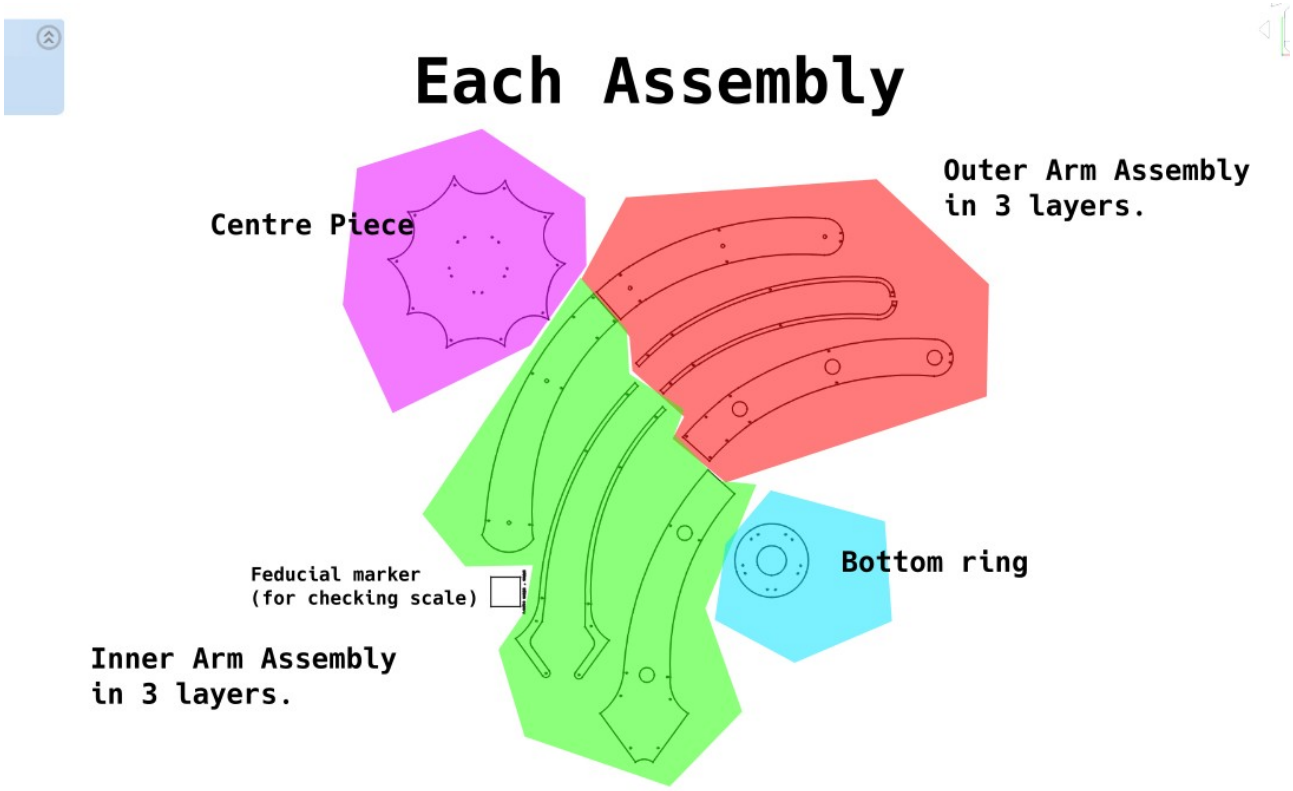


DXF file

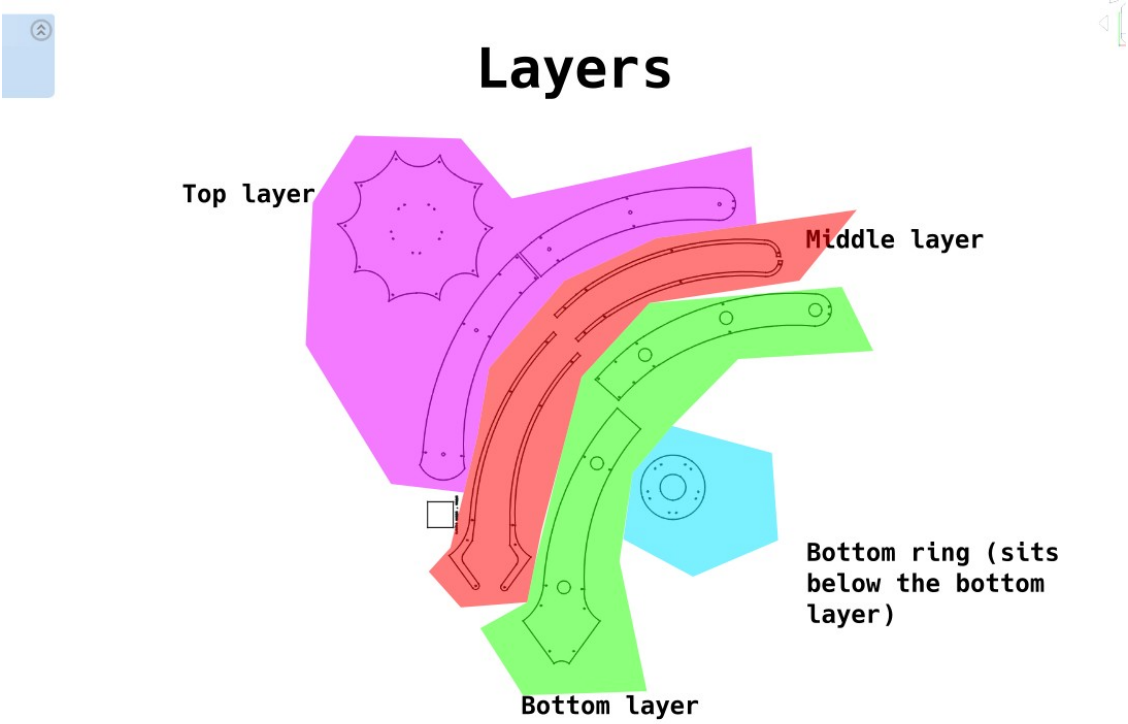
This is what the DXF file looks like. It’s arranged so that the different groups of parts are easy to see (see colour coded groups below)



In the following chart you can see each assembly colour coded together.

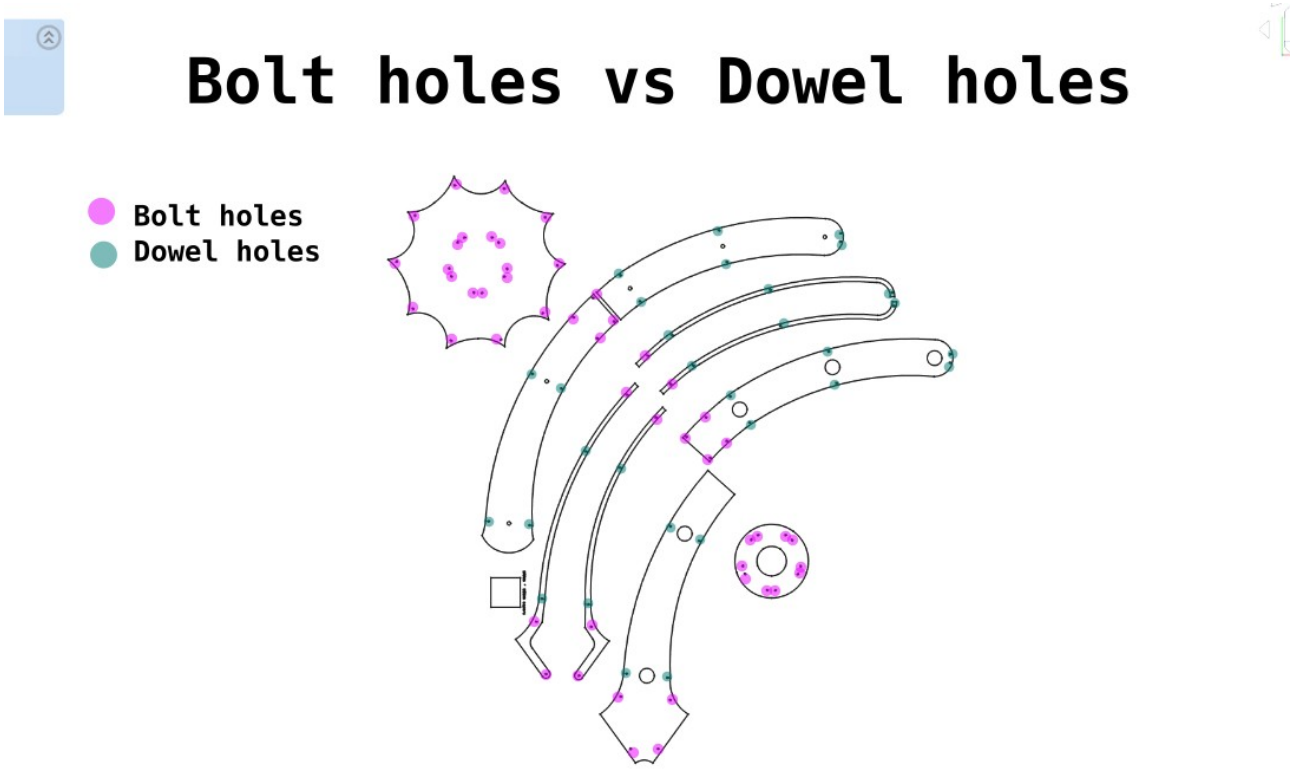


And each of these layers will sit on a separate plane stacked on top of one another when finally assembled.



Each of the assemblies is glued and dowelled together. To construct the final TART, the assemblies are bolted together. The bolt holes and dowel holes are both exactly 6mm in the design, and should be cut as such.

The following chart shows which 6mm holes are dowel holes and which are bolt holes.



NOTE on cutting the DXF: try to cut each of the 6mm holes to that dimension exactly if possible to make sure the dowels and bolts fit snugly. On a laser cutter this may involve using a kerf distance of half the laser width on these lines. How all the rest of the lines are cut is less important, but should be consistent so that the layers all line up with one another.

NOTE on Layer thickness. For our prototype we have been using 6mm plywood for the top, bottom, and bottom ring constructions, and two stacked 9mm plywood (18mm effective thickness) for the middle layer. The middle layer needs this thickness for cable routing and enough space for underneath the antennas. The top layer especially can’t be particularly thick otherwise the antennas won’t screw on properly. We reccomend 6mm for this.