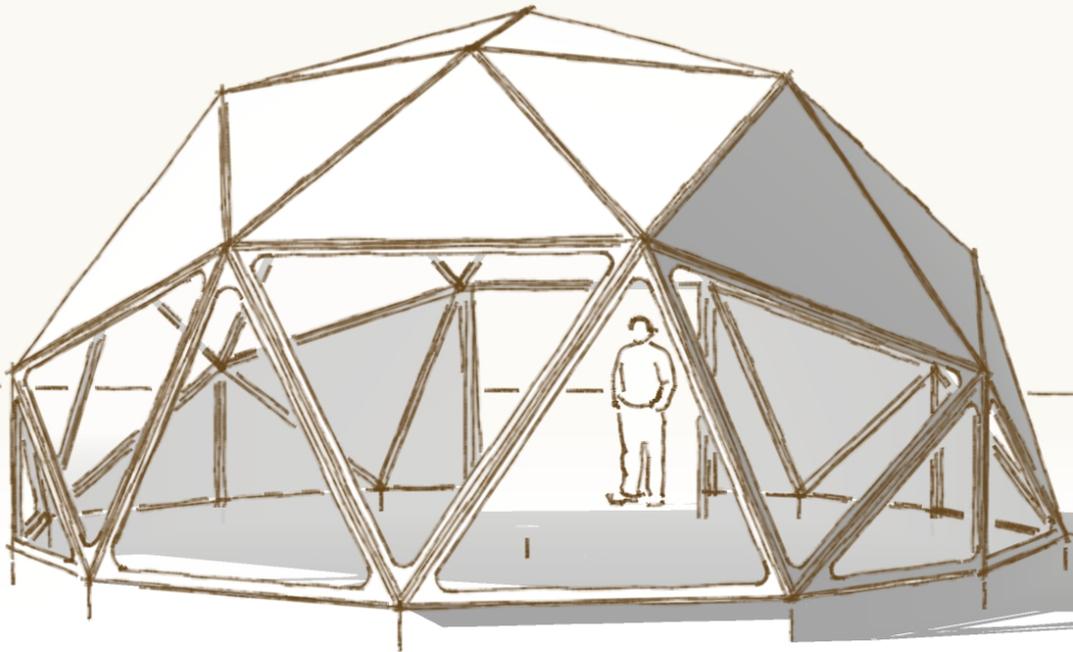
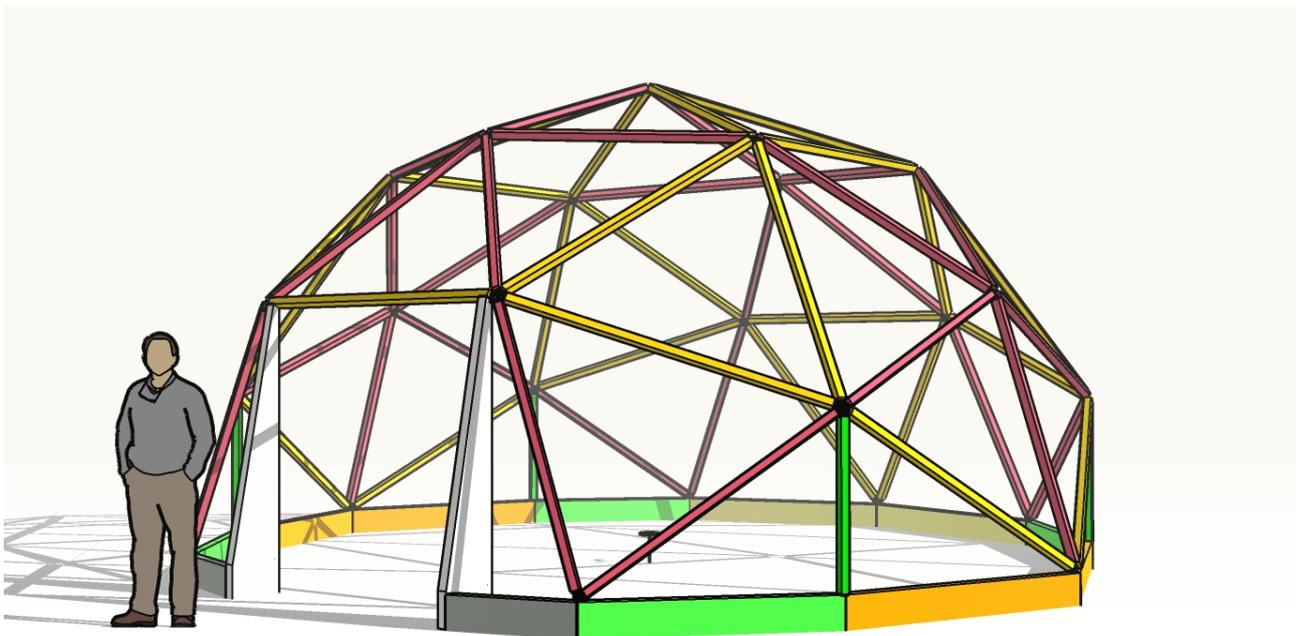


WangerFlange 2v dome

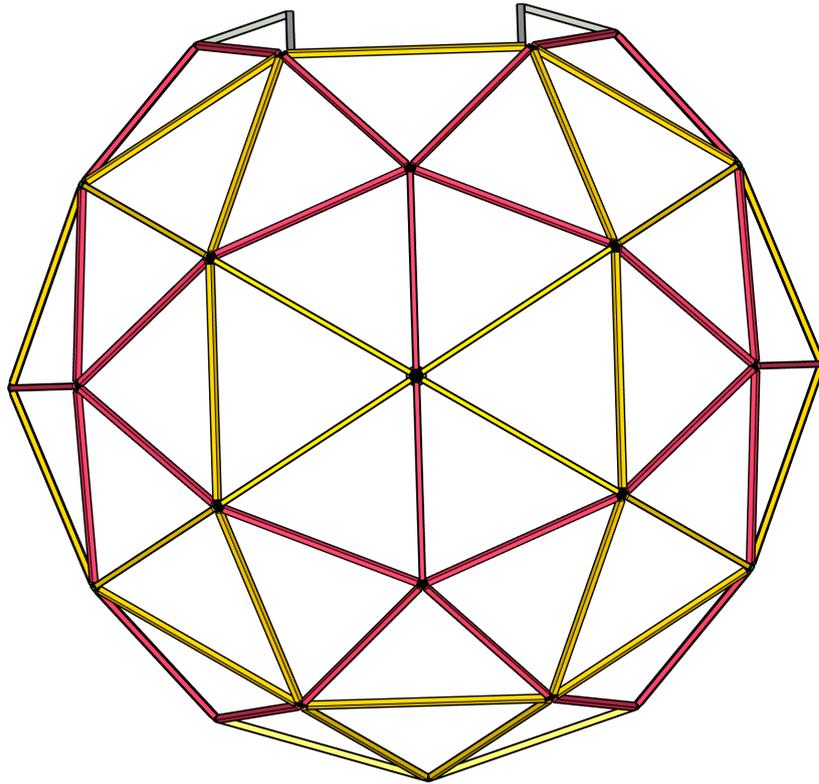


Classic 2V geodesic dome design with canvas cover

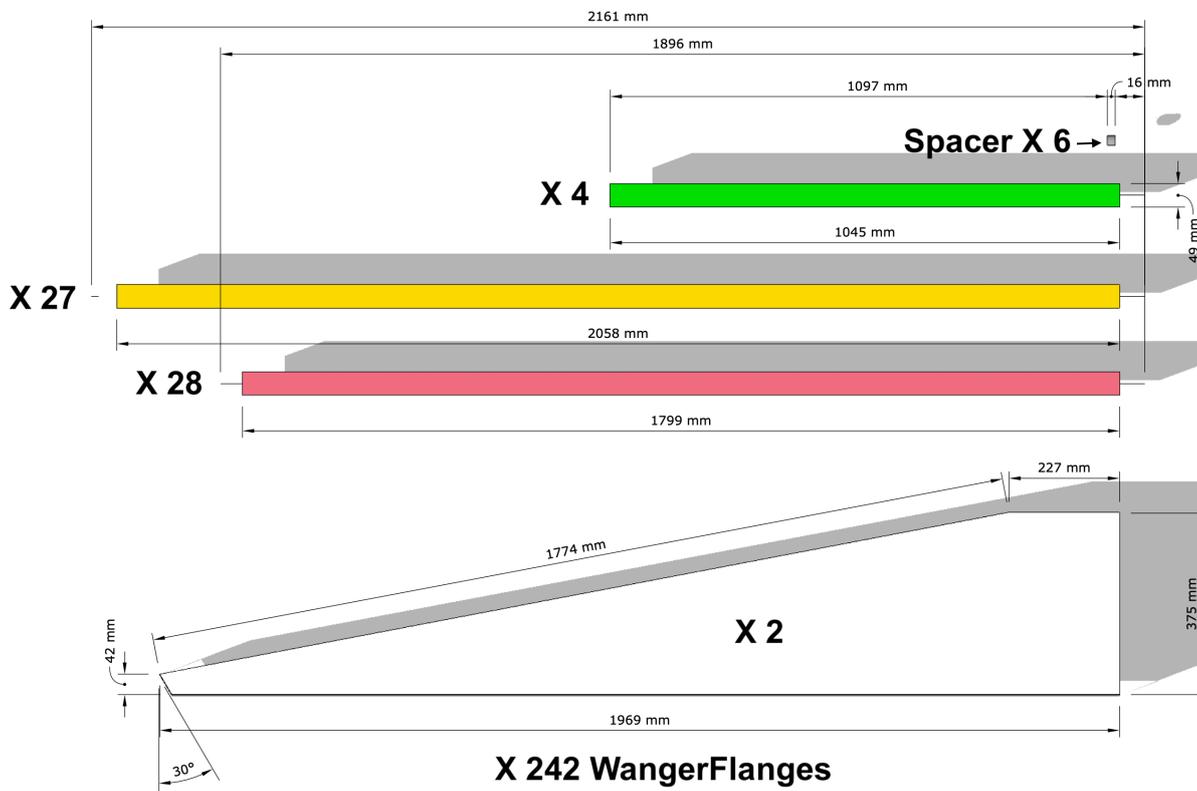


Colour coded overview of dome frame

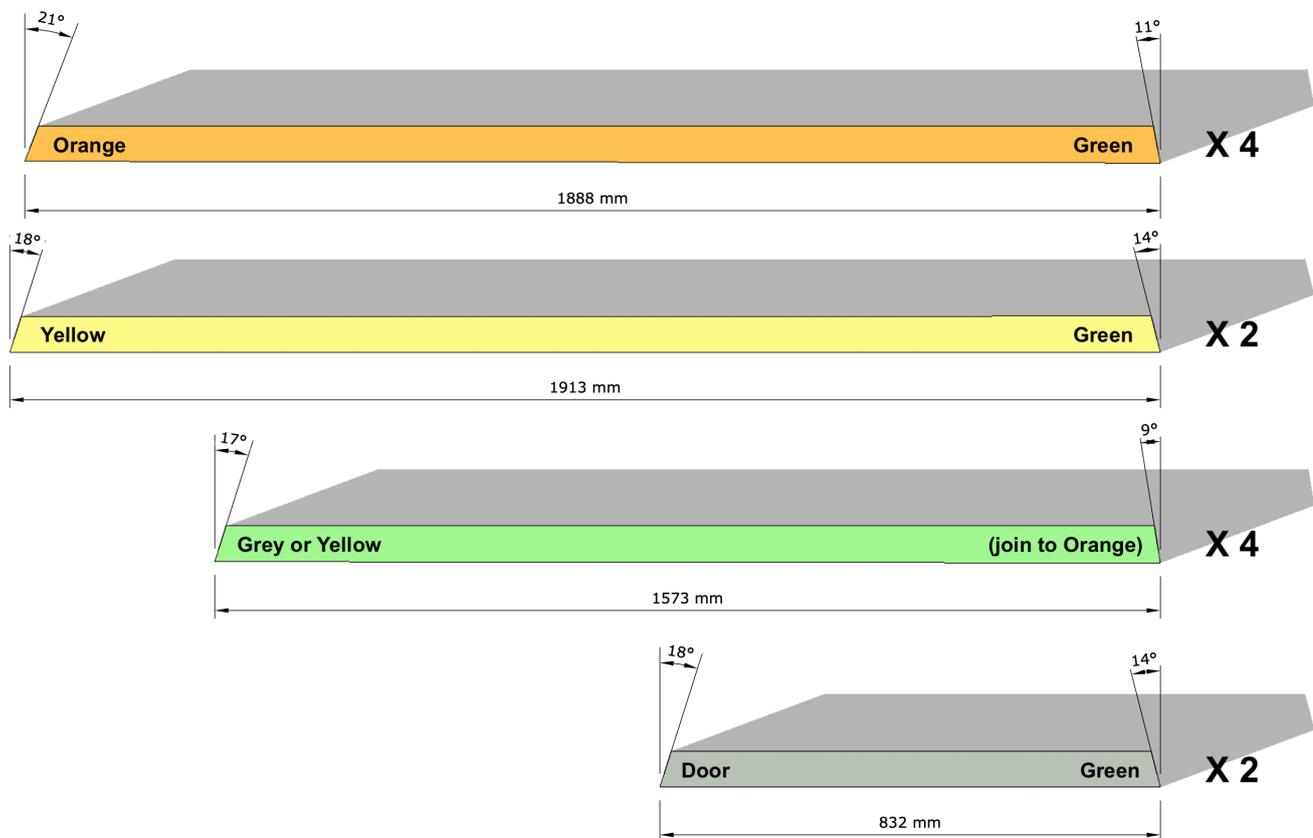
Plan View



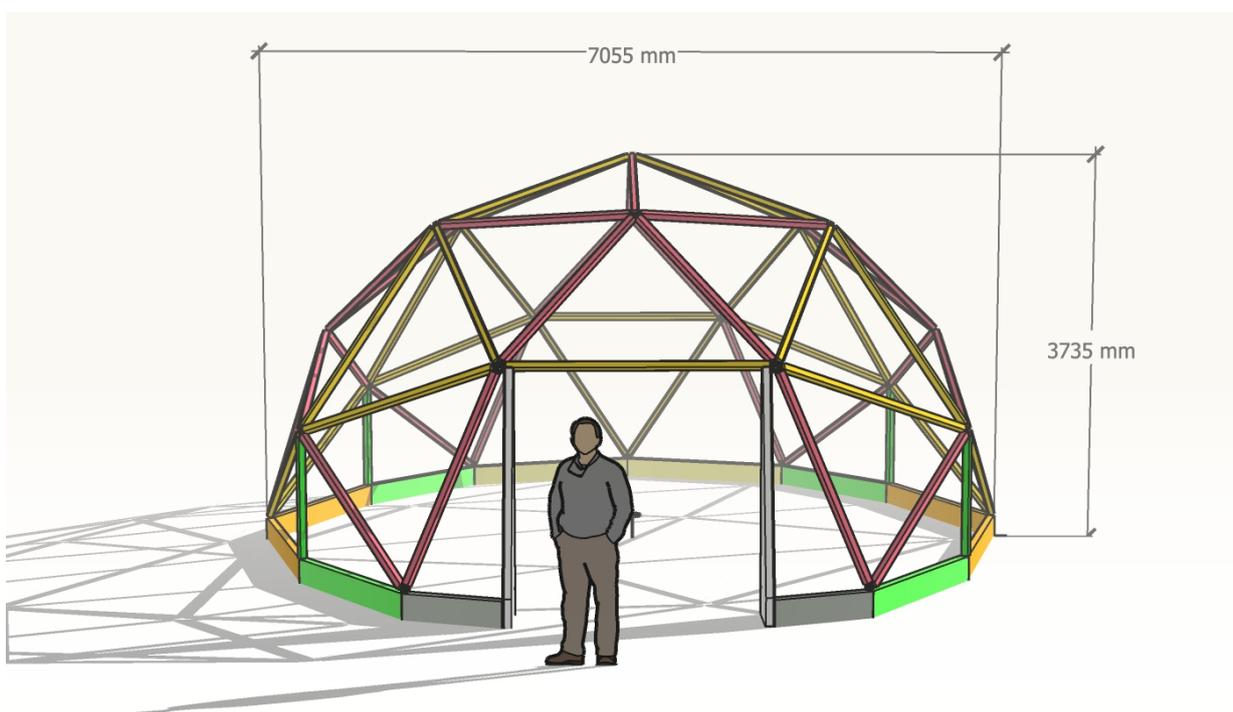
Parts List



Parts List (Base)



Base is cut from 150mm X 50mm (colours written represent colour of connecting base)  
 The base is not required if the dome is to sit and be fixed to a flat timber surface like decking.



## Build Instructions

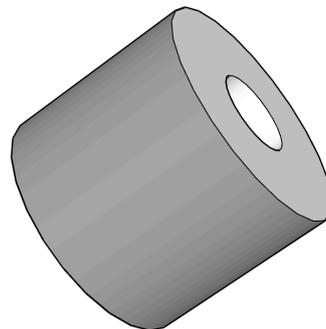
1. Select the type and size of material you want to build your dome then cut the number and lengths shown in the parts list. Fix two WangerFlanges to both end of every strut (except the green struts which have them on one end only)



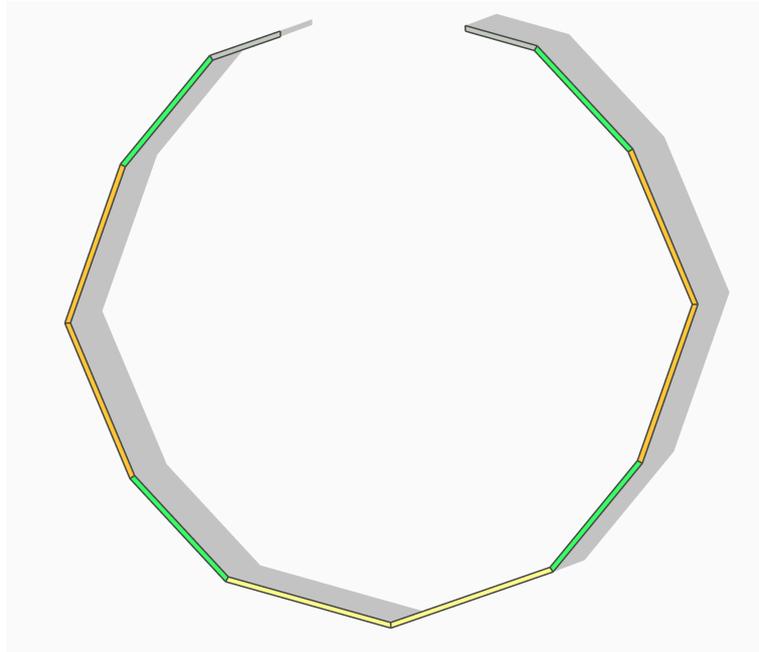
2. Cut the base timbers as shown in parts list if required, on smaller domes the base timbers need to be taller so the door height is maintained.

3. Make the two door side sections from 30-40mm thick timber, this is so they are stiff enough to hold the door firmly.

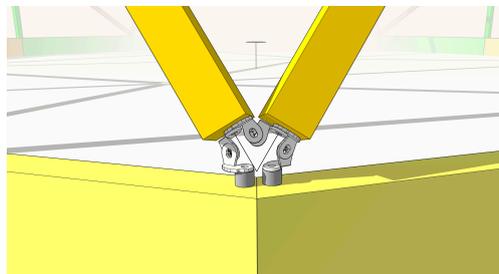
4. Make 6 spacers from thick wall metal tube, inner hole diameter of 7mm and outside diameter of around 16mm. Cut them to 16mm long.



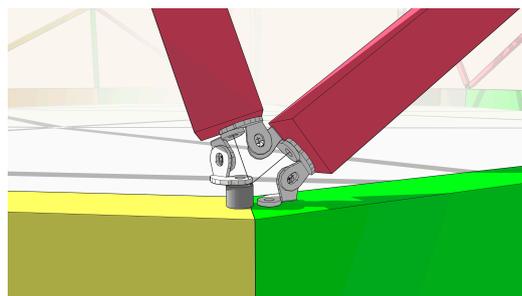
5. Now all the parts for the frame have been made assembly can begin. Start with the base beams laying them out in order on the ground



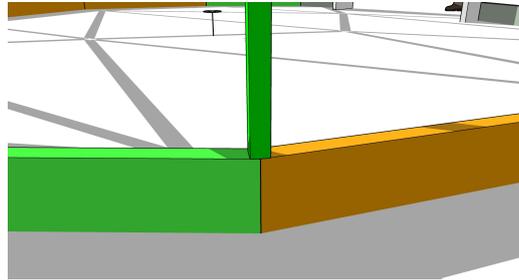
6. Starting from the bottom we can now put the frame together, note where the yellow struts meet the yellow base there are two spacers just to lift the frame up a tiny bit.



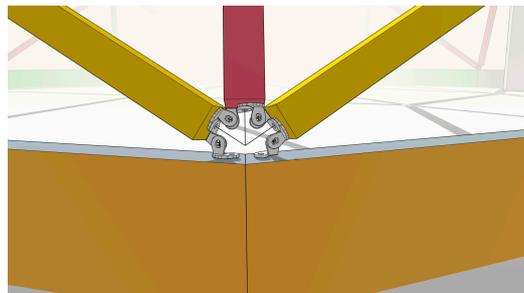
If we move clockwise to the next point in the base where the yellow and green beams meet, there is only one spacer placed under the left hand strut.



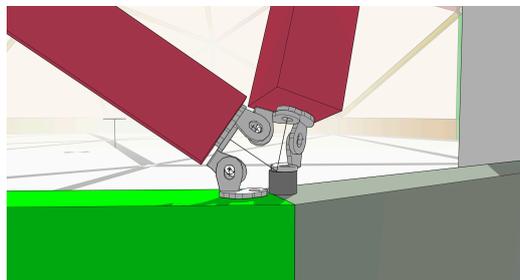
If we move round one more step to where the green base beam meets the orange base beam, this has no spacers or WangerFlanges on the strut ends and can be fixed directly to the base beam with metal straps or angle brackets.



Next round is where two yellow and one red strut meets the orange base beams. This one has no spacers, just WangerFlanges that attach directly to the base beams.

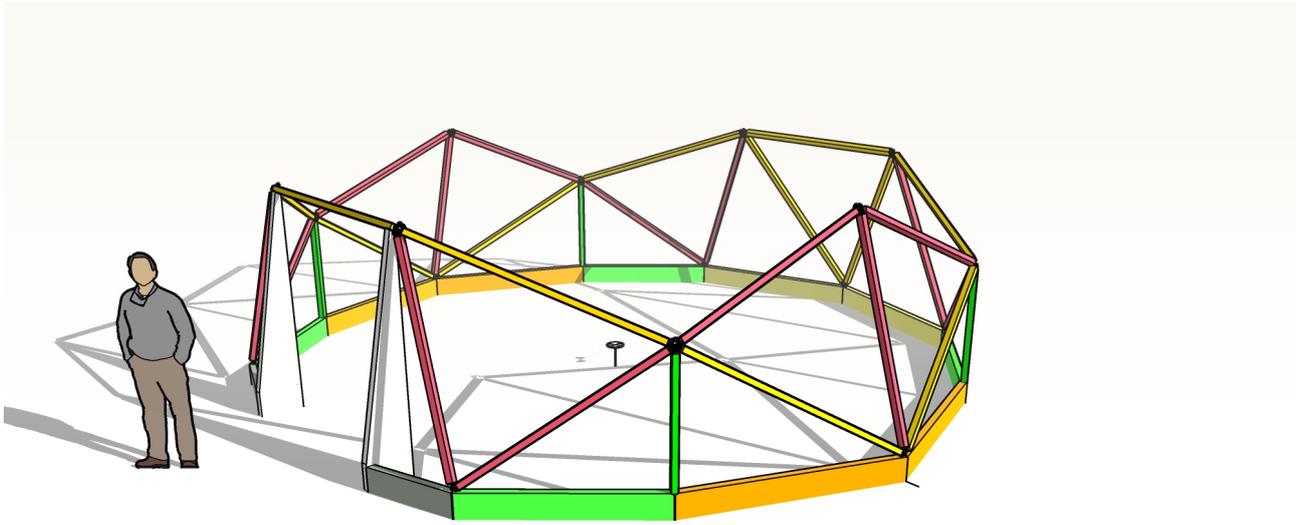


The next section round repeats the green/orange no WangerFlange or spacer configuration but is reversed orange to green. After that we move to green/grey near the door, this has one spacer like the yellow/green section but in reverse.

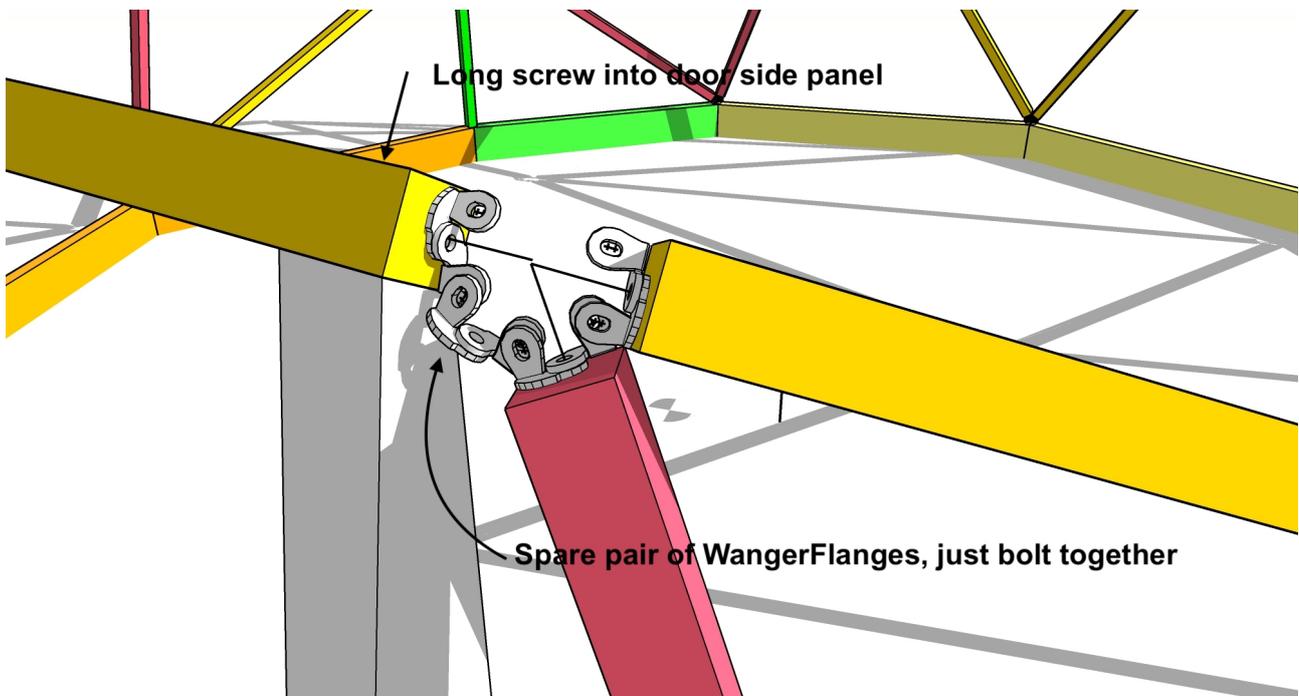


If we were to move anti clockwise from the start point all the same joints are repeated but mirrored all the way round to the left hand door side.

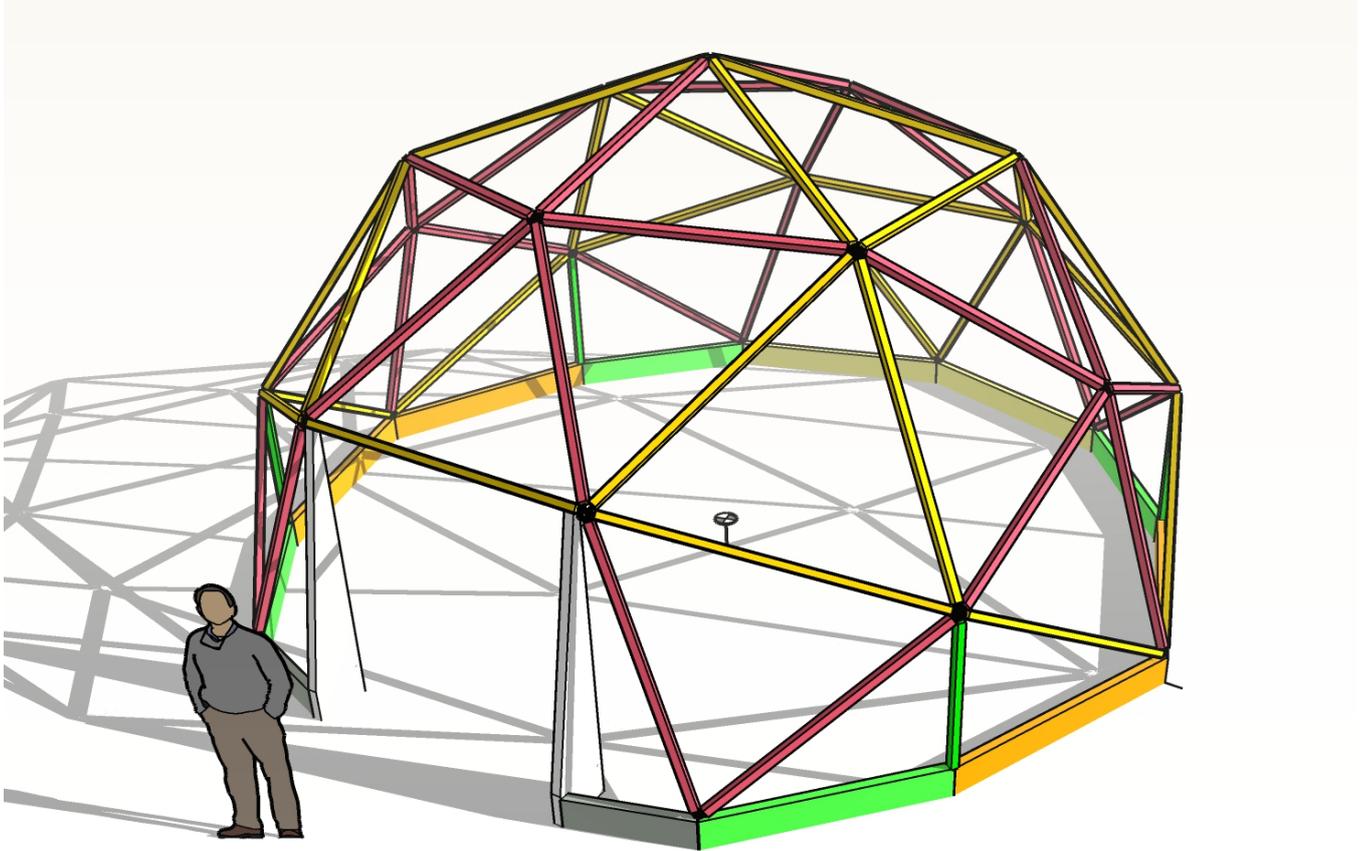
When you have attached all the struts that are fixed to the base you have the first ring of the dome, it will be very unstable at the point and may need support.



The door sides and door head can be fixed in place to complete the first layer, note in the below diagram that there is a ring of six WangerFlanges but only five have struts connected, the door side is fixed to the door head strut and the grey base section.



Bolt all the remaining struts in place in the correct order, use the diagram below and the plan view showing colour coded strut lengths. It's helpful to mark your struts with the correct colour to help with construction.



7. Finally tighten all nuts, bolts and screws firmly, a lot of the strength comes from the friction between the WangerFlange lugs so be sure to give everything a good tighten up.

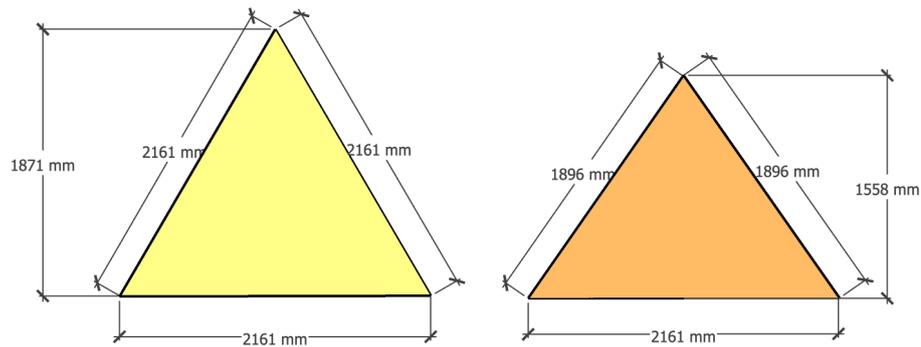
### Scaling

Before we move on to covering we need to take a look at scaling, not everyone wants a dome of 7055mm diameter (this is the largest I would recommend) so to make other sizes you will need to calculate a scaling factor.

There are some issues with simply rescaling the whole structure because the WangerFlanges are not scaled, they stay the same size. You can rescale small amounts without any problems but if for example you need to reduce the dome size by 50% the WangerFlanges would be 50% bigger than expected. To solve this we need to know the base geometry, which is measured from the centre of the struts.

The two triangles below show the measurements for this dome, let's look at the measurement of the yellow triangle which is 2161mm but the strut length is 2051mm

So to calculate the strut length from the geometric size we simply subtract 110mm (55mm for each WangerFlange)



For example if we want to change the diameter from 7055mm to 5000mm

Use this equation:

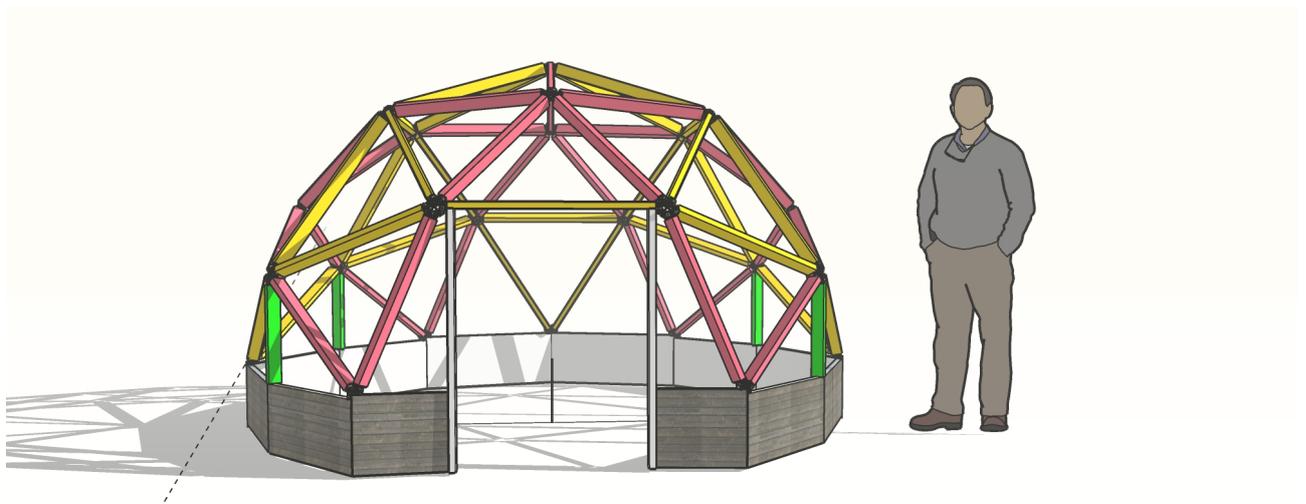
Length you want (5000mm) divided by original length (7055mm) = scaling factor (0.70871722)

Lets apply this to the original geometry for the yellow strut

$2161\text{mm} \times 0.7087122 = 1531.5\text{mm}$

Then we take away 110mm for the WangerFlanges giving a strut length of 1422mm

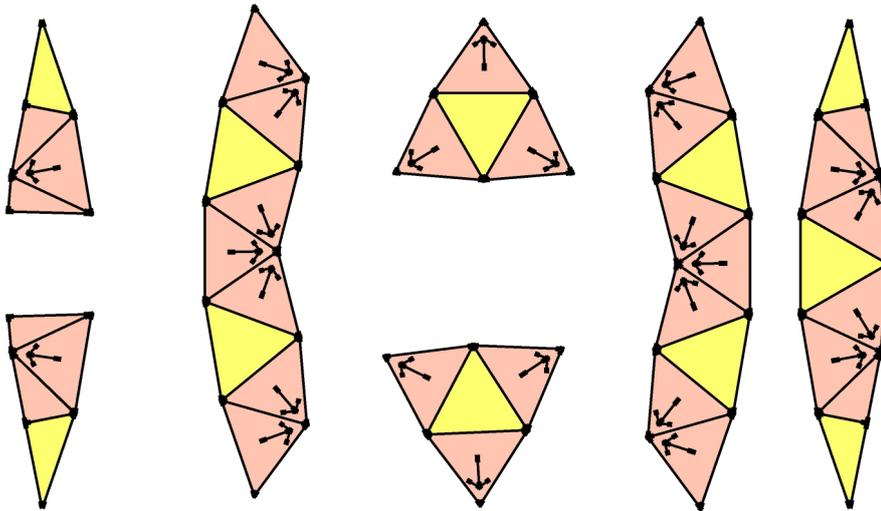
Be careful with scaling because as you scale the dome down remember that the door is also being scaled down, if you scale down to much the door height becomes very low, when this happens you need to add to the base beams and make them taller until you get the door height you want.



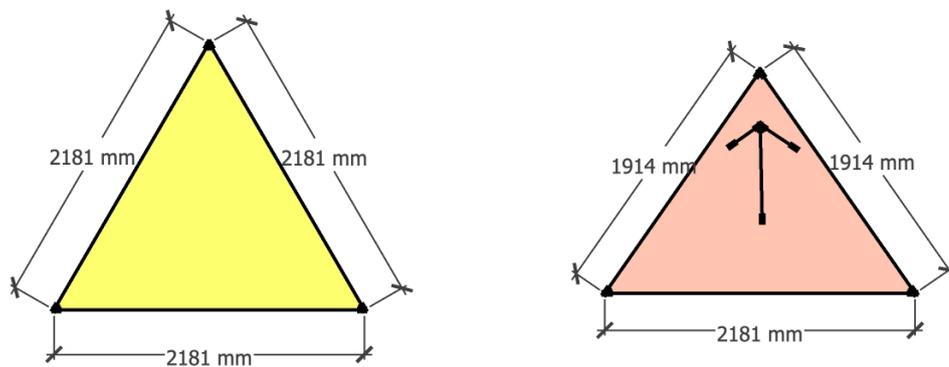
### Covering

Now that the frame is finished we can look at covering.

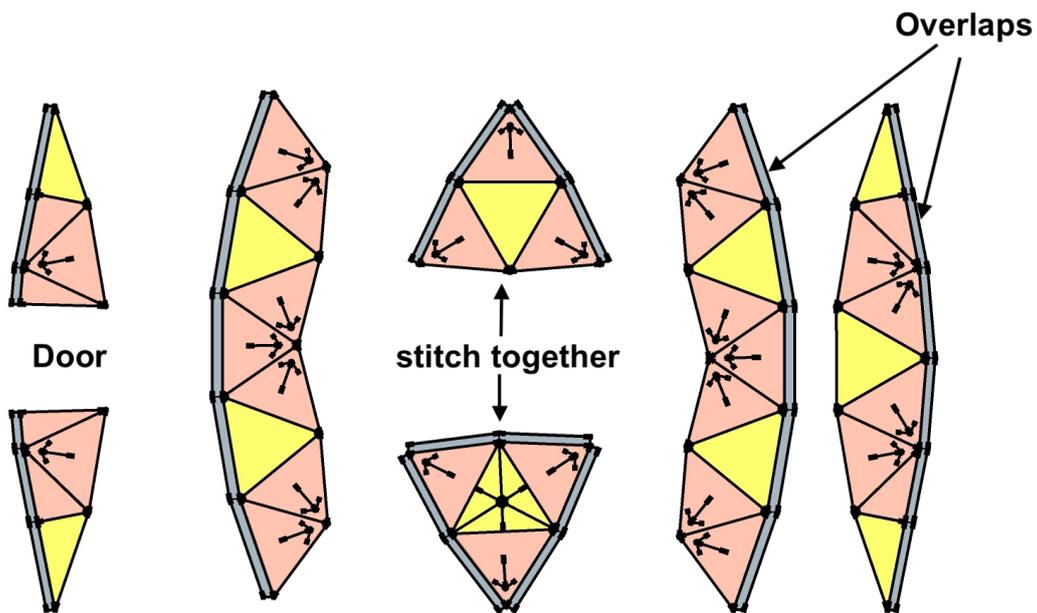
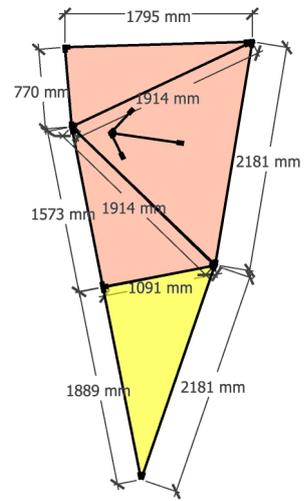
This design is best covered with canvas or polythene, there are only three different canvas panel shapes to form the complete cover.



Looking from left to right, door panels, second ring, two top half (stitched together) another second ring then window section opposite door.



Detailed measurements of the canvas around the door



Windows can be added where needed but a full window panel in the far right cover look good creating light and views opposite the door.