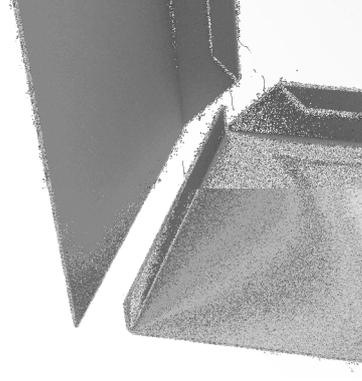
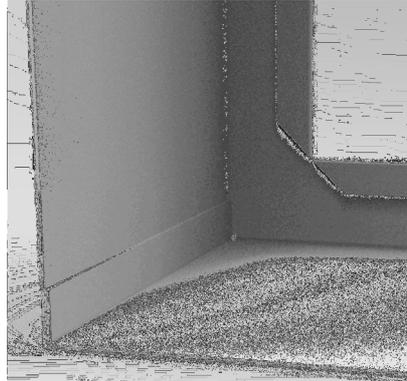
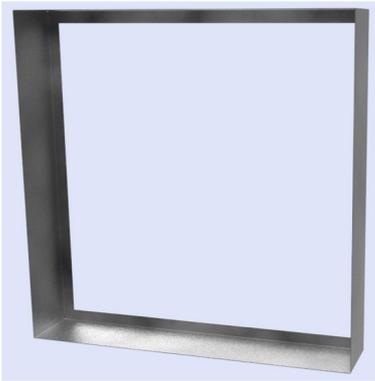


Creating a two piece holding frame from 1mm sheet metal complete with hem and mitred corners

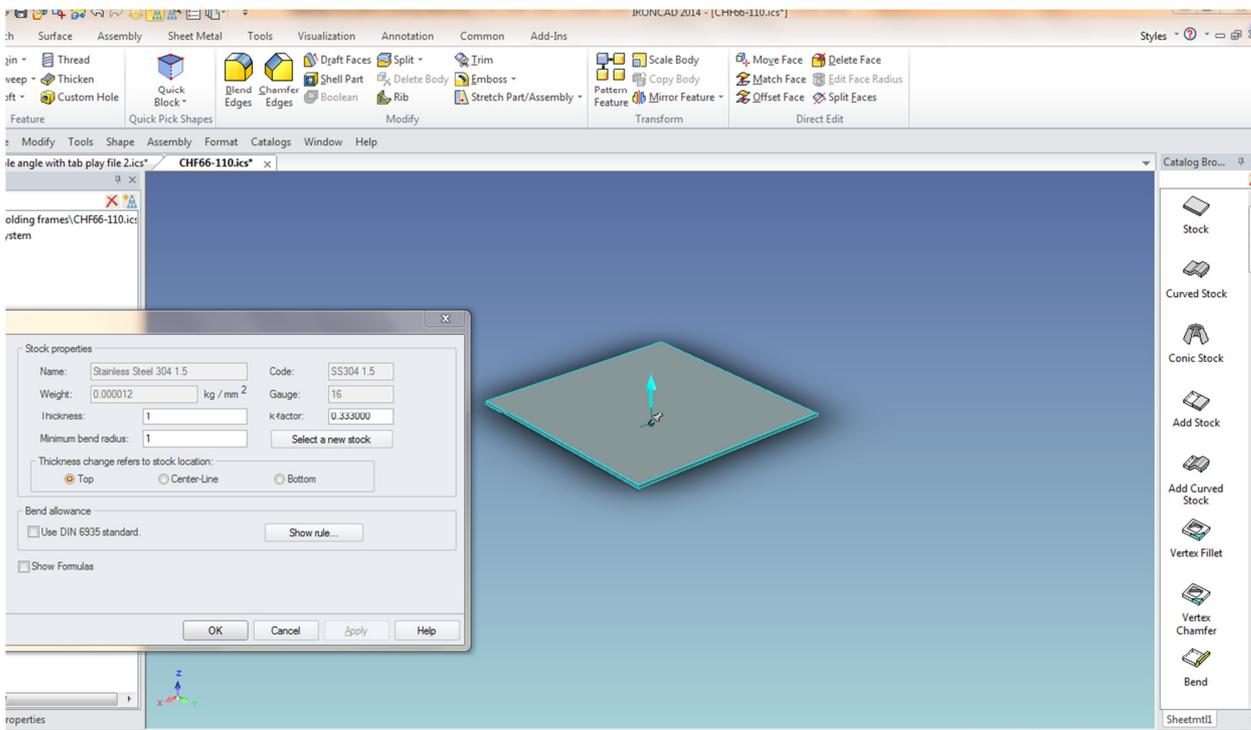
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The holding frame is overall 610mm x 610mm x 110 mm deep, when spot welded together.

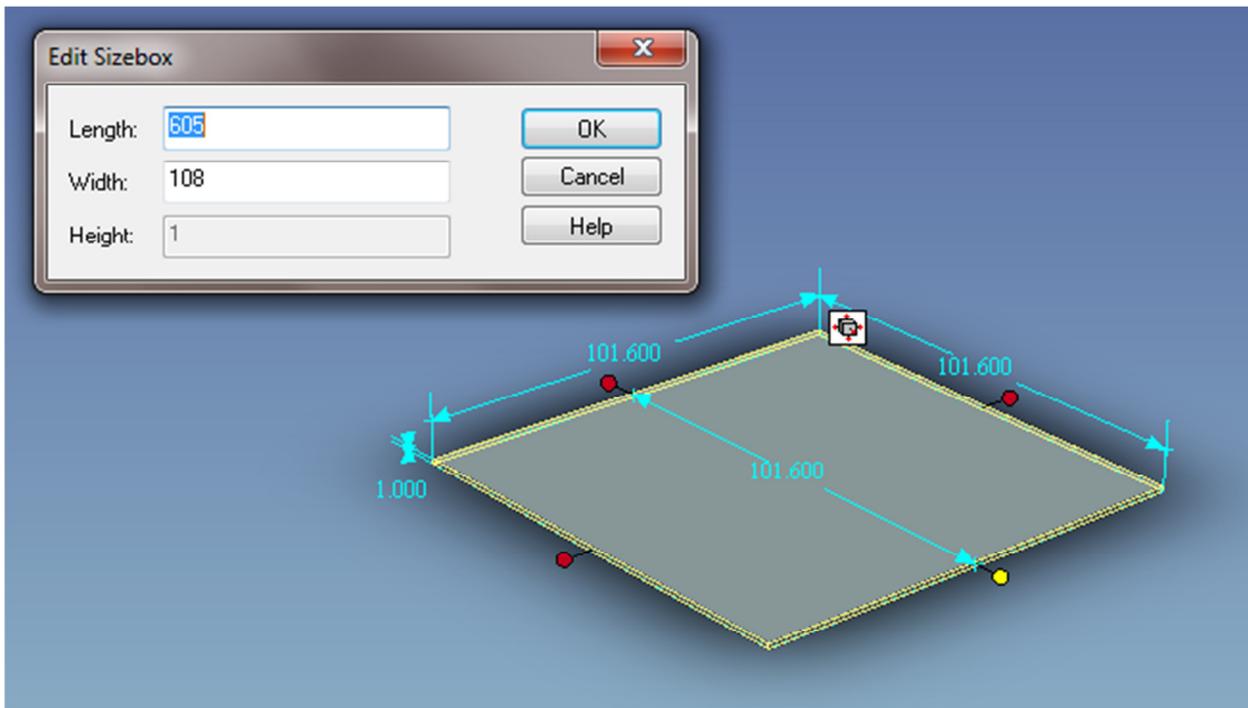
This exercise will use 1mm thick St St with min bend radius of 1mm and K factor of 0.33. The mitred corner will have a 0.2mm gap clearance.



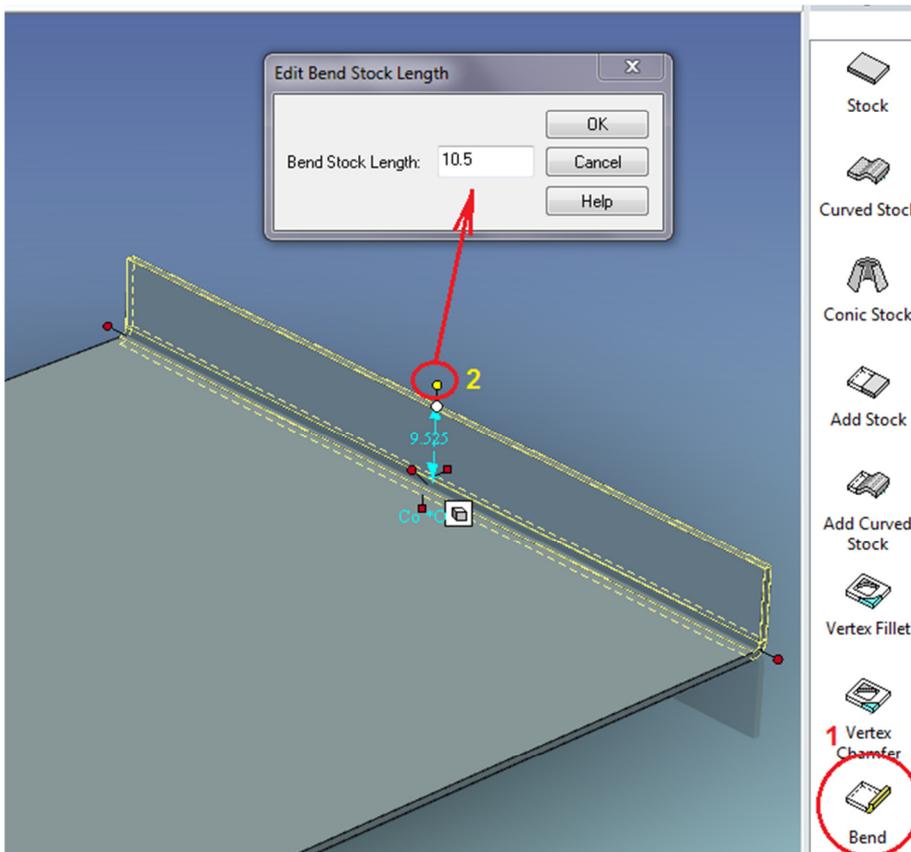
Here is what we are drawing up.



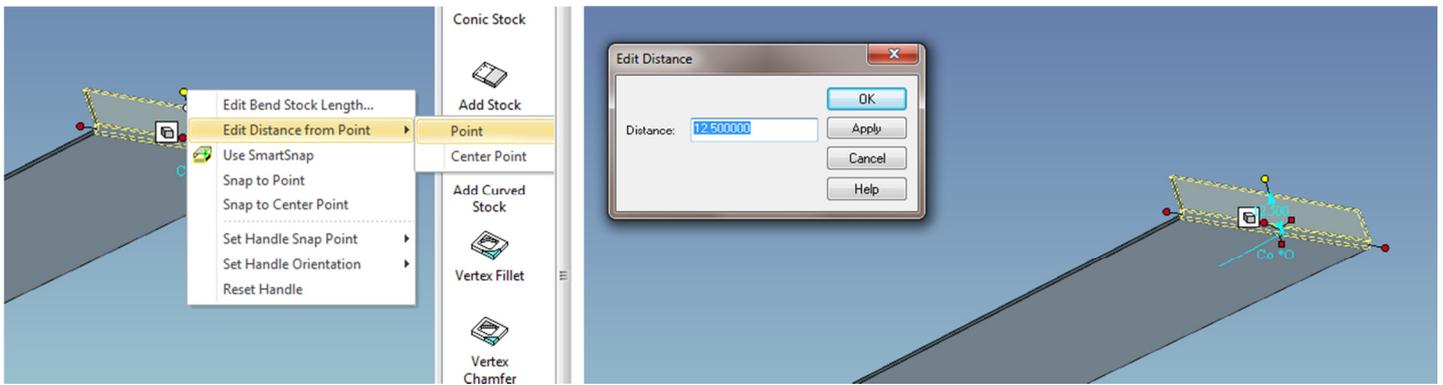
Drag 'Stock' into the scene from the Sheetmetal catalog. Right mouse button click (RMB) on the stock, select 'Part Properties' from the menu, select 'Sheetmetal' and if necessary, 'Select a new stock' and/or change the 'Thickness' to 1mm and the 'Minimum bend radius' to 1mm. OK



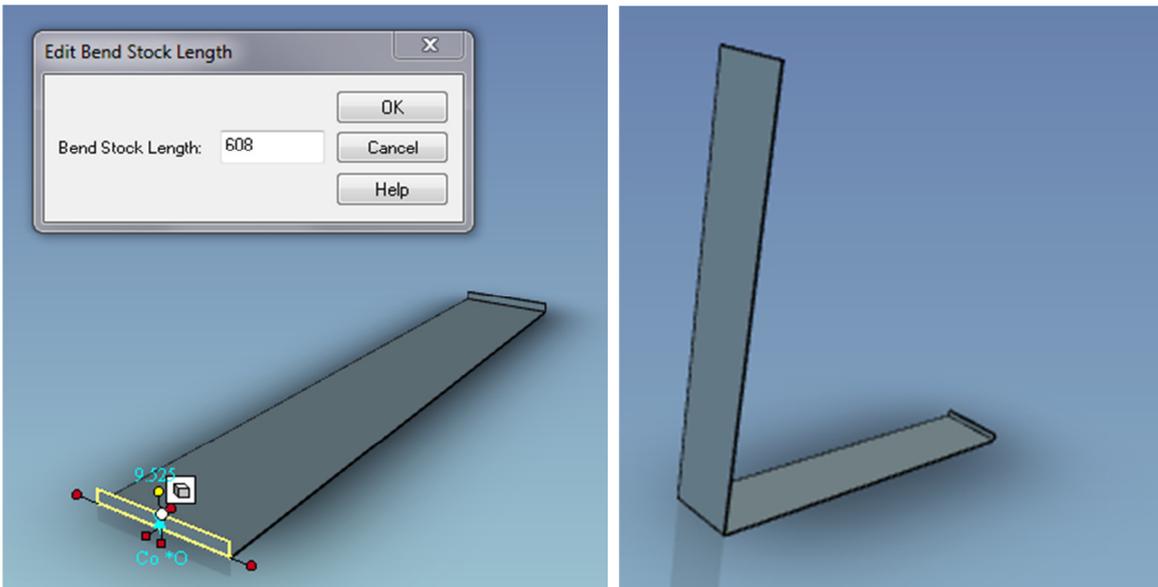
Left mouse button click (LMB) on stock twice to bring up 'Intellishape mode', RMB on bottom right hand handle as shown in picture, select 'Edit Sizebox' and enter 605mm for length and 108mm for width. The length will take into account the 610mm overall finished dimension minus two bends at 1mm, two thicknesses for those bends at 1mm and one material thickness at 1mm for the second part of the frame



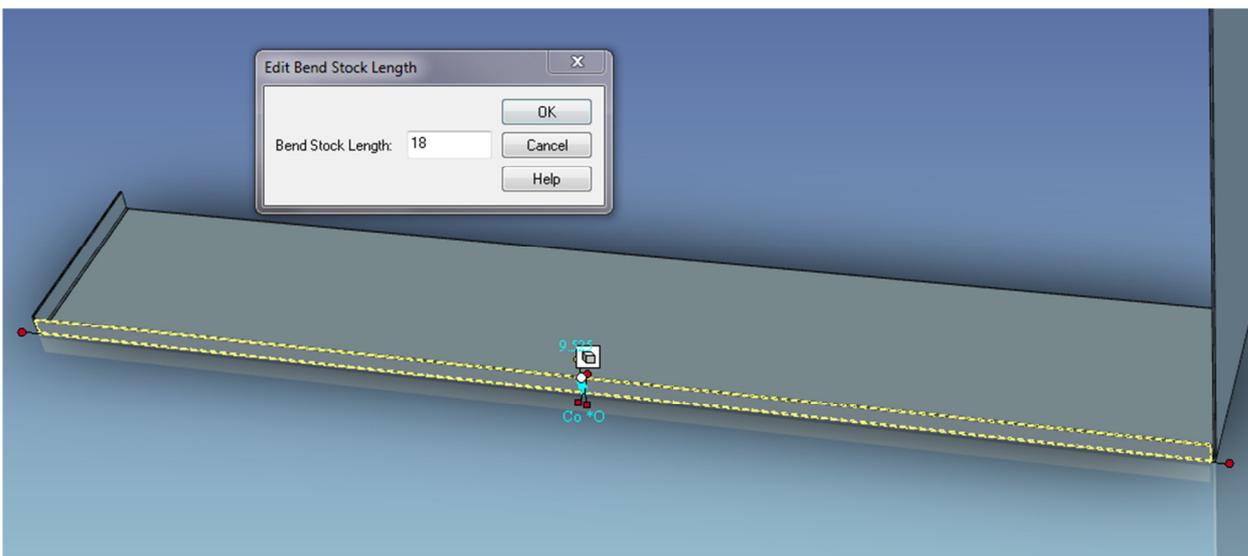
LMB on bend in catalogue, drag to top edge of the right hand end of the stock. RMB on the distance handle of the bend, and change 'Bend Stock Length' to 10.5mm. The overall dimension of height from bottom edge is to be 12.5mm, hence the 10.5 minus 1mm material thickness and 1mm bend radius.



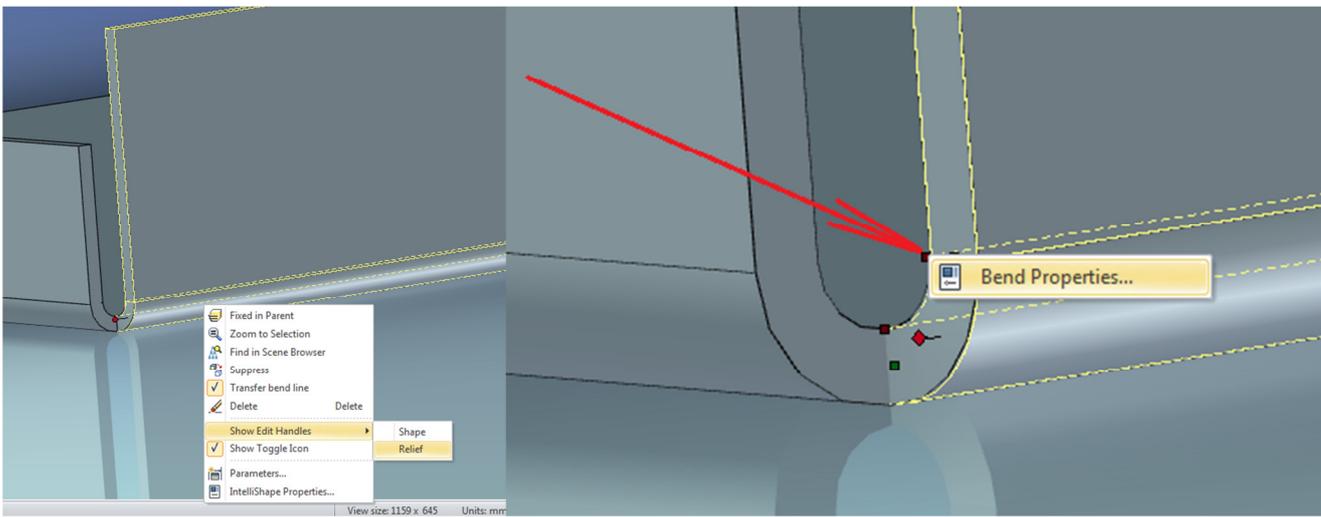
Alternatively, you could select the bend, RMB on top distance handle, select 'Edit Distance from Point' – 'Point' and select the bottom surface. Set the dimension to 12.5mm



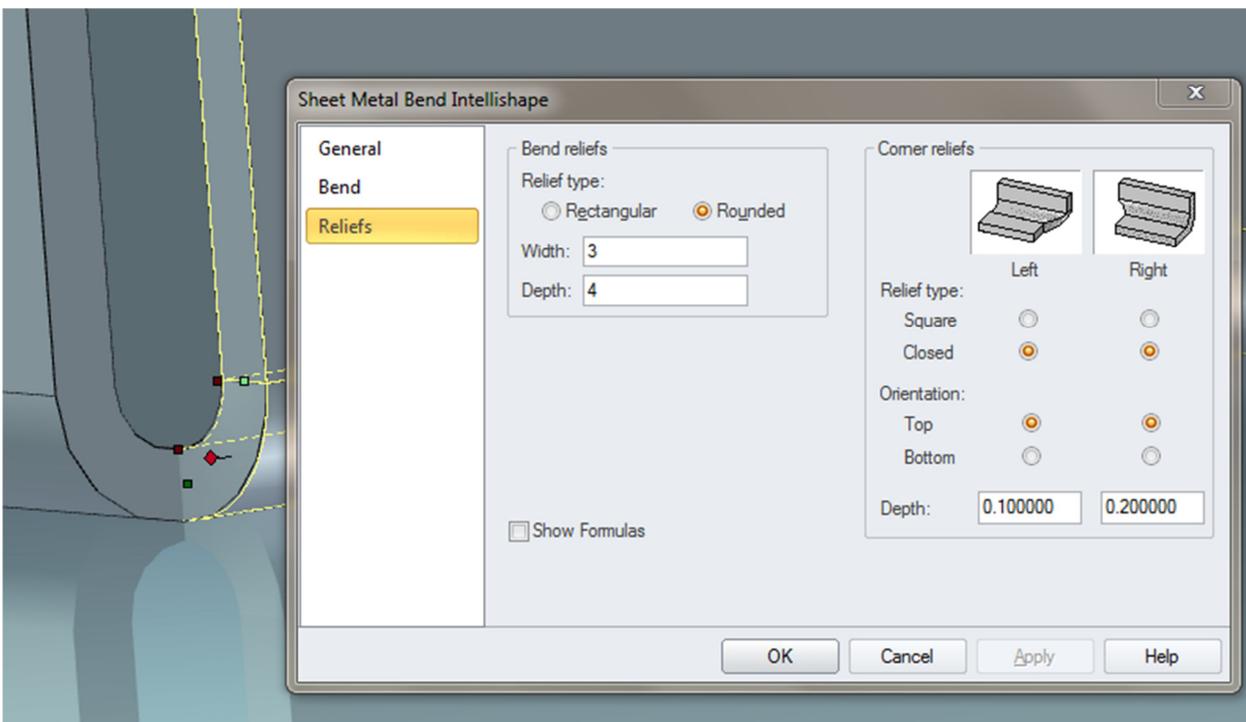
Add a bend at the left hand end of the stock, set the 'Bend Stock Length' to 608 (610 overall minus one material thickness of 1mm and one radius of 1mm for that bend). Alternatively use the method of setting the distance of the distance handle to a point on the bottom surface and make that 610mm.



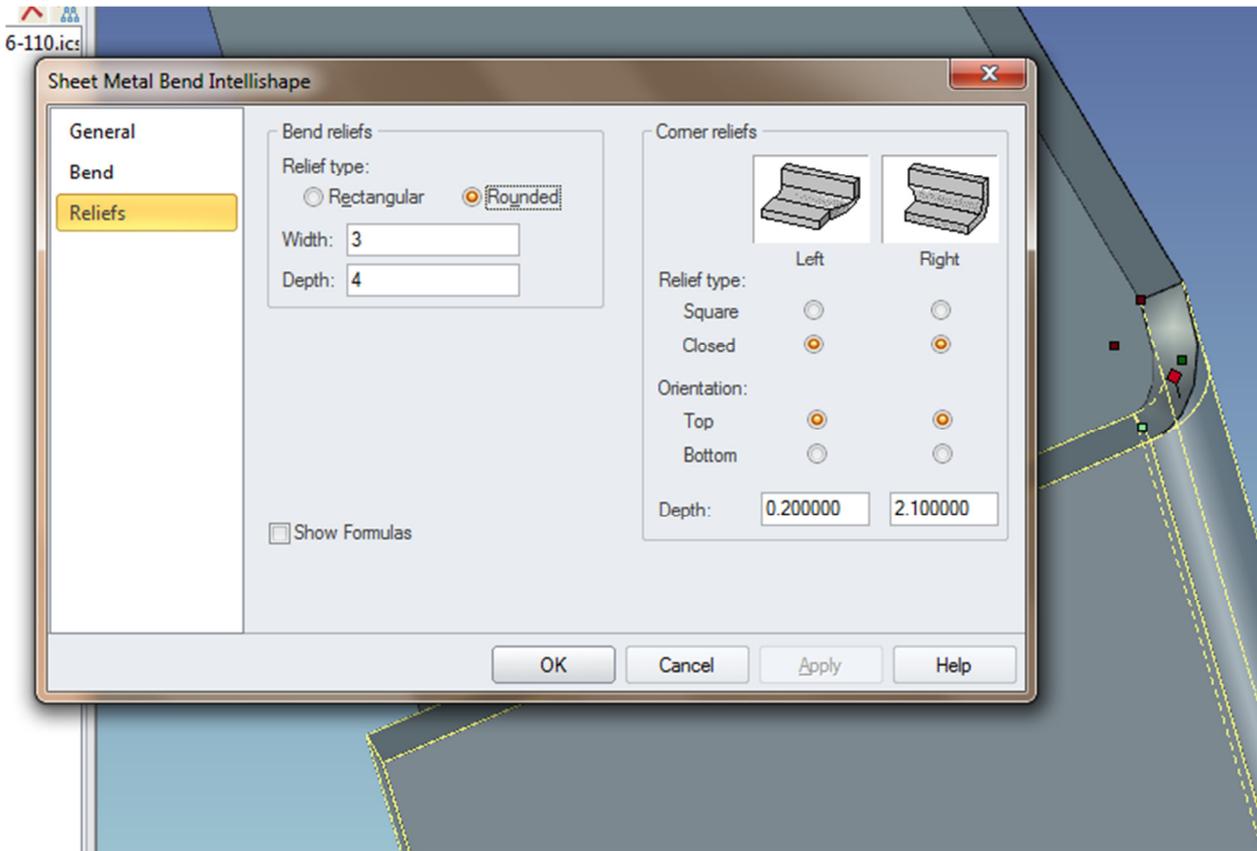
Flip the frame around to view from the back, add a bend and set the 'Edit Bend Stock Length' to 18mm. We'll eventually have the overall height of 22mm which will consist of stock length of 18mm, a bend and radius at the bottom totalling 2mm and a hem and radius at the top totalling 2mm.



Next, set the reliefs. Select the bend as shown into Intellishape mode, RMB and select 'Show Edit Handles' – 'Relief'. RMB on the bend handle shown and select Select 'Bend Properties'.

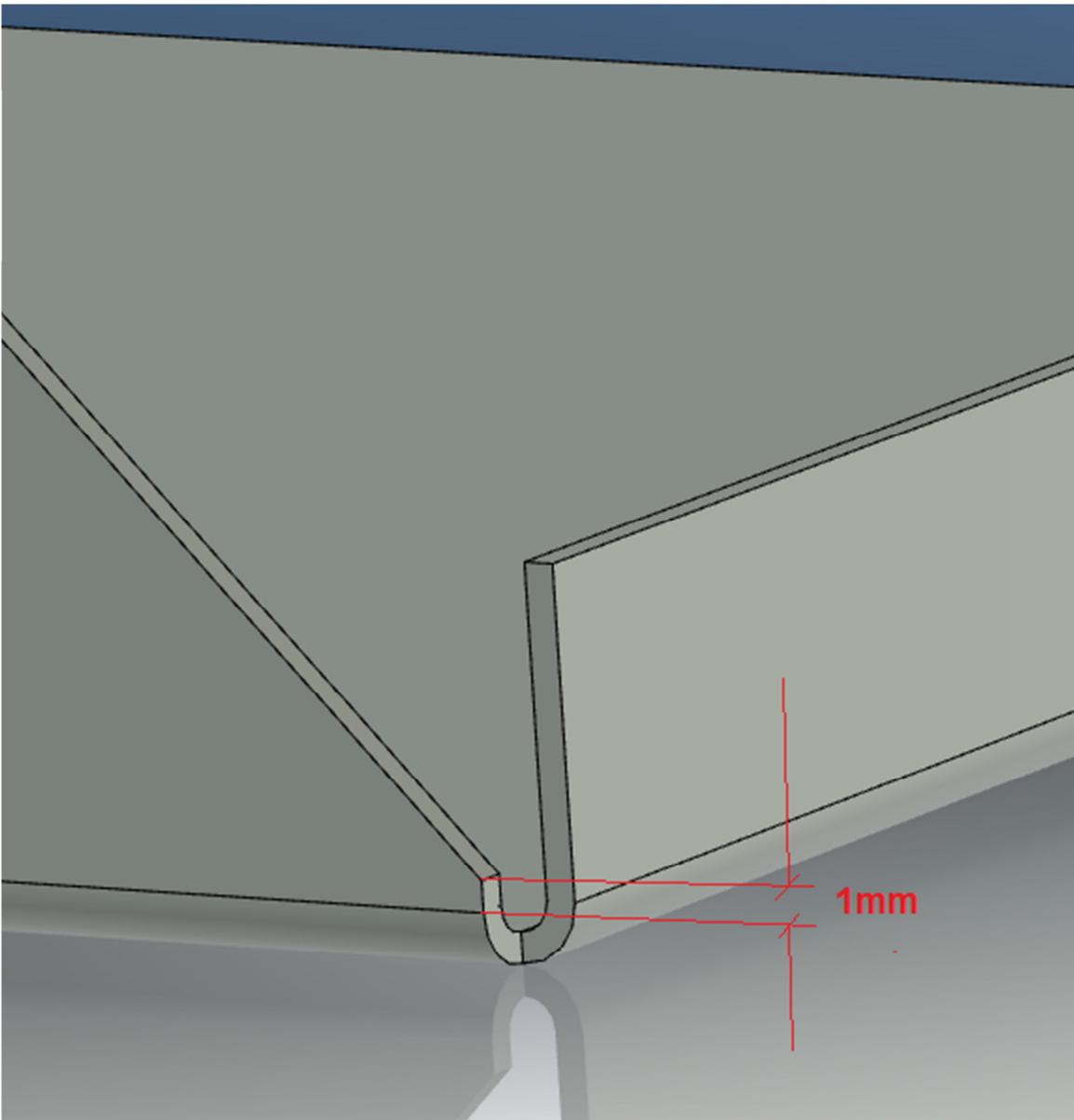


Select 'Reliefs' and change the Corner relief values to those shown:- Left:Closed:Top: Depth=0.1 and leave the Depth of the Right one at 0.2 (the mitred corner).

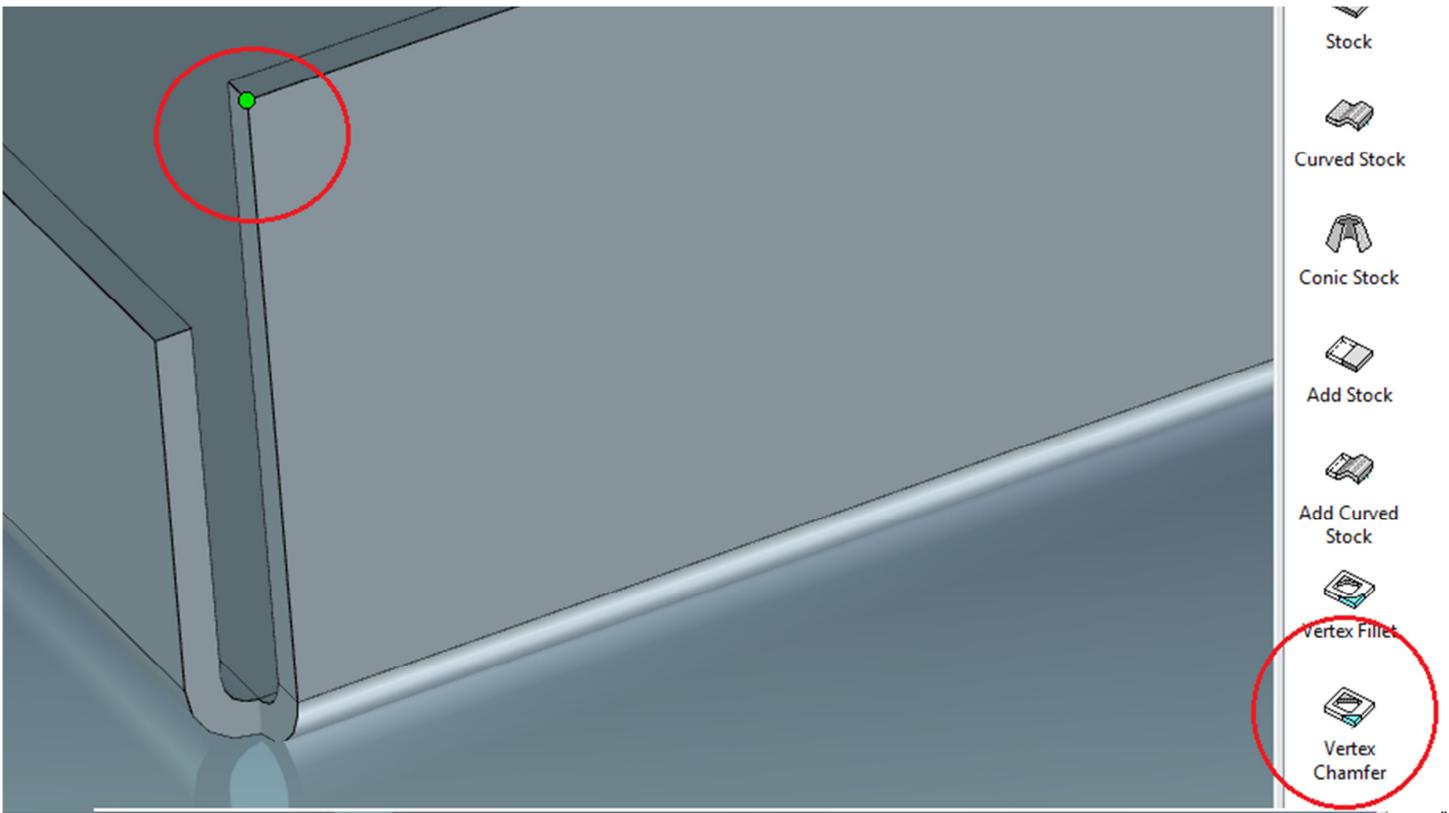


Change the bend Corner reliefs for the other end to those values shown above (Leave the Left at 0.2 – mitred corner pre-set) and change the Right to Closed:Top:Depth = 2.1

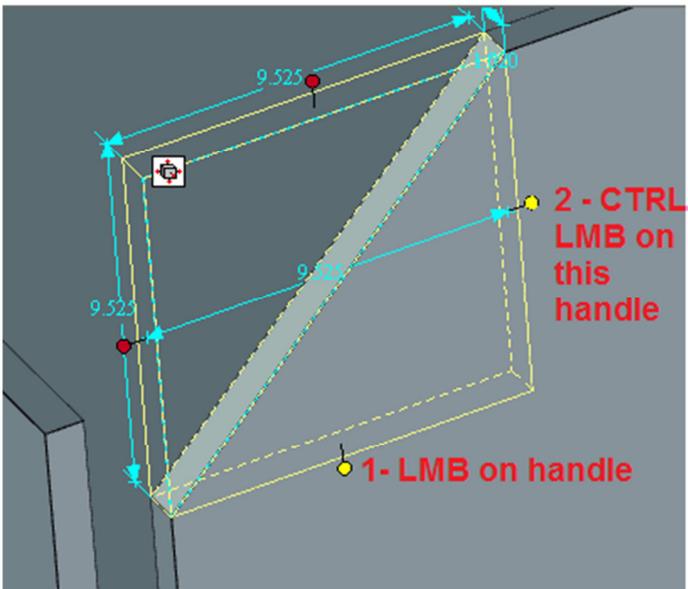
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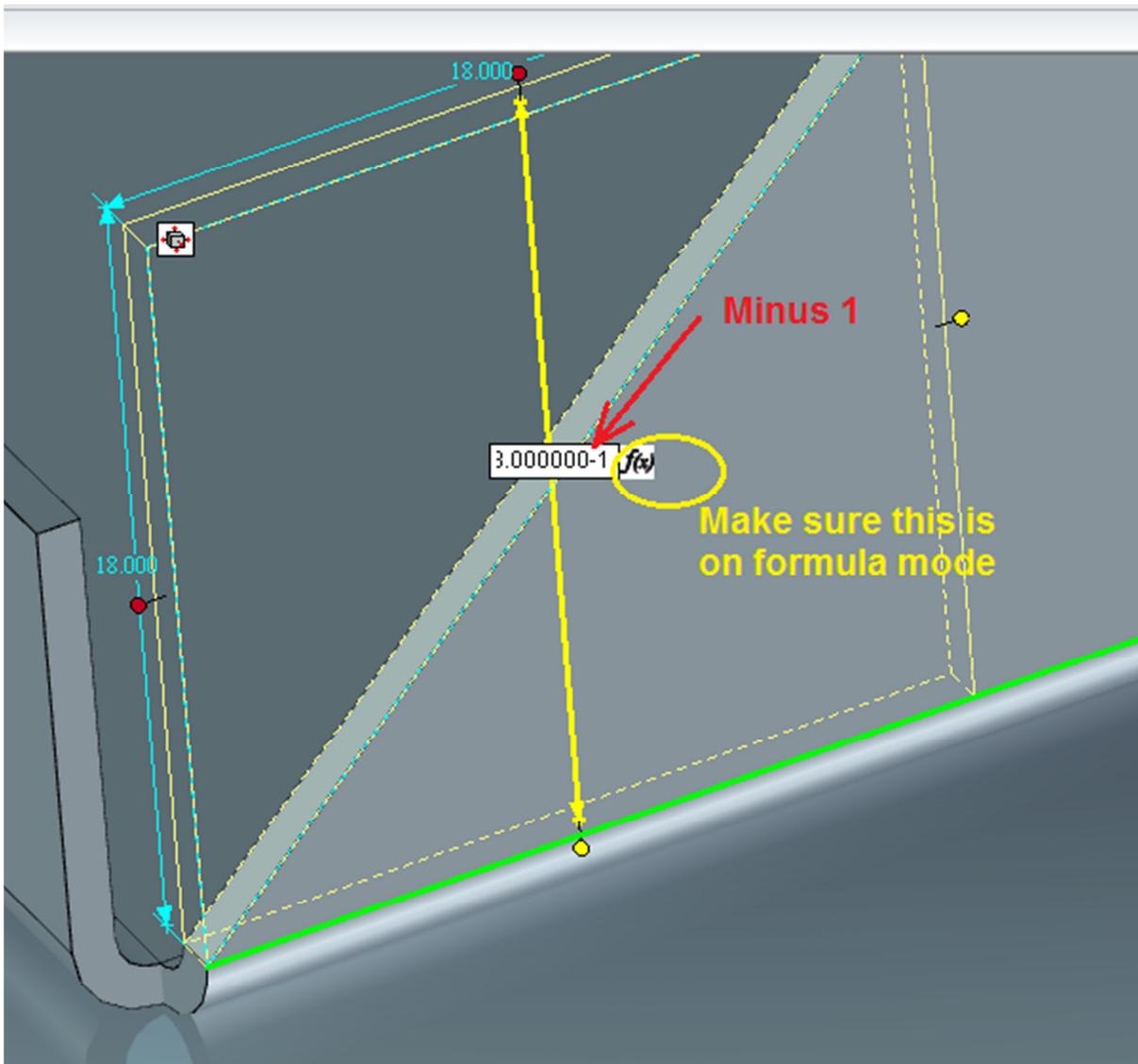
We will now create a cut sheet metal feature, offset on material thickness from the bend radius. This pic is showing a mirrored/inverted view to the part we're modifying in this example but gives you the idea of where the offset has to be placed.



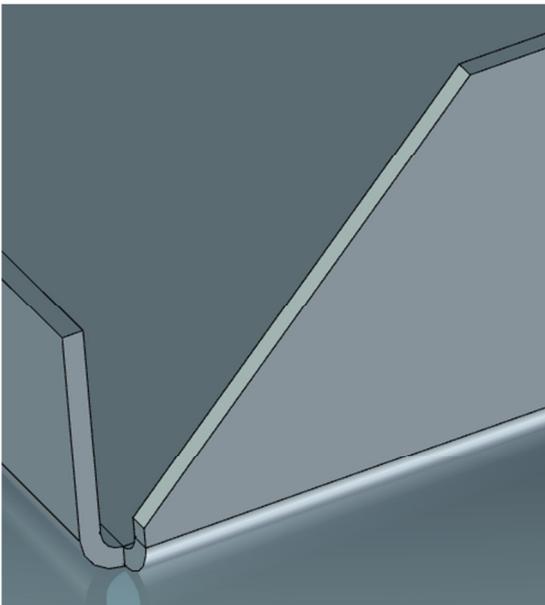
LMB on 'Vertex Chamfer' on Sheetmetal catalogue, and select the top corner as shown for placement



LMB on bottom handle as shown and CTRL-LMB on right handle.

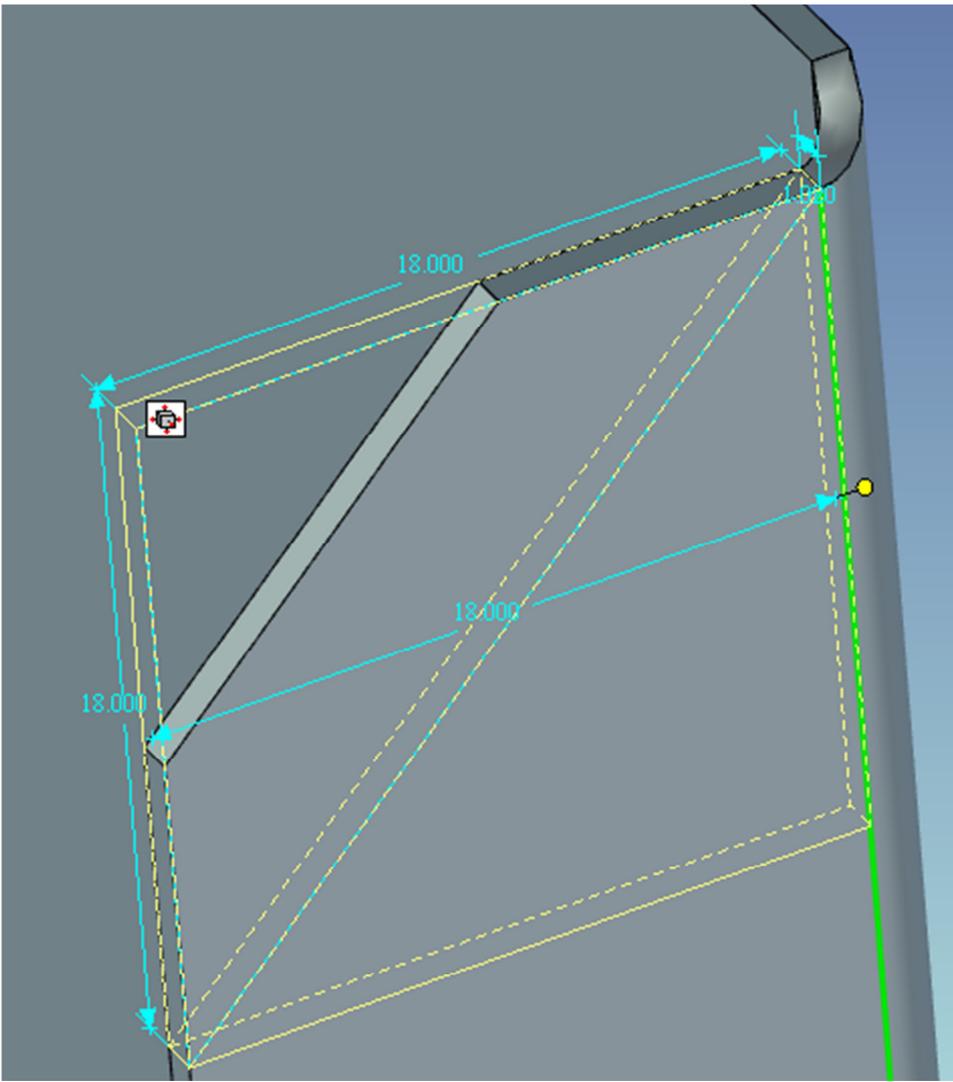


Drag down to end of bottom bend whilst holding the shift key and when line as shown turns green release. Make sure the size-box is in formula mode and insert -1 as a numerical value.

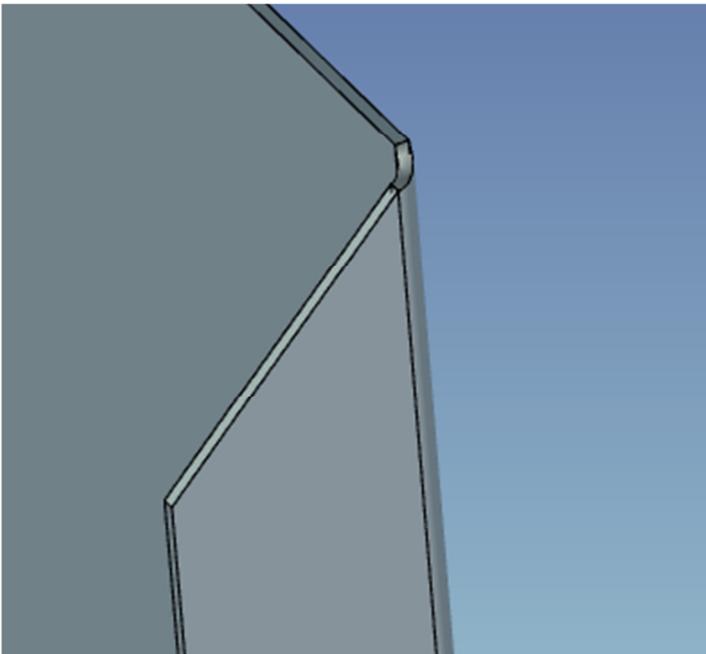


This is the result.

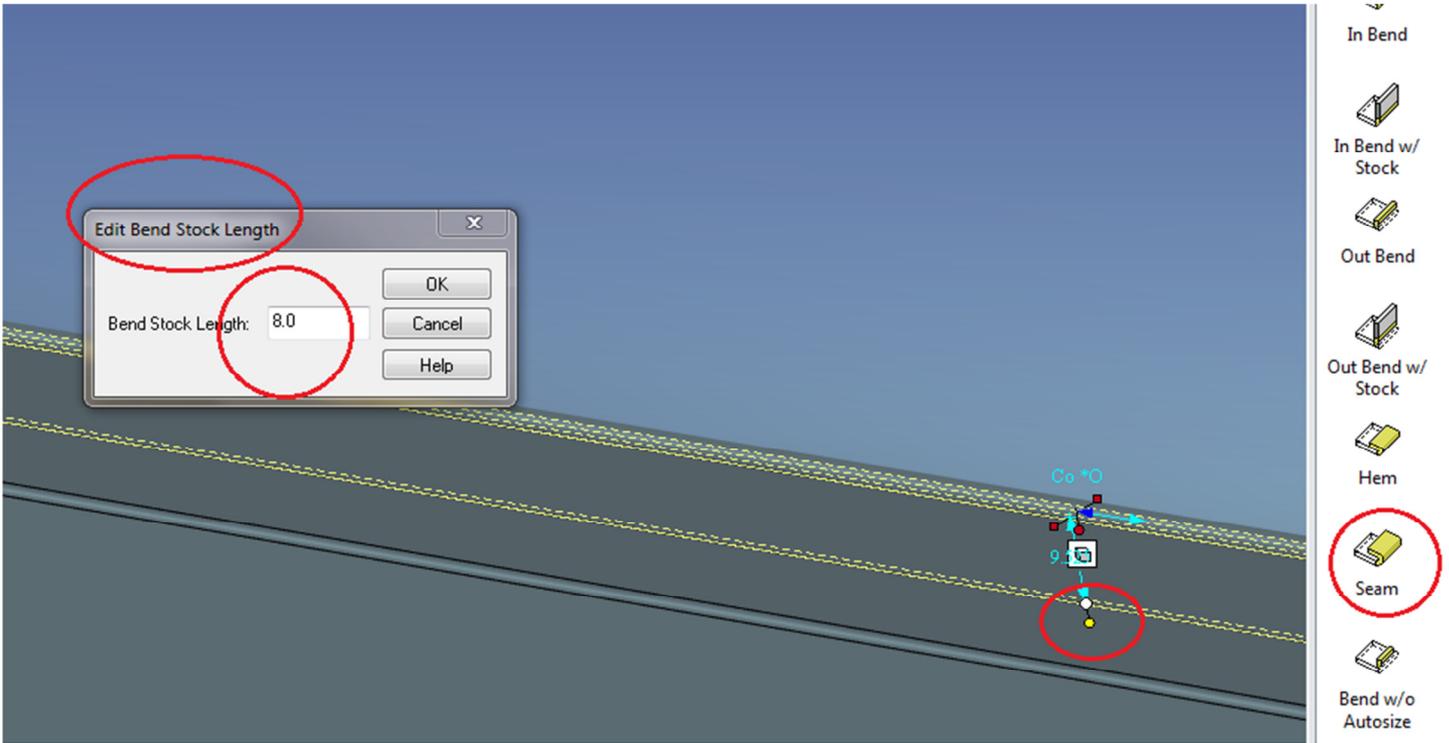
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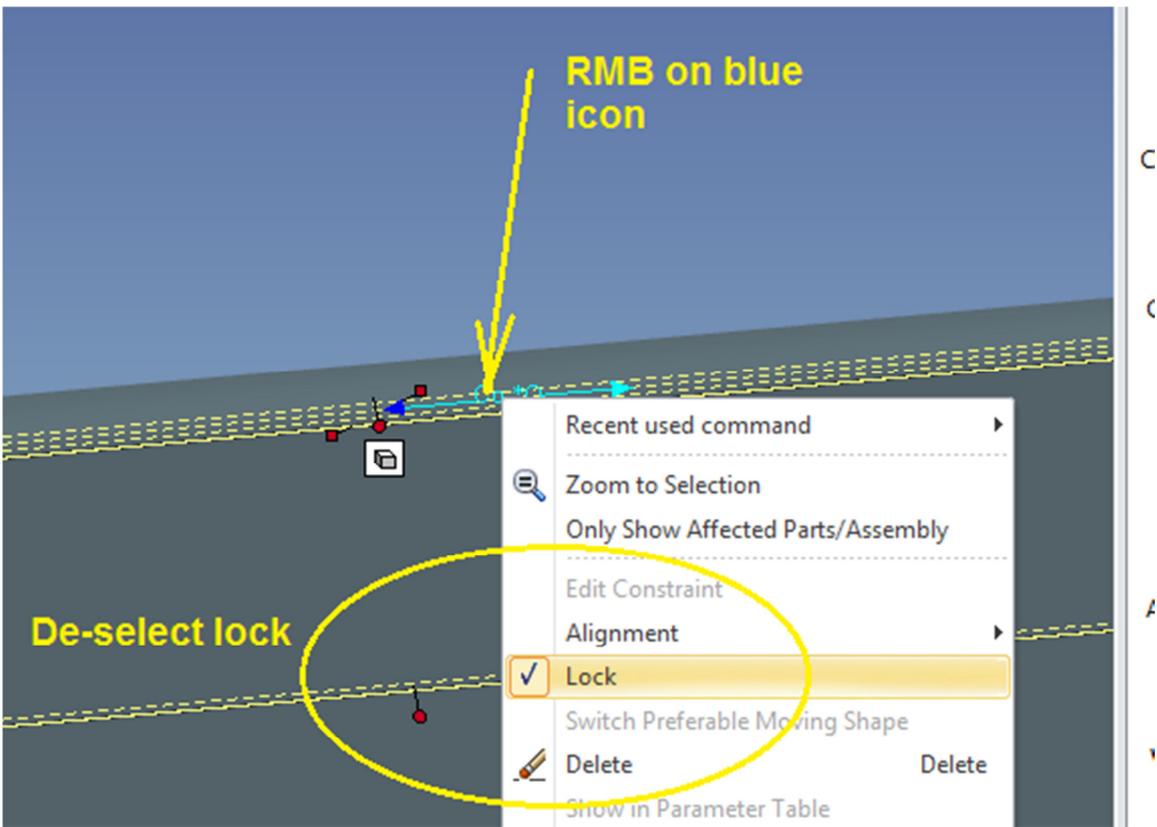
Create a Vertex Chamfer at the other end as shown, CTRL select the bottom and right hand handles, hold Shift and move the right handle to the bend line, when it turns green – release.



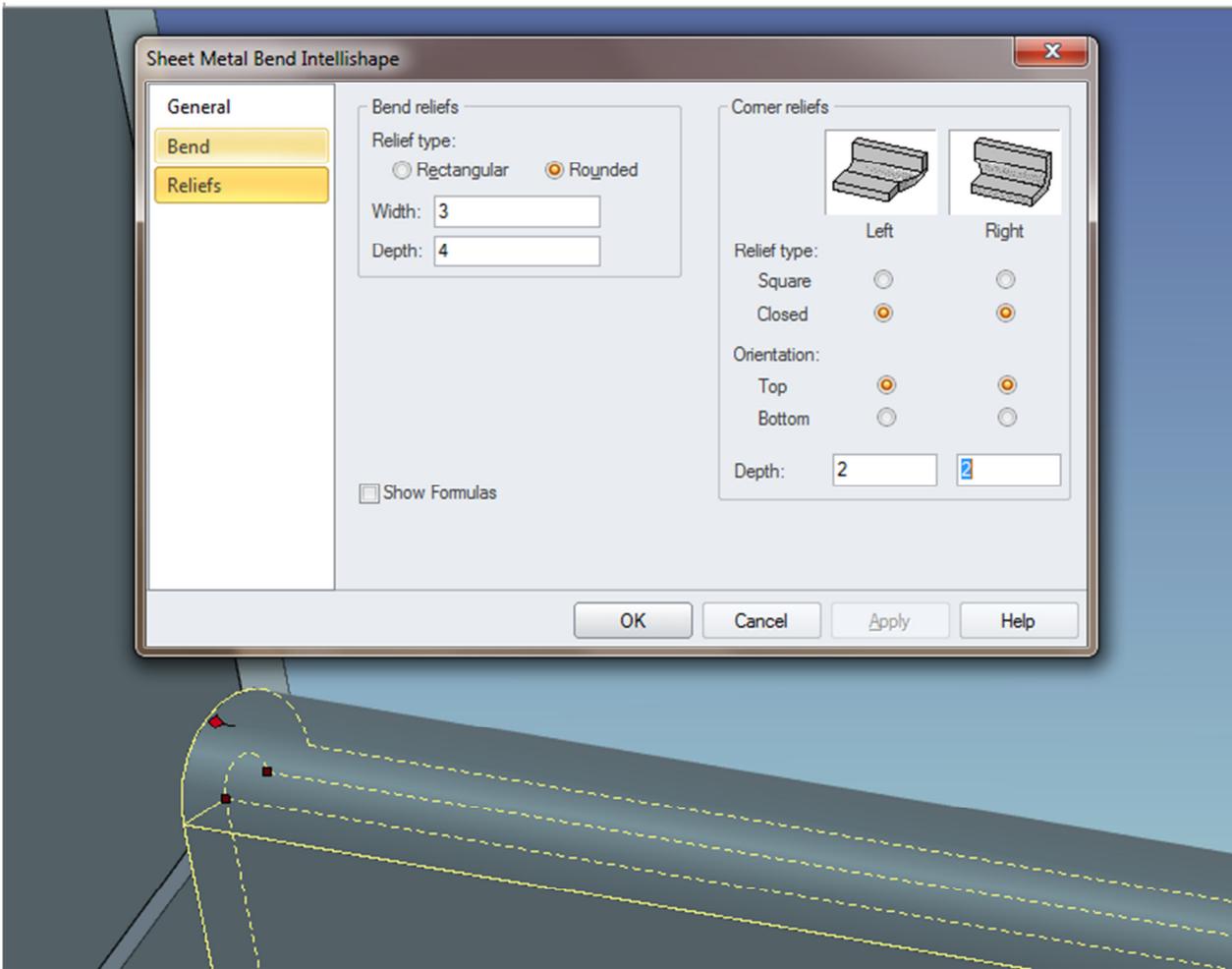
Result.



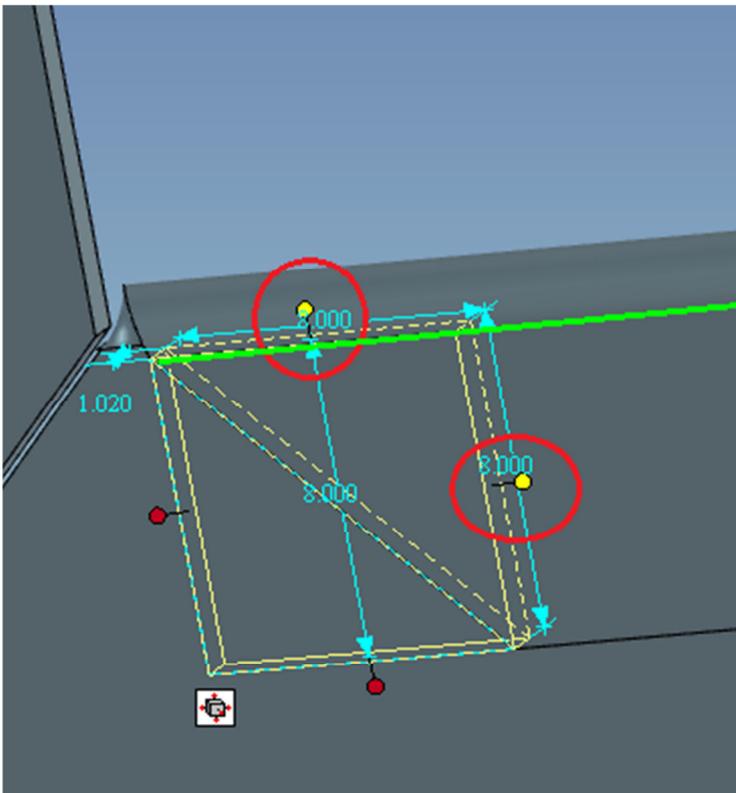
Add a hem to the first back bend, RMB on the stock length handle and change that to 8mm. OK.



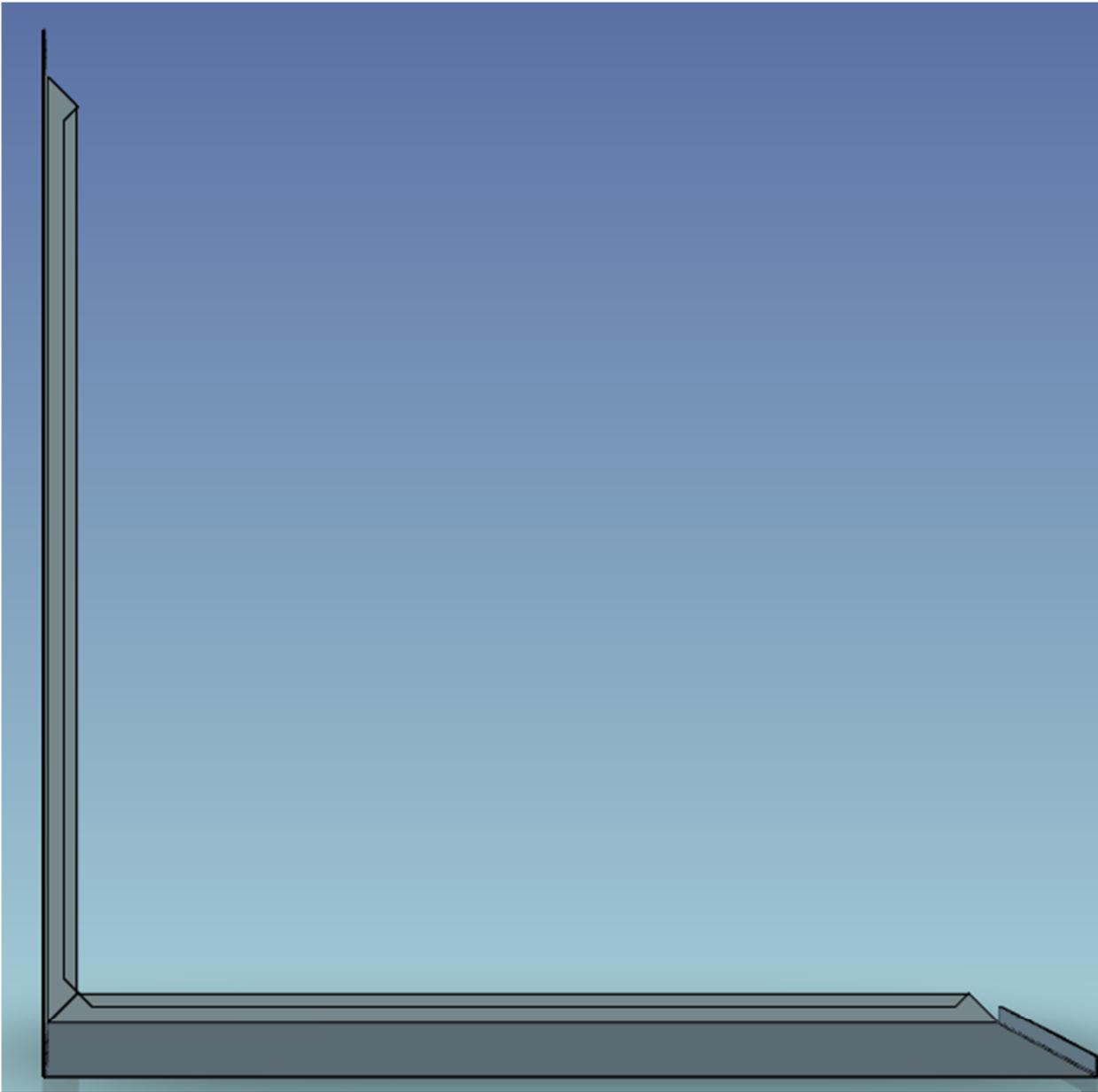
RMB on blue icon. De-select (untick) 'Lock'



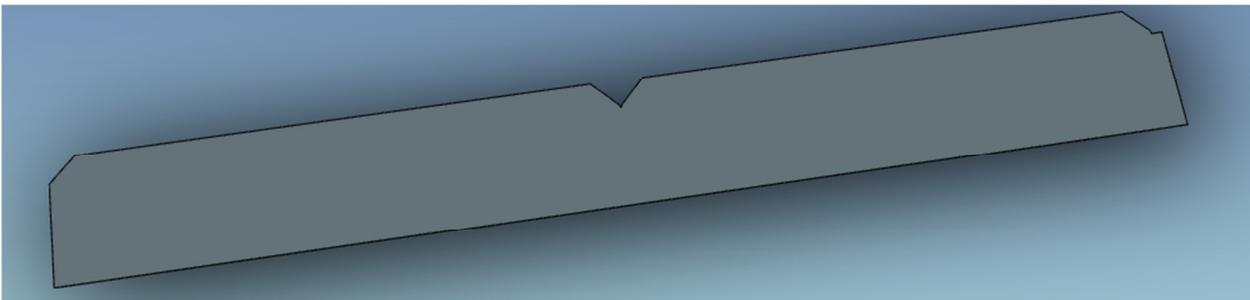
LMB on the hem twice to change to Intellishape. Set the bend to relief mode and change the corner reliefs parameters to those shown above - OK



Place a vertex chamfer on the corner of the hem return, CTRL select the top and right hand handles, hold Shift key and drag top handle to green line shown – the hem fold line.

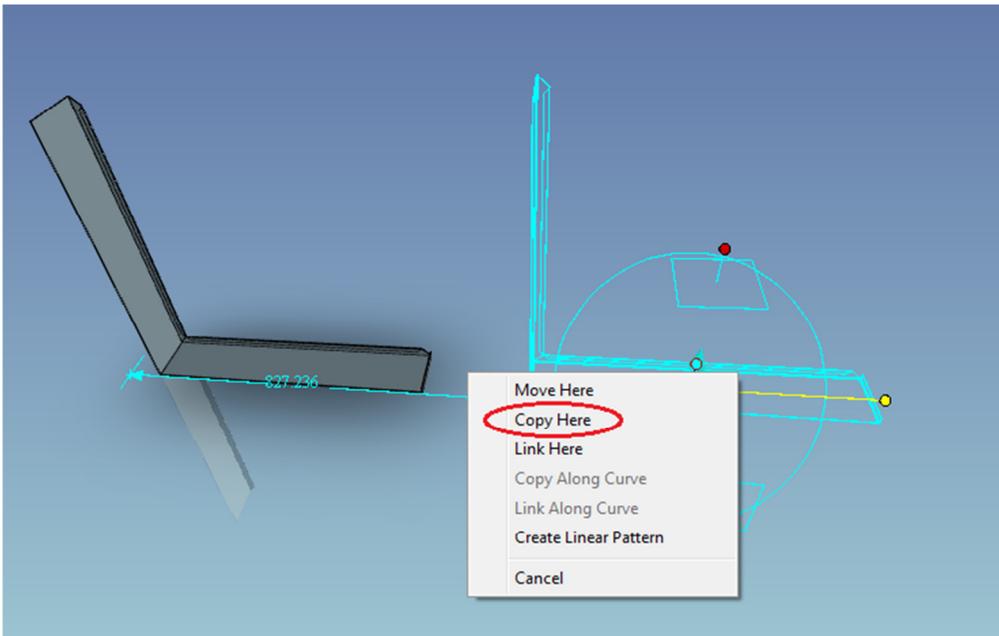


Repeat the above (add a hem and vertex chamfer for the other back bend. LMB on part, select Sheet metal ribbon bar and unfold.

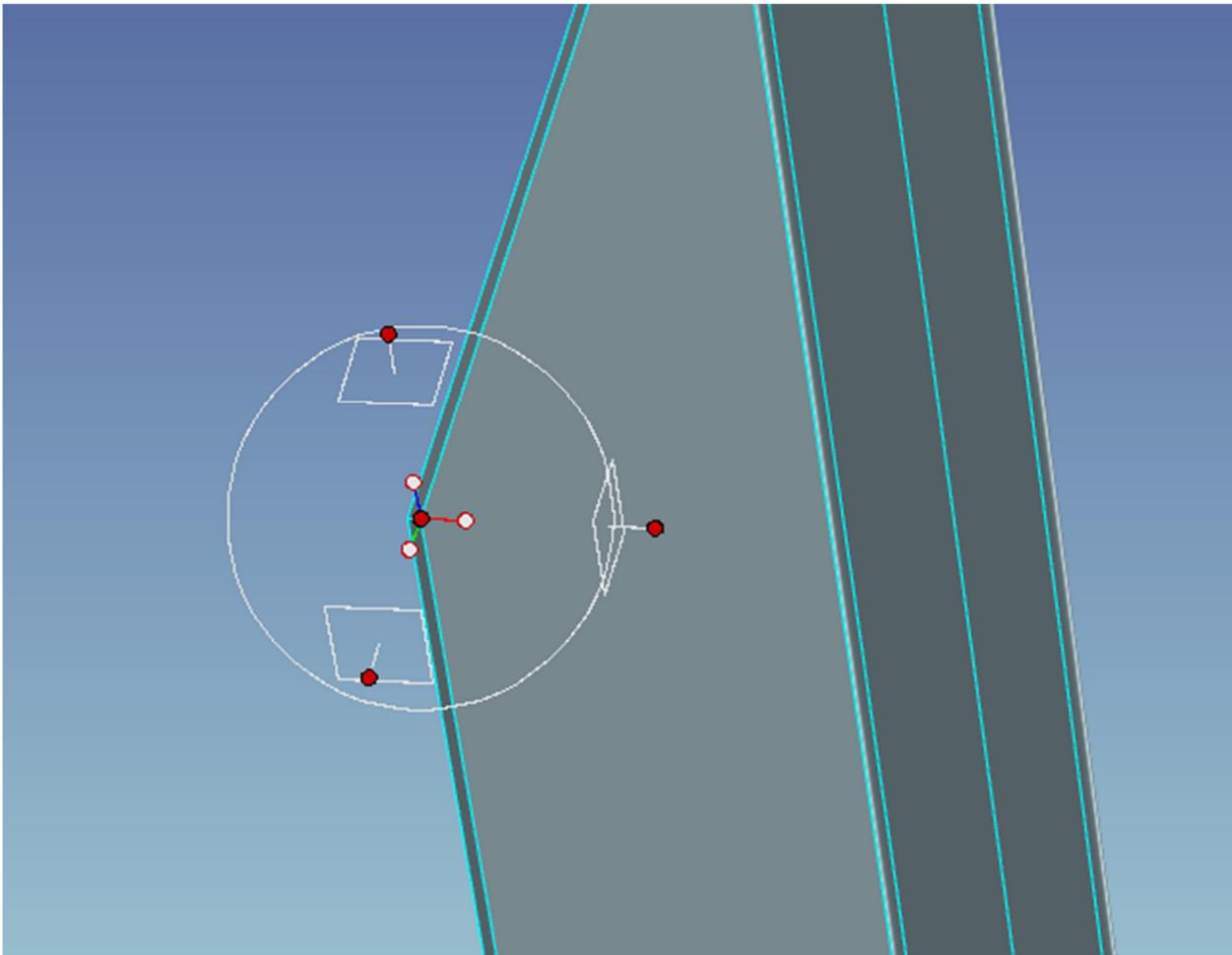


Result.

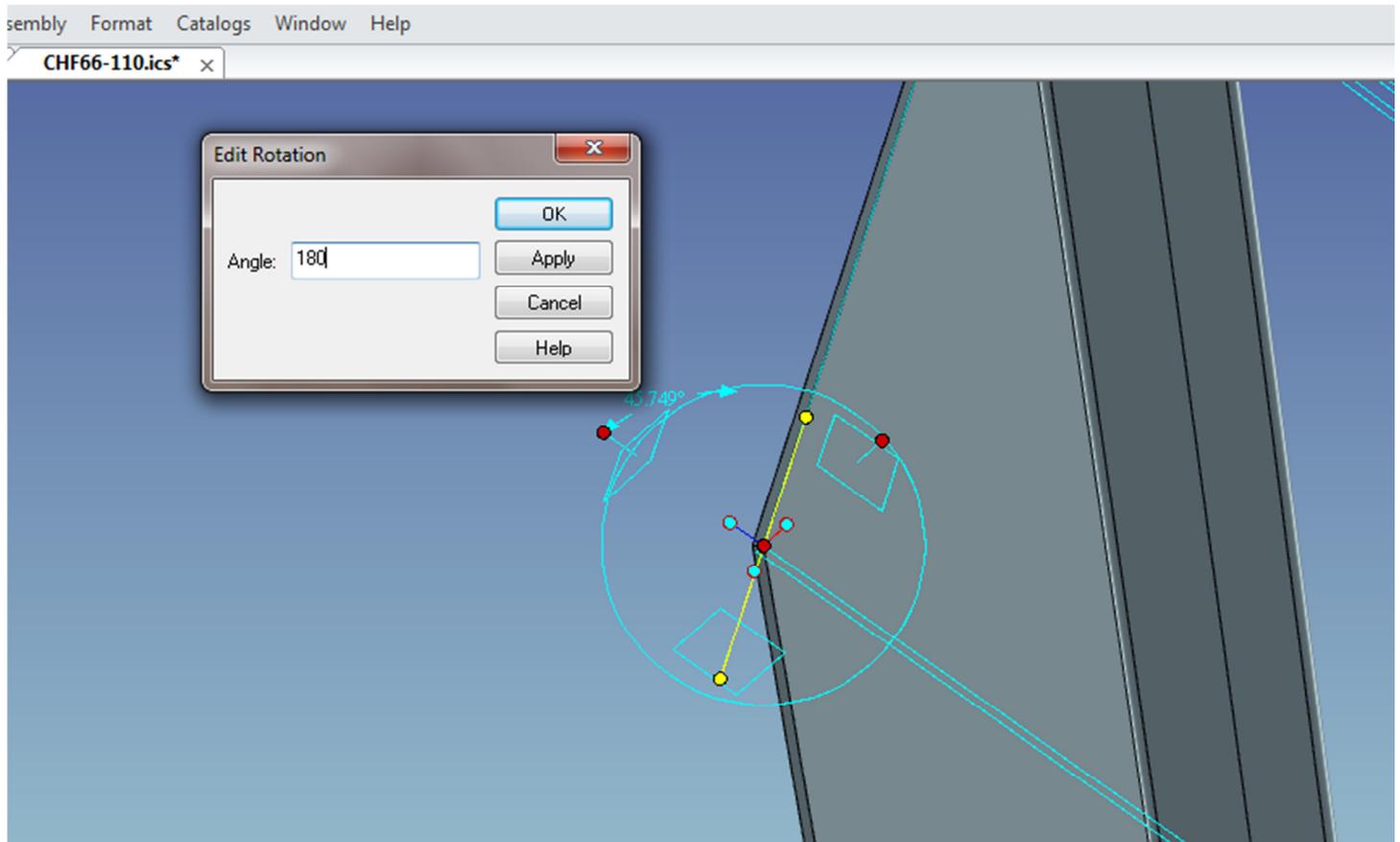
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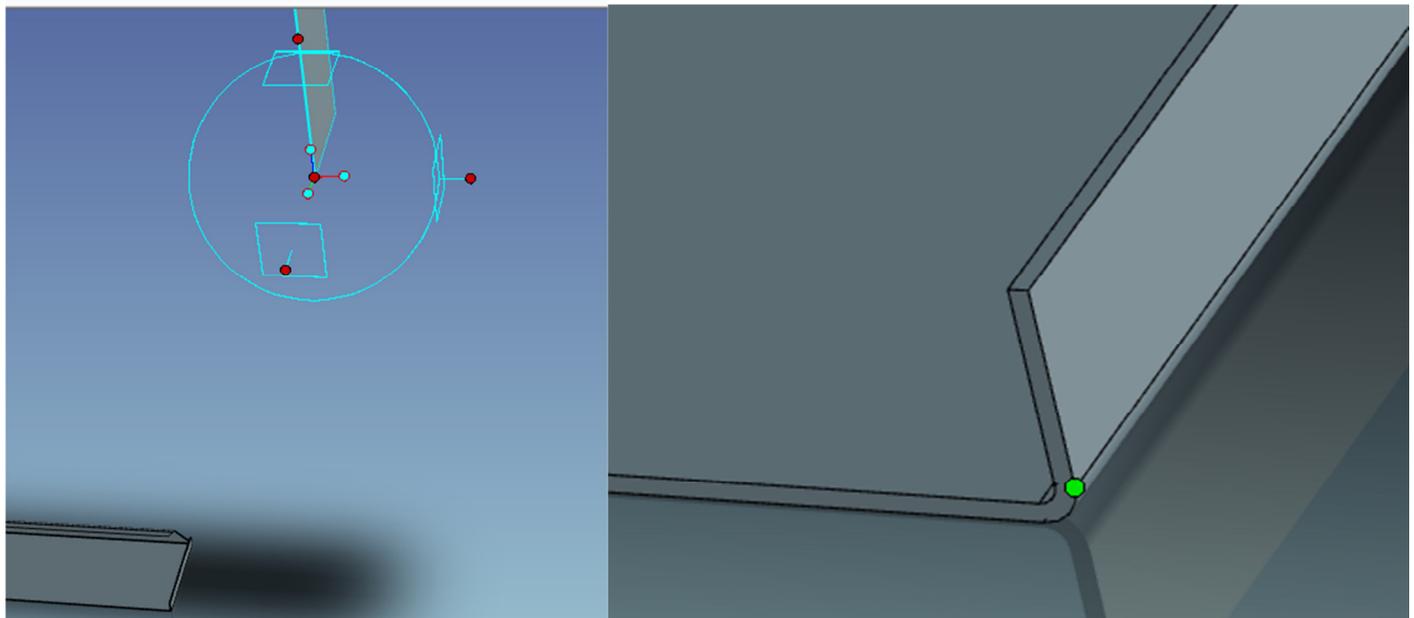
Refold. LMB on part and engage Triball. RMB on handle, drag and copy



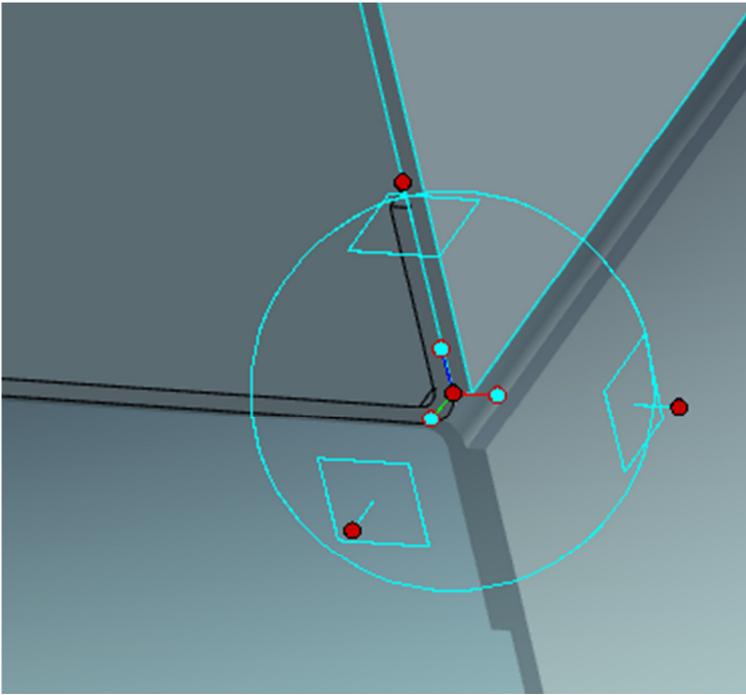
Engage Triball on copied part, hit space bar, Triball turns white, RMB middle node of Tribal, click 'Point' and select the point shown above. Hit space bar – Triball turns blue again.



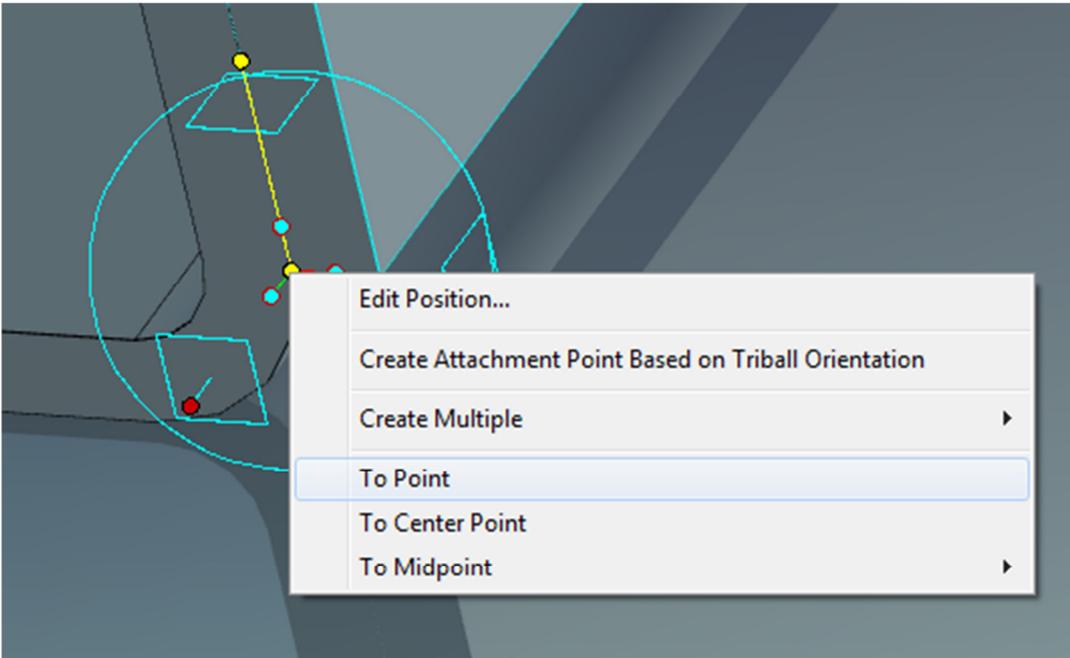
Select axis shown, and rotate 180 degrees



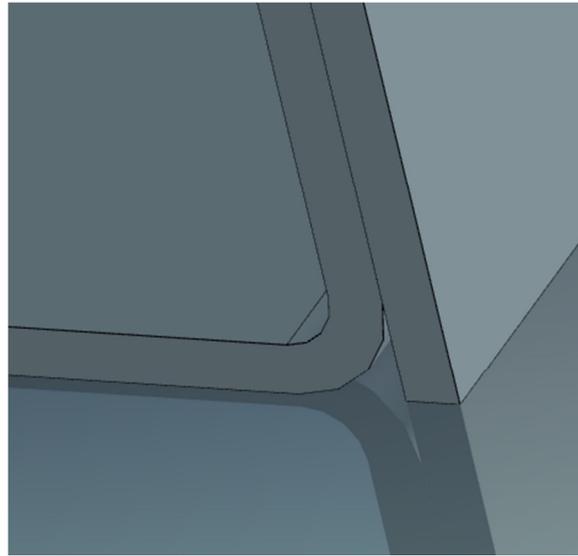
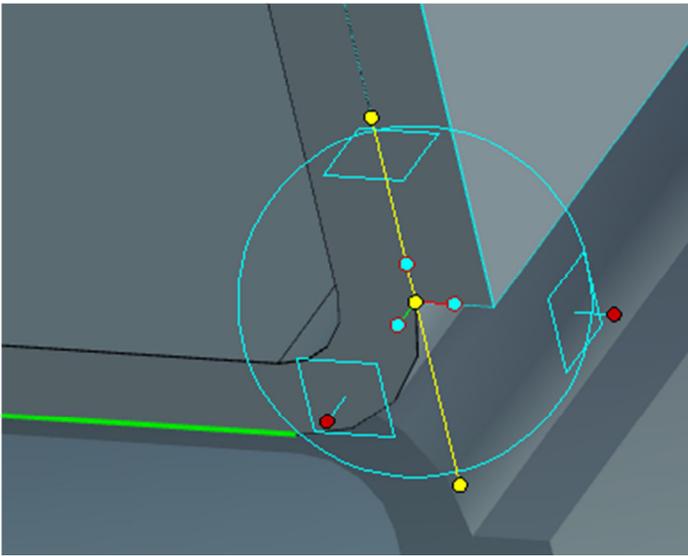
RMB on centre node, select 'To point' and select the point on the first part as shown.



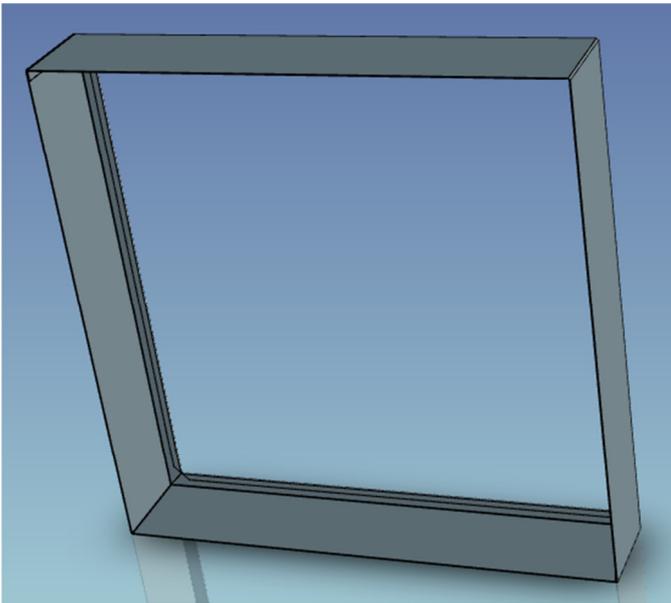
Result



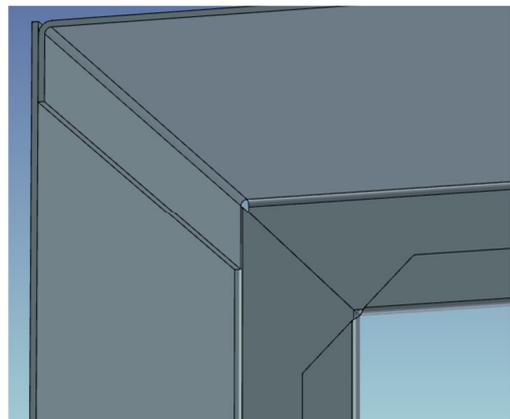
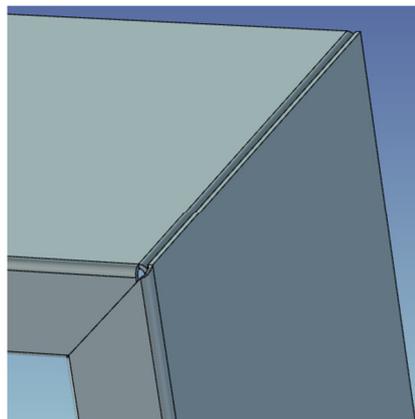
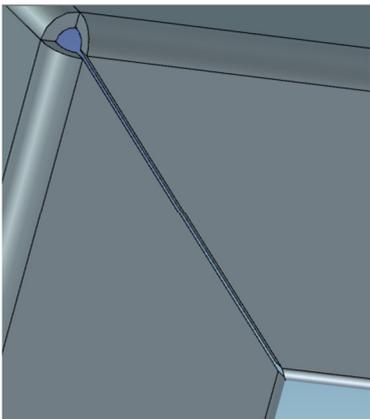
Select vertical axis. RMB on centre node, select 'To Point'

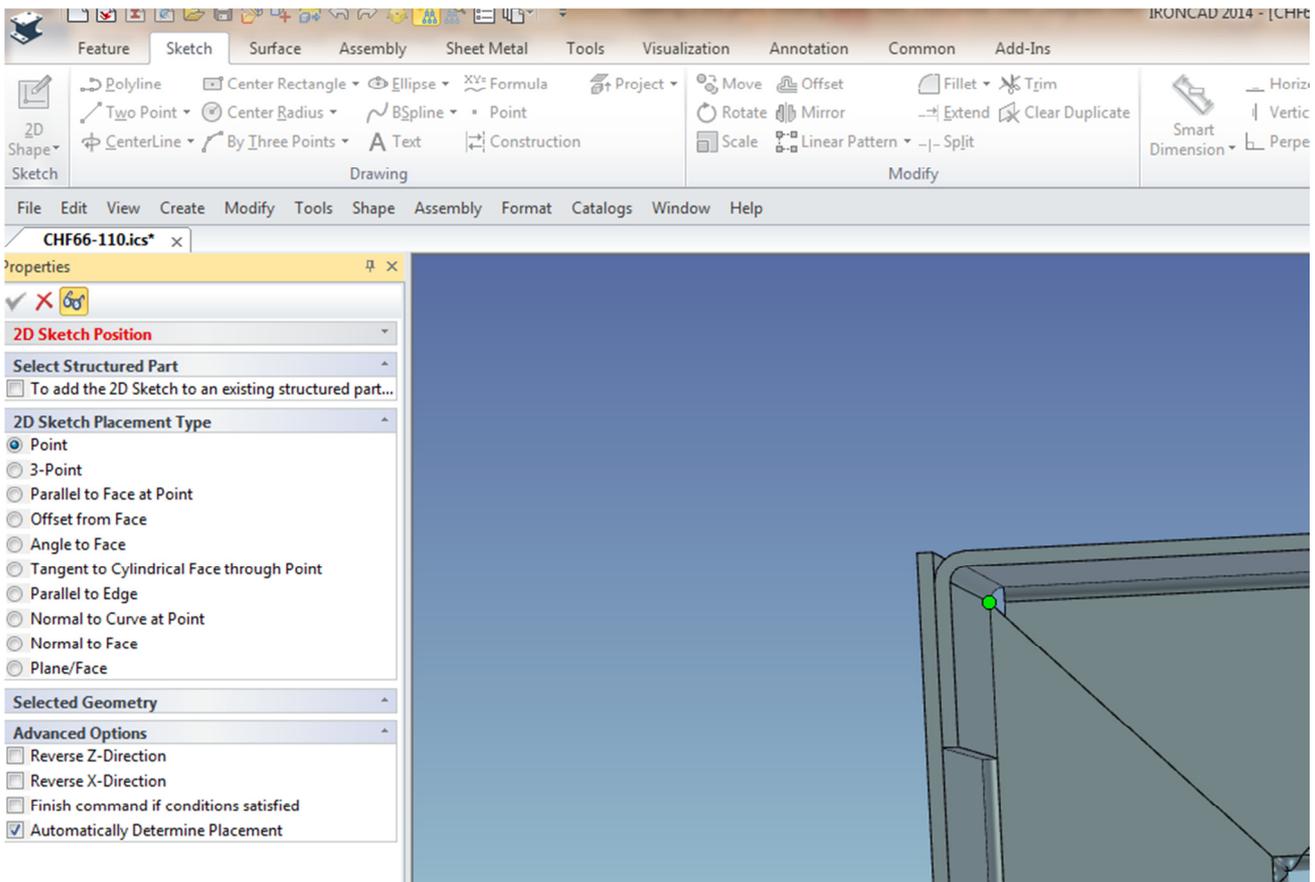


Select the bottom line of the first part.

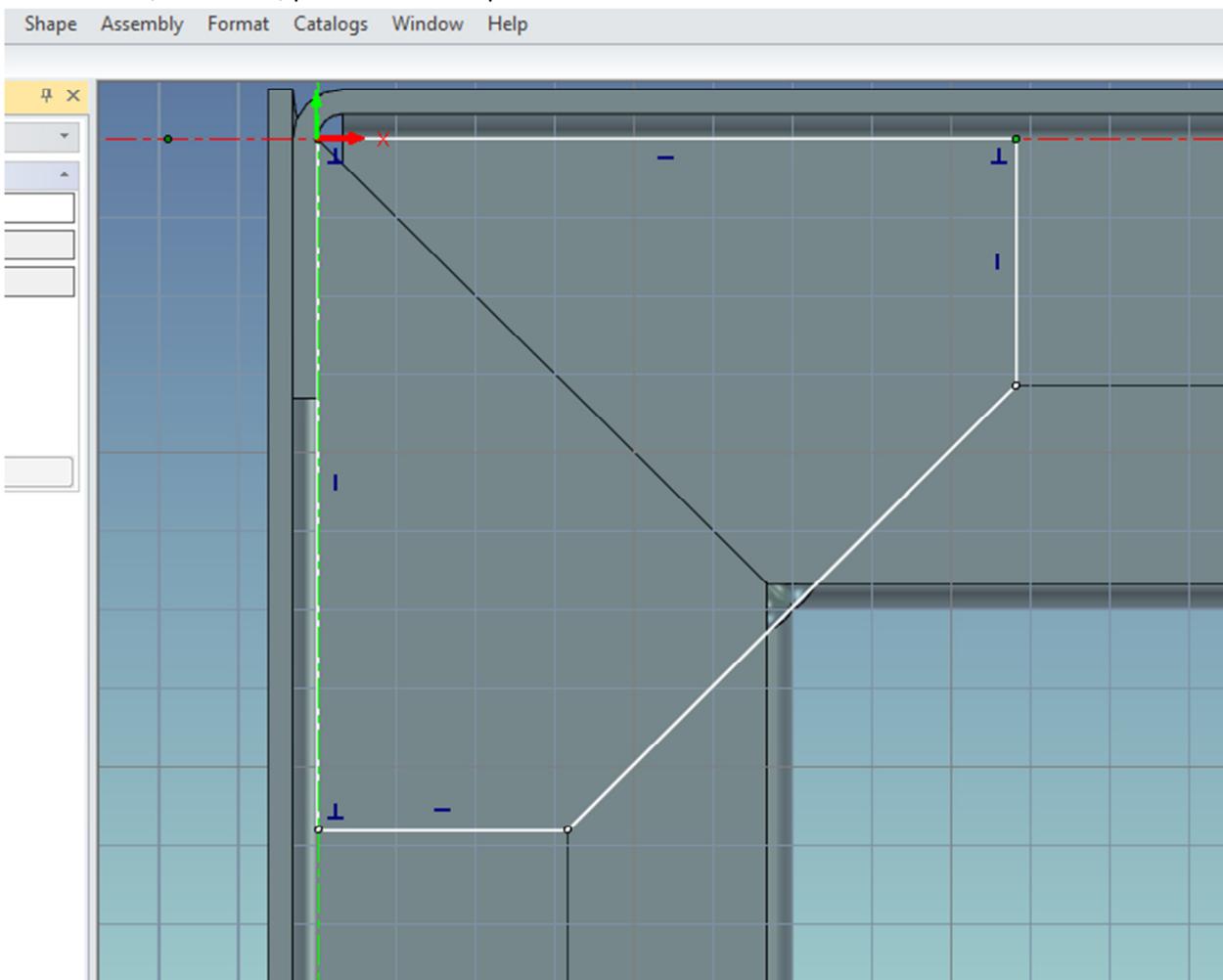


Result – a two piece frame.

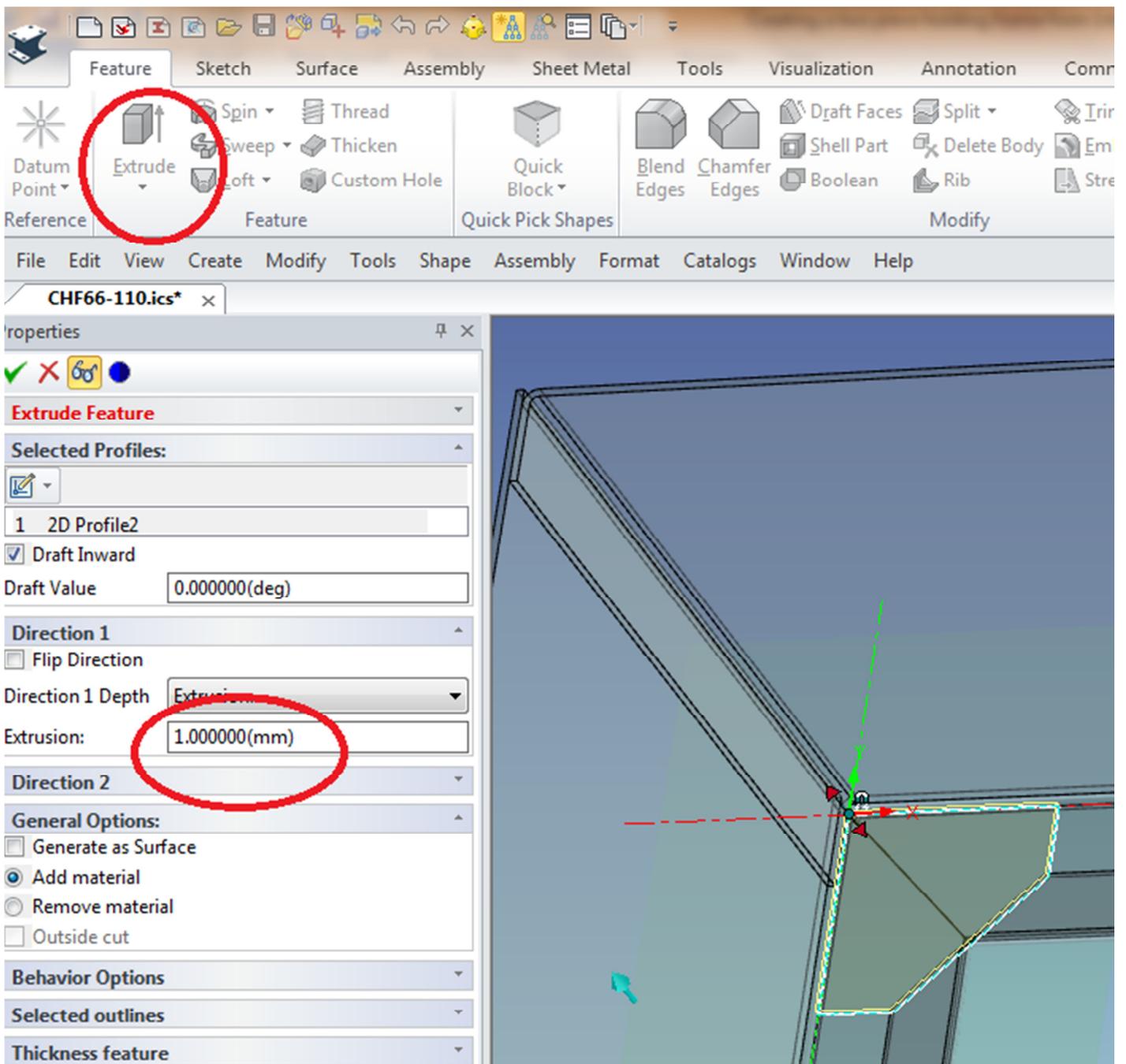




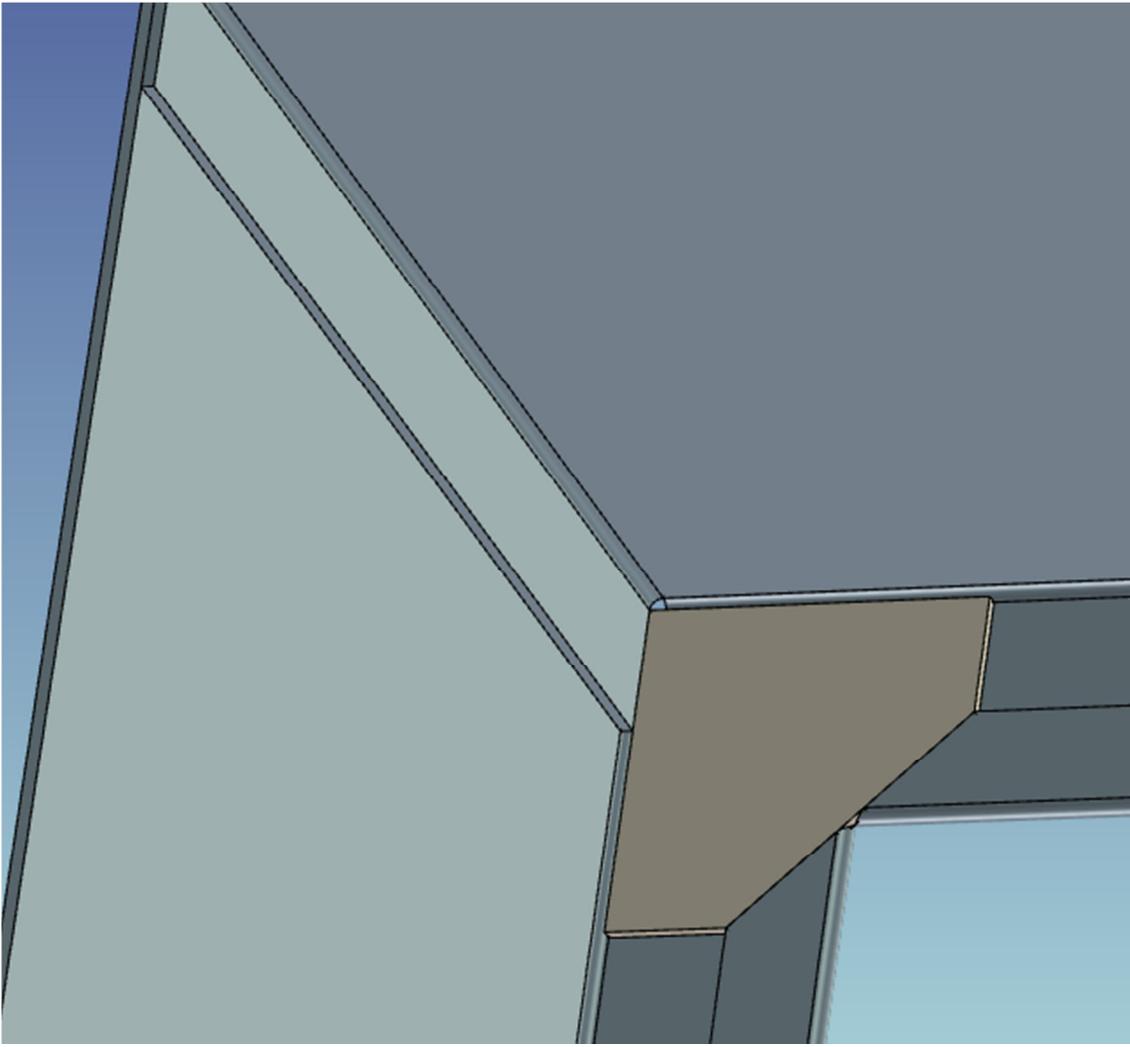
Corner stiffeners should be added. These spot weld into the corners to provide strength and evenness. Select Sketchmode, 2d Sketch, point and select point shown above



Draw shape shown. The 45 degree angle follows the line of the hem mitres



Select Extrude from Feature ribbon bar, Select Stand-alone part, set 'Extrusion' to 1mm – OK



Copy this part to the other 3 corners using the Triball

