

PROJECT 2: HANGING BRACKET

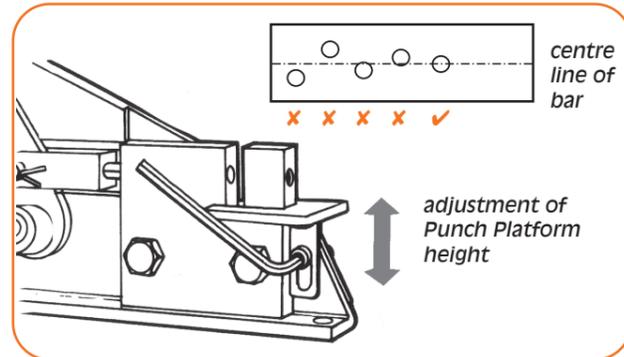
BEFORE STARTING this project read the instructions for the Practical Riveting/Bending/ Rolling (RBR) tool, the Practical Punch/Shear tool, the MK 1/2 Scroll Former & MK2/2(H) or MK2/3 Scroll Formers. The design project does not involve any Twists but for those with the Practical Twisting tool, we have shown some development ideas where twists can be incorporated. Read these instructions together with the accompanying Design Sheet before commencing the project.

Note that this design can also be created with the Master Punch/Shear, Master RBR provided you have a MK2/2(H) or MK2/3 Scroll Former.

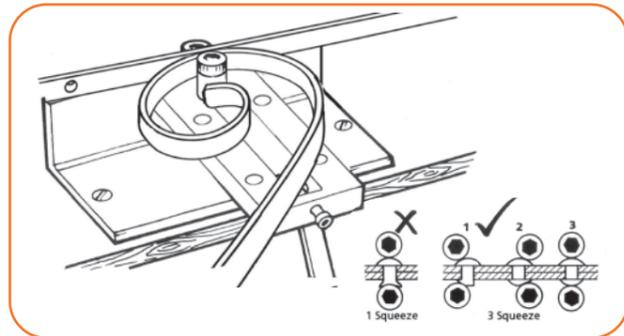
- 1** Take a 920mm (3ft) length of 15mm x 3mm (5/8" x 1/8") steel strip and 920mm (3ft) length of 20mm x 3mm (3/4" x 1/8") steel strip. Before cutting or bending them it is recommended that you use a cloth or abrasive paper to remove any excess oil, grease or scale from the strips.
- 2** Then take the 920mm (3ft) length of 15mm x 3mm (5/8" x 1/8") steel strip and mark a length of 450mm (17 3/4") using a fine tip marker pen or pencil. Use the Punch/Shear tool to cut a bar at the mark made. For a neater finish you can trim the corners off each end of the bar. This will be used to make the decorative strut (see Component 1 on the attached Design Sheet)
- 3** The remaining bar from Step 2, should measure approximately 470mm (18 1/2") if not trim to size and trim the corners on this also. This piece will be used to make the S scroll (see Component 2 on the attached Design Sheet)
- 4** Next take the 920mm (3ft) length of 20mm x 3mm (3/4" x 1/8") steel strip and mark a length of 350mm (13 3/4") using a fine tip marker pen or pencil. Use the Punch/Shear tool to cut a bar at the mark made and trim the corners. This piece will be used to make the back plate (see Component 3 on the attached Design Sheet)
- 5** Then take the 450mm (17 3/4") bar and using a fine tip marker pen or pencil, mark all the hole positions H1 & H2, bending positions B1 & B2 and scroll end positions S1 as shown on the attached Design Sheet for component 1) - Note if the line on the diagram is solid make the mark on one side of the bar and if the line is dotted put the mark on the reverse face.
- 6** Then take the 470mm (18 1/2") bar and using a fine tip marker pen or pencil, mark the hole position H2 and the scroll end positions S1 and S2 as shown on the attached Design Sheet for Component 2) - Note if the line on the diagram is solid make the mark on one side of the bar and if the line is dotted put the mark on the reverse face.
- 7** Now take the 350mm (13 3/4") bar and using a fine tip marker pen or pencil, mark the hole positions H1 and H3 as shown on the attached Design Sheet for Component 3).
- 8** Then place one end of Component 1 into the centre of the MK 2/2H Scroll Former (or MK 2/3 Scroll Former) and form a scroll in such a way that the S1 mark on the face of the bar will make contact with the scroll former's segment to signify when the scroll is formed. Repeat this at the other end of the bar ensuring the scrolls at each end face the same way.
- 9** Next place the "S1" end of Component 2 into the centre of the MK 2/2H Scroll Former (or MK 2/3 Scroll Former) and form a scroll in the same way as step 8. Repeat this at the "S2" end of the bar but remember to flip the bar over so that the scroll formed is an S scroll shape as shown in Diagram 2.
- 10** With a spare piece of material set up the Riveting/Bending/Rolling tool to bend an angle until you reach the angle shown (150 Degrees) - as shown in Template 1.
- 11** With the angle set correctly place Component 1 into the Riveting/Bending/Rolling Tool in the orientation shown below and bend at position B1. Then move along to the next bending position B2 and switch the bar round to bend in the opposite direction.

12 Then switch the bar around again and bend at position B1 and repeat this by switching the bar round between B1 positions on one side and B2 positions on the opposite face until all bends are complete on Component 1 and it resembles Diagram 1.

13 Next adjust the platform on the Punch/Shear tool so that it is ready to punch holes in 15mm x 3mm (5/8" x 1/8"). Take a small piece of spare material in this size and punch a sample hole. The hole should be on the centre line as shown in the picture below. If not adjust the punching platform height with the allen key provided on the adjustment bolt, either up or down (as necessary). Move the sample piece of bar and punch another hole to test if alignment is correct. When you have got the hole central tighten up the adjustment bolt.



- 14** Next take Component 1 and punch holes H1 and H2 and also punch hole H2 in Component 2.
- 15** Now using the same approach as described in Step 13, re-set the Punch/Shear tool to punch on the centre-line of 20mm x 3mm (3/4" x 1/8") and when this is done punch the holes marked H1 and H3 on component 3.
- 16** Next lay out the three components as shown in Diagram 3, and use a nut & bolt through hole H2 in Component 1 and H2 in Component 2 to temporarily hold the two components together. Similarly, join Components 1 and 3 together with a Nut & Bolt through the hole marked H1.
- 17** Mark on the edge of the components 2 and 3 the point at where they come into contact.
- 18** Then punch holes in both components 2 and 3 at the marks made, remembering to adjust the Punch/Shear platform for the different widths of bar (ref: Steps 13 & 15).
- 19** Then set up the Riveting/Bending/Rolling Tool for riveting by ensuring the two rivet posts are fitted and the Winding Handle (for rolling) is removed. Then in turn undo each nut and bolt fastening and replace with a 10mm x 3mm (3/8" x 1/8") rivet and use the tool to rivet the two pieces of metal together (as shown in the diagram below). Repeat for all remaining joints and repeat the whole process for the other angle and scrolls.



The finished bracket can now be painted in a wide variety of finishes (smooth, satin, hammer and metallic) either by aerosol or by brush application. Powder coating and plastic dip finishes can also be applied but these type of finishes are more for commercial/industrial scale finishing.



Starter Pack 2



PROJECT 2: HANGING BRACKET



Main Project



Alternative Project

However, even with aerosol or paint finish you can make your finished item look professional. In this case we used paints from the Plasti-kote and Hammerite ranges - available from most DIY and Painting/Decorating outlets. For best results, always follow instructions on the tin and make sure the metal is free of all scale, dirt, grease or rust.

The finished item, like any bracket is a versatile and highly useful object suitable for a wide range of applications such as Hanging Baskets, Bird Feeders, Lanterns & Lighting, Wind Chimes, Shelving etc.

In the section on the opposite page, we show how this basic design can be adapted to include other decorative features using other functions of Metalcraft tools. In addition, this simple bracket can be made to look much more elaborate by adding further scroll.

We have also provided below (and on the reverse side of the Design Sheet) a further or alternative project you can make with the materials provided in your Starter Pack. This is a simple two component variant which incorporates a rolled arch as a decorative feature.

ALTERNATIVE PROJECT: CURVED HANGING BRACKET

Before starting this project read the instructions for all tools needed to make this item and read these instructions together with the notes on the reverse side of accompanying Design Sheet before commencing the project.

- 1 Start by taking two 920mm (3ft) lengths of 20mm x 3mm (3/4" x 1/8") steel strip. Before cutting or bending them it is recommended that you use a cloth or abrasive paper to remove any excess oil, grease or scale from the strips.
- 2 Then take the first 920mm (3ft) length of 20mm x 3mm (3/4" x 1/8") steel strip and mark a length of 780mm (30 3/4") using a fine tip marker pen or pencil. Use the Punch/Shear tool to cut a bar at the mark made and trim the corners. This piece will be used to make the Arched Backplate & Hook (see Component 1 on the reverse of the attached Design Sheet)
- 3 Next take the second 920mm (3ft) length of 20mm x 3mm (3/4" x 1/8") steel strip and mark a length of 720mm (28 3/8") using a fine tip marker pen or pencil. Use the Punch/Shear tool to cut a bar at the mark made and trim the corners. This piece will be used to make the S Scroll (see Component 2 on the reverse of the attached Design Sheet)
- 4 Then take Component 1 - the 780mm (30 3/4") bar and using a fine tip marker pen or pencil, mark the Scroll Forming position S1 which is also R1 one of the rolling limits, R2 the other rolling limit and the fixing hole positions H1.
- 5 Similarly, take Component 2 - the 720mm (28 3/8") bar and using a fine tip marker pen or pencil, mark the Scroll Forming positions S2 and S3.
- 6 Then place the "S1" end of Component 1 into the centre of the Mk 2/2H Scroll Former (or Mk 2/3 Scroll Former) and form the beginning of a scroll in such a way that the S1 mark on the face of the bar will make contact with the scroll former's segment to signify when the scroll is to finish.
- 7 Then place the "S2" end of Component 2 into the centre of the Mk 2/2H Scroll Former (or Mk 2/3 Scroll Former) and form a small scroll in such a way that the S2 mark on the face of the bar will make contact with the scroll former's segment to signify when the scroll is to finish. Do the same with the "S3" end but remember to flip the bar over before forming the scroll in order to achieve an S shaped Scroll.
- 8 Then set up the Riveting/Bending/Rolling Tool for rolling by removing the two rivet posts and fitting the Winding Handle used for rolling. Place Component 1 in the tool at Mark S1/R1 with hook type scroll made in Step 6 facing you. Then apply gradual pressure on the lever (as shown in the Operating Instructions for the RBR tool) and use the winding handle to drive the metal bar through the machine but stop at position R2.

- 9 Apply more pressure with the lever and roll back again towards the hook and stopping at position R1.
- 10 Repeat this until you achieve a full and even semi-circle approximately 215mm (8 1/2") diameter between R1 and R2. (If necessary, after rolling you can tweak the shape by a bit of manipulation or bending in a vice in order to achieve the preferred shape, if it is not quite right).
- 11 Next lay out the two components as shown in Diagram 1, and make a mark on the top edge of each component where the large scroll of component 2 touches the curved inner face of the hook on Component 1. Likewise, make marks on the top edge of each component where the small scroll of component 2 touches the back plate of component 1.
- 12 Now set the Punch/Shear tool to punch on the centre-line of 20mm x 3mm (3/4" x 1/8") as shown in the main project and when this is done punch the holes in both components where they were marked in Step 11.
- 13 Then set up the Riveting/Bending/Rolling Tool for riveting by ensuring the two rivet posts are fitted and the Winding Handle (for rolling) is removed. Then place a 10mm x 3mm (3/8" x 1/8") rivet and use the tool to rivet the two components together at the two positions marked in step 11.
- 14 To complete the project, take the bracket back to the Punch/Shear machine and punch the two fixing holes at positions H1 on the backplate of component 1. The weight of the object to be hung from the bracket will dictate an appropriate size of screw fixing. If the fixing screws to be used are larger than the 3mm (1/8") diameter holes punched, you can use a larger punch size if you are using the Master Punch/Shear. However, if you only have the Practical Punch/Shear you can widen the hole by using a suitable drill.
- 15 ...and that is the project completed, ready for painting or coating as mentioned above.

We hope that these two Starter Projects have helped to teach you the basics of using Metalcraft tools to make simple practical and decorative metalwork.

Development Of Hanging Bracket

Once you have had a go at making the bracket idea shown here you can easily develop and adapt the idea.

For example, for those with one of our Twisting Tools, instead of the bent zig zag detail on the decorative strut you can of course put a twist in instead as shown here.



These simple brackets can be also adapted to act as temporary brackets as shown here. This one can hook over fence panels

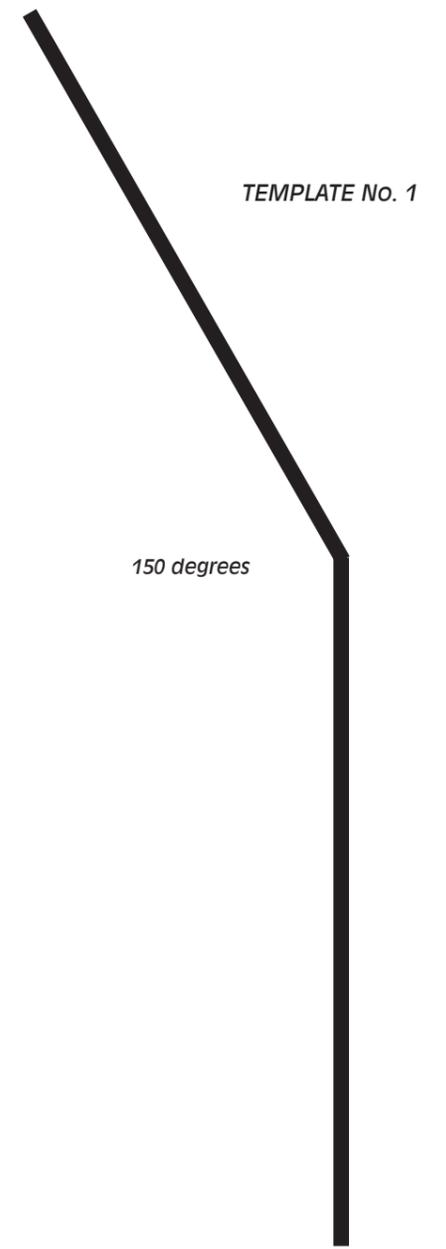
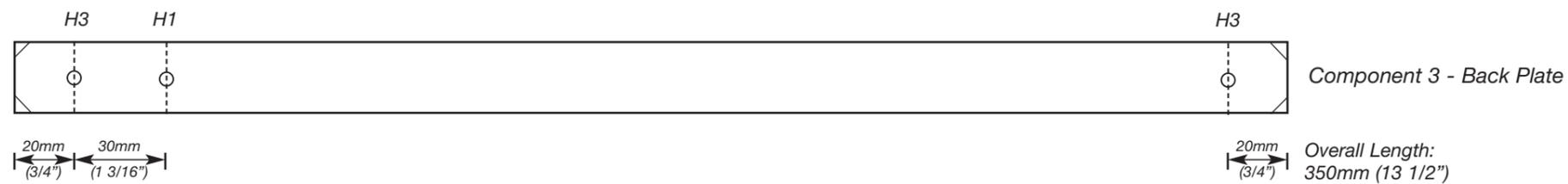
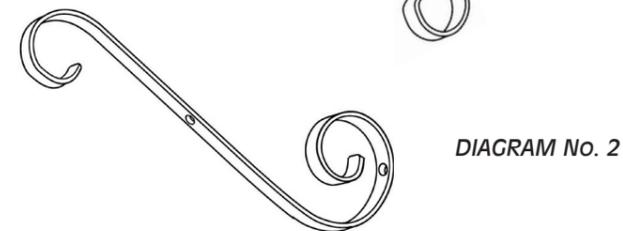
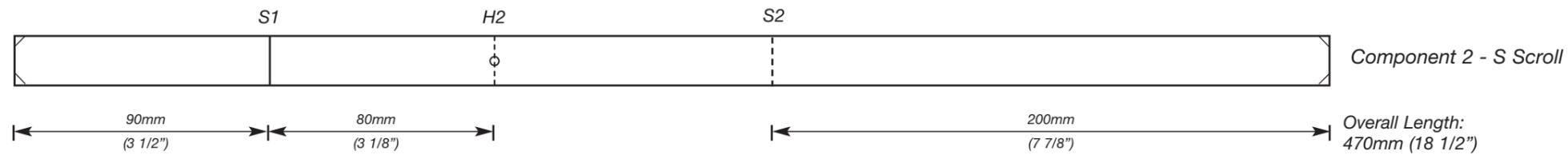
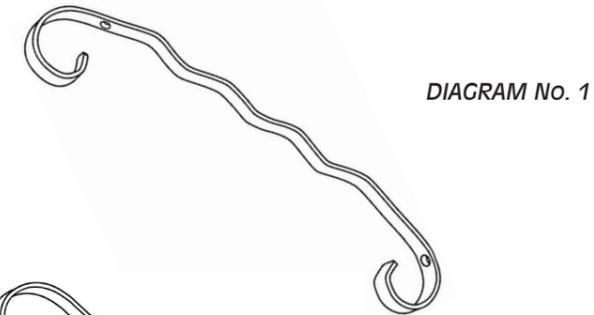
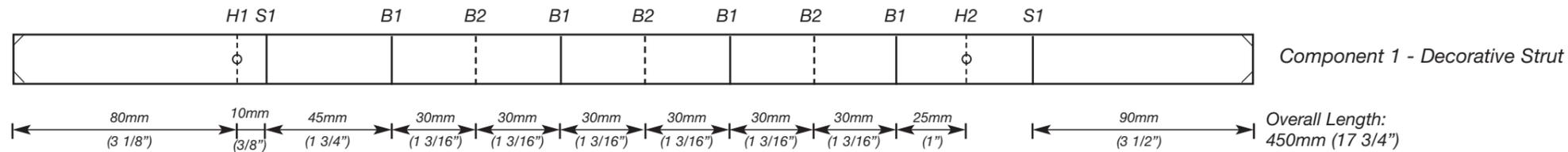


Alternatively, you can use curves between scrolls to make your bracket look classy or larger rolled sections as demonstrated by our alternative bracket project.

With a bit of imagination you can find creative ways to adapt your bracket in order to fix it onto surfaces where conventional screw fixings are impractical. The bracket in the picture below has been adapted to make use of and disguise unsightly concrete fence posts.



Starter Pack 2 PROJECT 2: HANGING BRACKET - DESIGN SHEET



List of Materials Required:

- 1 x 920mm (3ft) Length of 15mm x 3mm ($\frac{5}{8}$ " x $\frac{1}{8}$ ") Steel Strip [Re-Order Ref: MC037]
- 1 x 920mm (3ft) Length of 20mm x 3mm ($\frac{3}{4}$ " x $\frac{1}{8}$ ") Steel Strip [Re-Order Ref: MC039]
- 3 x 10mm x 3mm Rivets [Re-Order Ref: MC052L]
- 2 x 10mm x 3mm Nuts & Bolts [Re-Order Ref: MC060L]

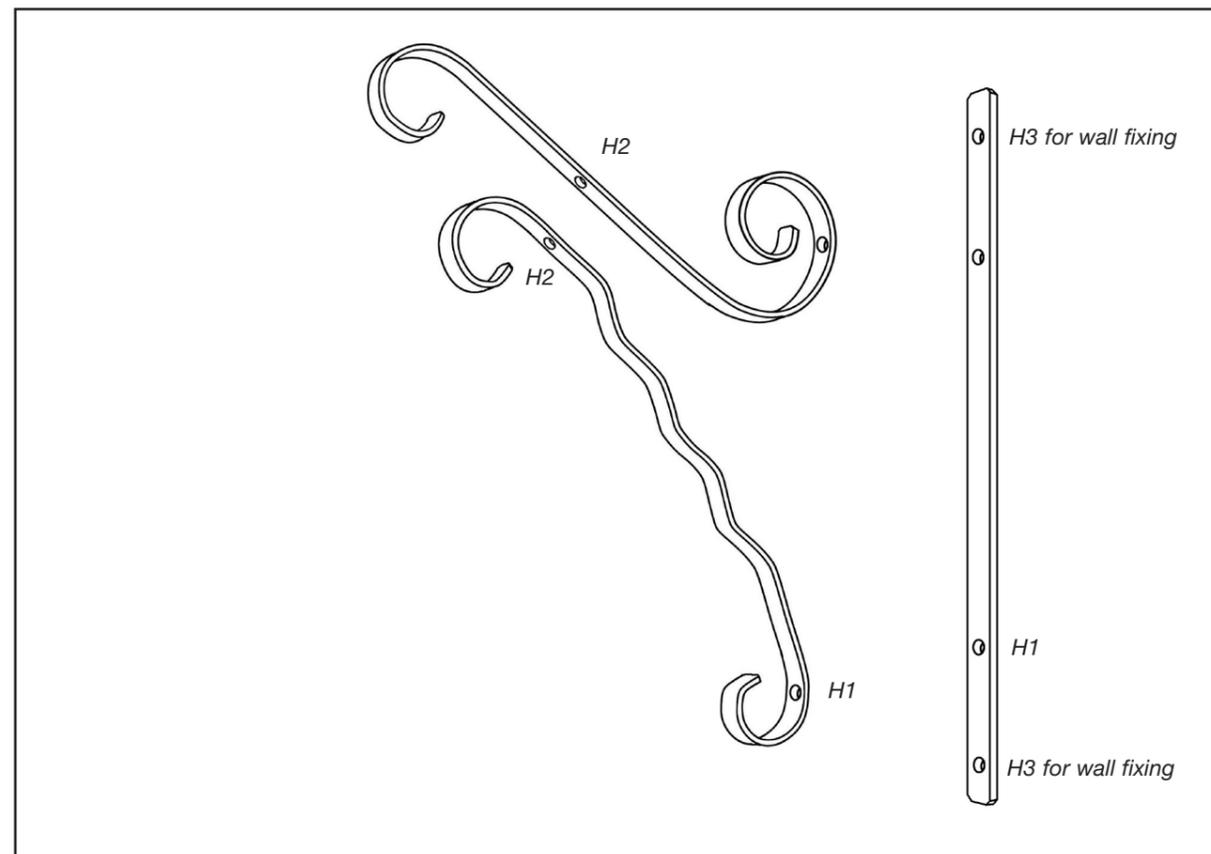
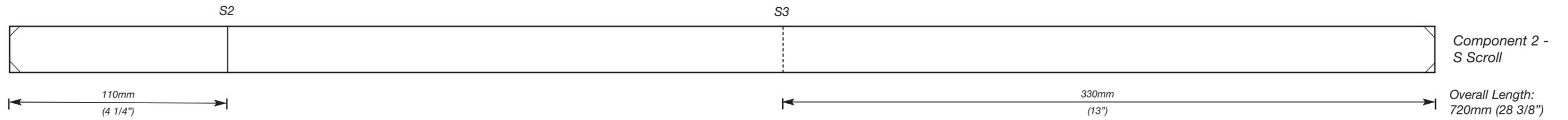
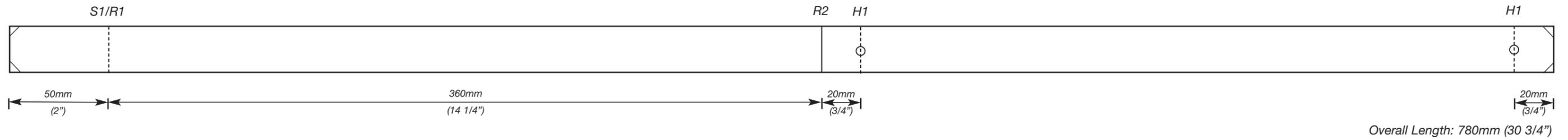


DIAGRAM No. 3

Starter Pack 2 PROJECT 2 (ALTERNATIVE): CURVED HANGING BRACKET - DESIGN SHEET

Component 1 - Arched Back & Hook



List of Materials Required:

2 x 920mm (3ft) Length of 20mm x 3mm ($\frac{3}{4}$ " x $\frac{1}{8}$ ") Steel Strip [Re-Order Ref: MC039]

2 x 10mm x 3mm Rivets [Re-Order Ref: MC052L]

