THE ACADEMY

BLACK RAVEN ARMOURY

PATTERNS

TRIBESMAN BODY

WWW.BLACKRAVENACADEMY.COM

About the Tribesman Body

Choose a suitable pattern for your body size. It is very useful to have a duct tape dummy or mannequin available, to be able to form the armour and get a good fit.

The Consumables

Vegetable Tanned Leather

For the majority of parts we suggest something around the 9oz (or 3.5mm thick) veg tanned leather. For SCA armour we would recommend 12–13oz (5mm) leather, or you can use the thinner 9oz leather and laminate it to the required thickness (*see below*). In this case we suggest an additional heavyweight suede or a leather split in around 6oz (2mm).
You will need 65x38 inches (164x95cm) of this thickness. For the buckle and strap ends 6oz (2mm) leather is ideal. You will need a piece 12x15 inches (30.5x37.5cm).

Tools

These are the basic tools you will need to complete the build:–

Knife or scissors to cut out the pieces • hole punch • rivet setter • anvil • edge beveller • stitch groover • mallet • needles • sharp knife or sandpaper • wire wool for antiquing.

Rivets

Choose a complementary finish in the following sizes:–
20 x 12mm rivets • 130 x 10mm rivets • 8 x 7mm rivets.

For SCA Armour – where you have thicker plates – or if the plates have been laminated before assembly, we recommend using solid burr over rivets.

Buckles

Choose a complementary finish (we have used brass) – 8 x ¾ inch buckles.

D-Rings or Decorative Brooch/Buckle

Choose a complementary finish (we have used brass) – 2 x decorative brooch buckles.

Thread

Choose a thread colour complementary to your dye – a heavyweight thread is recommended to take a lot of wear and tear.

Dye

Whatever colour you prefer.
Also something to seal the surface; clear wax, dubbin or similar to give a more weather-proof finish.

Glue

We use a high-strength contact adhesive suitable for leather.

Laminating to Achieve SCA Thickness

As noted above, for SCA armour you can use the 9oz (3.5mm) leather and laminate it to the required thickness, using a heavyweight suede or a leather split in around 6oz (2mm thick).

To laminate you can either laminate each panel before joining them together, or – and this is our preference – after joining the panels together and before adding the straps and buckles.
Use a good contact adhesive and use plenty of it, as leather tends to suck in any liquids including adhesive. So don't apply in a thin layer.

Place the panel or group of panels onto the backing material and draw around leaving a ¼ inch (6mm) overlap of backing all around. Cut the backing to shape.

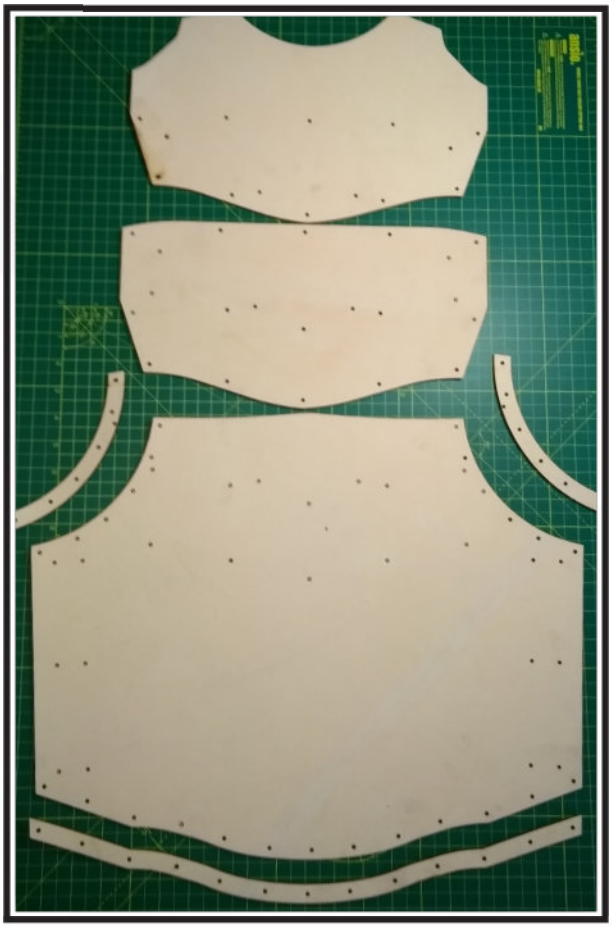
Apply contact adhesive to both the backing and the panels following the manufacturer's instructions, then join the two together. Start in the middle of the panel and work to the edges to prevent air pockets.

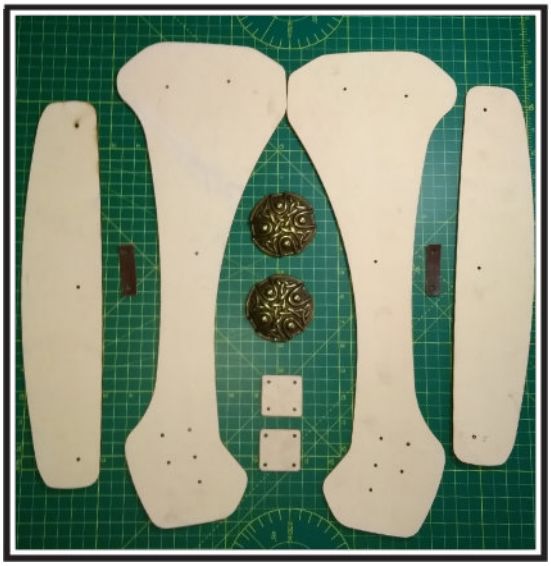
Add some weight to keep the panels and backing pressed tightly together then leave for 24 hours.

Use a very sharp blade to trim the backing to the edge of the panels. Finally finish the edges on the rear with a bevel and/or sand lightly to get a smooth finish.

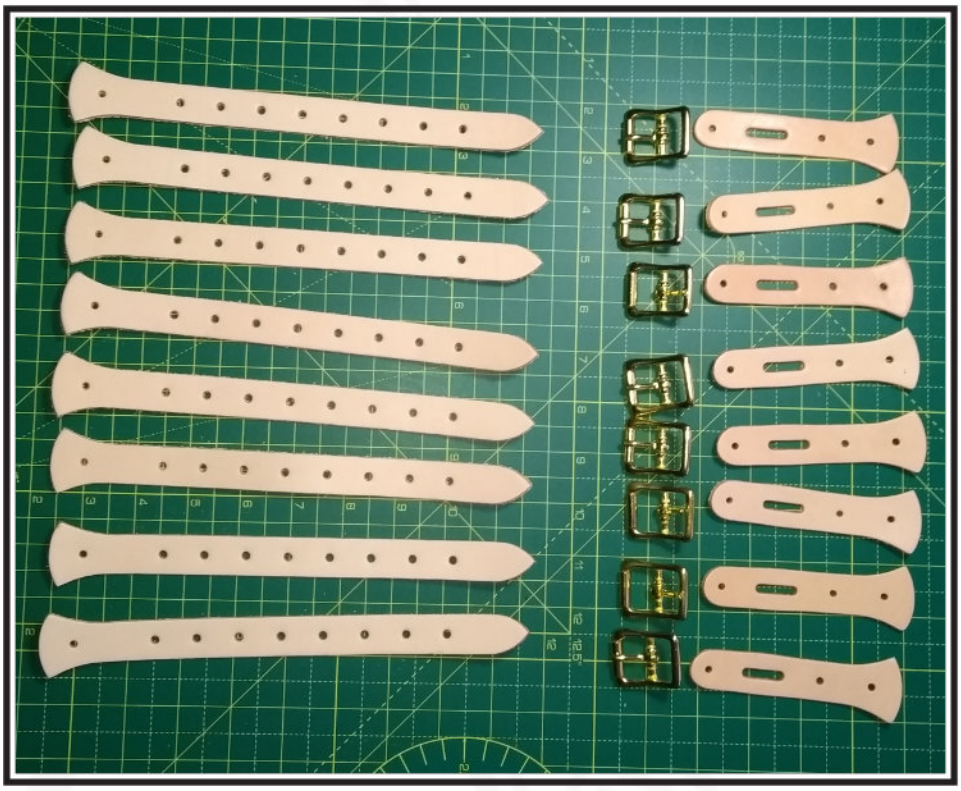
Building the Body

Start by cutting out all the parts, edge bevel and smooth the exposed edges. This is also a good time to do any embossing or tooling work, whilst the pieces are still laid out flat.

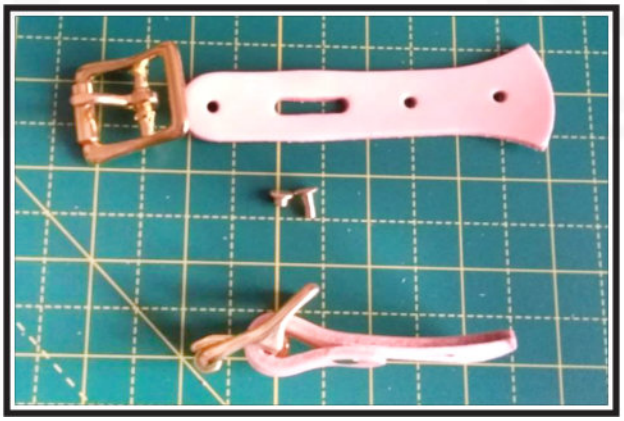


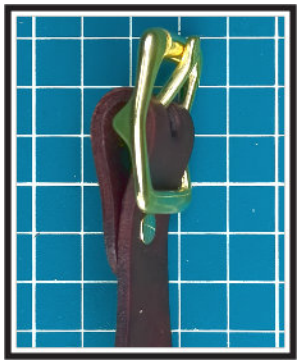


shoulder parts include 2 small square pieces, 2 connecting pieces and 2 large decorative brooch buckles.



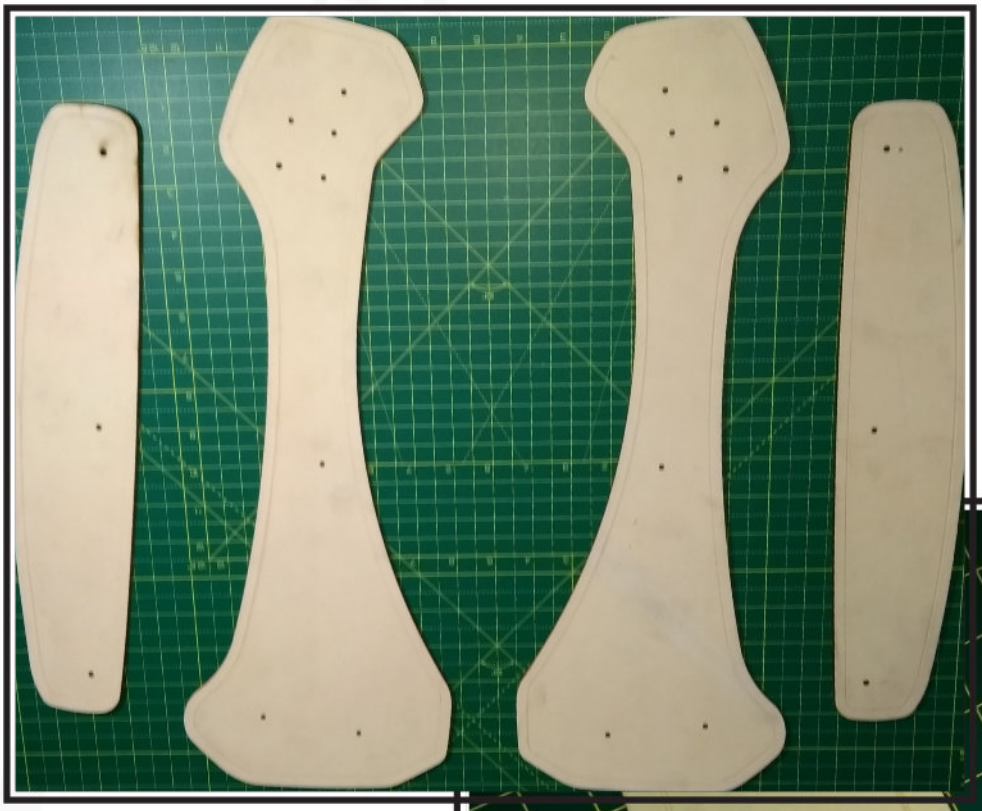
- 8 x body length straps
- 8 x ¾″ buckles
- 8 x buckle straps



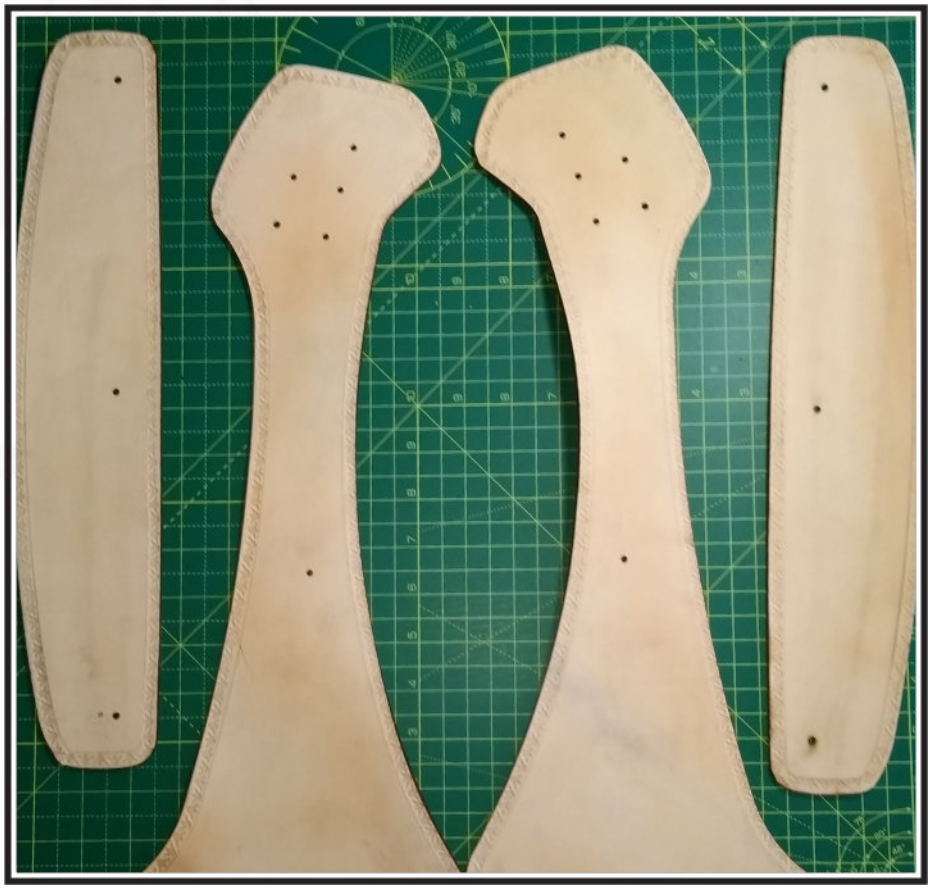


Attach buckles to the buckle straps using 7mm rivets.

Locate the main shoulder pieces. Using a stitch groover set at 8mm, groove around all the edges.

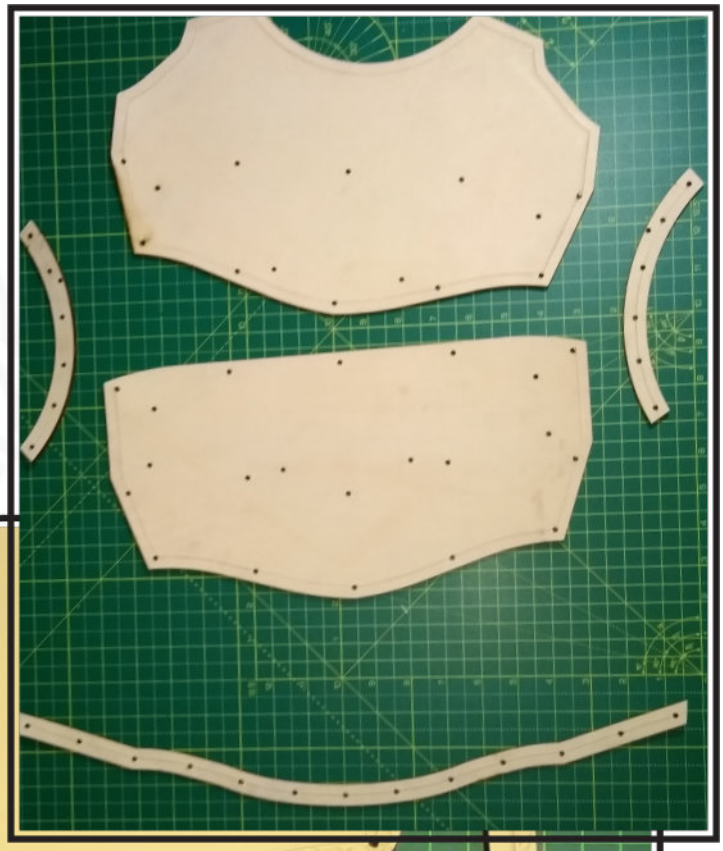


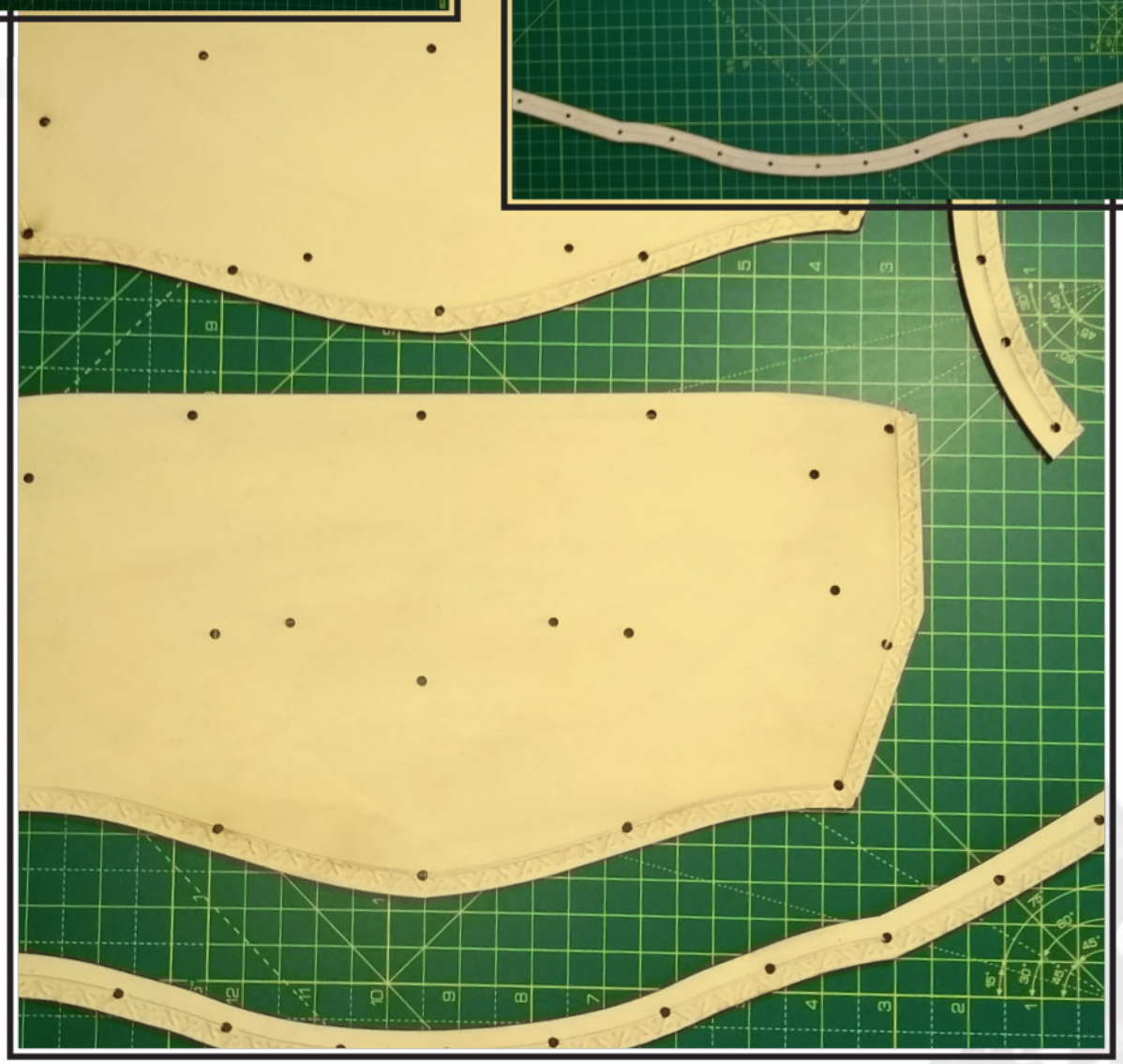
Add any decorative stamping to the pieces as preferred, between the outer edge and the stitch groove. Be sure all the edges are bevelled.



Edge groove and stamp the back pieces shown below in the same way as the shoulder pieces.

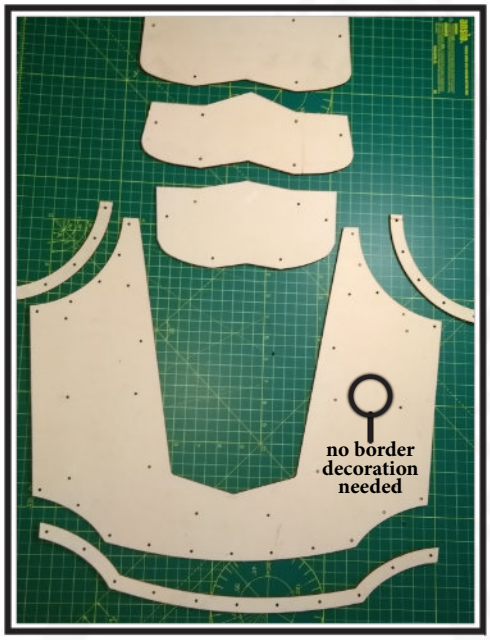
N.B. the large lower section of the back does not need grooving or border decoration –as always though, make sure that all edges have been bevelled.





Decorate the front pieces shown below in the same way as the other pieces, using a stitch groover, decorative stamp and edge beveller. This is also a good time for any tooling or embossing work on the upper front / chest sections.

N.B. again, note that the large lower front section does not need grooving or border decoration.



Stain the Parts

If you've not yet dyed the pieces, now would be a good time to do so. Staining before construction means that any glue used will not act as a mask, preventing the stain getting to the leather should it squeeze out the edges anywhere. It will also ensure any overlapping parts have full coverage of dye.

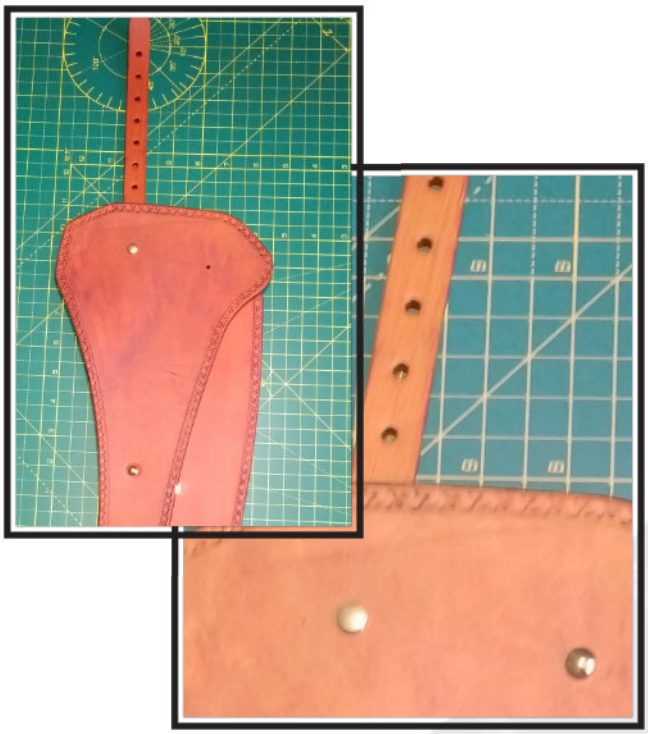
We typically use 3 coats of stain with lighter colours and 4 coats with darker colours.

After each coat is dry, buff with a cloth to remove any excess stain sitting on the top surface.

Constructing The Body

Locate the shoulder pieces. Using a 10 mm rivet, fix the small piece of connecting leather to the centre holes as shown:-

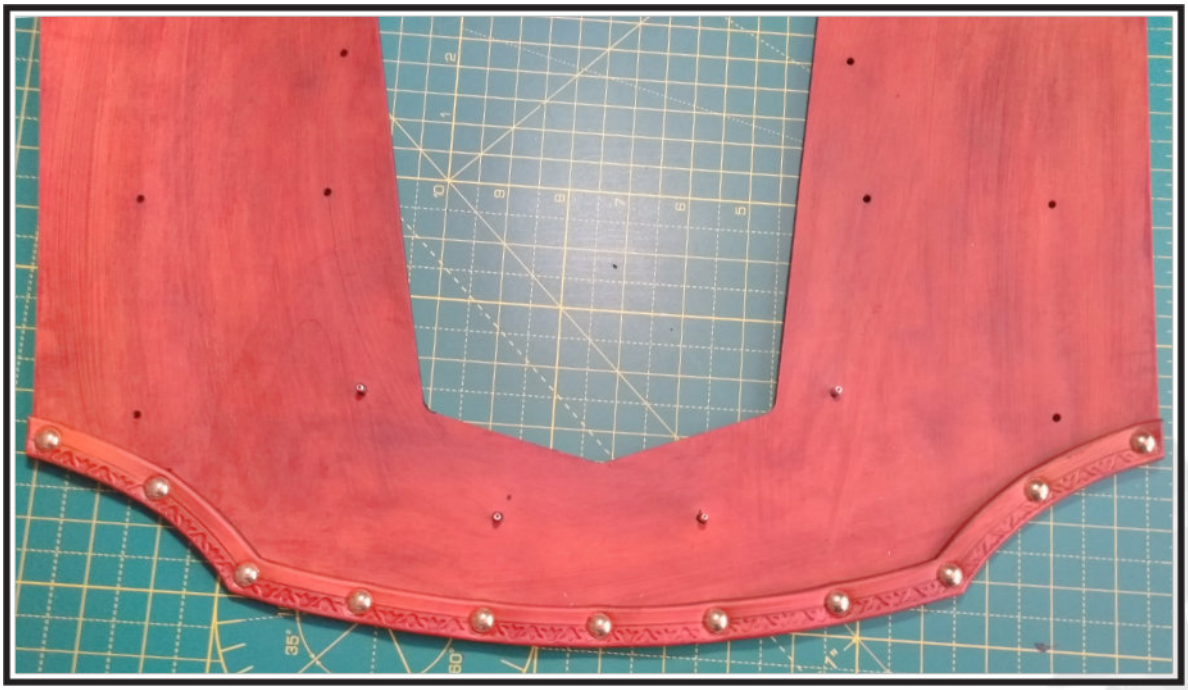
Add the strap to the shoulder using a 10mm rivet as shown.



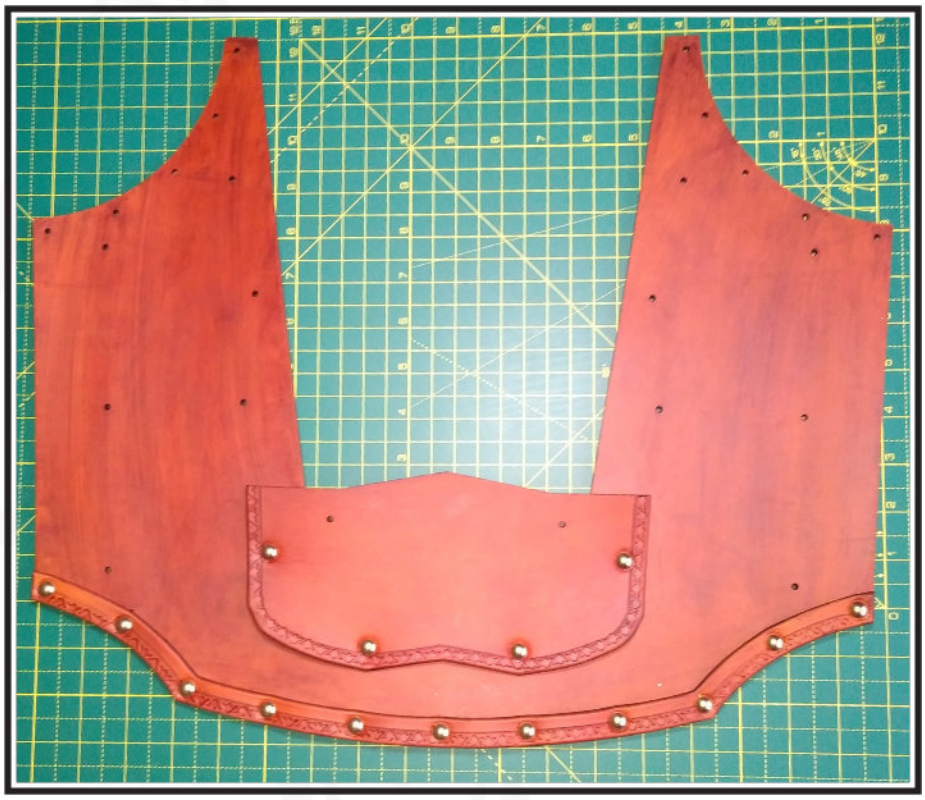
Attach the small square piece to the shoulder using 1x 10mm rivet (2 layers of leather) and 1x 12mm rivet (3 layers of leather). Fix on the decorative buckle and finish attaching the square using 2 more 10mm rivets.

Using 10mm rivets, attach the front overlay to the upper front chest piece.

Use 10mm rivets to attach the bottom decorative overlay as shown below:-



Next use 10mm rivets to attach the lowermost front centre part to this main body section as shown..

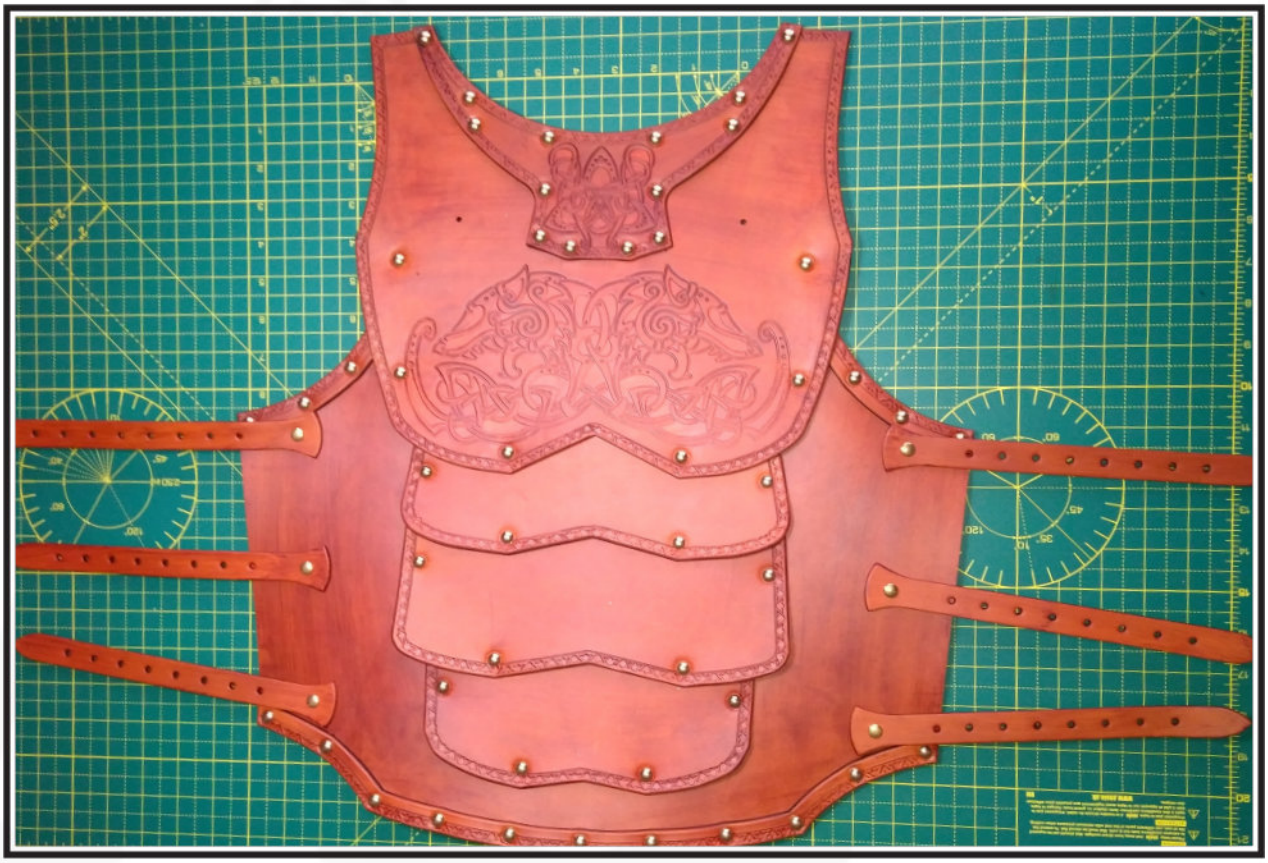


Then attach the next piece up to the main body front, still using 10mm rivets.

Attach the next piece up using 10mm rivets again, then attach the armhole pieces using 10mm rivets (use flat caps on the 4th hole up) – *DO NOT* rivet the top hole yet though.

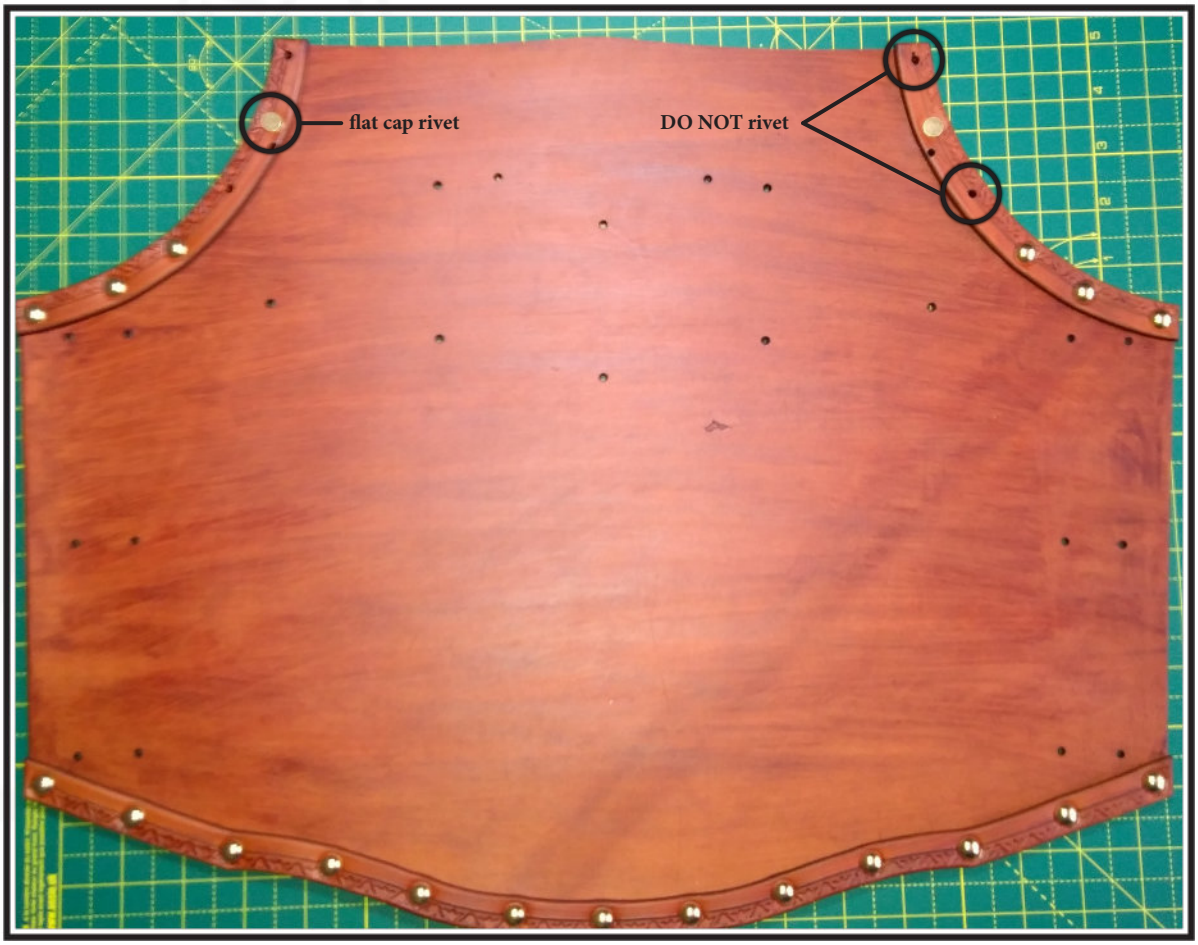
Use 10mm rivets to connect the top and bottom sections as shown.

Attach the body straps using 10mm rivets.

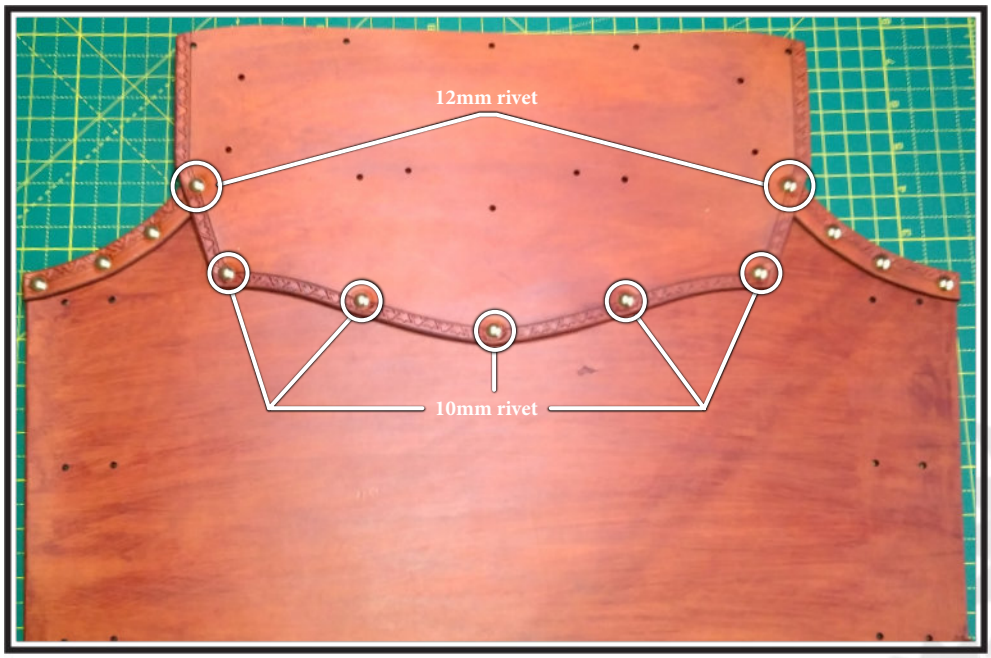


Now for the back –use 10mm rivets to attach the bottom decorative overlay to the main back piece.

Attach the armhole overlays to the main back body using 10mm rivets as shown below –use flat cap rivets on the 5th hole up, *DO NOT* rivet the 4th and 6th holes yet.

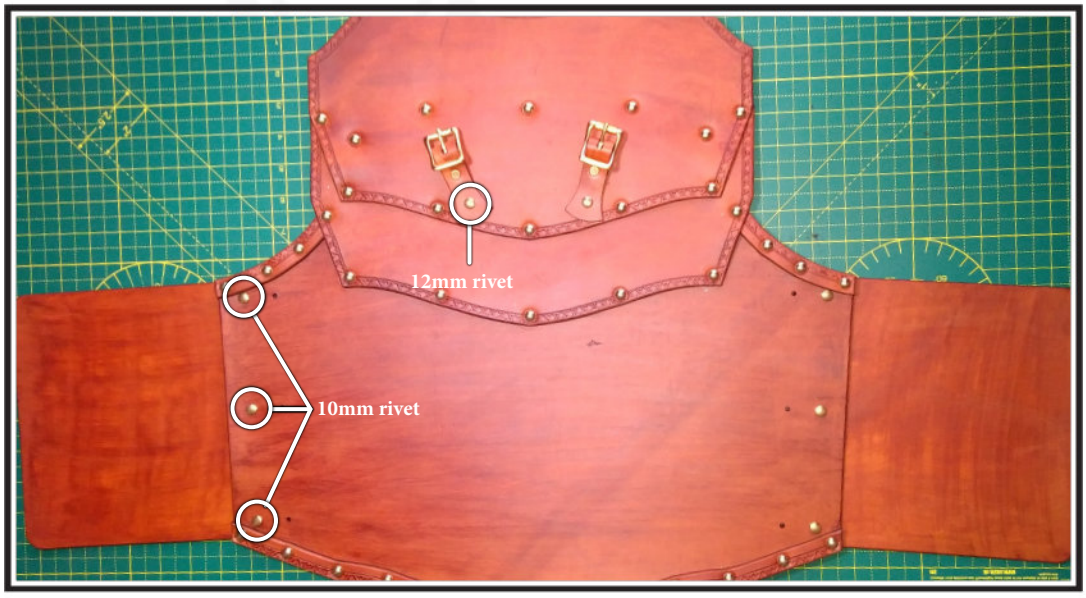


Add the next piece as shown –use 10mm rivets when fixing through 2 layers of leather, and 12mm rivets for 3 layers of leather.



Add the next piece as shown, again using 10mm rivets for 2 layers of leather and 12mm rivets for 3 layers of leather.

Add the shoulder buckles using 12mm rivets and add the side gussets using 10mm rivets.

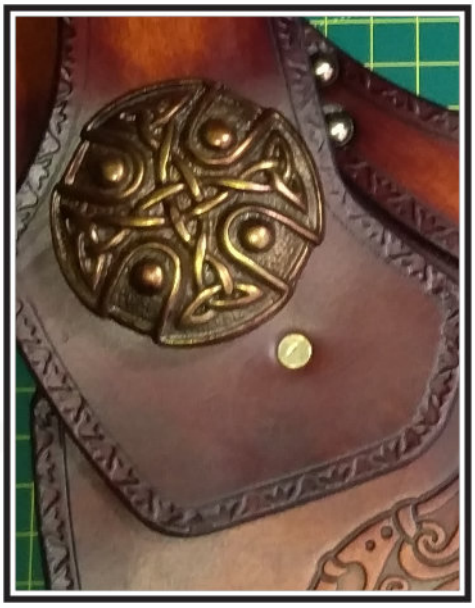


Finally, attach the side buckles using 10mm rivets.

Apply Antiquing, Seal & Assemble

To seal, we use *Resolene,* which is an acrylic surface sealer. When applying Resolene you can use an airbrush, but the simplest method just requires a cheap paintbrush and a small amount of damp kitchen towel. Apply Resolene evenly and gently with a brush –if you get any bubbles on the surface, gently dab them with the kitchen towel. Bubbles can actually set solid, which you don't want. Pay particular attention to the surface of any embossed areas and the junctions between two or more panels – also the edges of rivets.

Add the shoulders to the front body using 10mm rivets



PATTERNS

CONSTRUCTION TECHNIQUES

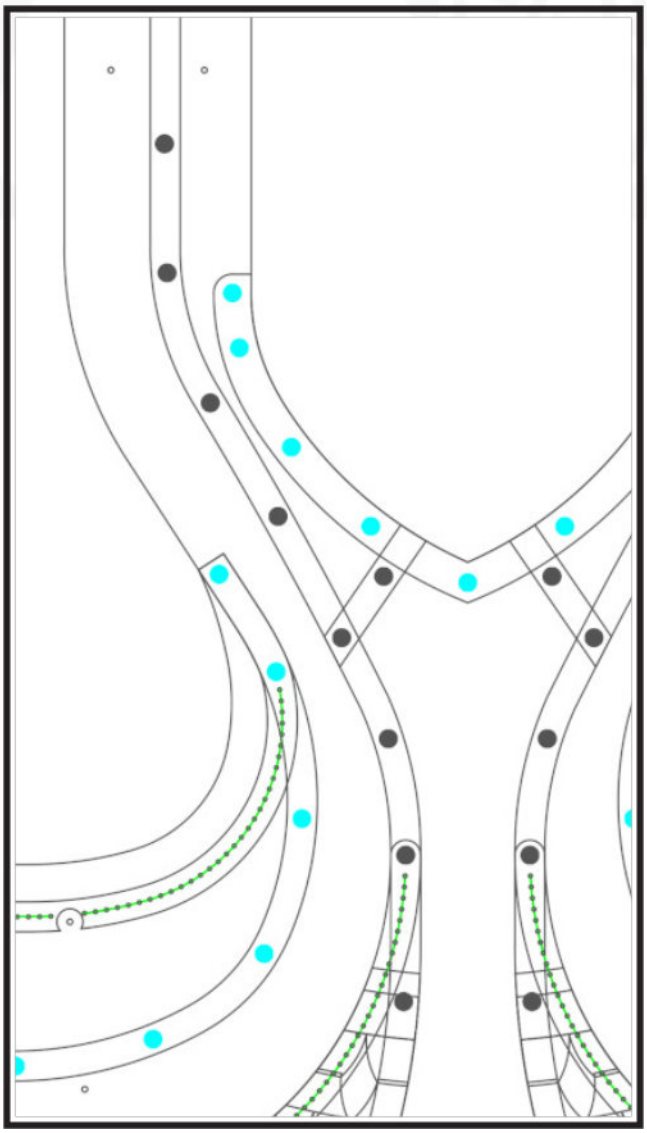
Construction Techniques

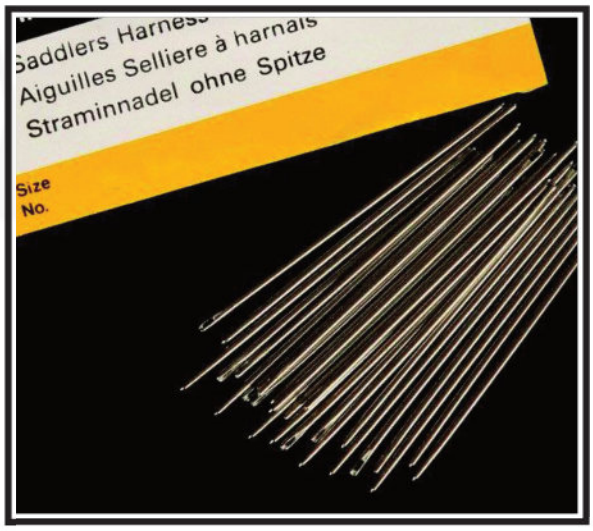
Making the stitch holes

For the larger holes such as those required for grommets we suggest a set of punches, but for the smaller rivet holes and especially the stitch holes these can be hard to achieve in heavier leather. It's perfectly acceptable to use an electric drill to form these holes; if you have a drill press you can ensure absolutely vertical holes, but even without such a press a steady hand and a small drill (Dremel or similar) will do a great job.

Stitch holes for heavy thread should be roughly two and a half times the diameter of the thread, so for example 0.7mm thread needs a 2mm hole to allow for the needle and two lots of thread for saddle stitching. Should you only need a single line of thread, something about 1.5 times the thread diameter is fine, but always allow for the needle size.

It is also acceptable to drill the rivet holes – typically we use a 3mm (⅛th inch) hole for almost all our rivets save for a few really large ones.





Saddle Stitching

Saddle stitching can be done with a single needle, or as illustrated below using two needles. The aim is the same, which is to tightly lock two or more layers of leather to each other.

To use a single needle draw half the thread through and feed the thread backwards and forwards to form half the stitches. Then put the needle on the other end of the thread and do the other half of the stitching. Knot the two ends together on the rear of the leather.

WHEN BROKEN, THE SADDLE STITCH LOOSENS ON ONE SIDE OF THE MATERIAL ONLY.

THE OTHER THREAD CONTINUES TO HOLD THE MATERIAL FIRMLY TOGETHER.

Blunt Needles

Working with the heavier thicknesses of leather means using blunt needles. Whilst with thin leathers the needle makes the hole and guides the thread through it, with heavier leather you make the holes in advance by awl, punch or drill – the needle simply helps you guide the thread through each hole, so blunt needles that don't dig into either leather or fingers are what you need.

Sewing bag & Pouch gussets

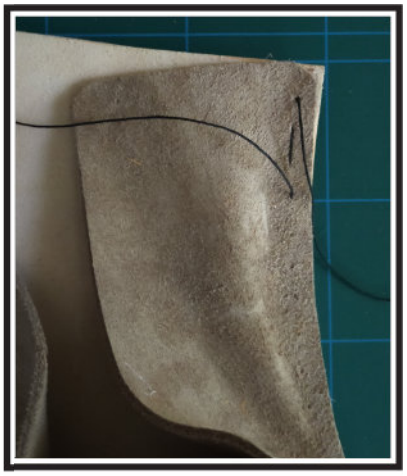
Start off by cutting out the various parts and adding the stitch holes.

It's a lot easier to stitch the gusset if you hold it in place first, either using contact adhesive or a strong double-sided tape. Here we've applied double-sided tape to the back face of the leather.

Now stick the suede gusset into place. We used some toothpicks to help align the holes.
NB. with complicated shapes such as this, it is often easier to prepare half the length of stitching at a time.

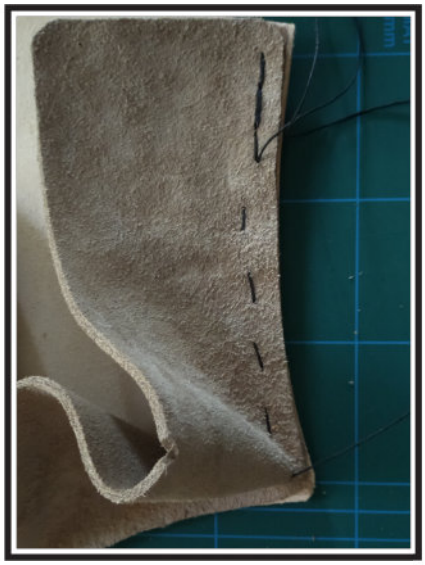
Now start sewing. Start the stitching 4 or 5 holes from the end (if you start at the end you create a weak point where the knot will be right at the point where the greatest stress occurs). You want to cut a length of thread about 4 times longer than the distance you will be sewing – this allows for the fact that you will be going out and back along the stitch line, reinforcing each end, and for the thickness of the leather.

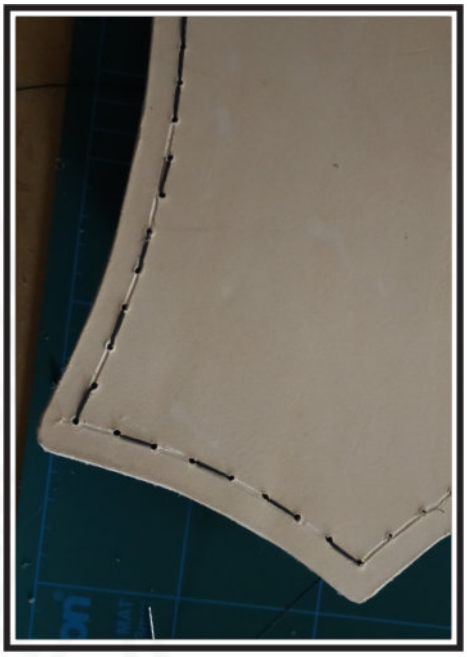
We have used a large stitch for illustration purposes here, so you can see what needs to be done. The final stitch length, however, is personal choice.



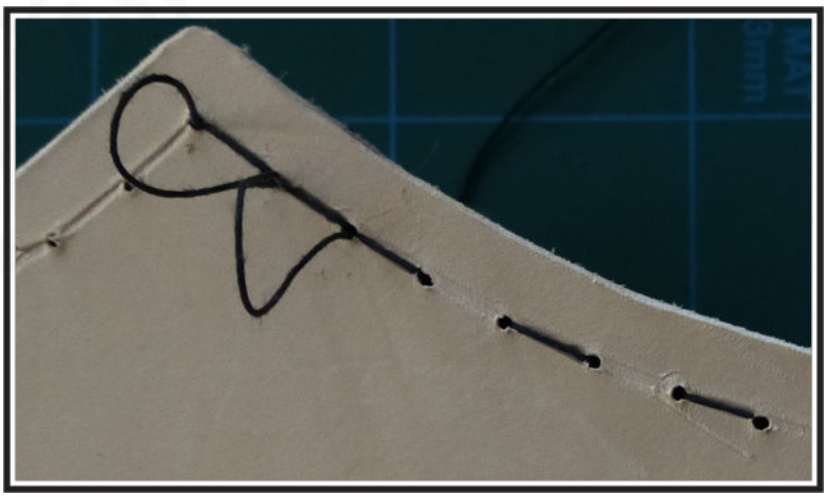
Stitch up to one end. Now for the end three holes you will put two stitches through each, to reinforce the end before going back towards the point where you started : think of it as two 'figure of 8's' of thread..

Carry on sewing down to the first change in direction, ensuring the thread is kept really tight as you do so.



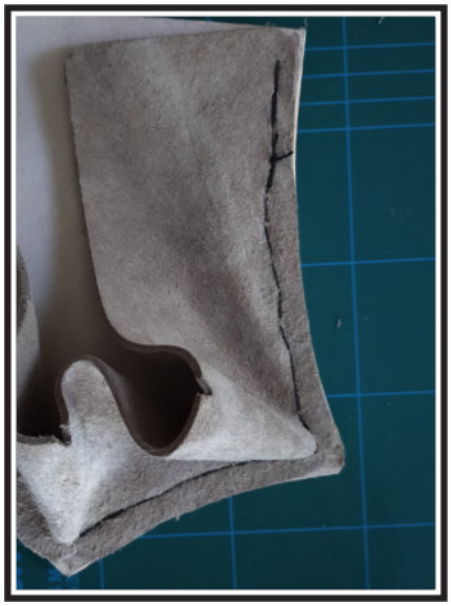


At the change in direction, the notches in the gusset will allow you to smoothly turn the corner and carry on your stitching to the mid point of the gusset



At the midpoint we again reinforce the stitching with two stitches through each of the end three holes, forming another pair of 'figure of 8's'. By only going halfway, we can reinforce the points on the gusset that have the greatest stress, so making it less likely the bag will fail.

Now return to one hole beyond where you first started and then tie off the two ends of the thread. Briefly apply a lighter or match to the cut ends and the knot, to remove any fraying and soften the thread around the knot. Then push the knot into the leather with a metal object. The heat of the flame plus the force from the metal object (a blunt knife or screwdriver work well) will stop the knot coming undone.



Don't leave the knot in the flame too long, or it will catch fire and you will have to do the stitching again..

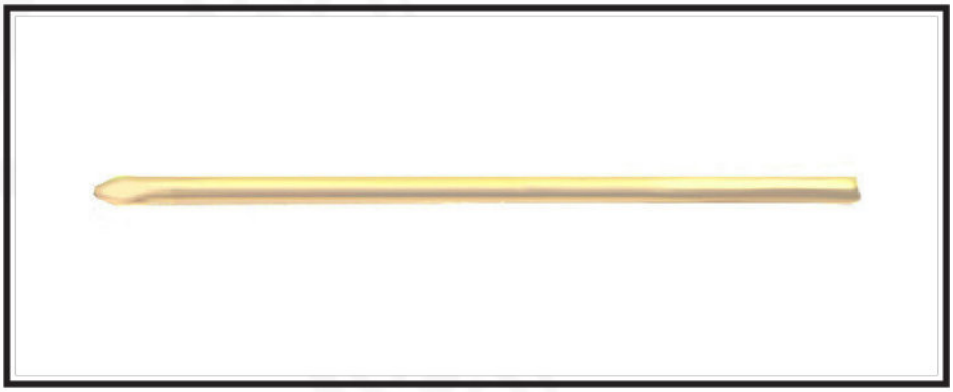
Repeat for the other half of the gusset – then do this all over again for the other side of the gusset – and you will have a really strong gusset in your bag.

Latigo Lace

Latigo lace stitching requires special needles, there are typically two types:

Perma Loc Needle

The *Perma Loc* Needle is a hollow cylindrical shape, you twist the latigo lace up and push it into the needle. The needle has a thread on the inside which prevents the lace from simply pulling out



Loc Eye Needle

The *Loc Eye* Needle (also called the 'two prong' needle and the 'hook and eye' needle) requires you to trim the end of the lace to a point. The rear of the needle is split and you feed the lace between the split legs of the needle, then tap the end with a mallet, locking it into place with a tiny hook that is inside one of the legs.

Working with eyelets, grommets and rivets

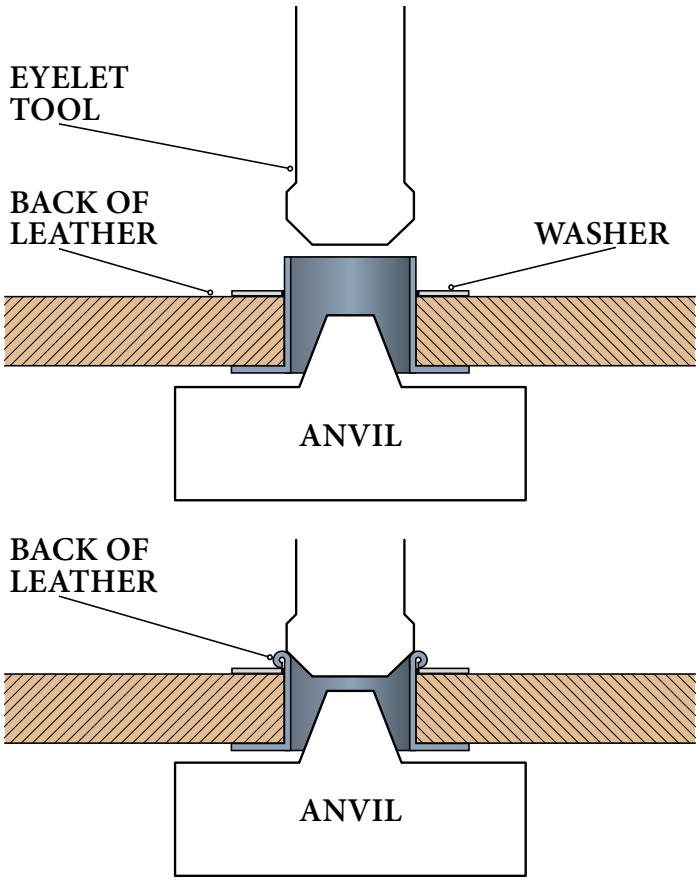
When working with hammer-set eyelets, grommets and rivets it is very important that you have a solid surface to hammer on to. Not everyone has access to an anvil, but a small steel plate at least 1cm or ⅜th inch thick will make a good surface to hammer on. It is also important, however, that this surface is placed on something that won't move: Don't put it on a lightweight table or bench which has any sort of give in the surface as you will find that the rivets will not set neatly. A solid surface is what you need – this can be a solid work table, a kitchen unit (secured to wall and floor) or even a concrete floor, though working on the floor makes it harder to hammer.

Setting eyelets and grommets

A grommet is essentially an eyelet with a backing washer. To set one you need an eyelet setter, which comes in two parts, an anvil and a hammer tool.

You will need one to use on ¼ inch grommets and eyelets.

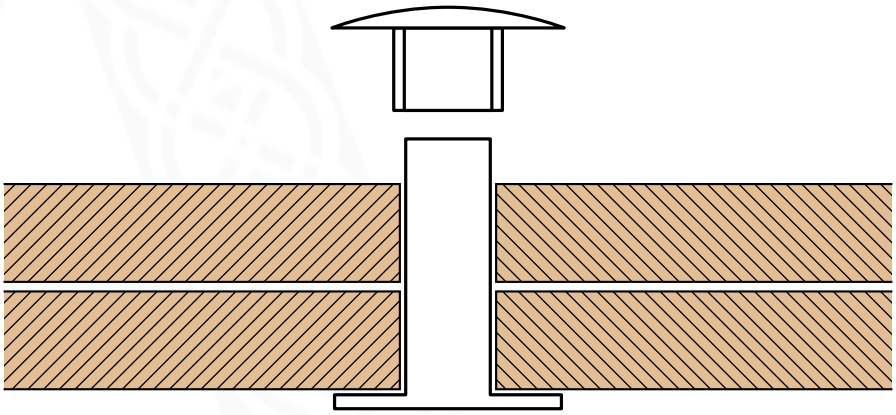
To use, push the eyelet through the leather from the front face then add the washer to the back and lay over the anvil as shown below. Place the hammer tool against the back of the eyelet and tap down with a hammer, use light blows to gently roll down the eyelet over the washer. If you use heavy blows you will tend to split the eyelet rather than roll it down.



setting eyelets & grommets

Riveting

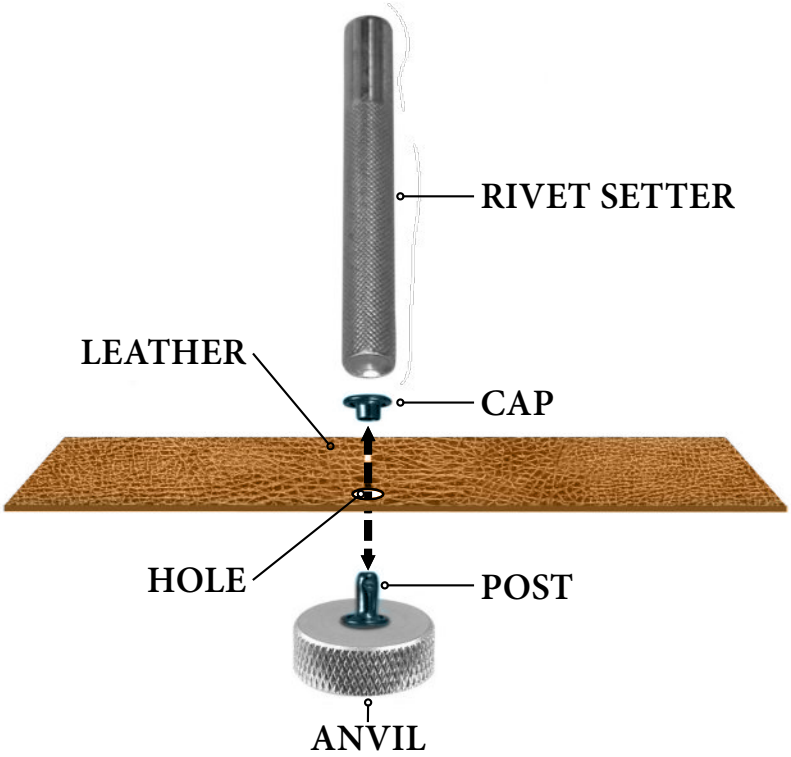
When fitting a rivet the post is pushed through the hole in the back (rough) face of the leather, passing through one or more layers. It should project 1 to 2mm beyond the front face. You then push the cap over the top and give a couple of sharp taps with a hammer on the cap to secure it. Always have the back of the rivet against a well-supported hard surface, e.g. a metal plate on a workbench or a smooth concrete floor.



fixing two layers of leather with a tubular rivet

To get an alternative finish, you can purchase a rivet setter for tubular rivets. Using this will keep the domed shape to the rivet cap, rather than flattening it when you strike it directly with a hammer.

Alternate rivets with different finishes and styles can be used instead. Once the rivet is set, a small dab of antiquing gel left overnight will create a distressed look – don't forget to coat with an acrylic varnish, lacquer or clear nail varnish to seal the look.

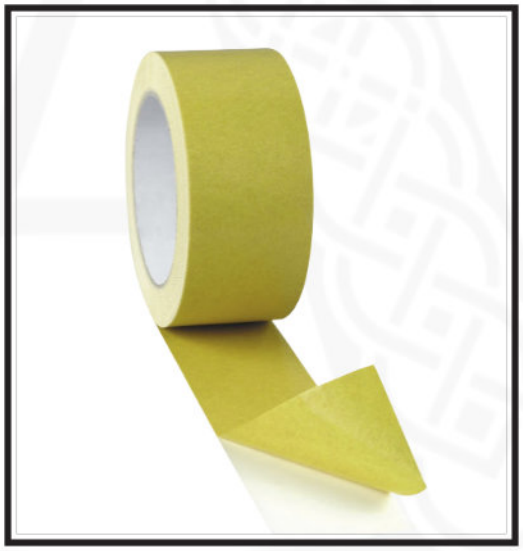


using a rivet setter

Double Sided Tape

Double sided tape can be a great help when trying to hold leather in place for sewing or riveting. Find a strong tape that will hold leather –look for narrow rolls; you don't want to leave any tape showing at the edges of your joins and using narrow tape makes this easier to achieve.

Be aware that using double sided tape can cause problems when hand sewing if you have not first cleared the path of the needle of any sticky tape..



Contact Adhesive

Great for creating a strong bond, better still for reinforcing a riveted or sewn junction.

All contact adhesives work in much the same way; you apply the glue to both pieces of leather you want to bond and then leave it until it's no longer sticky to the touch. The exact time will depend on the adhesive and the surrounding temperature, but 10 minutes is fairly typical.

Once the two adhesive coated surfaces touch each other they tend to bond at once and it will be very difficult and messy to remove if you make a mistake. Use stitch holes or rivet holes to make sure the parts are correctly aligned before touching each other.

Things to be aware of

Almost all contact adhesives that work with leather give off nasty fumes. Follow the instructions about working in a well ventilated space – if it says wear a particular type of respirator then please do so! At best you will get a nasty headache from the fumes, but results can be *much* worse.

Don't get the adhesive on any leather you want to stain or dye. Even if you rub a drop of spilled adhesive off the surface it leaves behind a residue that stops the dye penetrating the surface of the leather. Often it's better to stain before gluing together.

If applying contact adhesive to the smooth top surface of the leather, roughen the surface first; this gives a much stronger bond.

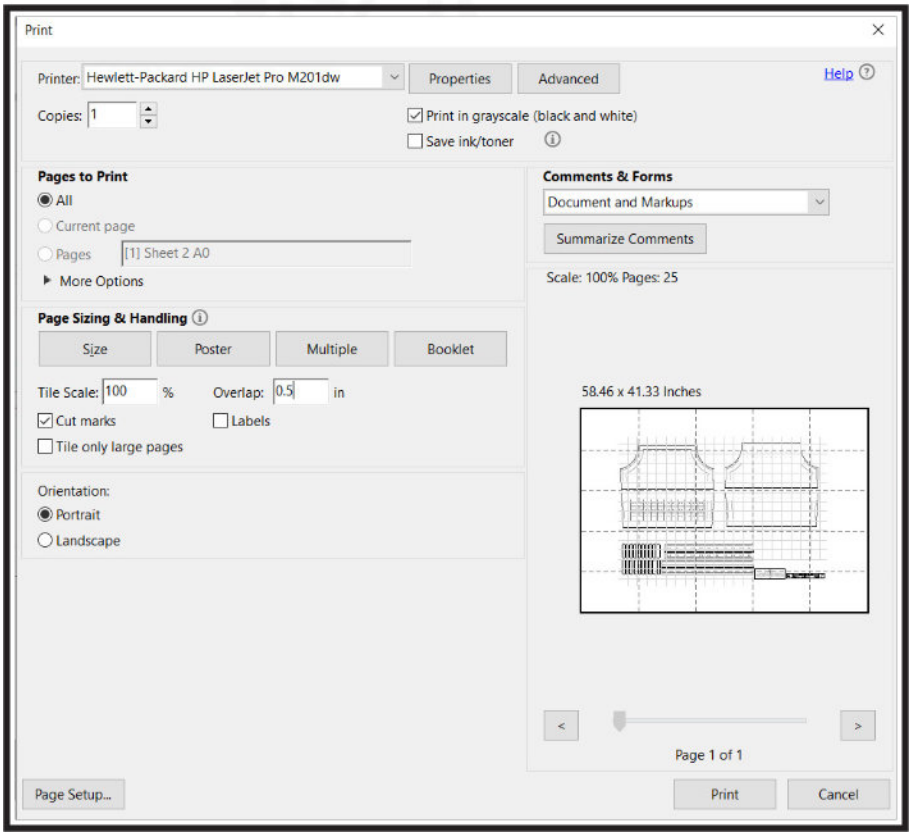
Printing the Patterns

To allow for different sized papers around the world we have duplicated the patterns onto ISO standard paper sizes and US Architectural sizes – thus A0 and A1 etc. for ISO paper and ARCH E, ARCH D and so on for US sized paper.

Many places can print these plans at full size for you at low cost, especially if you ask for them to be printed in back and white. If using this method just take the drawings (without GRID) in ISO or Architectural format to the printers and have them print.

If you don't have access to a large printer, but can get things printed on a smaller sheet size, do not panic. Get a copy of the Adobe PDF reader [*https://get.adobe.com/reader*] – it's free and works on most computer systems (but you can't poster print from a mobile phone). N.B. only the Adobe reader [version 9 and above] gives you a **poster** print option for tiling to smaller sheets.

Now choose one of the pattern sheets with the GRID on, open it with the reader and select print (using the GRID version helps with sheet alignment).



Under *Page Size and Handling*, select POSTER.

Set *scale* to be **100%,** *overlap* to be 0.5 inches (12mm) and make sure *cut marks* is ticked.

This will now print out the pattern tiled and at the correct scale on your smaller paper. To stick the pattern back together, start at one corner and stick it with tape to a window – so the light coming through helps alignment – then stick it all together. If the window is not wide, start by making columns then join each column to the next to make the whole.