

# Valsgarde Helmet Assembly Instructions

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This step-by-step tutorial teaches you to make your own Valsgarde 6 helmet, modified for SCA use. Basic tools, a bit of elbow grease, and a Zweihammer armoury helmet kit are all that's required.

Before beginning construction of your kit, take the time to read these instructions to understand and avoid some pitfalls. The kit has been assembled many times by many people to assure that the pattern works every time. As a rule, the more effort you put into preparing your pieces, the better the finished helm will be. Pre assemble each step before final riveting, and you will avoid having to take anything apart. **TOOLS REQUIRED**

First gather your tools together. While there are several ways to form and assemble this kit, this is the simplest from the perspective of skills and special tools. As a minimum, these are what you should have;

Sturdy work surface you can hammer on

Ball peen hammer; large enough to wield with authority, small enough to be precise.

Radiused and polished preferably.

Large mallet; deadblow, leather, or wood

Large wood block or small stump to dish and crease into

A large anvil with a surface for riveting, an edge to flare over (this can be as simple as a billet of steel, an old car part such as a cylinder head, or railroad track)

Bench vise

Chisel; radiused, blunted and polished preferably

Vice grips

Drill with 3/16 drill bit

Pin punch, awl, drift, or small Phillips screwdriver smaller than 5/32 to be used to line up

holes for riveting

Files, small round and flat mill files to dress the parts

Ruler and marker

10-32 x 1/2 machine screws and nuts for use as temporary fasteners, at least 20 each

Safety items such as glasses, ear plugs and gloves

Other tools such as an angle grinder, belt

grinder, metal dishing forms, ball stakes and creasing stakes, etc. make the construction easier, so if you have them, great. PREPERATION Your kit will contain a bag of 3/16 x 3/8 rivets with a smaller bag inside of 3/16 x 1/2 rivets (these are only needed in two places) The pieces will include;

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- 1 brow band
- 
- 1 nasal to nape band
- 
- 2 center side bands
- 
- 4 large "Y" sections
- 
- 4 small "X" sections
- 
- 8 small "Y" sections
- 
- 5 back slats
- 
- 6 small tie bars
- 
- 2 large tie bars
- 
- 2 cheek pieces
- 
- 1 nasal
- 

1 mouth guard

These parts are cut from mild steel with a laser and as such need to be dressed before assembly. The small amount of dross that may be present can be chipped off with chisel or filed off. The edges should be rounded with a file or sander or grinder. The finish of the parts is a mill scale that will not provide long term protection from rust and will need to be removed if you intend to polish or blue your helm. If you want to know how much to prep your parts, that is up to you, though this is the best opportunity to make your helm its best. One way to remove the mill scale is with sanding, another way is soaking in acid. As with anything, observe all safety precautions no matter what you do. Here is a set of parts soaking before assembly. ASSEMBLY After preparation the first step is to roll the brow band. This is the longest piece in the kit and requires care as you roll it preferably over something like an anvil horn or gas cylinder or large pipe. Striking with the soft face mallet off the supported area will allow you to roll it without kinking it where the holes are. If you do, don't worry much, as you assemble it will come in line on its own. The shape should be oval instead of round. The band will come together between the oculars and be hidden by nasal. You can use one of the center side bands to temporarily bolt the band together as shown. Now the center, nasal to nape, band is formed and creased. You will also take this opportunity to crease the back slats as it is the same process. Prepare the center band and the back slats by drawing a line with a straightedge along the center. Take your chisel and shape it like the one shown with either a file (long and slow) or with a grinder or belt sander (quick and clean), be careful not to heat up the tool and loose the temper. You can return the tool to its former shape after you finish this if you so desire. Here is an example. Take your block of wood or stump and form a shallow trench with a file, saw, grinder or chisel, this need only be an inch or so long, half an inch wide and half an inch deep for our purposes. Take your center band and the slats and placing them over this trench in the wood with the line drawn over the center place the chisel along the line. With the ball peen, strike the chisel and then move the piece so you can overlay the first hit by about half strike again. Do several passes instead of trying to do it all in one pass, this will give you a finer line and no lumps. Here is a slat being formed. The process is the same for the center band. On the slats stop three quarters of an inch from the end with the rivet holes, do not crease the whole length. The same applies to the center band, stopping your crease three quarters of an inch from each end. Here is an example of the center band formed and sanded to dress the crease. Of note, the steeper the center band crease the narrower and deeper the helm will end up, a shallow crease will give you a wider, shorter helm as you will see later. The center band is now ready to be riveted in, using your machine screws pointing from the interior outward (to avoid messing up the threads with an errant hammer blow while peening your rivets), bolt the

band to the center above the ocular cutouts and to the top center of the rear of the helm as shown, removing one screw at a time insert the rivets and peen them from the inside while supported on your anvil. (one important note on assembling and peen the rivets, the two pieces must lay flat upon one another, with no gap, as the swelling of the rivet shank will usually hold the pieces apart and not pull them together, resulting in unsightly and compromising gaps, fit up is important!) Here the center band is peened in. In a shallow dish in your wood formed by merely hammering in the end grain of your wood or stump with the peen end of your hammer, sink the side center bands into your dish and as you do it will roll them. They will go from the center sides to the center top and should have a shallow curve in both directions. The end the holes are grouped closest to goes toward the center band, as shown. Leave these bolted in if you have any doubts until the large "Y"s are fitted. The large "Y"s are not symmetrical, and you should lay them on your work surface, two facing one way, two facing the opposite and mark them so you form two left, two right. This is common to the other "X"s and "Y"s as well, lay them out and sink them into your dish, half one way and half the opposite. The large "Y"s have two holes in each end, using the machine screws to put each "Y" in place, removing one screw at a time to set and peen each rivet. At this point the helm is flexible; don't be tempted to put all the parts into one quadrant before doing the rest. It will make the rest difficult if you do. Putting all the large "Y" sections in locks the helm in shape and makes the remaining pieces easier to install. The next pieces will be the four "X"s. Once again, place the pieces all up, then flip two over and mark them. Dish them as you did the large "Y"s. Putting the "X"s in place, before the small "Y"s, allows a bit more access to peen the rivets.

With the "X"s in place, repeat the same procedure with the 8 small "Y"s, set them all up then flip half of them over, four up and four down. Mark them and sink them in the dish as the others. Install them as the others.

The next pieces to install are the slats you have already creased. After the crease, the slat will have a roll to it like this.

Now the top of the slat has to be rolled across the top to fit inside the brow band. A simple way to do this is to open jaws of a vise to support the edges and strike the center. Once it matches the inside of the brow band put them into the back of the helm.

With the slat in place take the 6 short tie bars and mark 4 on both ends as shown, roughly tangent to the end diameter and two on only one end.

Then take these and put them into the vise or bend them over the edge of your anvil or riveting block. Bend each marked end approximately 45 degrees to match the inside of the slats.

The last two will be fitted to the cheeks by twisting the other end to match, after you mount the cheek pieces of course.

The cheek pieces will need to be shaped by sinking into your dish until they match the inside of the brow band. Once the cheek piece is domed to fit, it needs the lower edge flared out to strengthen and to help with putting the helm on and off. Do this by marking the edge 1/2 inch in or so from the lower edge as shown.

Flare these over the edge of your anvil / rivet block by placing the marked side up with the line placed over the edge and flared in several passes. Use the mark as a guide as you pass the piece under your hammer strokes.

Rivet the cheek pieces in place. This lets you put in the last two short tie bars. Bolt them in place and establish how you need to twist them to line up with the one hole in the back edge of the cheek piece, then rivet in place as shown.

This might require squeezing the slats in to meet. Now all that is left is the nasal and the face pieces. With the nasal, the simplest way to crease the center is to mark the piece top to bottom as reference. Clamp into your vise with the line just showing and striking right next to the line, flip over in the vise and do another pass.

Once the crease is in the center, gently roll the sides over to match the brow. When riveting on the nasal leave the two lower outside (shown) out as these holes also mount the eyepieces.

Now take the eyepieces and sink them into your dish. One left, and one right. Bolt them into place before riveting. The place where you rivet through three pieces is where you use the longer rivets provided in the small bag.

The longer tie bars go from the cheek pieces to lowest holes in the nasal. A slight twist will help. Rivet the bars in place. Now this leaves the mouth guard. Sink this into the dish form, this piece requires the deepest radius so keep shaping until this fits inside. Once you can bolt it in with the machine screws, replace one at a time with a rivet and you are done. You now have a helm that looks like this.

When shaping your helm it can be made slightly narrower or wider to custom fit your head. As shown by both these examples, both the same size kit, side by side.

We at Zweihammer Armoury appreciate your interest and hope your build was a fun and learning experience. Contact us if you have any questions.