

# Gauntlet Kit assembly instructions

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These instructions describe and illustrate the process of assembling one of our gauntlet kits.

Tools needed:

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ball pien

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a leather mallet

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a block of wood cut from the end of a 4x4

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a blunt chisel (a railroad spike),

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a file,

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a vise to hold the chisel

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(as a luxury) a 2" trailer ball

Before proceeding with your kit it is suggested that you read through these instructions first. The gauntlet made to illustrate these instructions, was done with the minimal tools to show that it can be done. It was formed using a ball pien, a leather mallet, a block of wood cut from the end of a 4x4, a blunt chisel (a railroad spike), a file, a vise to hold the chisel and as a luxury a 2" trailer ball to speed up the forming. Though I have many other tools and techniques to speed this up I will show finished parts and describe one technique. Those of you with more skills or tools can innovate as you see fit.

The kit as you receive it should include two each of the 13 different plates as shown and 50 plus 1/8" x 1/4" S/S rivets and 50 plus washers with a few of a larger diameter than the rest.

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Before taking the pieces apart from each other lay them out on the table as shown and mark them from the cuff up to the thumb pieces with a large permanent marker from L1 through L13 on the left and R1 through R13 on the right. Make sure you mark them as shown as the differences are subtle and it helps to have the marks on the outside to keep track and oriented.

I also suggest tracing the cuff piece, either L1 or R1 to help later to make a leather cuff for the gloves to put in the finished gauntlet.

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After marking, break the pieces apart from each other and file off the tabs that held them together. File all the edges and any dross from the laser as smooth as you see fit.

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Roll both cuffs with the mark to the outside until the ends overlap. The picture shows the left cuff L1 but all forming is simply opposite for the right hand pieces.

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Rivet both holes from the outside, and pien tight from the inside.

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Mark the larger of the two ends, the outer edge of the cuff from  $\frac{1}{4}$ " to  $\frac{3}{8}$ ", this will be your visual aid to roll the edge. The mark shown is  $\frac{3}{8}$ " and yields a large roll, I suggest a  $\frac{1}{4}$ ".

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Place the cuff atop your chisel with the line inside, over the point of the chisel stake outside, parallel to the edge. You will not be able to see the tool but if you hold the cuff with your fingertips against the edge to help you reference and steady your hold.

After a few light hammer strokes off the edge with the line leveraged over the point of the chisel stake, the position of the stake will become apparent. As you see the edge forming, correct as needed.

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Leaving your position steady, and hammering with constant and light strokes off the edge of the cuff, rotate the cuff underneath as you strike. This will take several passes around the cuff, patience is the key to a consistent smooth rolled edge.

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After the first couple of passes, the edge you are creating should naturally sit over the edge of the stake. Keep changing the angle you hold the cuff at with each subsequent pass getting steeper.

Continue until you have reached an angle greater than 90 degrees (a right angle).

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At any time you wish to clean up the line of your cuff, take it from your chisel stake and make a pass with the flare on the face of an anvil, vise or block of steel with the side of the cuff against the edge of the anvil. This helps in evening up the flare.

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Once you are past 90 degrees you can take the cuff and place the inside over a round stake, horn of an anvil or the corner of a block of wood and begin closing the roll. Lightly strike the upturned edge of the cuff downward toward the cuff itself. Again, patience is the key here, with several passes as flare collapses upon itself first to form a "C" and curls down to form the finished roll.

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After you are almost closed you can leave it slightly open or set the roll tight if you wish by putting the cuff with the open side of the roll down on the tip of the chisel stake or the square edge of an anvil and strike the outside edge of the roll to curl it closed. Careful not to flatten the roll as that would simply be a hem which is not as strong as it lacks the third dimension of a rolled edge.

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Take L1 and roll it to approximate the inside of the cuff, flare the ends slightly to match the angle of the cuff where the rivets pass through.

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Rivet L2 inside L1 with the rivet passing through the hole on the outside and with one of the smaller washers over the slider on the inside. Pien the ends slightly at first to check movement. Continue pining to tighten them up, checking freedom of movement, but remember it is easier to tighten them up at a later stage. Loosening the fit will require removal of the rivet and starting over.

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Roll L3 to approximate the inside of L2.

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This part requires the ends to be formed into an anticlastic curve to conform to the angles of L2 and L4. This can be achieved by placing the ends over a saddle, not a dish, created in your block of wood and strike the center with a mallet to curl the last inch or so with a curve now perpendicular to the cuff. Repeat for the other side, only the ends require this.

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Rivet with washers to the inside of L2 as you have already done with L1 and L2, Start with both sides loose and tighten as you check for movement.

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Roll L4 to the outside dimensions of L3. This is the first lame to start to dip into the area that is formed by the web of the thumb next to your hand. This is just a small dip that will be formed after the lames are assembled. Continue this roll around as it forms the heel of your palm.

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Rivet outside L3 as you have been doing using the washer over the slider. Tune as necessary with the other lames.

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Anytime during assembly you can tune the fit of the lames together over any appropriate form with a soft face mallet or deadblow. Form them over each other and close up gaps, but work up to your fit with light strokes as heavy pounding can coin the lames over each other and ruin the fit.

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Roll L5 to the outside of L4 with the web area of the thumb prominently deeper. L5 extends around the heel of the palm deeper.

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Rivet L5 outside L4 with sliding rivets as before and form the dip into the web together with L4.

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Roll L6 around L5, this lame wraps around the area just outside the first knuckle of your thumb, follow the dip and wrap around.

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Rivet L6 outside L5 with sliding rivets as before. Form the depression between the web deeper after assembly.

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Roll L7 around the knuckle area of L6, this is the transition to the finger lames.

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Rivet L7 outside L6 as before with sliding rivets.

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Roll L8 around L7 to begin with. This is the first of the finger lames and can be formed a number of ways. I have chosen to dome the lower edge to clear the upper edge of L7 as the lames pass over on another and to provide the physical stop to prevent gapping. This can also be squared off as the gauntlet I patterned off of was. This is also where you set the width and depth the final gauntlet will be and should fit comfortably over your gloved hand with room for padding on the back.

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This will require fit up and may need to be removed several times before you are satisfied with the fit.

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Once the fit is done rivet L8 outside L7 with the smaller washers, checking for movement.

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L9 and L10 are along the same lines as L8, doming the lower edge after rolling slightly over the preceding lame, possibly curling the upper edge slightly if necessary after you check fit and movement.

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L11 differs in that it is domed along its upper edge as well to curl down the finger tip area and end the gauntlet lames. It rivets as did L8 through L10.

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The thumb is comprised of the last two pieces L12 and L13 and should be formed together completely before putting on the rest of the gauntlet.

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L12 forms the most difficult piece to articulate as it covers the joint at the base of your thumb and must provide several axis of movement. Dome the end with the slot (careful not to stretch the slot excessively) to lay over this knuckle on your hand. Then over your stake form down the sides outside. This does not have to be perfect at this point as you will work the tip over this piece.

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Begin to form the tip L13 by doming the tip with the ball pien directly into your block of wood.

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Once this done, use the stake to form down the sides to approximate the outside of L12, the end of the tip will start to overlap. Using any handy drift, a nail or pick, etc. line up the 4 holes as soon as possible, do not wait until the tip is fully formed.

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Put the rivets in from the outside without a washer and pien tightly once the tip has no gap between the overlap. File down the rivet heads on the outside to diminish their height.

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Once L13 can be placed over L12 with rivets placed but not pined it will be apparent that it will not articulate. Mark the inside where L12 hits L13, and dome the overlap as you did the finger lames. First use the blunt chisel into your block of wood, followed by using it as a stake and curling the back edge further down to form your physical stop once the tip is able to move. This will be trial fit and tune effort as you form the two L12 and L13 together. As L13 starts to look like a thumb tip, place the open end down on your block of wood for support and draw down the area over the thumbnail.

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After the two fit well enough to articulate, file the heads down on two rivets and using the larger washers on both the inside and out put the rivets through from the inside out and pien as before. Place the thumbtip over your chisel stake after they are together and draw down the edge to limit the movement to prevent gapping.

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Continue working the fit over your stake and place it over your gloved thumb to make sure it is the correct width, it should articulate 35 to 45 degrees to allow you to grasp a handle.

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Once you are happy with the thumb, place the rest of the gauntlet over your gloved hand and it over the back of your gloved thumb. This is where you will have to drill a hole, due to differing personal preferences and hand widths I left this hole out. Mark the outside where the slot for the slider is  $\frac{1}{4}$ " or so from the edge of L6. Drill this with a  $\frac{1}{8}$ " bit after center punching. Rivet this to L6 using the larger washers, VERY LOOSLY as this has to allow a greater degree of movement. If the slot has been stretched it may be necessary to add a larger washer under the washers provided.

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You should now be bone with the mechanical aspects and it should approximate a gauntlet now. With the assembled gauntlet tune the fit to your hand and the lames to each other as you see fit before strapping and attaching the gloves.

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Everyone has personal preferences as to how to attach gloves to gauntlets. I highly recommend permanent attachment as opposed to just strapping and pulling on over gloves as these have too many articulations and will bunch up and hang slack if unsupported. I also recommend making a gamboised pad (like out of a pieces of moving blanket) to put between the back of the hand/thumb and inside of the gauntlet. Excellent protection and won't shred like foam. Attaching the finger tips and thumb tip as well as the cuff, either riveted directly to the gauntlet, or as I prefer sewn to leather that has been riveted to the gauntlet, allows you to easily pull the gauntlets on or off your hands and lets the gauntlet move with you. A small strap across the inside of the palm, the inside of the fingers and the inside of the thumb will keep you safely inside.

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These remaining images are for reference and include the gauntlet I patterned these from with the glove attached for comparison.

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Hopefully all has gone well and you now have a pair of S/S gauntlets. Any questions or comments feel free to contact me , Thanks. Erick Davidson