



## Rollerprint Patterns™

Instructions for Use

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“Before I begin with all the technicalities, I would like to mention that this process is so simple it has been taught to four year olds. Even though it is very possible that you may achieve perfect results on your first try, it is also possible that you may come across some challenges. Understanding the details of this process will give you the ability to control your results and allow you to create whatever you’re envisioning. So take a deep breath, release it, and remember knowledge is power”.

Tracey Johnson

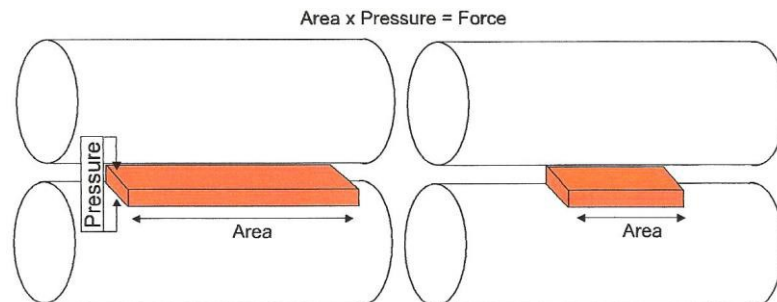
Founder and Prior Owner of Rolling Mill Resource

## **Understanding the process**

There are three basic components involved in roller-printing. The first is the steel rollers, second is the paper pattern, and third is the metal itself. When roller-printing, the steel rollers do not change shape, because they are hardened steel. The paper pattern also has very little “squish” to it, so it does not move much either. However, something needs to “give” when the tremendous force is applied with the tightened steel rollers. The component with the most sponge-like, malleable quality is the sheet metal. This process of roller-printing with laser cut paper works not because the paper molds the metal, but by the metal reforming into the empty spaces of the paper.

## **(Area x Pressure = Force)**

Sounds so scientific; but it is actually quite simple. The length of the pattern being rolled does not affect the amount of pressure needed, but the width of the pattern does. The wider the metal you are patterning the more pressure that is needed. For example: you are rolling a one inch wide piece of 22g sterling silver and you found the perfect pressure setting for that alloy/gauge combination, but now you are about to roll a one and a half inch wide piece of that same metal. You will need to compensate for the change in surface area by tightening the gears a couple notches. It simply takes more *pressure* for the one and a half inch wide strip to pattern similarly to the one inch strip or if a *force* is applied over a smaller surface *area* you get a larger *pressure*.



**More difficult**

**Easier**

Cut your metal down to the narrowest width possible for the piece you are fabricating.

## **Choosing your metal**

Some metals are very dense and some are more “sponge-like”; or in technical terms, some metals have molecules that are close together and some are spaced further apart. It is that workable property that makes a metal easy or difficult to texture. Understanding that each alloy has its own unique characteristics and that the gauge/thickness also plays a factor in this process will help you to achieve a beautiful texture in your sheet metal. Sterling silver, fine silver, and argentium are very nice to roller-print with. The purchasing of base metals (brass, bronze, copper) can sometimes be confusing. Purchasing a sheet of metal with the label of “copper” on it does not mean that it is pure copper, and it also doesn’t mean that it will roll the same as copper purchased from another supplier. The term “copper” could be referring to the color. 99% pure copper rolls the easiest. If questionable, verify with your supplier what you are ordering. There is also variance in the names of some alloys. For example, “brass” can also be called Jeweler's brass, red brass, NuGold, Jeweler’s Bronze or Merlin’s Gold. “Dead-soft” is a term related to the temper (softness) of a metal and it is best to purchase all metals in this form whenever possible. You may need to anneal your metal before rolling if you don’t purchase it in dead-soft form. Thickness/gauge of metal also will contribute to how deep the pattern will appear. Gold alloys are difficult to pattern and are not recommended. Bi-metal alloys with a layer of gold do work.

\* A good starting point is to use 22-24 gauge, sterling silver or copper, in dead-soft temper.

\* If annealing metal, make sure to rinse and dry it well before rolling. The pickle will etch pits into the steel rollers.

## **Choosing your backing material**

It is not necessary to use a backing material. The benefit to using a backing material is that it adds just a little more “sponge-like” quality to the metal when being rolled. The Styrofoam backing is very helpful when rolling metal of thin gauges because thinner metal, no matter what the alloy, is less malleable. The foam actually helps the thin metal to get a nice deep impression.

## **Tracking**

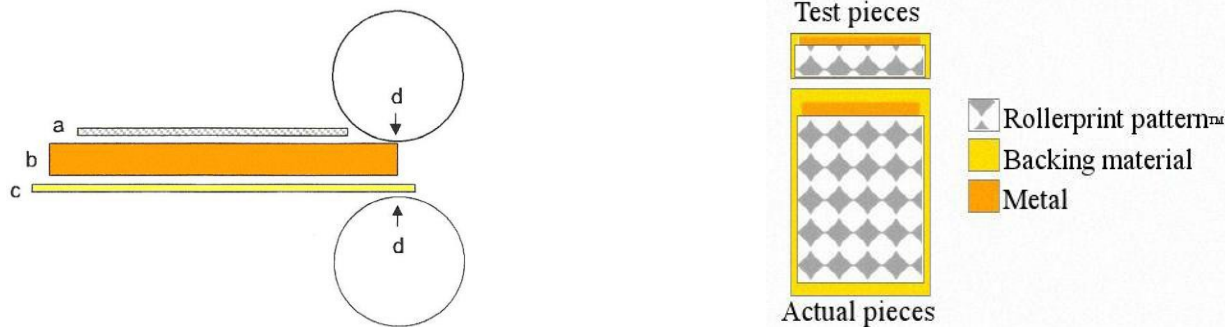
The length of your sheet metal does not affect pressure, but may affect the pattern/metal sheet tracking. Length is not a factor regarding pressure, because only a very small section of the steel roller is in contact with the metal at any time [d]. The longer the pattern, the higher the chance the combination will veer off track while rolling. A high quality mill will typically have fewer issues with alignment than an economy mill. Note: If the steel rollers on your mill are not even from side to side, your metal may roll unevenly. You will know if that is happening if your metal is wavy on one side or longer on one side (that may also be an issue of putting the metal in parallel to the rollers). If you are having this issue then check with the manufacturer of your mill for instructions on how to adjust the rollers for that particular model. The higher end mills are usually very accurate and are less likely to be out of alignment.

## **Preparing to Roll**

You may roll your pattern in any direction you choose, however, each pattern is slightly reduced lengthwise to compensate for the stretching that happens in the roller-printing process. It takes a lot less pressure to create a nice impression in a one inch wide piece of metal than in a two inch wide piece of metal. (Area x Pressure = Force) Therefore, cut your paper and metal down to the narrowest width possible for the piece you are fabricating. Once you decide the width of the metal you will need, cut test pieces of that metal, paper pattern, and backing material in the same width of your actual piece. Set the preliminary depth of the rollers by using a scrap piece of metal the same gauge as you are rolling, but do not include the pattern or backing material.

Tighten the rollers onto the metal so that you can easily tug it back out again. That is the starting pressure for testing. If you are using a backing material such as foam or cardstock, make sure you also use that in your testing. Whether or not you are rolling your test pieces or actual pieces, layer your items in the same manner by making a “sandwich” stacking the pattern (facing downwards towards the metal [a], then the metal [b] and underneath it all the backing material [c] (optional). The backing material can be cardstock/old file folders, thin tag board, or thin foam (available at [rollingmillresources.etsy.com](http://rollingmillresources.etsy.com)). The bottom layer otherwise known as the “backing material” [c] should be cut larger than the other two layers so you can see that is in alignment with the metal layer. The middle layer, “metal”, should be slightly longer than the pattern because that will give the rollers something to grab onto and in will prevent the combination from slipping between the rollers. The top layer or “Rollerprint pattern™” may need to be slightly longer than the metal if you are trying to pattern the metal sheet from top to bottom, such as in the case of making a cuff bracelet strip. Use pliers if necessary to temporarily hold the short test pieces until the rollers start to grab. Roll your test grouping. The best possible imprint is as deep as possible without overstretching. You will know if you have overstretched the metal if it has “stretch marks” in it, or if the design looks distorted or elongated. Keep in mind the line width in the pattern will also contribute to how deep the design appears in the metal. If the lines are very delicate it will be a shallow design. If the lines are bold they will appear deeper in the metal. A visual explanation of that same principle would be the difference between rolling an actual feather or a thick wire. The feather will always be a lighter imprint.

Once you roll your first test, determine if the imprint is too light, overdone, or just right. Adjust the spacing in your rollers by a notch or two in the direction needed and retest if the impression needs adjusting. Once you achieve the proper pressure, document those gear settings, or mark your gears with a paint marker or Sharpie pen (you may need to clean the grease off the gears with denatured alcohol to mark them). The good news is... once you get the right setting for any metal alloy/gauge/backing material combination, you will only need to retest again if you are drastically changing the width of the metal being rolled.



Grouping of actual pieces

## **Polishing**

If you like the matte backgrounds created by the paper; then rub it by hand with a polishing cloth. Sunshine brand polishing cloths work great for this. Eurotool’s polishing pads work nicely with oxidized metal. Sometimes it is best to leave the polishing step until after your jewelry is fabricated. Some jewelry designs are too intricate for that technique and need to be polished before fabricating.

Having great success? Be sure to send pictures!

Having struggles? Be sure to say something, we will help you through it!

Please send all questions, concerns or compliments to [rmmrgwen@gmail.com](mailto:rmmrgwen@gmail.com)

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