SLEEVED RING HANDOUT

Including texture!

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This document is a helpful guide for learning how to make a sleeved ring. This is a great introductory project that will introduce sawing, texture, ring sizing and tube rivets.

Things you will need:

- 2 pieces of 2 x 3 -inch 20 gauge copper/brass
- 1 piece of 2 x 3 inch- 24 gauge **FINE** silver (.999)
- Hard and Medium solder
- Roll printing materials

Project requirements

Design:

- Explore surface texture in metalsmithing techniques, and learn how to add a rich surface onto a metal sheet.
- You must make a sleeved ring with the interior of fine silver, and an exterior of brass or copper.
- You must use the rolling mill and stamping (chasing)
- You must use Liver of Sulfur patina (before you add the silver or after)

Craftsmanship:

- All soldered seams must be complete (no gaps)
- There should be no pools of solder visible anywhere
- Seams have been sanded completely smooth, they should no longer be visible.
- The silver layer wraps completely around the textured layer, laying flat without gaps
- Interior ring band needs to be sanded to 600 (polished if desired)

HOW TO MAKE A SLEEVED RING: Step By Step

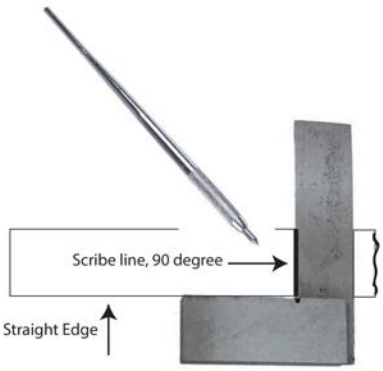
CREATING TEXTURE:

1. Use the brass and copper as a “roll print sandwich” and create a pattern on both sheets. Multiple rolls increase the variation in the pattern. Remember to anneal each piece of metal before each roll to avoid excessive work-hardening which leads to cracking.
   (See last page for roll printing guide)
2. Choose one piece, ANNEAL, and further enhance the pattern by using stamps, or chasing tools.

MAKING THE SILVER BAND, TO THE CORRECT SIZE

<u>Textured band</u> **Width** _____mm	Determine the width you want your ring to be. **It must be under 10mm**. Choose your favorite portion and cut a strip (THE LONG WAY) out of your metal. Leave it long! Set aside for now.
Ring Size:	Measure your finger using ring sizers.
<u>Silver Band</u> **Width** _____mm	**First: Determine the WIDTH of the silver band.** To do this, measure the width of the copper/brass strip you cut out. **Add approximately 6 millimeters to that width.** That is the width you need for your silver. **Example, if your textured band is 10 millimeters, your silver will be 16.*
<u>Silver Band</u> **Blank Length** _____mm	**Second: Determine LENGTH of silver band.** Look at the Ring Blank Chart (pg 6). Follow the column for gauge and meet the row with your ring size. **This is your Ring Blank Length**. **If there is no 24g, then choose the closest gauge listed.*

3. Now you know the length and width of your silver. Lay it out with a machinist's square and a scribe.
   **Use the stomp shear to cut the width.*
   **Use your saw to cut the length, and file to scribe line.*
   This will prevent a bevel at your solder seam.



4. Bend, solder then hammer round.
   Use **medium** solder for this joint. It has the maximum flexibility of the solder and will help ensure that you won’t split when you bend this band over the other.

5. **File and sand the INSIDE** of the silver band (leave the outside).

   **DO NOT use the ring stretcher on the silver. It will stress it too much, causing it to crack later.*

MAKING THE TEXTURED BAND, TO FIT THE SILVER BAND

<u>Silver Band</u> **OD: _____mm**	Use a caliper or ruler to determine the **outer diameter (OD)** of the silver band. Silver must be perfectly round. 
Find the Textured band blank length	The **inner diameter** (**ID**) of the textured band needs to be the same as the **outer diameter** (**OD**) of the silver band.
<u>Textured Band</u> **Required ID: _____mm**	**Hint, it's the same as the silver band OD**
<u>Textured Band</u> **Blank Length _____mm**	Using the other ring blank chart (pg 7), determine your textured blank length. Use the **INNER Diameter column** and **gauge column**. If your gauge is not listed on the chart, then use the closest possible option.

6. Using a machinist square and scribe, mark the blank length on the back of your textured piece. **Saw** the length, file, bend, solder, and hammer round. Use **hard solder** for this joint.

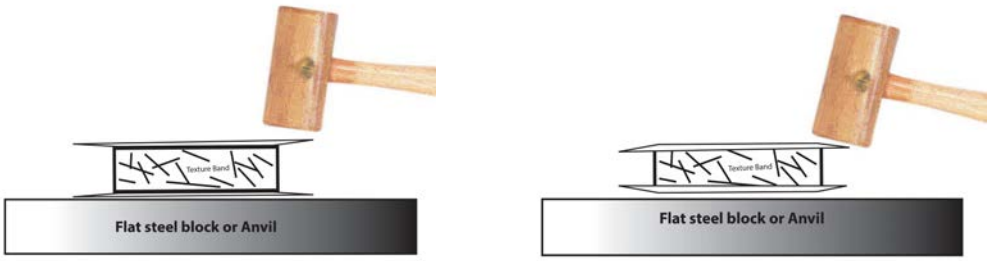
7. **File and sand the outside of the solder seam.** There should be no excess solder left. If your ring seam was as tight as it should be, there will be zero evidence of your seam.
   Leave the interior seam, it will be covered.

FITTING THE TWO RINGS TOGETHER

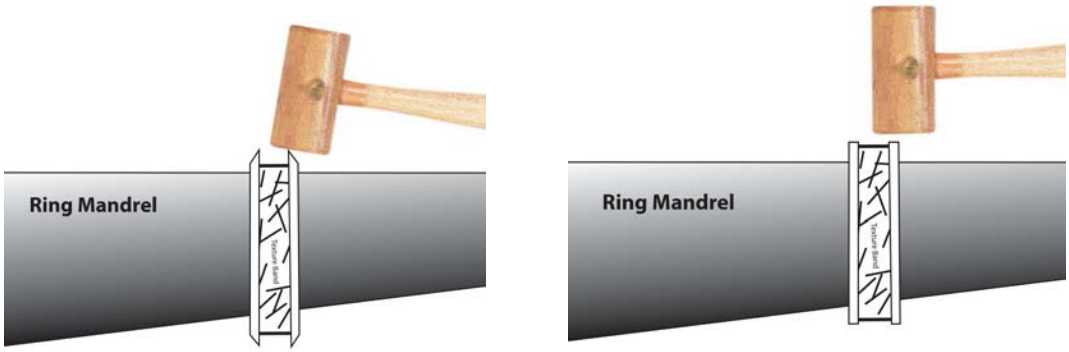
1. Slide the textured band onto the silver band. If it is <u>just a little</u> too small, you can stretch it with the ring stretcher. If it's a <u>little too big</u>, you can compress it with the same tool. In extreme cases, one of the bands will need to be cut, and re-soldered to the correct size.

2. Using dapping punches flare the silver band on both sides. Use larger punches that don't fit too deeply inside the bands.

3. Once it is nicely flared on both sides, use plastic or rawhide mallet to confirm the silver to the edge of the copper/brass band. At this point the silver should be 90 degrees to the ring.
4. Then hammer it so that it is starting to wrap around the textured band.



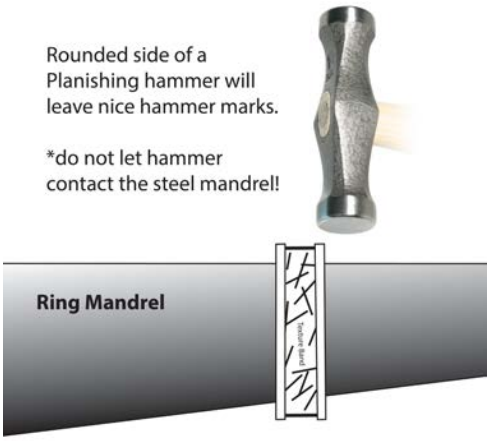
5. Now it is time to confirm the silver flush against the textured band. There should be NO GAPS. **Don't over hammer or the silver,** it will become work-hardened and springy. This will prevent it from conforming to the copper/brass band.



FINISHING

6. You may choose to do a final round of hammering with a **planishing hammer** (red handel). This will leave a visible hammer texture on the silver.

   **Do not let the hammer make contact with the steel mandrel. It will damage the hammer's clean shiny surface!*



7. Sand the silver interior band until the solder seam is invisible. Use the slotted mandrel, the flex shaft by the dust collectors, and your sandpaper (320, 400, then 600)

8. Polish the inside using Gesswein Barrels or Felt Buffs.

Gesswein Order: 1. Blue 2. Green 3. Pink	
Felt Buff Order: 1. Bobbing 2. White Diamond 3. Rouge Switch buff when you switch compounds.	

9. **Patina:** Place the ring in a Liver of Sulfur bath (remember directions for that patina).
   Use some steel wool over the top (textured area) of the ring.
   Seal it with a very thin layer of Renaissance Wax.

10. If bright silver surface is desired on the interior, do one last round of the high polish (Rouge, or Pink Gesswein compound). This will be fast, and will bring back your bright silver.

11. Protect your ring! Keep it perfect for the critique.

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Ring Blank Sizing Chart

To determine your ring blank length, find the desired ring size in the far left column, then read across to the appropriate material thickness.
** Add 0.5 mm to the length of the blank if the width of your material is greater than 4 mm.*

US Ring Size	Metric Ring Size	Diameter (mm)	Circum. (mm)	Material Thickness											
				10 ga. 2.6 mm	2.4 mm	2.2 mm	12 ga. 2.1 mm	2.0 mm	1.8 mm	14 ga. 1.6 mm	1.4 mm	16 ga. 1.3 mm	1.2 mm	18 ga. 1.0 mm	20 ga. 0.8 mm
1	39.0	12.4	39.0	47.1	46.5	45.9	45.6	45.2	44.6	44.0	43.4	43.0	42.7	42.1	41.5
1 1/2	40.2	12.8	40.2	48.4	47.8	47.1	46.8	46.5	45.9	45.2	44.6	44.3	44.0	43.4	42.7
2	41.5	13.2	41.5	49.6	49.0	48.4	48.1	47.8	47.1	46.5	45.9	45.6	45.2	44.6	44.0
2 1/2	42.7	13.6	42.7	50.9	50.3	49.6	49.3	49.0	48.4	47.8	47.1	46.8	46.5	45.9	45.2
3	44.0	14.0	44.0	52.2	51.5	50.9	50.6	50.3	49.6	49.0	48.4	48.1	47.8	47.1	46.5
3 1/2	45.2	14.4	45.2	53.4	52.8	52.2	51.8	51.5	50.9	50.3	49.6	49.3	49.0	48.4	47.8
4	46.5	14.8	46.5	54.7	54.0	53.4	53.1	52.8	52.2	51.5	50.9	50.6	50.3	49.6	49.0
4 1/2	47.8	15.2	47.8	55.9	55.3	54.7	54.3	54.0	53.4	52.8	52.2	51.8	51.5	50.9	50.3
5	49.0	15.6	49.0	57.2	56.5	55.9	55.6	55.3	54.7	54.0	53.4	53.1	52.8	52.2	51.5
5 1/2	50.3	16.0	50.3	58.4	57.8	57.2	56.9	56.5	55.9	55.3	54.7	54.3	54.0	53.4	52.8
6	51.5	16.4	51.5	59.7	59.1	58.4	58.1	57.8	57.2	56.5	55.9	55.6	55.3	54.7	54.0
6 1/2	52.8	16.8	52.8	60.9	60.3	59.7	59.4	59.1	58.4	57.8	57.2	56.9	56.5	55.9	55.3
7	54.0	17.2	54.0	62.2	61.6	60.9	60.6	60.3	59.7	59.1	58.4	58.1	57.8	57.2	56.5
7 1/2	55.3	17.6	55.3	63.5	62.8	62.2	61.9	61.6	60.9	60.3	59.7	59.4	59.1	58.4	57.8
8	56.6	18.0	56.5	64.7	64.1	63.5	63.1	62.8	62.2	61.6	60.9	60.6	60.3	59.7	59.1
8 1/2	57.8	18.4	57.8	66.0	65.3	64.7	64.4	64.1	63.5	62.8	62.2	61.9	61.6	60.9	60.3
9	59.1	18.8	59.1	67.2	66.6	66.0	65.7	65.3	64.7	64.1	63.5	63.1	62.8	62.2	61.6
9 1/2	60.3	19.2	60.3	68.5	67.9	67.2	66.9	66.6	66.0	65.3	64.7	64.4	64.1	63.5	62.8
10	61.6	19.6	61.6	69.7	69.1	68.5	68.2	67.9	67.2	66.6	66.0	65.7	65.3	64.7	64.1
10 1/2	62.8	20.0	62.8	71.0	70.4	69.7	69.4	69.1	68.5	67.9	67.2	66.9	66.6	66.0	65.3
11	64.1	20.4	64.1	72.3	71.6	71.0	70.7	70.4	69.7	69.1	68.5	68.2	67.9	67.2	66.6
11 1/2	65.3	20.8	65.3	73.5	72.9	72.3	71.9	71.6	71.0	70.4	69.7	69.4	69.1	68.5	67.9
12	66.6	21.2	66.6	74.8	74.1	73.5	73.2	72.9	72.3	71.6	71.0	70.7	70.4	69.7	69.1
12 1/2	67.9	21.6	67.9	76.0	75.4	74.8	74.5	74.1	73.5	72.9	72.3	71.9	71.6	71.0	70.4
13	69.1	22.0	69.1	77.3	76.7	76.0	75.7	75.4	74.8	74.1	73.5	73.2	72.9	72.3	71.6
13 1/2	71.3	22.7	71.3	79.5	78.9	78.2	77.9	77.6	77.0	76.3	75.7	75.4	75.1	74.5	73.8
14	72.6	23.1	72.6	80.7	80.1	79.5	79.2	78.9	78.2	77.6	77.0	76.7	76.3	75.7	75.1

Inner Diameter (MM)

Required Blank Length

FIGURING THE LENGTH OF A RING BLANK

FINGER SIZE	GAUGE B & S	GAUGE MM	GAUGE INCHES	INSIDE DIAMETER INCHES	INSIDE DIAMETER MM	INSIDE CIRCUMFERENCE INCHES	INSIDE CIRCUMFERENCE MM	OUTSIDE DIAMETER INCHES	OUTSIDE DIAMETER MM	OUTSIDE CIRCUMFERENCE INCHES	OUTSIDE CIRCUMFERENCE MM	REQUIRED BLANK LENGTH INCHES	REQUIRED BLANK LENGTH MM
	14	1.6	.064	0.59	14.9	1.85	46.8	0.72	16.08	2.25	50.5	2.05	48.6
4	16	1.3	.050	0.59	14.9	1.85	46.8	0.69	16.08	2.17	50.5	2.01	48.6
	18	1.0	.040	0.59	14.9	1.85	46.8	0.67	16.08	2.10	50.5	1.98	48.6
	14	1.6	.064	0.60	15.3	1.88	48.0	0.73	16.50	2.29	51.8	2.08	49.9
4.5	16	1.3	.050	0.60	15.3	1.88	48.0	0.70	16.50	2.20	51.8	2.04	49.9
	18	1.0	.040	0.60	15.3	1.88	48.0	0.68	16.50	2.14	51.8	2.01	49.9
	14	1.6	.064	0.62	15.7	1.95	49.3	0.75	16.94	2.35	53.2	2.15	51.2
5	16	1.3	.050	0.62	15.7	1.95	49.3	0.72	16.94	2.26	53.2	2.10	51.2
	18	1.0	.040	0.62	15.7	1.95	49.3	0.70	16.94	2.20	53.2	2.07	51.2
	14	1.6	.064	0.63	16.1	1.98	50.6	0.76	17.36	2.38	54.5	2.18	52.5
5.5	16	1.3	.050	0.63	16.1	1.98	50.6	0.73	17.36	2.29	54.5	2.14	52.5
	18	1.0	.040	0.63	16.1	1.98	50.6	0.71	17.36	2.23	54.5	2.10	52.5
	14	1.6	.064	0.65	16.5	2.04	51.8	0.78	17.80	2.44	55.9	2.24	53.9
6	16	1.3	.050	0.65	16.5	2.04	51.8	0.75	17.80	2.36	55.9	2.20	53.9
	18	1.0	.040	0.65	16.5	2.04	51.8	0.73	17.80	2.29	55.9	2.17	53.9
	14	1.6	.064	0.67	17.0	2.10	53.4	0.80	18.34	2.51	57.6	2.30	55.5
6.5	16	1.3	.050	0.67	17.0	2.10	53.4	0.77	18.34	2.42	57.6	2.26	55.5
	18	1.0	.040	0.67	17.0	2.10	53.4	0.75	18.34	2.36	57.6	2.23	55.5
	14	1.6	.064	0.68	17.4	2.14	54.6	0.81	18.76	2.54	58.9	2.34	56.8
7	16	1.3	.050	0.68	17.4	2.14	54.6	0.78	18.76	2.45	58.9	2.29	56.8
	18	1.0	.040	0.68	17.4	2.14	54.6	0.76	18.76	2.39	58.9	2.26	56.8
	14	1.6	.064	0.70	17.8	2.20	55.9	0.83	19.20	2.60	60.3	2.40	58.1
7.5	16	1.3	.050	0.70	17.8	2.20	55.9	0.80	19.20	2.51	60.3	2.36	58.1
	18	1.0	.040	0.70	17.8	2.20	55.9	0.78	19.20	2.45	60.3	2.32	58.1
	14	1.6	.064	0.72	18.2	2.26	57.1	0.85	19.64	2.66	61.7	2.46	59.4
8	16	1.3	.050	0.72	18.2	2.26	57.1	0.82	19.64	2.57	61.7	2.42	59.4
	18	1.0	.040	0.72	18.2	2.26	57.1	0.80	19.64	2.51	61.7	2.39	59.4
	14	1.6	.064	0.73	18.6	2.29	58.4	0.86	20.06	2.69	63.0	2.49	60.7
8.5	16	1.3	.050	0.73	18.6	2.29	58.4	0.83	20.06	2.61	63.0	2.45	60.7
	18	1.0	.040	0.73	18.6	2.29	58.4	0.81	20.06	2.54	63.0	2.42	60.7
	14	1.6	.064	0.75	19.0	2.36	59.7	0.88	20.50	2.76	64.4	2.56	62.0
9	16	1.3	.050	0.75	19.0	2.36	59.7	0.85	20.50	2.67	64.4	2.51	62.0
	18	1.0	.040	0.75	19.0	2.36	59.7	0.83	20.50	2.61	64.4	2.48	62.0
	14	1.6	.064	0.77	19.4	2.42	60.9	0.90	20.94	2.82	65.8	2.62	63.3
9.5	16	1.3	.050	0.77	19.4	2.42	60.9	0.87	20.94	2.73	65.8	2.57	63.3
	18	1.0	.040	0.77	19.4	2.42	60.9	0.85	20.94	2.67	65.8	2.54	63.3
	14	1.6	.064	0.78	19.8	2.45	62.2	0.91	21.36	2.85	67.1	2.65	64.6
10	16	1.3	.050	0.78	19.8	2.45	62.2	0.88	21.36	2.76	67.1	2.61	64.6
	18	1.0	.040	0.78	19.8	2.45	62.2	0.86	21.36	2.70	67.1	2.57	64.6
	14	1.6	.064	0.80	20.3	2.51	63.7	0.93	21.90	2.91	68.8	2.71	66.3
10.5	16	1.3	.050	0.80	20.3	2.51	63.7	0.90	21.90	2.83	68.8	2.67	66.3
	18	1.0	.040	0.80	20.3	2.51	63.7	0.88	21.90	2.76	68.8	2.64	66.3
	14	1.6	.064	0.81	20.7	2.54	65.0	0.94	22.32	2.95	70.1	2.74	67.5
11	16	1.3	.050	0.81	20.7	2.54	65.0	0.91	22.32	2.86	70.1	2.70	67.5
	18	1.0	.040	0.81	20.7	2.54	65.0	0.89	22.32	2.79	70.1	2.67	67.5
	14	1.6	.064	0.83	21.1	2.61	66.3	0.96	22.76	3.01	71.5	2.81	68.9
11.5	16	1.3	.050	0.83	21.1	2.61	66.3	0.93	22.76	2.92	71.5	2.76	68.9
	18	1.0	.040	0.83	21.1	2.61	66.3	0.91	22.76	2.86	71.5	2.73	68.9
	14	1.6	.064	0.85	21.5	2.67	67.5	0.98	23.20	3.07	72.8	2.87	70.2
12	16	1.3	.050	0.85	21.5	2.67	67.5	0.95	23.20	2.98	72.8	2.83	70.2
	18	1.0	.040	0.85	21.5	2.67	67.5	0.93	23.20	2.92	72.8	2.79	70.2
	14	1.6	.064	0.87	21.9	2.73	68.8	1.00	23.64	3.13	74.2	2.93	71.5
12.5	16	1.3	.050	0.87	21.9	2.73	68.8	0.97	23.64	3.05	74.2	2.89	71.5
	18	1.0	.040	0.87	21.9	2.73	68.8	0.95	23.64	2.98	74.2	2.86	71.5
	14	1.6	.064	0.88	22.3	2.76	70.0	1.01	24.06	3.17	75.5	2.96	72.8
13	16	1.3	.050	0.88	22.3	2.76	70.0	0.98	24.06	3.08	75.5	2.92	72.8
	18	1.0	.040	0.88	22.3	2.76	70.0	0.96	24.06	3.01	75.5	2.89	72.8
	14	1.6	.064	0.90	22.7	2.83	71.3	1.03	24.50	3.23	76.9	3.03	74.1
13.5	16	1.3	.050	0.90	22.7	2.83	71.3	1.00	24.50	3.14	76.9	2.98	74.1
	18	1.0	.040	0.90	22.7	2.83	71.3	0.98	24.50	3.08	76.9	2.95	74.1
	14	1.6	.064	0.91	23.1	2.86	72.5	1.04	24.92	3.26	78.2	3.06	75.4
14	16	1.3	.050	0.91	23.1	2.86	72.5	1.01	24.92	3.17	78.2	3.01	75.4
	18	1.0	.040	0.91	23.1	2.86	72.5	0.99	24.92	3.11	78.2	2.98	75.4
	14	1.6	.064	0.93	23.5	2.92	73.8	1.06	25.36	3.32	79.6	3.12	76.7
14.5	16	1.3	.050	0.93	23.5	2.92	73.8	1.03	25.36	3.23	79.6	3.08	76.7
	18	1.0	.040	0.93	23.5	2.92	73.8	1.01	25.36	3.17	79.6	3.05	76.7
	14	1.6	.064	0.94	23.9	2.95	75.0	1.07	25.78	3.35	80.9	3.15	78.0
15	16	1.3	.050	0.94	23.9	2.95	75.0	1.04	25.78	3.27	80.9	3.11	78.0
	18	1.0	.040	0.94	23.9	2.95	75.0	1.02	25.78	3.20	80.9	3.08	78.0