

How to Make a Pattern for a Cone

By Ric Harber

When you do custom work, making patterns for our projects is a necessary “evil”. Some are simple, such as a basic rectangle (wallets, pictures) or cylinders (a rectangle curved around so the ends meet), while others are more complicated. One of the complicated ones is a cone, or a cylinder without a constant circumference. Examples include wide bracelets, cuffs/bracers (not the suspender kind), and cup wraps.

For the cone, you might initially think you just need to measure the diameter at the top and bottom of what you to cover and draw the four sides, resulting in a trapezoid. If you try that, you’ll discover that once wrapped around your cone, there will be a “dip” in the middle of the wrap that just doesn’t look right!

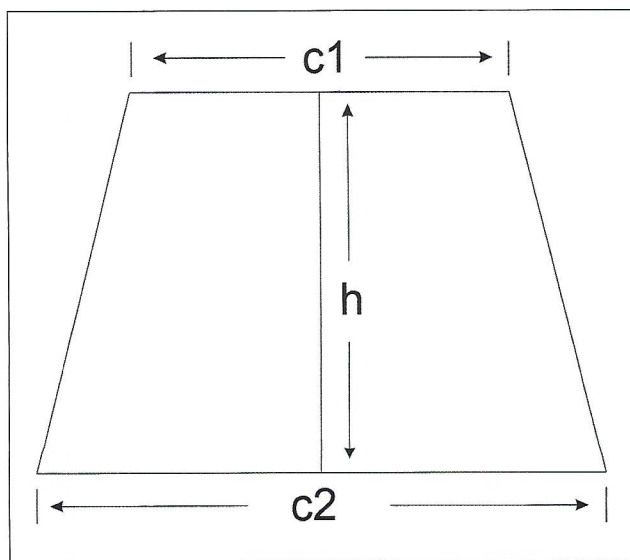
In this article, I’ll describe how to make a pattern to wrap a cone shape that will look right. I’ll also use the technique to develop a pattern for a full leather wrap for a YETI 20-ounce tumbler that can be secured with lacing or “the seam” (see Harber, “The Weltd Seam,” *Leather Crafters & Saddlers Journal*, Vol. 29 No. 5, p.70).



The Process

To begin, you need three measurements: the circumference of the cone at the bottom, the circumference of the cone at the top, and the basic height of the wrap. For example, say you wanted a pattern for a bracer or cuff with a six-inch height (fig.1). First, measure your client’s arm around the wrist or where he/she wants the cuff to sit when the arm is upright ($c1$). Next, measure up the forearm six inches and wrap your tape measure around the arm there ($c2$).

Fig.1



We already established that the height (*h*) is six inches. (Don't forget to adjust *c1* and *c2* for the thickness of the leather and lining you plan to use! See Orfandi, "Using Mathematical Formulas for Perfect Sizing: Cylindrical Objects", *Leather Crafters & Saddlers Journal*, Vol. 26 No. 5, p. 58).

Now it's time to get a big piece of paper, a straight edge, a square and a compass (or a tack, string and pencil to make your own compass). Orient your paper "portrait" style. Mark a vertical line on your paper in the center. This line represents the vertical axis of your pattern. Pick a spot towards the bottom of the paper and draw a horizontal line centered on the vertical line, with a length of *c2* (I'm assuming that *c2* > *c1*). You now have a line that represents the bottom of your pattern and is equal to the larger of the two

circumference measurements.

Now, back to that vertical line. Measure upwards the height of the pattern (*h*) and draw another horizontal line (centered on the vertical line), with a length of *c1*. Connect the corresponding ends of the two horizontal lines (see **fig.1**). This results in the trapezoid that gives you the center dip when wrapped around your cone.

Extend the vertical line way up to the top of your paper, and then extend the trapezoid's right slanted side upwards to intersect with the vertical line (point **A** in **fig.2**). Set the fixed end of your compass at point **A**. Place the marking end of the compass at the other end of the slanted line (**C**). Use the compass to draw an arc from **C** to **D**. Next, bring the marking end of the

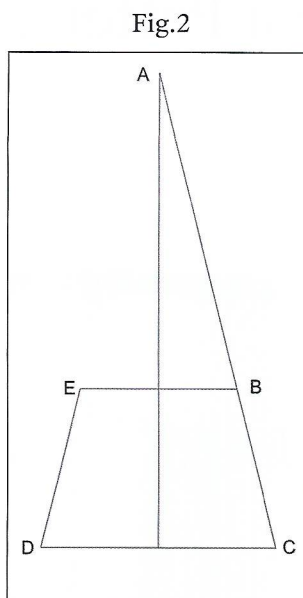


Fig.2

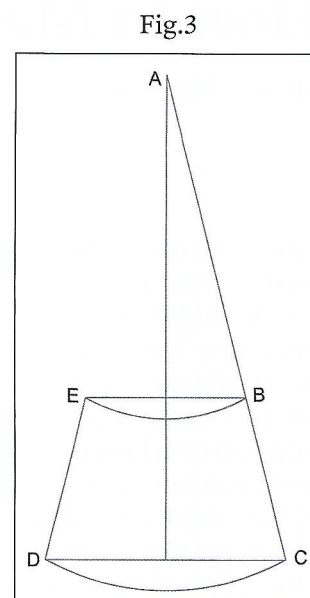


Fig.3

compass to **B** and draw an arc to **E**. The result is shown in **Figure 3**.

Taking the two slanted sides and the two arcs, you have a perfect pattern for your cone that will give you straight lines at the top and bottom when it is wrapped so that the slanted edges meet (**fig.4**)!

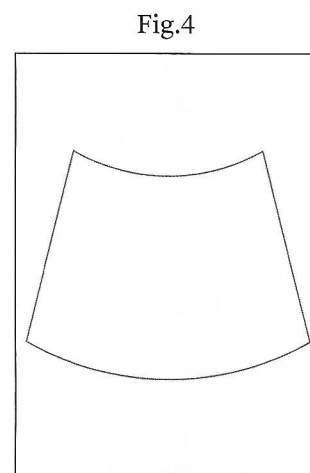


Fig.4

Full Leather Wrap

Let's apply that technique to making a wrap for a 20-ounce Yeti tumbler. Using the powder-coated Yeti cups as "inspiration," we can take the desired dimensions from the powder-coated area. That will leave an exposed area to drink from and a matching area at the bottom. The height of the wrap will be 5.5 inches. This leaves approximately 1/2 inch

of the cup exposed at the top and bottom. The circumference of the cup at the top of the designated area for the wrap is 11 inches, while the circumference of the cup at bottom of the designated area for the wrap is 9-3/8 inches. I plan to use 6/7 oz. leather for the wrap, so following the calculations from the previously cited article by Natalie Orfandi, add 1/2 inch to each of

those circumferences. So, *c1*=9.875" (9-7/8"); *c2*=11.5"; and *h*=5.5" (**fig.6a**; see **Pattern Pull-Out** for full-size template, or follow my directions above to draw the pattern.

All that remains is how to connect the ends together once they wrap around the cup. One option is to use two or three short straps with snaps. A second option

would be to use a baseball stitch to sew the ends together. Another, and more elegant, way is to lace the ends together.

The first step is to lay out the holes for the lacing. I use a single line of matching, 1/8-inch holes set 3/16" in from the edges and with 3/8 inch between holes. When laying these out, I start at the edges (3/16 inch from the top and bot-

tom edges) and work my way towards the center making any adjustments in the spacing in the center. The resulting wrap pattern is shown to scale in the **Pattern Pull-Out**. There are a variety of

lacing patterns that can be used once the holes are in place. I prefer a stair-step, criss-cross pattern (see **Stair-Step Criss-Cross Lace** instructions in fig 5).

Fig.5

From Outside In L1, In R1	L1 ○ ○ R1
L1 down and across in R2 R1 down and across in L2	L2 ○ ○ R2
L1 down and across in R3 R1 down and across in L3	L3 ○ ○ R3
L2 down and across in R4 R2 down and across in L4	L4 ○ ○ R4
L3 down and across in R5 R3 down and across in L5	L5 ○ ○ R5
L5 across and in R5 R5 across and in L5	L3 up and out L2 R3 up and out R2
From Inside Cross and Out R1, Out L1	L4 up and out L3 R4 up and out R3
L2 up and out L1 R2 up and out R1	L5 across and out R5 R5 across and out L5
	Both ends underneath the final cross and one vertical stitch.

Another way to close the wrap is to use "the seam" as described in the previously cited article. For a piece of this size, I use 3/8" holes. As explained in the referenced article, you need to adjust the size of your pattern to provide the material to create the seam, in this case adding 3/8" of material on the two sides to be connected. With a non-rectangular pattern such as this one, however, the process for incorporating this extension is different. Initially, you

might think that you just add another 3/4" (2 x 3/8") to the circumferences c1 and c2 (that was my initial approach). Believe me, that doesn't work and results in a basic mess.

The key is to visualize that the center of the final seam will be at the current boundaries of the pattern, and the material added will wrap over the current ends. Thus, you need to duplicate the very ends of the pattern, then add them onto the base pattern.

Barry King Tools

HANDMADE MAULS, MALLETS, AND STAMPING TOOLS

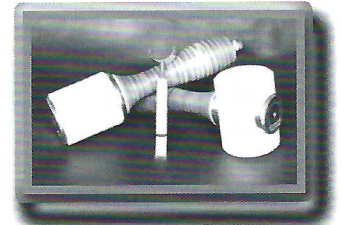


Sheridan Style Stamping Tools:

- ◆ Stainless Steel
- ◆ Hand Crafted
- ◆ From Bar-grounders to Veiners, we have the tools needed for Sheridan Style carving.
- ◆ Prices start at \$20.00 ea.

Mauls and Mallets:

- ◆ Leather Handles
- ◆ Durable Nylon Heads
- ◆ Polished Brass Fittings
- ◆ From 12 oz. to 6 pounds
- ◆ Prices start at \$45.00



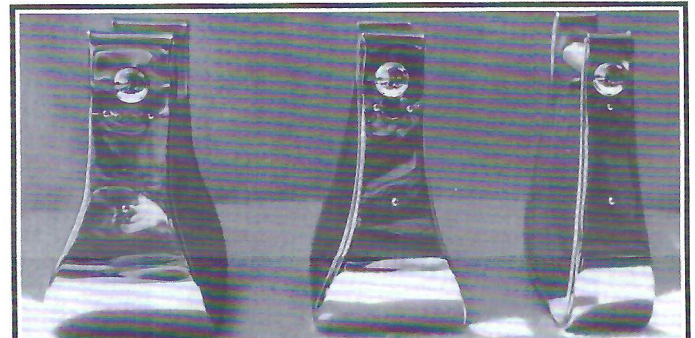
Swivel Knives:

- ◆ Solid Brass ◆ Free Spinning bearing design ◆ \$45.00 with 1 blade
- ◆ Several barrel sizes and blades to choose from

Call or write for a free catalog • 1751 Terra Avenue
Sheridan, WY 82801

307-672-5657 • Fax 307-673-8588

Email: kingtool@fiberpipe.net
Web: www.barrykingtools.com



"Stir it up" with Weber Stirrups!

Celebrating our 28th Anniversary

Each Stirrup made of Laminated Stock for added strength by Nettles Stirrups.

Metal cover wraps around all edges. Cover offered in Stainless Steel, Brass, Copper.

Sizes range from 1" to 6" in a Flat Bottom Stirrup. Also available in Oxbow and Overshoe

Custom Orders Welcome.

Weber Stirrups

1507 N McDermott Rd, Nampa, ID 83687

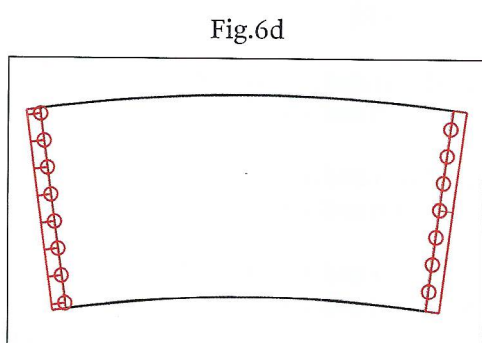
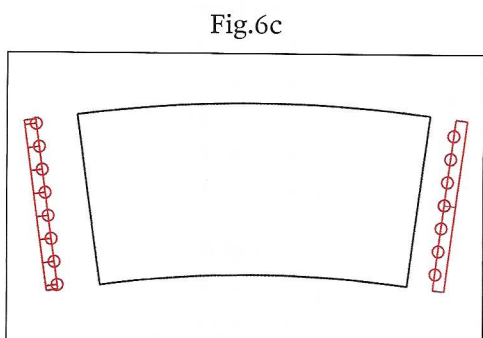
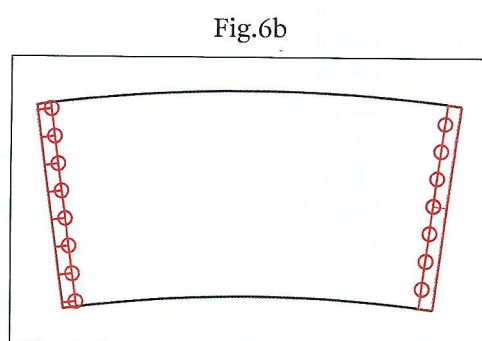
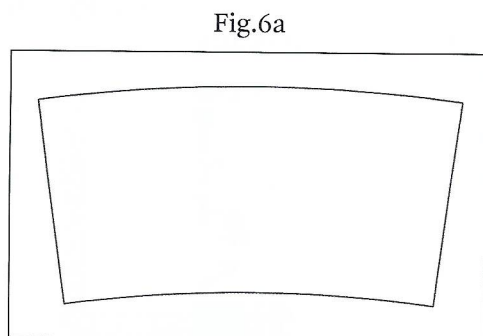
Phone: **208-466-2870**

www.weberstirrups.com trinaweber@msn.com

"We would like to take this moment to thank all our customers for 27 wonderful years of doing business. Every call is special." Mrs. Trina Weber.

Established 1985

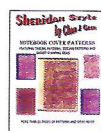
Figures 6a-d illustrate these steps. Start with the base pattern (fig.6a). Lay out the holes and cuts for "the seam" on the inside of the basic pattern (fig.6b in red). Now, pull away the hole and cut patterns (fig.6c), and attach them to the ends of the base pattern (fig.6d).



The title picture shows examples of cup wraps using both of these approaches to closing the wraps. (The laced example is not a full wrap, not for a Yeti, and uses holes that are more closely spaced than in the accompanying pattern.) I hope this article helps you to get a grip on your beverage containers! ↑

CHAN GEER

INSTRUCTIONAL DVDS,
HOW TO BOOKS,
PATTERN BOOKS,
PATTERN PACKS,
ONE-ON-ONE INSTRUCTION



GEER'S CUSTOM
LEATHER
41 W 7TH ST
SHERIDAN,
WYOMING 82801
307-674-9226



To all who participated, sponsored & assisted:

THANK YOU
for a great Show!

SHOPTALK!

WILDHORSE
RESORT & CASINO

TRAVEL
PENDLETON

Pendleton
CONVENTION
CENTER

Hamley & Co.
EST. 1883

Adrian Buckaroo girl
The Moss Brothers Band

@pendletonleathershow
www.pendletonleathershow.com

Mark your calendars:

Nov 6 & 7, 2020