

***Custom Yarnover Toe Up Short Row Toe & Heel Sock:
Guide to Measuring, Gauging and Creating a Pattern***

By

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Video Links:

1. [How to do a Short Row Toe-Heel Toe Up Sock \(Part 1\)](#)
2. [How to do a Short Row Toe-Heel Toe Up Sock \(Part 2\)](#)
3. [How to do a Short Row Toe-Heel Toe Up Sock \(Part 3\)](#)



This sock pattern is made from the toe up using Judy's Magic Cast On and yarn over short rows. I also used the Magic Loop Method so that I could knit both socks at one time, however, if you choose to knit one sock at a time, you could use any method of knitting in the round (i.e., Magic Loop, DPN's, Two Circular Needles). In addition I used a tubular bind off which produces a very elastic edge.

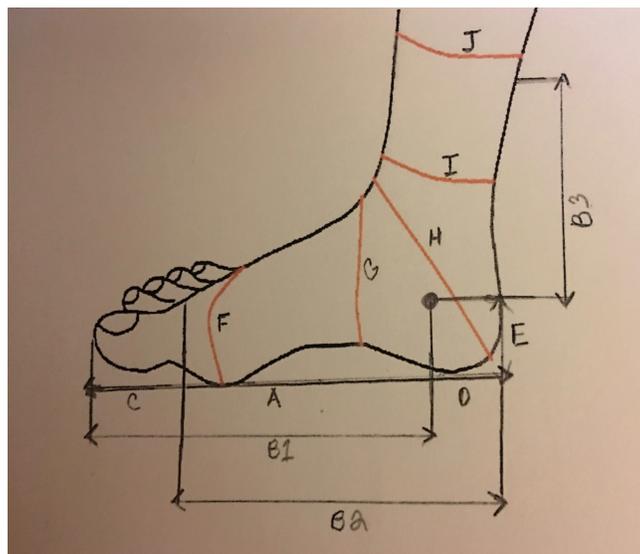
For this sample I used Jaeger 100% Extra Fine Merino Chunky. Each ball contains 50 grams/69 yards. One sock used a total of 35 grams. I also used size 10 – 40 inch circular needles. Please note that I only recommend using heavy weight yarn for the purpose of learning these techniques. Because this is a generic pattern, any weight yarn and measurements can be used to make your practice socks. If you prefer starting out with sock yarn, I'll provide a link to my favorite sock yarn. It's from Must Stash Yarn and it is exceptional quality. It is so soft that one would think it's 100% Merino, but it's actually a blend of 75% merino and 25% nylon. The colors are mesmerizing and when the label says "Perfect Sock – Self Striping" that's exactly what they mean. Here is the link to their website [Must Stash Yarn](#)

For the sample sock pictured above, I had no pattern of any kind. I simply used my gauge and measurements to create the sock and I will walk you through the necessary steps to customize your own sock. If you already have a pattern in mind and want a perfect fit, just apply the results of your worksheet and start. I'm confident that you'll find it is much easier than you think. Once you establish the yarn, your gauge, and foot measurements you'll be well on your way to creating custom fit socks.

Foot Measurements

Using the following chart, measure each area A through J and record the results on the following page. Measuring ones own foot can easily be done by yourself, however, if you find it difficult, ask a friend to assist you.

It's a good idea to have a traditional ruler and a tape measurer. Please make sure that you use a tape that is newer and in good condition...preferably plastic coated as cloth has a tendency to fray and stretch with age. In my opinion it's best to measure a bare foot. After all, that's how your sock will be worn!



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Please note that A, B₁, B₂, B₃, C, D, and E are straight-line measurements whereas F, G, H, I, and J are all circumference measurements.

Some tips on measuring:

When measuring the length measurements, you may find it easier (and more accurate) to stand on a white piece of paper and place yourself against a wall.

To measure circumference, you don't want any ease. Always hold the tape measure snug but NOT tight. If you experience pinching or if a mark is left behind, you're probably holding the tape measurer too tight.

Finally, remember that if you suffer from bunions, you do not want to include them in your measurement. Adjust your tape measurer by sliding it just past the bunion. If you're wondering why you don't measure the bunion, the answer is simple: why would you base the entire sock circumference on an area that probably represents less than 10% of your foot? That means 90% of your sock would be too large.

- A) Total length of foot = _____
- *B₁) Length of foot from the tip of longest toe to anklebone = _____
- *B₂) Length of foot from where the toe meets the joint to back of the heel = _____
- *B₃) Length of leg from anklebone protrusion to where the sock will end = _____
The measurement of B₁, 2, and 3 should be the same and/or close to each other.
- C) Length of toe from tip of the longest toe to where the toe meets the joint = _____
- D) Length of heel from the middle of the anklebone protrusion to back of heel = _____
To take this measurement, line a pencil up vertically from the center of the anklebone protrusion straight down to the floor. Then measure from that point to the back of heel - it's helpful if you're standing on paper and mark the measurement points. These measurements are often the same and/or close to the toe length.
- E) Height of heel from the middle of the anklebone protrusion to the floor = _____
- *F) Foot Circumference of the widest part of foot (metatarsal) = _____
***Adjusted foot circumference (AFC): F minus 10% or 1 inch = _____**
*** Negative ease**
- G) Gusset circumference (thickest part of foot) = _____
- H) Diagonal heel circumference = _____
- I) Ankle Circumference = _____
These measurements are often the same and/or close to the foot circumference.
- J) Upper ankle circumference (where sock will end) = _____

Balance is the best word to describe the fit of the average sock for the average foot. When you look at the measurement chart, you will notice that several measurements are the same if not similar to one another. For example, B₁, B₂, and B₃ are the same lengths. That means that even the cuff (B₃ on the measurement chart) has an ideal length that maintains the balance and overall look of your sock. You'll also notice that the heel and toe lengths are comparable as well. Even the ankle and foot circumference measures the same on the average foot.

That being said, it's important to note that not all of us fit in the average foot category. In fact, sometimes our own feet don't match and unfortunately, most sock patterns are written for the average foot. This is why it is so important that you understand the construction of a sock and how the measurements relate to one another. With this understanding you'll be able to create a customized sock that fits you perfectly.

People are unique in many ways. We come in all different sizes, shapes, and colors and our feet are no exception. So what happens when your feet don't measure up as average?

Here are a few common fit problems for toe up socks and what can be done to correct them:

- 1) Sock is difficult to put on and is tight throughout the heel and instep
- 2) Sock fits well but is baggy throughout the heel and instep
- 3) Socks are loose and baggy
- 4) Cuff is very tight and cuts into leg

Variations in gusset circumference, foot circumference and diagonal heel circumference on short row and afterthought heels

When socks fit poorly throughout the heel and instep, it's usually because the wearer is either flatfooted or has a very high arch/instep. Adjustments such as adding gussets can be done for those with a higher instep. For those individuals with a flatter foot, other adjustments can be made to create the best fit. The last thing you want is for the problem to become evident after you've completed the sock.

The easiest way to determine if gusset adjustments need to be addressed is to do some easy math with the measurements taken from your foot.

Gusset Circumference (G) divided by adjusted foot circumference = _____

If the result is greater than **1.15**, your arch is higher than the average foot. It would probably be beneficial to add some gusset stitches to the instep. Unless the difference is a drastic amount, a 10% increase in stitches would be sufficient. On the other hand, a result of less than **1.0** would suggest a flatter foot. In this scenario you

would decrease 10% of the stitches. Please visit my [website](#) and watch my video on how to add gusset stitches to your short row toe and heel socks.

Negative Ease

Before we begin determining our cast on stitches, we need to discuss something that may have a great impact on the overall fit of your sock. It's called negative ease. Negative ease is a term that is applicable to garment knitters. This is because knitters create the fabric and, regardless of how tight the knitting may be, it will never be as tightly woven as commercially woven fabric. For this reason, your fabric will stretch. One might think that wouldn't be the case because as sock knitters we all know that the gauge requirement for socks is much tighter than it would be for a sweater using the very same yarn.

The definition of negative ease for a sock is quite simple: the knitter is compensating for the additional elasticity by knitting the sock smaller than the actual measurement of the foot. By contrast, positive ease is knitting the piece larger than the measurement. With the exception of possible medical conditions (i.e., diabetes, heart failure, etc.) there are few situations that would warrant this.

How much negative ease to allow for depends on what you're making and how it's going to be worn. For example, a sock that has no decorative pattern to it (i.e., stockinette all around) will stretch far more than something with a heavy cable pattern. Another example of a non-stretchy fabric would be stranded color work or a Fair Isle pattern.

Another factor is the yarn you choose. Everything from the fiber content to how it's spun will have an affect on the elasticity of your finished piece. Yarns that contain silk, alpaca, and bamboo may have a tendency of stretching more than wool/nylon blends. This does not mean one is superior over the other but rather to be mindful and take the necessary steps to stave off a potential knitting disaster.

So how much negative ease should you allow for? For adult socks the rule of thumb is about 10% off of the circumference, or 1-inch, and approximately 5% off of the circumference, or ½ inch, of a child's foot. Many knitters also reduce the length of their socks. Typically, no more than a ½ inch is taken off the length of an adult sock and ¼ inch on a child's.

Binding Off

This may sound like a no brainer, but choosing a bind off that lacks elasticity is a sure fire way to end up with a sock that is so uncomfortable you'll never want to wear it again. Examples of bind offs that are suitable for toe up socks are the Russian bind off, sewn bind off, and tubular bind off in both 1x1 and 2x2 ribbing. Videos are available for all 4 methods on my website. [Tubular bind off in 1 x 1 rib](#), [Tubular bind off in 2 x 2 rib](#), [How to do a sewn bind off](#), [How to do a Russian Bind off](#)

Whether your foot is average or not, I highly recommend an exceptional book that will help you understand all aspects of sock knitting and fit. Many of the fit issues I've mentioned Kate will address in great detail. The book is called "Custom Socks: Knit to Fit Your Feet" by Kate Atherley, an Interweave publication. Here is a [link](#) if you wish to purchase her book.

Gauge Swatch

I cannot stress the importance of doing a nice, big gauge swatch. The information that swatch provides is invaluable. I know it's not what knitters want to hear, but not doing it means your socks may never fit properly.

As a general rule, I typically cast on 25 to 30 stitches for my gauge swatch and work it for a minimum of 4 inches. Because you are knitting in the round, your gauge swatch should also be done the same way.

I also think it's worth mentioning that I'm personally not a big fan of doing the circular speed swatch method. If you're not familiar with it, it's a way of working the stitches back and forth on a circular or double-pointed needle without ever turning your work. Supposedly not introducing a purl row (WS) into your work will create the identical fabric as knitting in the round. I'm sure this method works well for some knitters, however, I am not one of them. If you are interested in trying it, be sure you do 2 swatches, one in the speed method, the other in the traditional way. If both swatches measure the same, then it's safe to say that you can use the speed method. If not, stick with the old reliable.

To get the most accurate reading, it's a good idea to measure several areas of your swatch – both rounds per inch and stitches per inch. Once you've established your gauge, write down the information, as you'll need it for your calculations.

Now that you understand how to measure your foot and do a circular gauge swatch, let's apply them to the sample sock above.

Gauge for the sample sock:

4 stitches per inch
6 rounds per inch

Measurements for the sample sock foot:

A) Total length of foot = 6"

*B1) Length of foot from the tip of longest toe to anklebone = 5"

*B2) Length of foot from where the toe meets the joint to back of the heel = 5"

- *B₃) Length of leg from anklebone protrusion to where the sock will end = 5"
The measurement of B₁, 2, and 3 should be the same and/or close to each other.
- C) Length of toe from tip of the longest toe to where the toe meets the joint = 1"
- D) Length of heel from the middle of anklebone protrusion to back of heel= 1"
To take this measurement, line a pencil up vertically from the center of the anklebone protrusion straight down to the floor. Then measure from that point to the back of heel – it's helpful if you're standing on paper and mark the measurement points. These measurements are often the same and/or close to the toe length.
- E) Height of heel from the middle of the anklebone protrusion to the floor = 2"
This measurement would only be used for a sock that uses a heel flap.
- F) Foot Circumference of the widest part of foot (metatarsal)= 7"
- G) Gusset circumference (thickest part of foot)= 7½"
- H) Diagonal heel circumference = 8"
- I) Ankle Circumference = 7"
These measurements are often the same and/or close to the foot circumference.
- J) Upper ankle circumference (preferably where sock will end) = 7¾"

Basic proportions for a Short Row Sock and the math to create a customized pattern

Foot Circumference (F) = 100% of the number of stitches needed before adjustment for negative ease = 7"

Adjusted foot circumference (AFC) = (F) minus 1 inch x stitch gauge is now the maximum stitch count for cast on and cuff = 6"

Max stitches = (AFC) x stitches per inch will represent the maximum stitch count for the cast on and cuff = 24 stitches

Be sure the result is divisible by 4 for 2 x 2 ribbing. (24 divided by 4 = 6)

If you choose to incorporate a stitch pattern, be sure to take into account the repeats.

Number of heel/Toe stitches: 50% of the Max Stitches from above = 12 stitches

Unworked stitches between yarnovers on toe and heel = 12 x .30 = 3.60 rounded up to 4

This number is easily determined by the result from above and multiplying by 15% for a narrow toe/heel, 20% for a medium width and 30% for a wider, more blunt toe/heel. Be sure to round up or down to get a whole number.

Length of foot before heel (B₁) = 5"

This number represents the length you must knit before beginning your short row heel. If you wish to incorporate negative ease on the length, subtract ½ inch from this number.

Total Length of sock leg (B₃) = 5”

We now have recorded all the information necessary to create a short row sock and are ready to write our pattern.

If you wish to use the worksheets I’ve provided in this document, please feel free to copy the pages and apply your personal numbers.

Lets begin!

Pattern

Using the results from the calculations on pages 7 and 8, we will create our sock pattern.

You can either work your entire sample sock in stockinette or do as I did and work a small cable pattern up the center of the instep.

Abbreviations:

K: Knit

P: Purl

RS: Right Side

LLC: Left leaning cable. Slip 2 stitches onto a cable needle and hold in front. Knit next 2 stitches on left needle then knit the two stitches from cable needle.

RLC: Right leaning cable. Slip 2 stitches onto a cable needle and hold in back. Knit next 2 stitches on left needle then knit the two stitches from cable needle.

If you’ve never done so, this would be a great project to learn how to cable without a cable needle. [How to Cable without a cable needle](#)

K2tog: Knit 2 stitches together. A right leaning decrease.

K3tog: Knit 3 stitches together. A right leaning decrease.

SSK: Slip as to knit, slip as to knit, slip the 2 stitches back to the left needle and knit the stitches together through the back loop. A left leaning decrease.

SSSK: Slip as to knit, slip as to knit, slip as to knit, slip the 3 stitches back to the left needle and knit the stitches through the back loop. A left leaning decrease.

SSP: Slip as to knit, slip as to knit, slip the 2 stitches back to the left needle and purl the stitches through the back loop. A left leaning decrease on the RS.

SSSP: Slip as to knit, slip as to knit, slip as to knit, slip the 3 stitches back to the left needle and purl the stitches through the back loop. A left leaning decrease on the RS.

Using the Judy’s Magic Cast on and the Magic Loop method, cast on 24 stitches, 12 per needle. [How to do Judy's Magic Cast on using the Magic Loop Method](#)

Work the decreasing yarnover short rows until 4 stitches remain in the center unworked.

Now begin your increasing short rows until all stitches have been worked.

Join the toe to the sole stitches (the remaining 12 that have yet to be worked) by transferring the last yarnovers to the other side. First you'll work the yarnover with the first stitch of the sole and K2tog and continue knitting across the sole stitches leaving the last stitch unworked. Transfer the remaining yarnover from the toe stitches to the sole (you may find a crochet hook to helpful for this task) and work an SSK. The toe is now complete.

If you're working 2 socks at a time, it's important to note that both the heel and toe must be worked separately. It's also worth mentioning that you may find it easier to slip the completed toe onto a spare needle before casting on to start the second.

Work 3 rounds of stockinette and then begin cable pattern.

Cable Pattern:

Round 1: K2, P2, K4, P2, K2, K12

Rounds 2, 3 & 4: Repeat round 1

Round 5: K2, P2, LLC, P2, K2, K12

Rounds 6, 7, 8 & 9: Repeat round 1

Round 10: K2, P2, RLC, P2, K2, K12

Repeat these 10 rounds until you reach the point of working the heel. For the sample sock, I worked a total of 5 inches.

Begin the heel on the 12 sole stitches and work exactly the same as you did for the toe. Once the heel is completed, join the stitches to the instep just as you did for the toe.

Once you've completed the desired length, convert to a 2 x 2 ribbing. You'll notice that at first the rib pattern will not line up on the instep. That's okay...after a few rounds it will not be noticeable. I worked 8 rounds of 2 x 2 ribbing and did a tubular bind off.

Sources:

Simple Socks Plain and Fancy, written and illustrated by Priscilla A. Gibson-Roberts.

Custom Socks: Knit to Fit Your Feet, Kate Atherley