MADALYNNE INTIMATES








# HOW TO DRAFT AN UNDERWIRE BRA PATTERN

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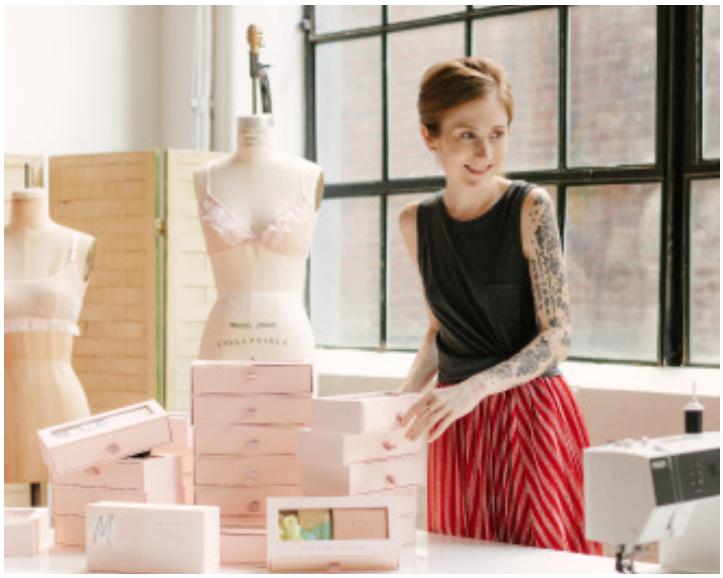
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# ABOUT MADALYNNE INTIMATES

Madalynne Intimates is the manifestation of Maddie Flanigan's passion for sewing and teaching lingerie. She is the founder and owner, and her brand offers hand crafted lingerie as well at DIY lingerie kits, lingerie sewing patterns, 1-on-1 lessons, and intensive bra making workshops. Overall, Madalynne's overarching vision is to provide women with well fitting intimates that support more than just your shape. From a floral lace halter bralette to a cheeky underwear, intimates that "lift" your personal style. At the same time, intimates worth baring.



## FEATURED IN:

NY TIMES FASHION, COSMOPOLITAN, VOGUE, FORBES, HUFFINGTON POST, THE KNOT, PHILLY MAG, PHILLY MAG WEDDINGS, PHILADELPHIA BUSINESS JOURNAL, CBS PHILLY

Best of Philly 2018 - Lingerie Workshop

Best of Philly 2019 - Plus Size Lingerie

## UNDERWIRES: A CANTILEVER SYSTEM

In order to draft an underwire bra pattern, it's important to understand the underwire system and its purpose.



Simple cantilever

The purpose of an underwire is to contour the breast tissue entirely, provide lift, and counteract gravity. Underwire bras achieve this by a cantilever effect that involves a combination of the underwires, the band, the cups and to a lesser extent, the straps. In a cantilever system, there is a fulcrum, or a pivot point, that is lifting a load. In the case of an underwire bra, the fulcrum are the underwires, which are lifting the load of the breasts. The cups, the frame and the band form the lever. The straps help to keep the breasts in the correct position to allow the lever to function, but their purpose is not to support the breasts. The straps should only provide 10-20% of support.

Since underwires are only part of the support system, the amount of support they provide is dependent on the cups and the band. A low cut cup, such as a demi, will not provide the same support as a full coverage cup, even if the same underwire is used.

## PARTIAL BAND BRA VERSUS A FULL BAND BRA

The first step in drafting an underwire bra pattern is choosing an underwire. Just like it's important to understand the underwire system, it is also important to understand the difference between a partial band and and a full band bra before proceeding to this step. They have different patterns, cup volume and construction. You cannot sew the cups from a partial band bra into the frame of a full band bra. You also can't decide mid-sewing to change a partial band bra to a full band bra or vice versa. The only pattern pieces that are interchangeable are the straps and in some cases, the back band.





A full band bra is a bra in which the cups are sewn into a frame (left picture above), and a partial band bra is a bra in which there is no frame and the band and the bridge are separate pieces (right picture above). For both styles, the underwire sits at the base of the breast, but the position of the wire seam is different. To understand this better, let's walk through the construction of each. On a partial band bra, the cups are sewn to the bridge and the band, and then channeling is attached. After, the channeling is flipped to the INSIDE of the cup and stitched a second time. On a full band bra, the cups are sewn to the frame, and then channeling is attached. After, the channeling is flipped to the OUTSIDE of the cup and stitched a second time. So, a partial band has an extra 3/8" built into the pattern to account for the channeling being flipped to the inside of the cup.

## CHOOSING AN UNDERWIRE AND SISTER SIZING

Okay, so now you're ready to draft an underwire bra pattern! The first step is to determine what style and size to use. First, let's go over how underwires are sized.

Underwires are sized based on a B cup. So a 34 wire has the correct volume for a 34B bra. The reason underwires aren't sized based on cup letters is that original bras were sized by the band only and only available in one cup size. Over time, cup sizes were introduced, but the sizing system remained the same. The numbers 32, 34, 36 relate to cup volume, not the actual measurement of the band. Also, many foreign underwire vendors use different numbering systems. The underwires that I source for the Madalynne X Simplicity 8229 are available in sizes 70, 75, 80, 85, 90, 95, 100, 105, 110, 115, 120. Even though the numbers are different, the method is the same.

This doesn't mean a size 34 is ONLY used for a 34B. Bras use a concept of "sister sizing" so many sizes can use the same underwire. What is sister sizing exactly? Sister sizing refers to the same cup volume but on a different band size. As a bra band gets smaller, the same cup volume will have a bigger letter, and vice versa. In other words, a B is not a B is not a B. A 36B is a full cup size larger than a 34B, and a 36B has the same cup volume as a 38A. Sister sizing can be extremely beneficial when trying to find a size. Let's say the cup of a bra fits but the band is too tight. So, you would go up one band size, but go down one cup size (i.e. from a 36B to a 38A). The cup volume and the undewire would be the same.

BAND SIZE →

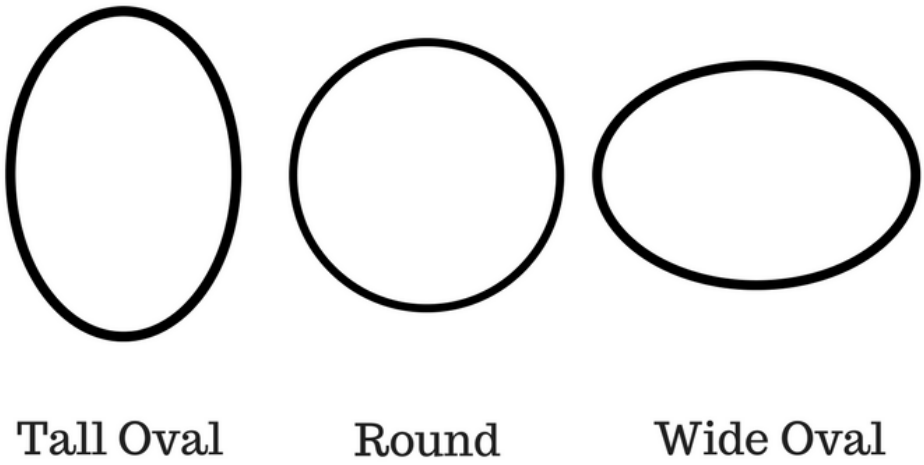
| ← CUP VOLUME | 30 | 32 | 34 | 36 | 38 | 40 | 42 | 44 | 46 | 48 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 30B | 32A | 34AA | | | | | | | |
| | 30C | 32B | 34A | | | | | | | |
| | 30C½ | 32B½ | 34A½ | | | | | | | |
| | 30D | 32C | 34B | 36A | | | | | | |
| | 30D½ | 32C½ | 34B½ | 36A½ | | | | | | |
| | 30E (DD) | 32D | 34C | 36B | 38A | | | | | |
| | 30E½ | 32D½ | 34C½ | 36B½ | 38A½ | | | | | |
| | 30F (DDD) | 32E (DD) | 34D | 36C | 38B | 40A | | | | |
| | | 32E½ | 34D½ | 36C½ | 38B½ | 40A½ | | | | |
| | 30G (DDDD) | 32F (DDD) | 34E (DD) | 36D | 38C | 40B | | | | |
| | | 32G (DDDD) | 34F (DDD) | 36E (DD) | 38D | 40C | 42B | | | |
| | | 32H | 34G (DDDD) | 36F (DDD) | 38E (DD) | 40D | 42C | 44B | | |
| | | | 34H | 36G (DDDD) | 38F (DDD) | 40E (DD) | 42D | 44C | 46B | |
| | | | | 36H | 38G (DDDD) | 40F (DDD) | 42E (DD) | 44D | 46C | 48B |

*sister sizing chart*
*Sizes in the same row have the same cup volume and underwire size*

Next, let's go over different underwire styles and shapes. Underwires can be tall and narrow, short and shallow, high at the side, high at the front, thinner gauge, thicker gauge, etc. What makes it even more confusing is that there is no standardization between vendors. So a classic shape underwire from one vendor might be a different shape than a classic shape underwire from another vendor. French underwires tend to be narrower; American underwires tend to be wider. Every vendor will have a catalog or a brochure - ask for it as well as samples before ordering.

There are two main reasons for different underwire styles. One is to suit different body types, and two is to suit different bra styles. Let's talk about different body types.

First, it's important to remember that there are many different body types, and this is only a generalization to help guide you. When it comes to body types, think about breast shape. Imagine that your breasts disappeared and all that is left is a circle where it attached to your chest wall. What does that circle look like? Is it tall and oval? Is it round? Your underwire should be close to this shape.




The other consideration is different styles of bras. Is it a classic bra? Then I would recommend a "classic" underwire. Is it a plunging bra? Then I would recommend a "demi " underwire. Is it a strapless bra? Then I would recommend an underwire for this style.

## WIRE SPRING

Drafting an underwire bra starts with the underwire, whether it's a classic, a plunge or a strapless style. You should not drape or draft a pattern and then choose an underwire. Why? You will see exactly when we get to drafting, but one big reason is because you haven't taken wire spring into account. When a bra is worn, the band stretches and applies tension, which flexes the underwire open so it matches the natural shape of the "breast root". This also explains why a bra with a band that is too big might feel like the wire is too small. It's because there is no tension opening the wire. This is also why a bra fitter should always fit the band first.

## MONOWIRES

Monowires are as elusive as bra tulle. Seriously, what the heck are they? First, is it one word or two? Are they different than regular underwires? Do they serve a different function or are they just for aesthetic? Do they create a monoboob?

Monowires are drafted from two classic underwires. If you overlap them so that the base of the curves align, you will see that they are related. Monowires are also curved, or 3-dimensional, so that they shape to the curvature around the body. Refer to top and bottom photos on the following page.



When you first look at a monowire, it might seem narrow. That's because on a classic underwire, there is space in between the underwires for the bridge. On a monowire, the bridge is merged. This however, pushes the breasts closer together. Refer to middle photo on the following page.



The Madalynne X Simplicity 8711, pictures to the left, uses a monowire.



01. MONOWIRE BASED ON CLASSIC UNDERWIRE



02. ON A REGULAR UNDERWIRE. THERE IS A SPACE IN BETWEEN UNDERWIRES FOR THE BRIDGE

02. ON A MONOWIRE, BRIDGE IS MERGED



01. MONOWIRE IS 3-DIMENSIONAL

## DRAFTING AN UNDERWIRE BRA PATTERN

1. The first step is to establish the balance point on the underwire. This is mostly visual, but you can use a grid or a cutting mat.

2. Draw one vertical and one horizontal line that are at a perpidicular angle to each other. Line up your underwire against these guidelines with the underwire inside the line at the center front.

Mark 1/4" down from the top of the underwire at the center front. Then shift/tilt the underwire down to this point. This will cause the balance point to move back but you do not remark the balance point. This tilt allows the underwire to fit better against the chest in the final bra.

Trace around the underwire along the inner edge - this is the wire seam line.

Mark 1/2" out at the underarm - this will account for wire spring.

Mark 1/4" above the end of the underwire at the underarm - this will account for wire spring. Failing to put this ease in will mean your wire won't fit into your final bra. If it does, it may squeak or break out of the channeling.

Mark 3/8" out from the wire line at the center front, and then draw a vertical line - this will become the new center front line.

Last, mark 1/4" above center front - this will account for seam allowance.

## SEWING AN UNDERWIRE BRA

**Construction steps are for the Madalynne X Simplicity 8229*
**Use ballpoint or stretch needle for all steps except those with channeling. Use universal needle when sewing channeling*
**All seam allowances 1/4"*

### Assemble bra cups

a. With right sides facing, sew inner and outer cups together. Use a straight stitch or a serge.
b. If used a straight stitch for step a., finish seam allowances by turning SA to one side and topstitching 1/8" away from seam with another straight stitch or zig zag stitch.

### Finish top edge of cup

a. With wrong side facing up, place 1/4" thin elastic about 1/8" from lowest/bottom point of scallop. Sew through center of elastic with a zigzag stitch approximately the width of the elastic.

### Finish top edge of frame

a. Sew a straight stitch 1/4" from top edge of frame at center front. You do not need to backstitch. Turn back top of frame along the stitch line and sew another line of straight stitches 1/4" from the top edge. You do not need to backstitch.

### Sew side seam

a. Sew the back band to the frame at the side seam. Use a straight stitch.

### Attach channeling

a. With wrong side facing up, fold the bra so that the cups and the bridge are pointing in one direction and the cup seam allowances are pointing in the other direction.
b. Place channeling over seam allowance with left edge of channeling extending 1/8" past wire seam on inside. Sew channeling to cup seam allowances approximately 1/8" from left channel's edge. Use a straight stitch and

make sure that your stitches are on the same stitches for the wire seam. Stop stitching ¾" from underarm to allow for elastic to be sewn in next steps. Stitch all the way to center front.

### Attach bottom band elastic

a. With right side of back band/rame facing up, place elastic on top, with flat edge of elastic extending 1/8" beyond fabric's edge. The picot edge should face inward to the fabric and the plush side should face up.
b. Stretching the elastic slightly, sew along the picot edge with a zigzag stitch. Stitch width should NOT exceed half the width of the elastic. Stitch as close to the picot edge as possible.
c. Flip the elastic to the wrong side and sew the opposite edge with a zigzag stitch. Again, stitch width should NOT exceed half the width of the elastic and stitch as close to the edge as possible.

### Attach elastic at top back band/underarm

a. Sew the elastic at the top back band/underarm exactly as it was done for bottom band, except stretch the elastic slightly more in the underarm area.

### Secure channeling

a. With right side facing up, topstitch 5/16" away from cup seam to secure channeling in place. Use a straight stitch.
b. Insert underwires.
c. Close channeling by sewing back and forth with a straight stitch at center front and underarm.
d. Trim channeling so it is flush with center front and underarm edge.

### Finish side seams

a. Place a strip of channeling over side seam with one edge aligned with seam. Sew around perimeter approximately 1/8" from edge.

### Attach hooks & eyes

Eyes go on the left side of the bra as if you were fastening it on someone else, and hooks go on the right.
a. Open tape on eyes and wrap around raw edge at center back. Sew using a straight stitch 1/8" from the tape's edge.
b. For the hook side, wrap the tape around the fabric's edge, and sew 1/8" from edge with hook facing up. You must sew with hooks facing up to avoid your machine from getting damaged.

### Make and attach straps

a. Cut a length of strap elastic 18" long.
b. Feed one end of strap up through the bottom of one slider, then over the center bar and down through the other side. It should look like a belt buckle, with one short end and one long end.
c. Fold the short side down and stitch back and forth with a straight stitch to secure. Trim close to stitching.
d. Turn elastic over and put one ring through the long side.
e. Weave long side up and over center bar of the slider just like in step b.
f. With wrong side facing up, overlapping strap 5/8" at strap point. Using a straight stitch, stitch back and forth 1/4" from top edge of cup. Stitch another line parallel to the first and approximately 1/4" below (optional – for extra security). Trim edge if necessary.
g. To attach elastic at back, cut another strip of elastic that is 4" long and feed through ring. With wrong side facing up, overlap strap ½" at notch point. Stitch back and forth ¼" from top edge. Trim if necessary.

# FAVORITE BRA MAKING TOOLS+ TIPS

Having the right tools is just as important as having the right fabric and trims. Let's imagine you have a delicate lace that is soft, the perfect shade of pink, and just enough sheen to make it special – but without Odif's 505 spray adhesive, which is my secret weapon in almost all my lingerie ewing – it's a b**ch to sew. No really, the biggest b**ch you've ever met. Because no one sees or knows about your supplies when a project is finished, it's easy to skimp in order to save a few bucks here and there. I promise you though that these tools are what makes or breaks my lingerie projects.

Below are my top 5 bra making tools plus tips! These are my essential supplies that I use day in and day out, and if I were to run out mid project, I'd stopped and get more.

## Superior Threads Bottom Line Thread






A quick look at Superior Threads website and it's obvious that they know their threads. They have almost every type for almost every kind of project – silk, cotton, metallic, fusible water soluble and more. Their Bottom Line thread is a lint free, lightweight blending thread that becomes virtually "invisible" on light/pastel fabrics. It's for sewists who don't want their thread to show and/or don't like monofilament thread, which has a sheen. I use it most often during bra workshops and when sewing a lot of samples of a light color at the same time. Students and myself don't have to change the thread/bobbin when switching from blush pink to white or cream color fabric/elastics. This thread will blend in with all of them. It is available in 55 colors and can also be used in quilting, applique and for binding.

## Odif's 505 Temporary Spray Adhesive

This has become my best friend. I use it mostly to spray baste the main fabric to the lining fabric prior to cutting. It's the same concept as block fusing interfacing. Doing so reduces the time it takes me to cut a pattern. There's no drying time, so you can spray, adhere and cut immediately. It's also odorless and does not gum up on needles. My preferred brand is Odif's 505. I've used Sulky in the past, but the spray was not as even. Buy the largest can. Like 1.5 or 2 ounce hair spray for traveling, you'll go through it in a snap, and if you ordered it online, you'll end up paying double for shipping. Be aware of the time between when you adhere to when you sew. I make sure to sew within a couple days after adhering. If I don't, the glue wears off and the lining and main fabric become independent. It's a real hassle to spray baste back together!

I also use spray adhesive during sewing. One example is when I attached hooks and eyes. I open the tape, spray a little inside, fit it over the back opening, press in place and then sew. Having it firmly secured before sewing helps with getting the topstitching straight and even. I have never achieved the same look if I used pins.

## Woolly Nylon Thread

I've knew about woolly nylon thread for years, but was hesitant to start using it. As the name suggests, it is made from nylon fibers, which results in a stitch that stretches and recovers, provides more coverage and has a softer touch. That's the perfect equation for lingerie, which needs to stretch as well as needs to be gentle on the skin. Although it can be used in a sewing machine, I have only used it in the lower loopers of my serger. It's more expensive than polyester or cotton, but it's worth it. My preferred brand is YLI.



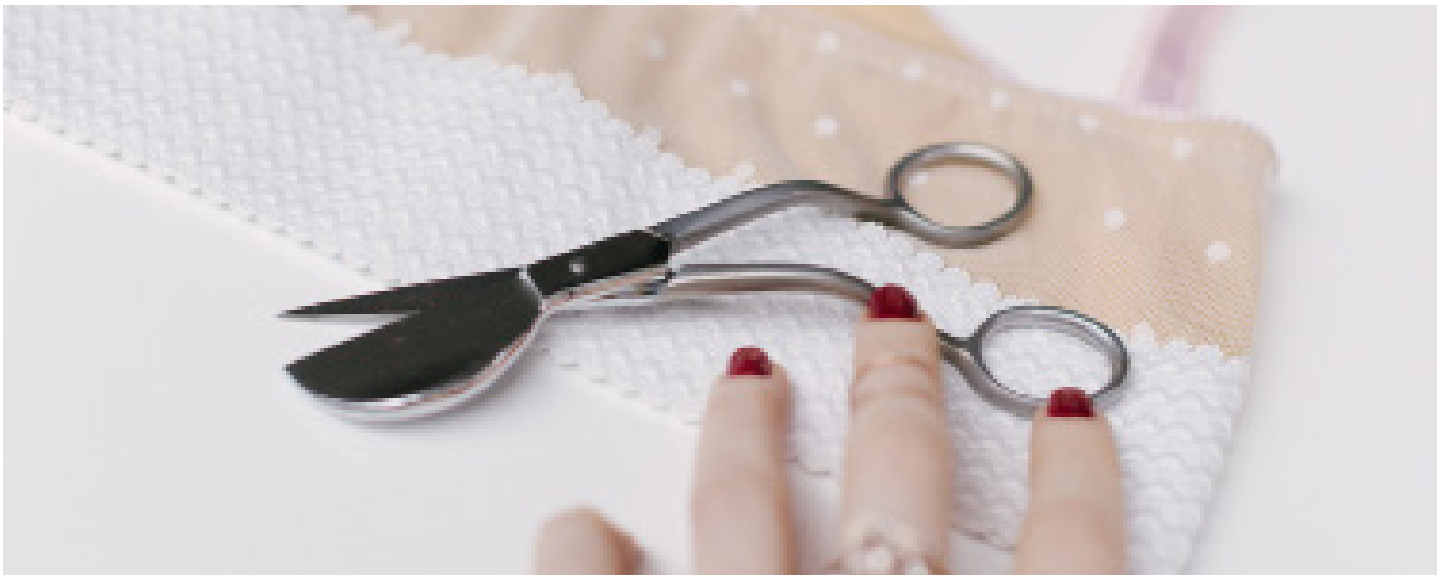


## Sulky's Water Soluble Stabilizer

Sulky's stabilizer majorly helps with sewing and serging delicate fabrics. If your machine is eating your fabric when either sewing or serging, try placing this on top and then sewing. When you're finished, run under water and voila! Or you can wait to finish your project and then wash the garment.

## Duck Billed Scissors

I'm always using my duck billed scissors them! They are one of those tools that as soon as you discover, you never go back and you don't understand how you did it before. I'm going to be brand loyal – I love Gingher! Expensive? Yes. Worth it? Totally. The paddle-shaped blade serves as a shield and a guide, which makes it easy to trim and grade seam allowances neatly. That's super important in lingerie when even if lined, the seam allowances are still visible.



*Shop Madalynne's favorite bra making tools on Amazon! I've created a shoppable list where you can purchase these and other helpful sewing supplies. Yes, I do make money off of every purchase, but this is more to help you out than make a buck. Profiting is simply an added bonus.*

# BOOKS

BARE ESSENTIALS: UNDERWEAR: CONSTRUCTION AND PATTERN DRAFTING FOR LINGERIE DESIGN

by Jennifer Lynne Matthews-Fairbanks

BARE ESSENTIALS: BRAS: CONSTRUCTION AND PATTERN DRAFTING FOR LINGERIE DESIGN (VOLUME 2)

by Mrs. Jennifer Lynne Matthews-Fairbanks

THE ANATOMY OF THE BRA, HOW TO SPEC A BRA AND BRIEF, HOW TO WRITE A BRA AND BRIEF TECH PACK, HOW TO GRADE A BRA AND BRIEF

by Laurie Van Jonsson

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