

STAR TREK: DEEP SPACE NINE, INSURRECTION, and NEMESIS

Formal dress uniform men's pattern Officer, Captain, and Admiral versions

Sizes S, M, L, XL, and 2XL



Drafted by Alex Beard
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FINISHED GARMENT MEASUREMENTS:

	S	M	L	XL	2XL
Shoulder to shoulder	18"	19 ½"	21"	22 ½"	24"
Chest (from 1" below arm hole)	43"	47 ½"	52"	57"	61"
Waist	37"	40"	43"	46"	49"
Sleeve length (from top of "center" quilt line on shoulder point)	24"	25"	26"	27"	28"
Sleeve cuff width	12"	12 ½"	13"	13 ½"	14"
Collar/neck	15"	16"	17"	18"	19"

FABRICS and TRIMS REQUIRED:

White wool gabardine = 2 yards
 Black wool gabardine = 3 yards
 Division color wool gabardine (sleeve cuff division stripes) = ½ yard
 White wool elastique = 1 yard (½ yard white and ¼ yard gray, for officer version)
 Gray wool gabardine = 1 yard (officer version only)
 Batting = ½ yard
 Underlining fabric = 2 yards
 Fusible midweight interfacing = ½ yard
 Collar interfacing = ½ yard
 Lining = 2 yards
 ⅝" division color braided collar piping = ¾ yard
 ½" gold metallic braid/naval lace = 12 yards
 ⅝" gold/black twisted piping = 14 yards
 ⅜", ¼", or ⅝" twisted/braided piping, division color of choice = 4 yards

ACCESORIES, NOTIONS, SUPPLIES, ETC. REQUIRED:

Walking foot or quilting foot for sewing machine (or a quilting machine)
 Zipper/piping foot for sewing machine
 Quilting needles for sewing machine
 Metallic/topstitching needles for sewing machine
 1 spool of white (or off-white) thread matching wool gabardine and elastique
 1 spool of black thread
 1 spool of gray thread matching wool gabardine and elastique
 (officer version only)
 1 spool of gold embroidery or Sulky thread matching the ½" gold braid/naval lace
 Disappearing ink marking pen for fabric
 Liquid fray preventer
 1 can of temporary fabric spray adhesive
 3 hook-and-eye closures (2 white, 1 black)
 16-20" lightweight separating jacket zipper (white for captain/admiral, gray or
 black for officer)
 20" black invisible zipper
 1 yard of 2" waistband elastic
 3 yards of ¾" or 1" black elastic
 1 pair of shoulder pads
 1 communicator and 1 set of rank pips of your choice (4 rank bars for admiral)

Also, a serger is HIGHLY recommended!

PATTERN SIZING LEGEND:

S _____
 M _____
 L _____
 XL _____
 2XL _____

NOTE: THIS TUTORIAL IS FREE AND FOR EDUCATIONAL PURPOSES ONLY!

WHAT THIS TUTORIAL INCLUDES:

Pattern instructions

Preliminary notes -----	pg. 3
Construction analysis overview -----	pg. 4
Construction analysis -----	pg. 9
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Required materials/accessories/supplies/notions/etc. (and known sources) -----	pg. 102
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Detailed jacket assembly instructions -----	pg. 112
Detailed trousers assembly instructions -----	pg. 236
Tips for altering the pattern and/or garment for a custom fit -----	pg. 264

Pattern pieces (on five sheets):

- A - collar and collar facing
- B - bib and bib facing
- C - lower bib panel and lower bib panel facing
- D - front yoke
- E - back yoke
- F - middle front body panel
- G - side front body panel
- H - side back body panel
- I - center back body panel
- J - shoulder point
- K - sleeve
- L - sleeve cuff band
- M - sleeve cuff inner layer
- N - sleeve cuff division stripe
- O - front hem facing
- P - back hem facing
- Q - front lining
- R - back lining
- S - sleeve lining
- T - trousers front
- U - trousers back
- V - trousers front waistband facing
- W - trousers back waistband facing

PRELIMINARY NOTES

Thank you for purchasing this pattern! The uniform was extensively researched, analyzed, and drafted to be as screen-accurate as possible.

That said, this garment is, ideally, a somewhat form-fitting one, and achieving an ideal fit may require some additional work on the part of the costumer. This pattern is an excellent base, but people come in all shapes and sizes, so some tailoring will probably be needed - but don't worry, tips for achieving a great fit (as well as revising the pattern as necessary) are included in these instructions!

This uniform requires advanced sewing skills (as well as equipment); it is not advisable for beginners and novices to attempt to make this garment. It involves quilting, piping, attaching a zipper, topstitching with metallic Sulky/embroidery thread, several "stitch in the ditch" procedures, interfacing, serging, etc.

We recommend reading this tutorial thoroughly to develop a working understanding of the garment's construction before attempting it; it might seem a bit complex at first but is fairly straightforward once familiar with it.

We also highly recommend doing a muslin test or three for practice before "officially" tackling the actual garment, especially if you're using the high-quality (and typically expensive) fabrics and trims of the screen-used uniforms. While more time-consuming, it will help you get acquainted with its construction as well as provide you with any necessary sizing/fitting information. (We've noticed that muslin can sometimes expand and contract a bit when ironed, though, so after pressing the pieces, check to be sure they're still the same size as the printed pattern pieces.)

We've included two major features with this pattern: the first is the option to decide which version of the jacket you wish to construct: officer, captain, or flag officer/admiral.

The second is a recommended placement for optional inside pockets (welt or double-welt is our recommended style) for practicality; since most of the time the garment will likely be worn in public (such as cons, screenings, weddings, etc.), as opposed to on set with a locker and/or assistants nearby, most of us would prefer to keep an ID, phone, debit/credit cards, etc. on our person. As long as it's lightweight and thin, the shape won't be visible on the outside. Just don't keep your entire wallet in your pocket, and it should be fine. Then again, the pockets are optional, so you can simply skip that step entirely if you wish.

We recommend wearing a white workout shirt (such as Under Armour) underneath to stay cool. This is a fairly heavy garment (as far as formalwear goes), so you'll likely be warm. A plain white T-shirt would work fine, though.

Lastly, we'd like to extend a special thank-you to Michael Cowart for sharing his extensive research into the uniforms of this era, the Starfleet 1701st for being a wealth of information, and TrekCore for its ample HD screencaps.

CONSTRUCTION ANALYSIS OVERVIEW

We'll start our analysis with a quick overview.

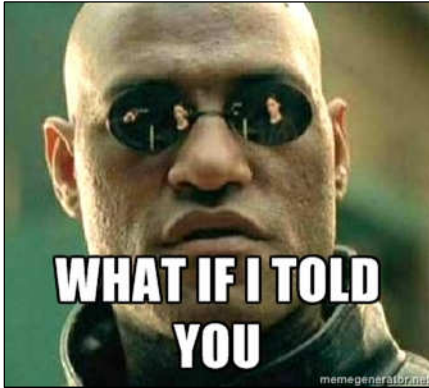
The DS9/NEM formal uniform was comprised of two garments: a jacket and trousers.

The garment style and construction were more or less the same for both genders except for the obvious anatomical differences.

The jacket was made of two fabrics: wool gabardine for the jacket body, sleeves, and collar (sometimes - more on that later!), and wool elastique for the yoke and "bib."

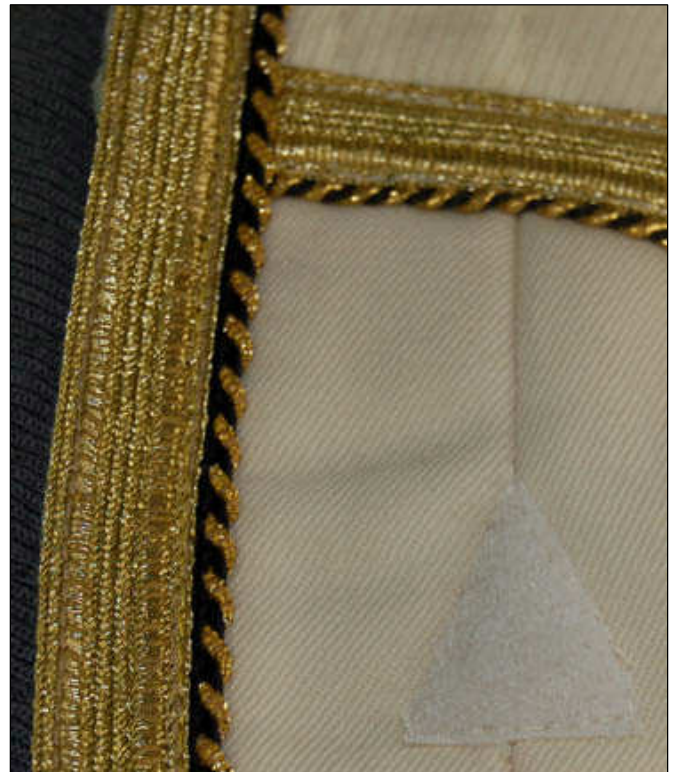
You can clearly see the two different fabrics (yoke and body) in these auction photos of screen-used jackets:





the DS9/NEM formal jackets *appeared* white on screen, but were, in actuality, an "off white" color?

The actual, off-white color of the jacket fabrics can be observed when the hook-and-loop tape ("Velcro") patch for the communicator, which was *actually* white, can be seen for comparison (see right):



In fact, the "off white" gabardine and elastique didn't even seem to match each other! It's not noticeable, though, as the seams between the two were nearly always obscured by the "trim" and was thus, surprisingly, not jarring at all.



For ease of communication, though, from this point forward, we'll be referring to the jacket, and its fabrics, simply as "white," but you should know that they were not *actually* white but off-white.

The jackets were rather short (with the bottom front being at about navel level), and the trousers quite high (extending well up onto the rib cage), by contemporary fashion standards.



Uniform garments like this might be familiar to those who have, say, played in a marching band:



But for most people, wearing garments like this might take a while to get used to.

Lastly, there were three versions of the jacket (not including the live musicians in *Nemesis*): a version for officers, a version for captains, and a version for admirals.

(We're not sure whether or not enlisted personnel wore the officer version of the jacket, as apparently nobody thought to invite Chief O'Brien to Riker and Troi's wedding, even though it was on Earth and O'Brien was, last we heard, teaching at Starfleet Academy ...)

The three versions were all very similar, but they had a few slight differences.

The main difference was that the officers' jackets had gray bibs and collars, while captains and admirals had white bibs and collars.

Also, the admiral jackets' sleeve cuffs were slightly different, which we'll look at when we get to the sleeve cuffs.

The formal trousers were the same, regardless of which version of the jacket was worn.

Now, let's take a good hard look at the garments themselves!



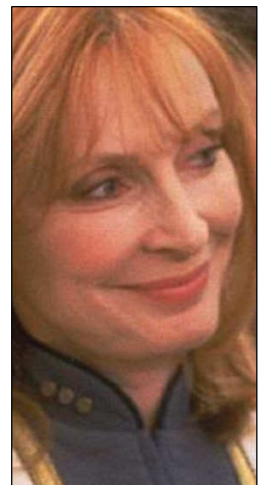
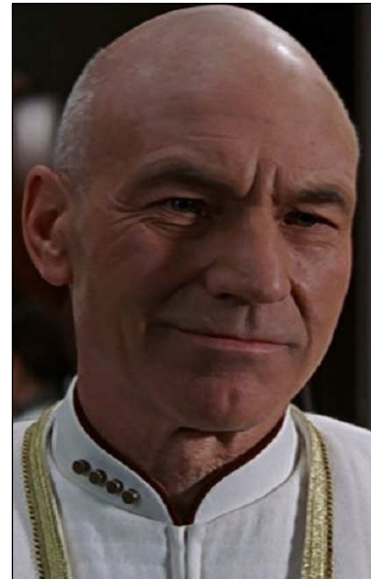
NOTE: For a garment that only had a grand total of about 12 minutes of screen time, there was notable and even surprising variation in the DS9/NEM formal uniforms - most of it subtle, but also undeniable. We'll present our research, the conclusions we've drawn regarding ideal standards, as well as outliers and what we believe to be production errors.

CONSTRUCTION ANALYSIS



Let's just take it from the top.

A notable characteristic of the DS9/NEM formal jacket was the re-introduction of the mandarin collars seen from *The Next Generation's* third season forward.



In reality, although the uniforms had evolved considerably since the TNG years - first into the VOY-style uniforms, and then into the DS9/NEM-style - the mandarin collars had never really disappeared for any appreciable length of time.

Even after *The Next Generation* concluded its run, the TNG-era uniforms still showed up every now and then:



DS9, 3x22 "Explorers"



DS9, 4x12 "Paradise Lost"



VOY, 2x18 "Death Wish"

They'd also occasionally show up randomly in the background for no apparent reason:



DS9, 6x26 "Tears of the Prophets"

The TNG-era cadet uniforms evolved into the VOY-era cadet uniforms, as worn by Nog and the members of Red Squad during the middle years of *Deep Space Nine*, which also had the TNG-esque mandarin collars:



DS9, 4x11 "Homefront"



DS9, 5x13 "For the Uniform"

The late TNG-era admiral uniforms also had the TNG-esque mandarin collars, and they were seen for quite a while after *The Next Generation* went off the air, even after the DS9/NEM uniform "upgrade":



DS9, 3x2 "The Search"



DS9, 4x11 "Homefront"



DS9, 4x18 "Rules of Engagement"



DS9, 5x10 "Rapture"

DS9, 5x16
"Dr. Bashir, I Presume?"

DS9, 6x1 "A Time to Stand"



VOY, 5x4 "In the Flesh"



VOY, 5x24 "Relativity"

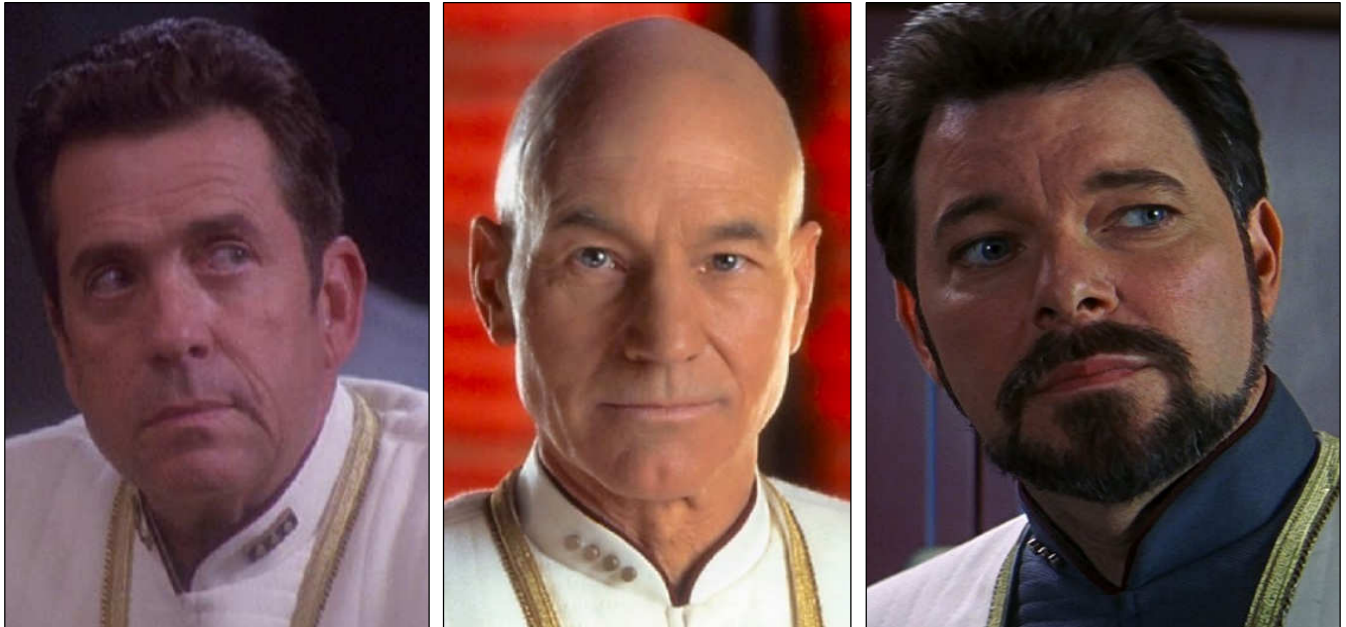
Nevertheless, the Starfleet mandarin collars is arguably something that will always be associated with *The Next Generation*:



In our opinion, incorporating the TNG-era mandarin collars into the DS9/NEM formal uniform to be debuted in the third TNG film, *Insurrection*, was a brilliant move!

Like in *The Next Generation*, the upper edges of the mandarin collar were embellished with 1/8" division-colored, braided piping.

Berry (aka "red") was for command:



Gold was for engineering, security, and operations:



Green was for medical and sciences:



As mentioned previously, the $\frac{1}{8}$ " division-colored collar piping was braided, as evidenced by this photo of a screen-used DS9/NEM formal jacket, shared by Robert Withrow on the Starfleet 1701st:



Thanks for sharing, Robert!

Oddly, the collar itself seems to have been sometimes made with the wool elastique of the bib, and other times, it appears to have been made with the wool gabardine of the zipper trim and bottom bib panel.

The collar in the photo on the previous page was clearly made of the same elastique as the bib, as was this one:



However, most of the collars we've examined appear to have been made of wool gabardine:



Insurrection



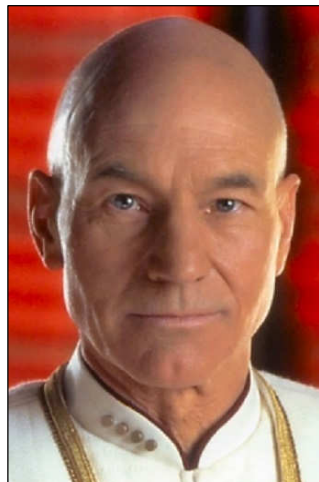
(auction photos)

Also note that, even from a distance, the wool gabardine is easily distinguishable from the elastique of the bib (note how the bottom bib panel, zipper trim, and collar all respond to the photography lighting in the same manner in the auction photos below):



We recommend using wool gabardine for the collar, since we like both the gabardine collar's look and its visual connection to the zipper trim/bib panel (as well as the stylistic consistency with the TNG collars, which were also wool gabardine and obviously a design influence with these jackets), but the choice is yours.

The actual height of the collar varied slightly, probably due to the varying physiques of the wearers; compare Captain Picard's and Admiral Ross' collars to Riker's and especially Bashir's:



Approximately 1" collars



At least 1 ½" collars

Like the other DS9/NEM-era Starfleet uniforms, the formal jacket had a wool elastique, vertically quilted yoke that extended onto the shoulder points.

The quilt lines were all $\frac{3}{4}$ " apart and parallel.



Nemesis

The formal jacket's yoke depth appeared to be approximately equivalent to that of the corresponding duty uniforms (jumpsuits, "captain jackets," and admiral jackets):



Nemesis

However, actual yoke depth (when measured from the center front) seemed to vary considerably ...

Captain Picard's jacket, for instance, had a yoke depth of eight bib quilt lines, or 4", which was comparable to that of his corresponding "captain jacket":



Insurrection

Data's jacket had a yoke depth of six bib quilt lines, or 3", which was comparable to that of his corresponding duty jumpsuit:



Nemesis

Riker's appeared to have a yoke depth of six bib quilt lines (3") as well, but it might have been 5 (2 ½"):



Insurrection



Nemesis

Worf and Geordi both had a yoke depth of five bib quilt lines (2 ½"), which was shallower than Geordi's corresponding duty jumpsuits' (we're not sure about Worf, though, since jumpsuits had a shallower yoke than others):



Nemesis

Beverly's yoke was surprisingly deep - seven quilt lines (3 ½"), which was actually deeper than Riker's, Data's, Worf's, and Geordi's!



Insurrection

Still, though, this was roughly on par with her duty jumpsuit's yoke depth; she had a deeper than usual jumpsuit yoke, more like Jadzia's than the typically shallow yoke on Ezri's, Kira's, and Deanna Troi's jumpsuits:

(Speaking of which, we never got a good read on Deanna's formal jacket yoke depth, sorry!)



Despite the minor variation, at this point, the evidence indicates to us that the formal jacket's yoke depth should be roughly equivalent with the wearer's duty uniform counterpart; note that Captain Picard's was at least a full inch deeper than everybody else except Beverly, which was also true of his DS9/NEM "captain jacket."

Also note that everybody else's yoke depth, particularly Worf's and Beverly's, appeared to be about the same as their corresponding duty jumpsuits'.

However, that theory goes out the window when you consider two things - first, that Admiral Ross' formal jacket yoke depth was, like Data's and possibly Riker's, six bib quilt lines (3"), which was at least a full inch shallower than his admiral jacket's yoke depth:



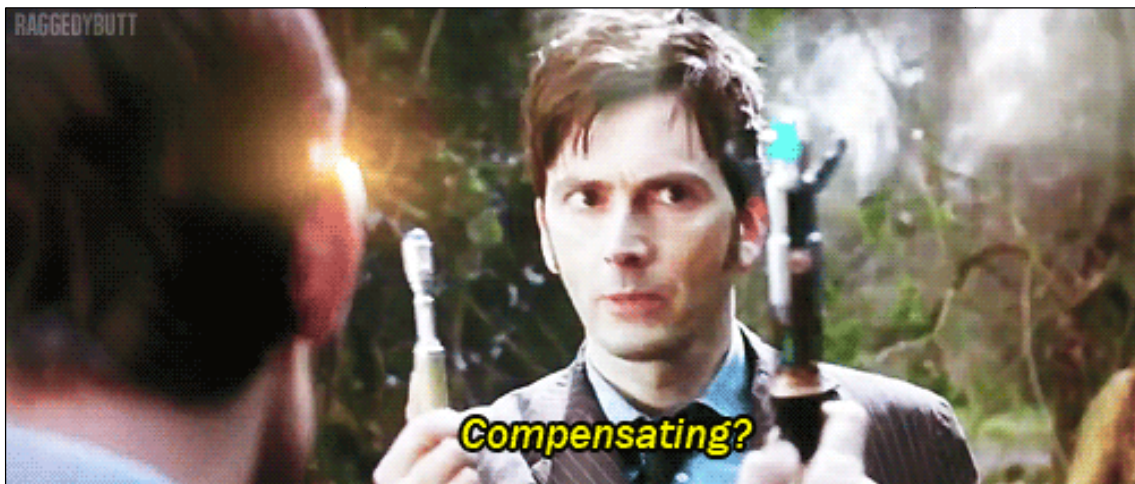
DS9, 7x16 "Inter Arma Enim Silent Leges"

There was also a random Vulcan guy in the background of *Insurrection* who had a bizarrely deep yoke (and he was neither a captain or an admiral, as evidenced by his officer's jacket):

Maybe he was a Changeling (the Dominion War was raging during this time), or perhaps he was a Romulan spy - in either case not getting the uniform quite right?



Insurrection



Seeing as the yoke depth obviously varied quite a bit, the question regarding screen-accuracy arises.

Wading through the conflicting evidence, we believe disregarding Admiral Ross' jacket as a standard for screen-accuracy to be a reasonable step, as the television uniforms were likely constructed in a tremendous rush - especially his, as no formal admiral uniform was seen earlier that production year in *Insurrection* (and thus his had to be designed and constructed from scratch on a television schedule).

We think it's also safe to disregard Mr. Vulcan Guy's yoke depth as either a production error, experiment, or some other such thing in the production rush, which is probably why it was slapped on a guy in the background who was only seen a few seconds.

That leaves the majority of the TNG crew's formal jackets, which, as mentioned previously, appeared to have yoke depths roughly equivalent to that of their corresponding duty uniforms ("captain jacket" and duty jumpsuits).

At this point, we classify Worf's as an exception, since his duty jumpsuit also had a shallower yoke than others'.

For this reason, on our men's formal jacket pattern, we have drafted the admiral and captain versions with a 4" yoke depth (from center front), and the officer version with a 3" yoke depth.



But those are more like guidelines than actual rules.

As mentioned previously, the yoke extended onto the shoulder points in the same manner as other DS9/NEM-era Starfleet uniforms, and the shoulder points were quilted in the same manner as the yokes.



Insurrection

As you can see, the formal jackets' shoulder points were wool elastique, just like the yokes:

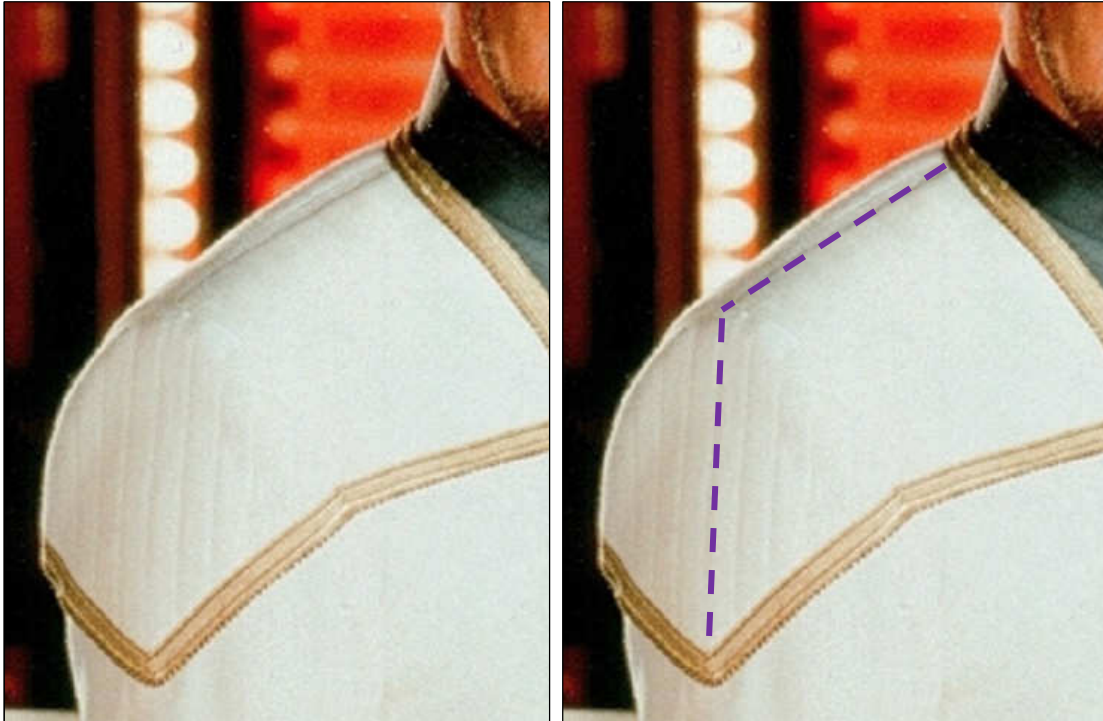


The shoulder point was intentionally asymmetrical in shape; it "leaned" forward slightly, as the back of the shoulder point was one quilt line wider than the front, or $\frac{3}{4}$ ".

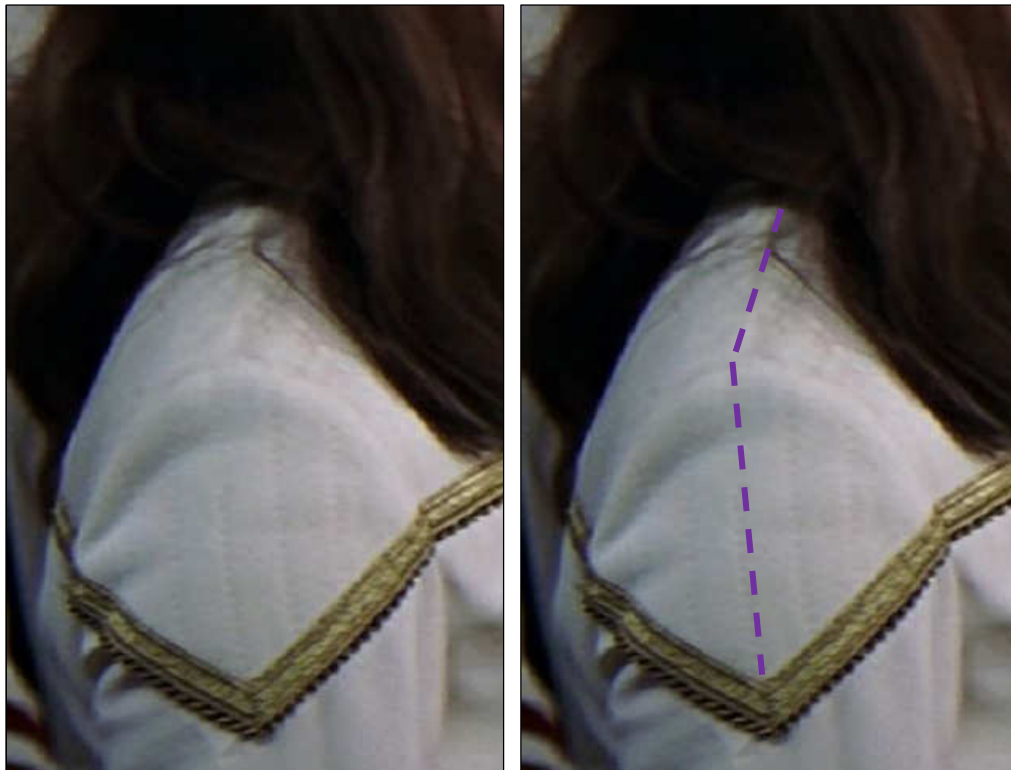


Insurrection

The quilt line that intersected the bottom corner of the shoulder point (hereafter called the "center quilt line," although that is technically an imprecise term ...) aligned perfectly with the shoulder seam to create a continuous line from the neck to the bottom of the shoulder seam, just like it did on the duty uniforms.



Insurrection publicity photo



Insurrection

Another characteristic the DS9/NEM formal jackets shared with their duty uniform counterparts was topstitching at the shoulder and armscye seams; on both of these seams, there was a row of topstitching $\frac{1}{8}$ " away on each side. The topstitching ran the full length of the shoulder seam and the yoke portion of the armscye seam.

In other words, where the front and back yokes met across the shoulder, one can observe both the seam AND two rows of topstitching - one on each side, $\frac{1}{8}$ " from the seam.

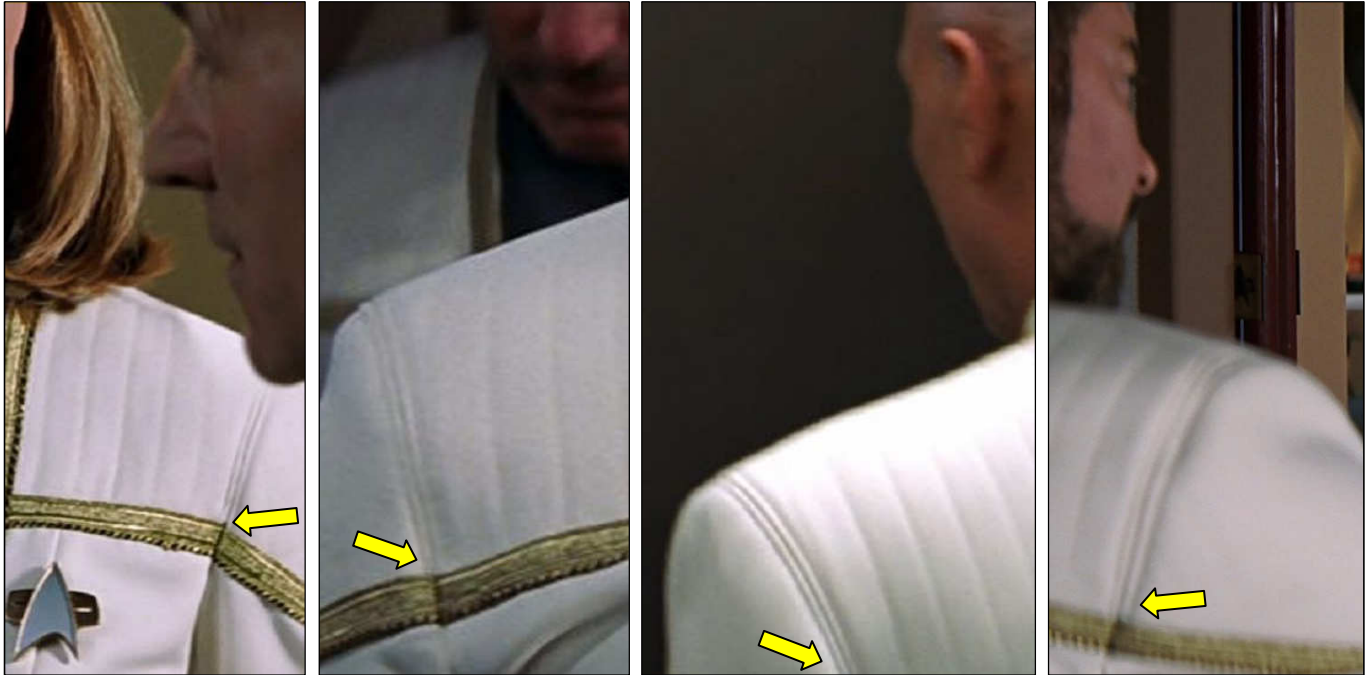


Insurrection



Nemesis

The bottom of the yoke was widened or narrowed (horizontally) by increments of quilt lines or half quilt lines (again, that is, $\frac{3}{4}$ " or $\frac{3}{8}$ ", respectively), so that the armscye topstitching at the bottom of the yoke was either flush with a quilt line or fell on a mid-quilt line.



Quilt line - *Insurrection*



Mid-quilt line

DS9, 7x16 "Inter Arma Enim Silent Leges"



Mid-quilt line

Insurrection

The same was true for the top of the armscye edges of the yoke at the shoulder seam.

It was also true for the width of the shoulder point itself - that is, the distance from the front corner to the back corner of the shoulder point was adjusted in widths of $\frac{1}{4}$ " or $\frac{3}{8}$ ", with the back of the shoulder point being slightly wider.

In addition to the aesthetic value, the topstitching also served to secure the corresponding seam allowances, which were pressed open, just as was done with the DS9/NEM duty jumpsuits, "captain jackets," and admiral jackets:



A major characteristic of the DS9/NEM formal jacket was what we call the "bib" - a somewhat narrow vertical panel on each side of the center front that was quilted horizontally in $\frac{1}{2}$ " increments and extended all the way from the collar to approximately navel level.



DS9, 7x16 "Inter Arma Enim Silent Leges"

The bib was made from wool elastique, and at the bottom, there was a 4" un-quilted wool gabardine panel.



Insurrection publicity photo

As mentioned in our overview, on the captain and admiral versions of the jacket, the bib was made from the same white wool elastique as the yoke and shoulder points.



DS9, 7x16 "Inter Arma Enim Silent Leges"



Nemesis

On the officer version of the jacket, the bib was made from gray wool elastique, with the bib panel and zipper trim being made from matching gray wool gabardine. These were likely the same gray elastique/gabardine fabrics that were used on the DS9/NEM duty uniforms, but only a side-by-side comparison of two screen-used garments (ideally from the same production) would confirm this.



Oddly, it appears that cutting methods varied for the bib, and we're not sure why.

Captain Picard's jacket had a bib which was cut on the grain - that is, parallel to the selvage of the fabric - as evidenced by screencap on the right:

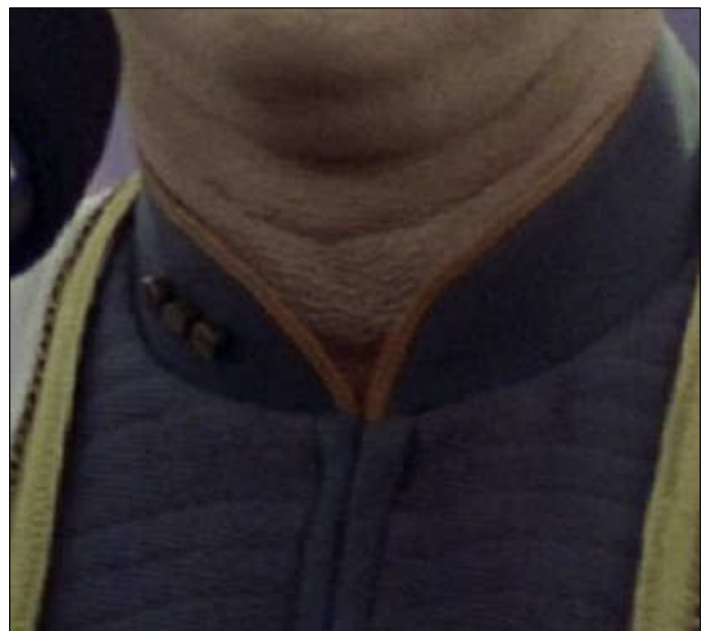


Insurrection

However, every other jacket we could examine with adequate focus and/or resolution had a bib that was cut perpendicular to the grain - i.e. cross grain, or "sideways" when the uncut fabric was lying flat.

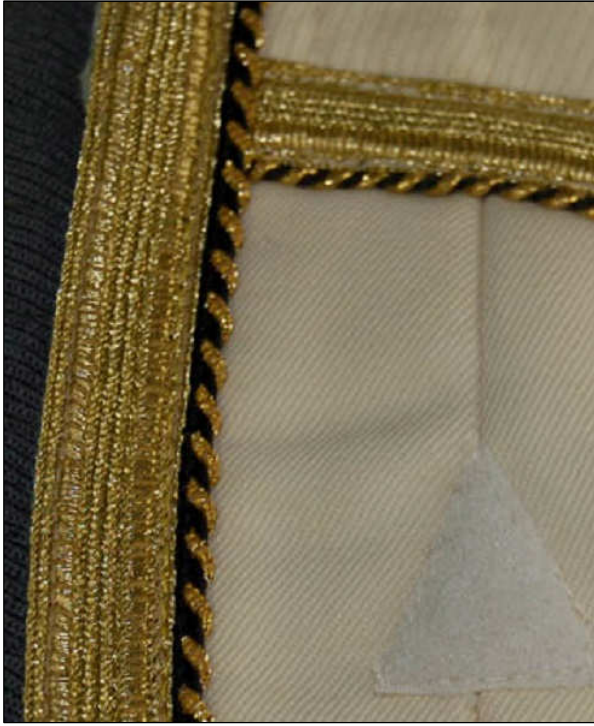


Insurrection



Nemesis

Here's an assortment of auction photos which, as you can observe, all had bibs cut on the cross grain (compare the direction of the bib's elastique weave to that of the yoke and/or jacket body):



From the available information, we can draw one of three conclusions:

1 - The ideal standard was for the bib to be cut on the cross grain, and Captain Picard's formal jacket was either an exception, oddity, experiment, outlier, or simply a mistake.

2 - The ideal standard for captain (and presumably, by extension, admiral) formal jackets was for the bib to be cut on the grain, while the standard for officers was for the bib to be cut against the grain.

3 - The ideal standard was for the bib to be cut on the grain, and Captain Picard's formal jacket was the only one correctly cut and assembled; all others were errors.

Considering how many formal uniforms were made and used across three productions (*Insurrection*, DS9's "Inter Arma Enim Silent Leges," and *Nemesis*), we find the third theory very unlikely.

Also, considering that Captain Picard was the star/lead character of the films, it stands to reason that the most care would be put into assembling the hero of all "hero" uniforms. This means that, while still possible (costume goofs unfortunately seemed to happen quite a bit over the years), it also seems rather unlikely.

This leads us to believe that, for whatever reason, the second theory is true, and we recommend constructing your formal jacket accordingly - with the bib cut on the grain for captains (and admirals?), and with the bib cut on the cross grain for officers.

Regardless of whatever may or may not have been the standard, though, the collar/bib seam line intersected a horizontal quilt line at the outermost edge of the zipper trim, forming a very nice three-way intersection:



Insurrection

Also, although it was covered by the gold trim, the yoke/body seam line met the bib on a horizontal quilt line:



Perhaps one of the most memorable features of the DS9/NEM formal uniform was the gold trim that adorned the bottom of the yoke and shoulder points, as well as the sides of the bib (wrapping around the neckline) and the side seams of the trousers' pant legs.

The trim was similar in function to the gray wool gabardine bias trim seen on the standard duty uniforms of the DS9/NEM era (which was also used as the zipper trim on the formal jackets).

The trim itself was actually comprised of two separate components: ½" gold metallic trim similar (if not identical) in style to naval lace, and ⅛" black/gold twisted piping. With the exception of the sleeve cuff embellishments, the two were sewn together to form a single piece of ⅝" trim, which was topstitched onto the formal jacket during construction.



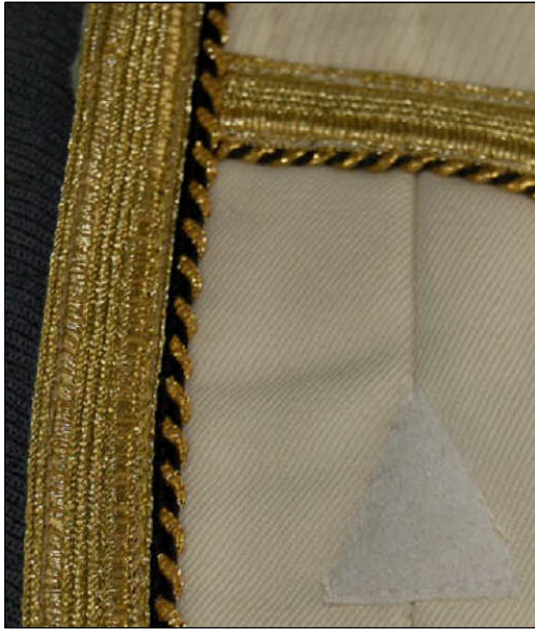
Here's a close-up photo of the trim on a screen-used formal jacket, again shared by Robert Withrow on the Starfleet 1701st:



(Thanks again for sharing, Robert!)

If you examine carefully, you'll see that the $\frac{1}{8}$ " gold/black piping had a cord that was not uniform in diameter, but that the gold portion was about $\frac{1}{8}$ " while the black portion was more like $\frac{1}{16}$ ".

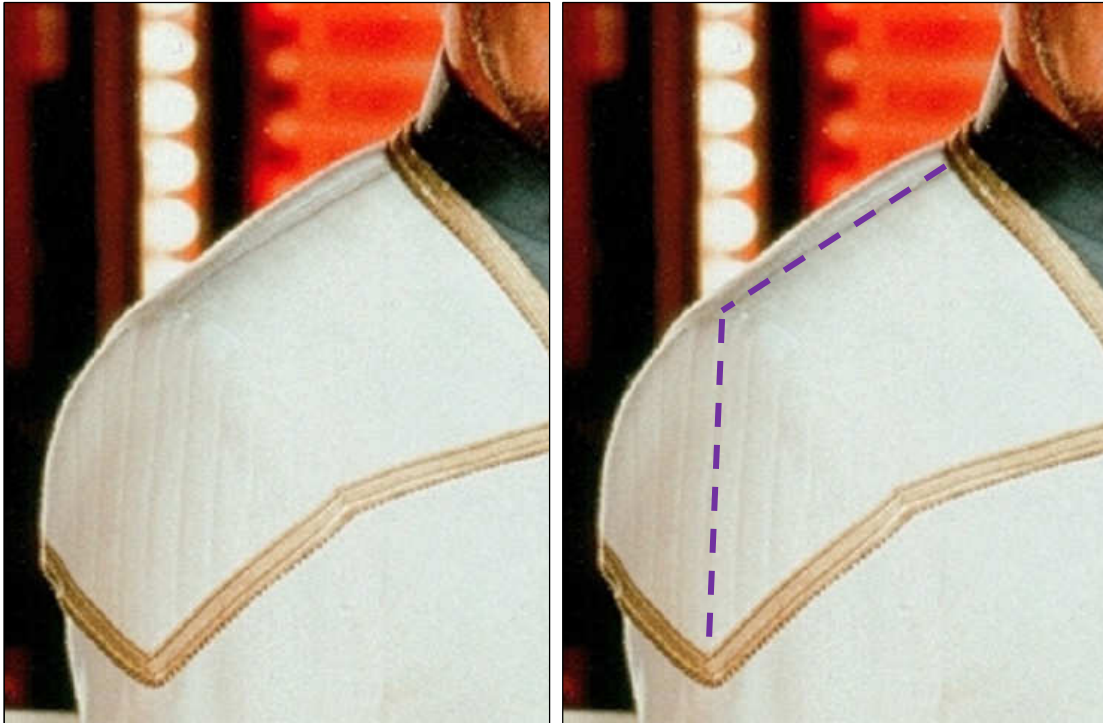
Here are some additional detail photos of the trim assembly from auction listings:



The raw edges of the trim were either simply topstitched over with another length of trim (as was the case with the yoke/bib intersection at the center front) or sewn into the seams (such as at the armscye and jacket bottom).



As mentioned previously, the gold trim was similar in function to the gray wool gabardine bias trim seen on the duty uniforms of the era, so it should come as no surprise that the trim was "mitered" at the bottom corner of the shoulder point in the same manner, and the bottom corner was on the "center" quilt line - that is, the quilt line that aligned with the shoulder seam.



Insurrection promo



Insurrection



(auction photo)

An interesting characteristic of the DS9/NEM formal jackets that varied considerably amongst the cast was a curvature of the upper bib/yoke seam line from the bottom of the yoke to the collar at the shoulder seam. Some of us fans have come to call this the "swerve."

In other words, instead of the outer/side edges of the bib dropping vertically from the shoulder seam (see Data's formal jacket below), the upper portion of the bib gracefully widened to the shoulder seam to accommodate the neck of the wearer (see Captain Picard's formal jacket below):



Nemesis

The extent of this "swerve" seems to have been determined solely by the lower portion of the bib being a fixed width, regardless of the wearer's size, then being widened as needed from the yoke/body seam line upward to the collar to accommodate larger necks.

As you can see, the extent of the "swerve" varied widely amongst the cast, from a straight drop (Data) to a fairly pronounced curve (Admiral Ross, Captain Picard, and Commander Riker):



No swerve



Slight swerve



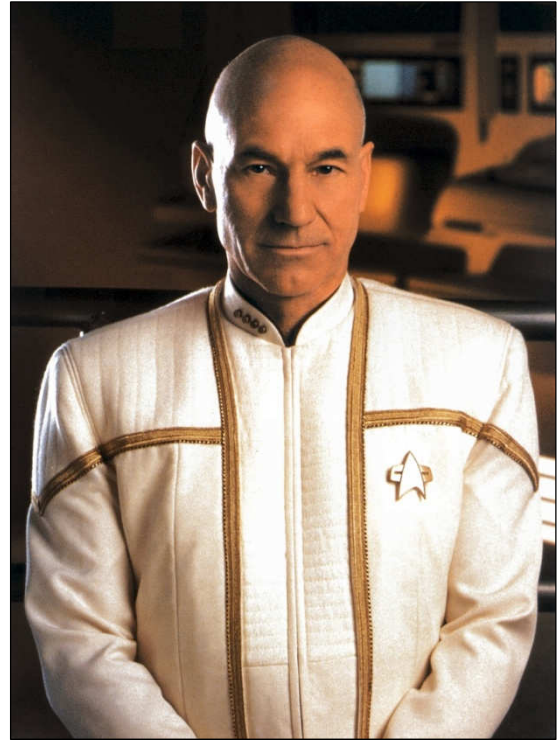
Pronounced swerve

And, once again, Mr. Vulcan Extra in *Insurrection* takes the cake for the most extreme swerve we observed:



NOTE: On our formal jacket pattern, we adjusted the curvature of the "swerve" by maintaining a fixed bib width beneath the yoke and gracefully widening to the collar's edge at the shoulder seam as needed with each larger size. Size "small" is a vertical drop, a la Data's jacket, and with each size increase, the swerve grows increasingly more pronounced.

Like the corresponding DS9/NEM-era duty uniforms, the formal jacket body was comprised of eight panels (not including the bib).



Insurrection publicity photo



Nemesis

Also as with the corresponding duty uniforms, the placement of the seam lines was determined by the yokes' quilt lines; they either aligned with a quilt line or a mid-quilt line.



Quilt line, *Insurrection*



Quilt line, *Nemesis*



Quilt line, auction photos

(Body seam placement, continued.)

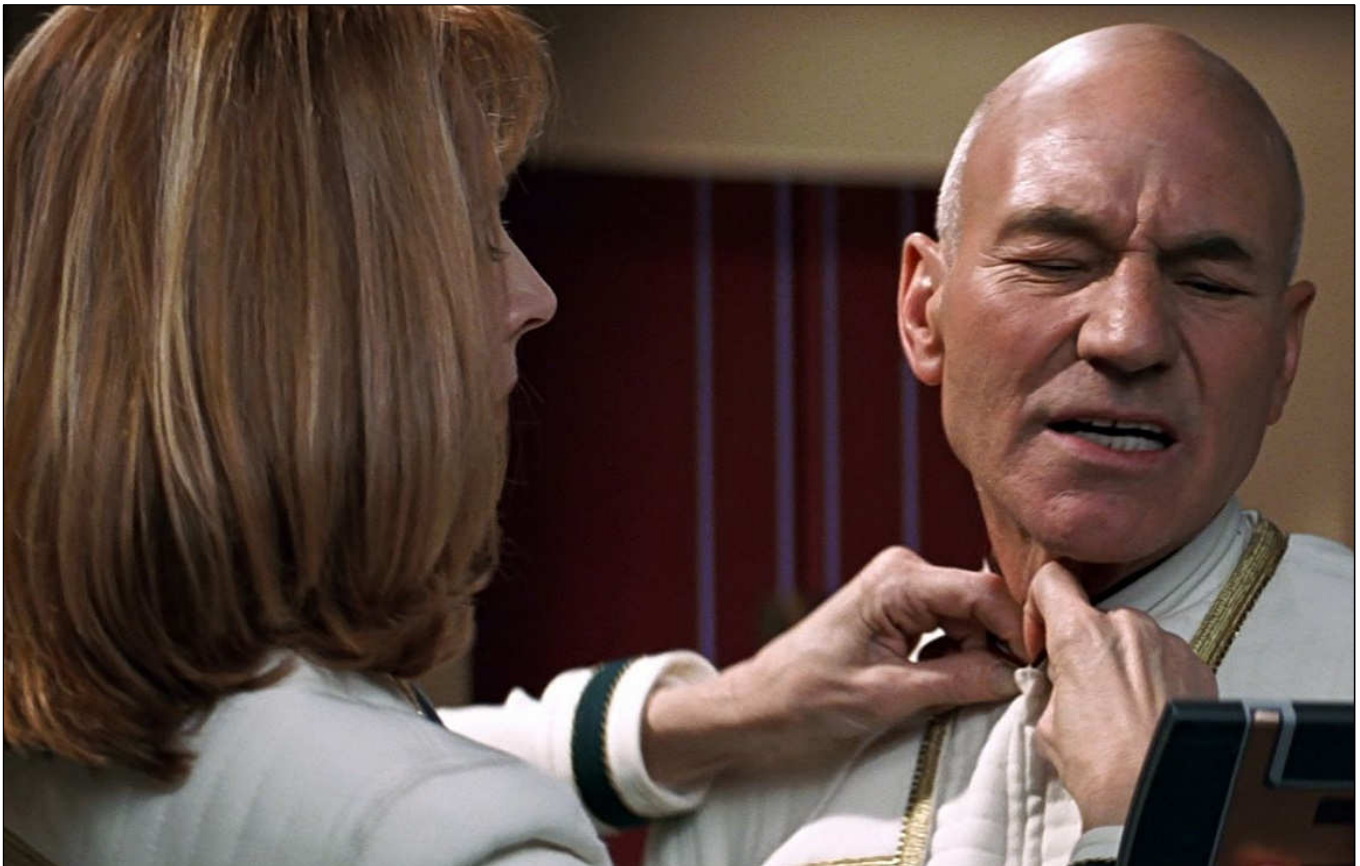


Mid-quilt line, *Insurrection*

Like the DS9/NEM "captain jacket," the formal jacket closed in the front via a zipper hidden underneath $\frac{3}{8}$ " wool gabardine zipper trim, with the uppermost inch or so of the zipper left hanging free and the top closing via a hook-and-eye closure (or two).

On officers, the zipper trim was the same gray wool gabardine as the collar and bottom bib panel, dyed to match the elastique of the bib.

On captains and admirals, the zipper trim was the same white wool gabardine as the collar and bottom bib panel.



Insurrection

The officer and captain versions of the DS9/NEM formal jacket had sleeve cuffs that were analogous to those on the corresponding duty jumpsuits and "captain jackets," consisting of two $\frac{3}{8}$ " raised bands a $\frac{1}{2}$ " division-colored stripe between them.

There were two notable differences between the duty jumpsuit/jacket sleeve cuffs and the formal jacket sleeve cuffs, though.

First, the formal jacket's upper and lower edges of the sleeve cuff division stripe were embellished with the $\frac{1}{8}$ " gold/black twisted piping (independently of the $\frac{1}{2}$ " metallic gold braid/naval lace) - a nice touch, in our opinion.



Second, while the DS9/NEM duty jumpsuit and "captain jacket" sleeve cuff division stripes were made from the same cotton lycra as the division shirt, the formal jacket sleeve cuffs were made from either wool gabardine or cotton twill (perhaps the same used on the VOY duty jumpsuit yokes or ENT division stripes, but that's just speculation).



As with the DS9/NEM duty jumpsuit and "captain jacket," the sleeve cuff assembly appears to have either been cut on the bias, or at the appropriate angle for the diagonal weave to be opposite what it is on the body - i.e. if the body weave goes lower left to upper right, the sleeve cuff weave goes lower right to upper left (see photos on previous page).

Also as with the corresponding duty uniforms, it appears that the sleeve hem allowance was turned upward and the sleeve cuff, which was assembled separately, was simply topstitched in place via a "stitch in the ditch" on the inside edges of the bands.



Insurrection

Interestingly, although the officer and captain versions of the DS9/NEM formal jacket had sleeve cuffs analogous to those of their duty uniform counterparts, the admiral version of the formal jacket had a different style sleeve cuff than that of its corresponding duty admiral jacket.

Whereas the DS9/NEM admiral jacket had a 2" command berry stripe near the bottom of the sleeve (which was embellished with $\frac{1}{8}$ " gold piping), the admiral version of the formal jacket was similar to the officer and captain versions of the jacket, except with two $\frac{1}{2}$ " command berry division stripes, over which the admiral rank bar was attached:



DS9, 6x26 "Tears of the Prophets"



DS9, 7x16 "Inter Arma Enim Silent Leges"

Like the DS9/NEM "captain jacket," the bottom of the DS9/NEM formal jacket was flat (horizontally straight) across the back.



Nemesis



Insurrection



Nemesis

The lower front, however, extended to a triangular point on each side:



Nemesis



Insurrection publicity photos



This downward slope of the lower front points began at the side seams, and, as you can see from the Captain Picard example below, the jacket back was the same length as the bib:



Insurrection



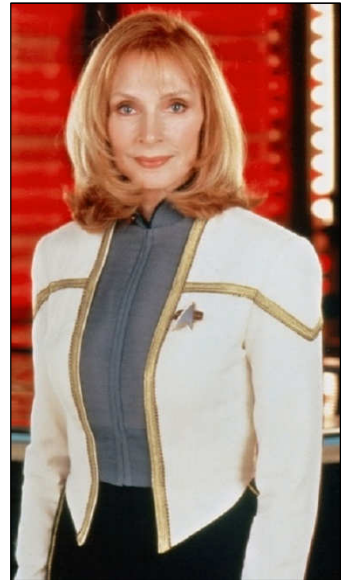
Nemesis



The distance the point extended from the bottom of the bib usually appeared to be roughly equivalent to the height of the lower bib panel, or about 4".



Nemesis



Insurrection publicity photos



However, some of the formal jackets had lower front points that were shorter - more like 3":



DS9, 7x16 "Inter Arma Enim Silent Leges"



Insurrection publicity photo



Oddly, some jackets had extremely short lower front points - about 2 ½" or less:



Examining a *Nemesis* group publicity photo, one can see that there was noticeable variation amongst the cast:



Note that Beverly's and Worf's were about the same depth (or, if anything, Beverly's was a bit longer), and note that Picard's was longer than Geordi's and Data's.

If there was a determining factor for the depth of the front triangular extensions, we were unable to discern it.

One might be tempted to conclude that there were differing standards for each gender, as this was often the case with the duty uniforms of various eras, but that theory goes out the window when one considers that Riker's front points extended about 4" beneath the bottom of the bib/bib panel, while Admiral Ross' only did about 3"; also, that Beverly's extended about 4", while Deanna's only extended about 2 ½" or 3".

However, in our opinion, it's aesthetically safer to err on the slighter side on ladies' jackets.

Considering the evidence, it seems that no particular standard was employed; if anything, the depth of the lower front points was determined on an individual basis based on the physique of the wearer.

NOTE: On our men's formal jacket pattern, we standardized the depth of the lower front triangular points so they extend to 4" past the bottom edge of the bib/bib panel on all sizes.

The depth of the lower front triangular points may have been partially determined by the length of the jacket itself, which, unsurprisingly, varied amongst the cast.

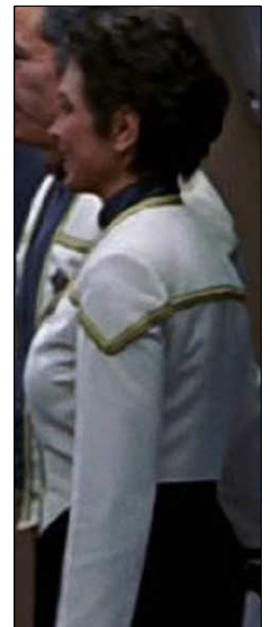
Although the specific lengths varied, we can safely point out that on both genders, the jacket bottom was approximately waist/navel level, about elbow-length when the arm hangs naturally at the side, where the body begins to widen and curve outwards for the hips:



Nemesis



Nemesis publicity photo

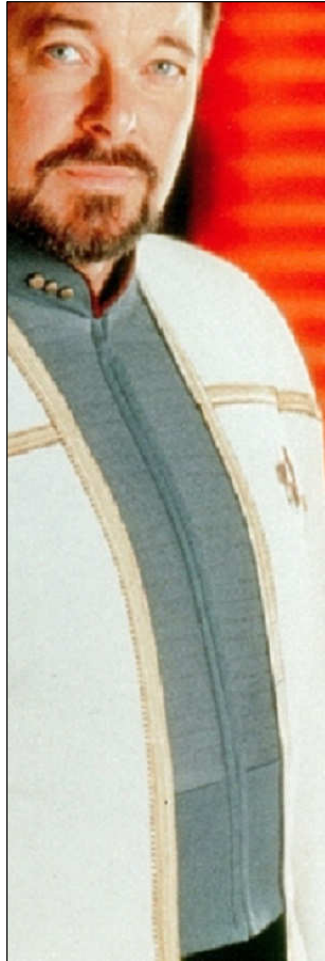


Insurrection

Like we said, though, the specific length varied quite a bit, which we were able to determine by counting the bib's horizontal ½" quilt lines.

On the men, the average jacket length appeared to be 16 ½", as evidenced by Captain Picard and Geordi both having jackets whose bibs had 25 quilt lines (12 ½" + bib panel).

Riker's and Wesley's formal jackets appeared to have 25 as well, although it might have been 26 ...



Insurrection



Nemesis

(Of course, the question arises as to why Wesley's even there and in a Starfleet uniform, complete with rank ... but hey, if that was the most baffling thing in *Nemesis*, then maybe the franchise might not have had to be rebooted!)

Data's formal jacket appeared to be a bit longer - about 27 bib quilt lines, plus the bib panel ... odd considering Brent Spiner (Data) is slightly taller than LeVar Burton (Geordi), yet Data's bib extended lower than Geordi's:



One might be tempted to conclude that the difference in jacket length was directly proportional to the difference in height, but note that Michael Dorn (Worf) is considerably taller than Gates McFaydden (Beverly), while his jacket was barely longer than hers when compared to their difference in height:



The longest formal jackets we observed were Worf's, Admiral Ross', and Dr. Bashir's, all of which appeared to be 28 bib quilt lines deep (plus the lower bib panel):



DS9, 7x16 "Inter Arma Enim Silent Leges"



Nemesis

As you can see, there doesn't appear to have been a standard jacket length, nor does the jacket appear to have been lengthened in direct proportion to the height of the wearer; consider that Jonathan Frakes (Riker) is fully several inches taller than Sir Patrick Stewart, but his jacket was only about $\frac{1}{2}$ " longer, while Michael Dorn (Worf) had a jacket that was about an inch longer than that ...



NOTE: On our men's formal jacket pattern, the total jacket length begins at 16" for the size SMALL and increases by $\frac{1}{2}$ " with each larger size - i.e. the size MEDIUM is 16 $\frac{1}{2}$ ", the size LARGE is 17", the size XL is 17 $\frac{1}{2}$ ", and the size 2XL is 18".

Like pretty much all the Starfleet uniforms of the modern era of *Star Trek*, the DS9/NEM formal jackets were structurally supported with shoulder pads.



The DS9/NEM formal jackets were also lined with white lining:



A quick glimpse of the lining inside the sleeves could sometimes be caught:



Insurrection



Nemesis

Sometimes the lining would actually "poke out" from the bottom of the sleeves a little bit:



Nemesis



Insurrection publicity photo



Insurrection

The lining extended up to the aforementioned TNG-esque mandarin collar; the collar itself was lined with shell fabric.



DS9, 7x16 "Inter Arma Enim Silent Leges"

A somewhat common misconception is that the accompanying formal trousers were simply the DS9/NEM or VOY standard duty trousers with the trim and piping attached to the sides.

The men's and women's formal trousers were different in construction, but we'll start with what they have in common.

Unlike the DS9/NEM and VOY standard duty trousers, which were eight panels (like the duty jumpsuits, jackets, and vest), the DS9/NEM formal trousers were only four-panel (i.e. front/back).

The side seams of the trousers were embellished with the same of $\frac{5}{8}$ " gold trim used on the jacket ($\frac{1}{2}$ " metallic gold braid/naval lace + $\frac{1}{8}$ " gold/black twisted piping) on each side, with a length of division-colored twisted piping centered between them.

Here's a close-up photo of a pair of screen-used formal trousers, again shared by Robert Withrow on the Starfleet 1701st:



Thanks again for sharing, Robert!

Oddly (yet, we suppose, unsurprisingly at this point), the width of the trousers' division-colored piping seemed to vary quite a bit.

Sometimes it appeared to be quite thick - perhaps $\frac{3}{8}$ ":



Sometimes it looked more like $\frac{1}{4}$ " (see the photo shared by Robert Withrow on the previous page as well):



Yet on-screen, sometimes it didn't even look to be $\frac{1}{4}$!"



Nemesis publicity photo



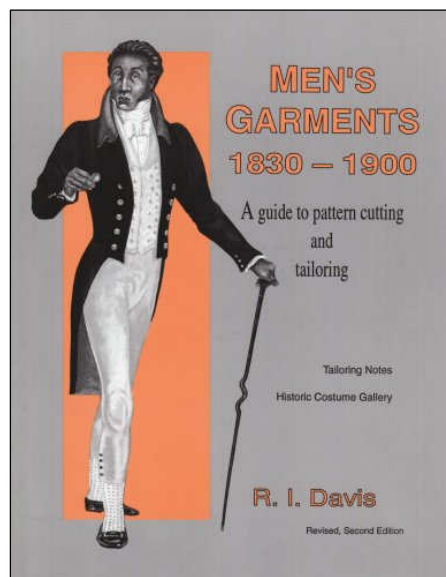
Nemesis

We recommend using the smaller $\frac{1}{4}$ " piping, just because we prefer the look. It's obviously a matter of opinion.

Like the DS9/NEM and VOY jumpsuits and duty trousers, the DS9/NEM formal trousers had elastic "stirrups":



In addition to the aforementioned Starfleet uniform garments, the elastic "stirrup" was hardly a new practice, as evidenced in R.I. Davis' wonderful book, Men's Garments 1830-1900:



The men's trousers extended quite high, even by the standards of high-waisted pants, as they had to overlap the rather short jacket a few inches to avoid any "peek-a-boo" from any undergarments/undershirts, even when sitting.



Nemesis

Interestingly, although the DS9/NEM and VOY standard duty trousers were rather form-fitting and seemingly constructed specifically for the wearer, the formal trousers were more adjustable via a back elastic waistband, as evidenced by these photos of screen-used formal trousers shared by Steve Tweed on the Starfleet 1701st:



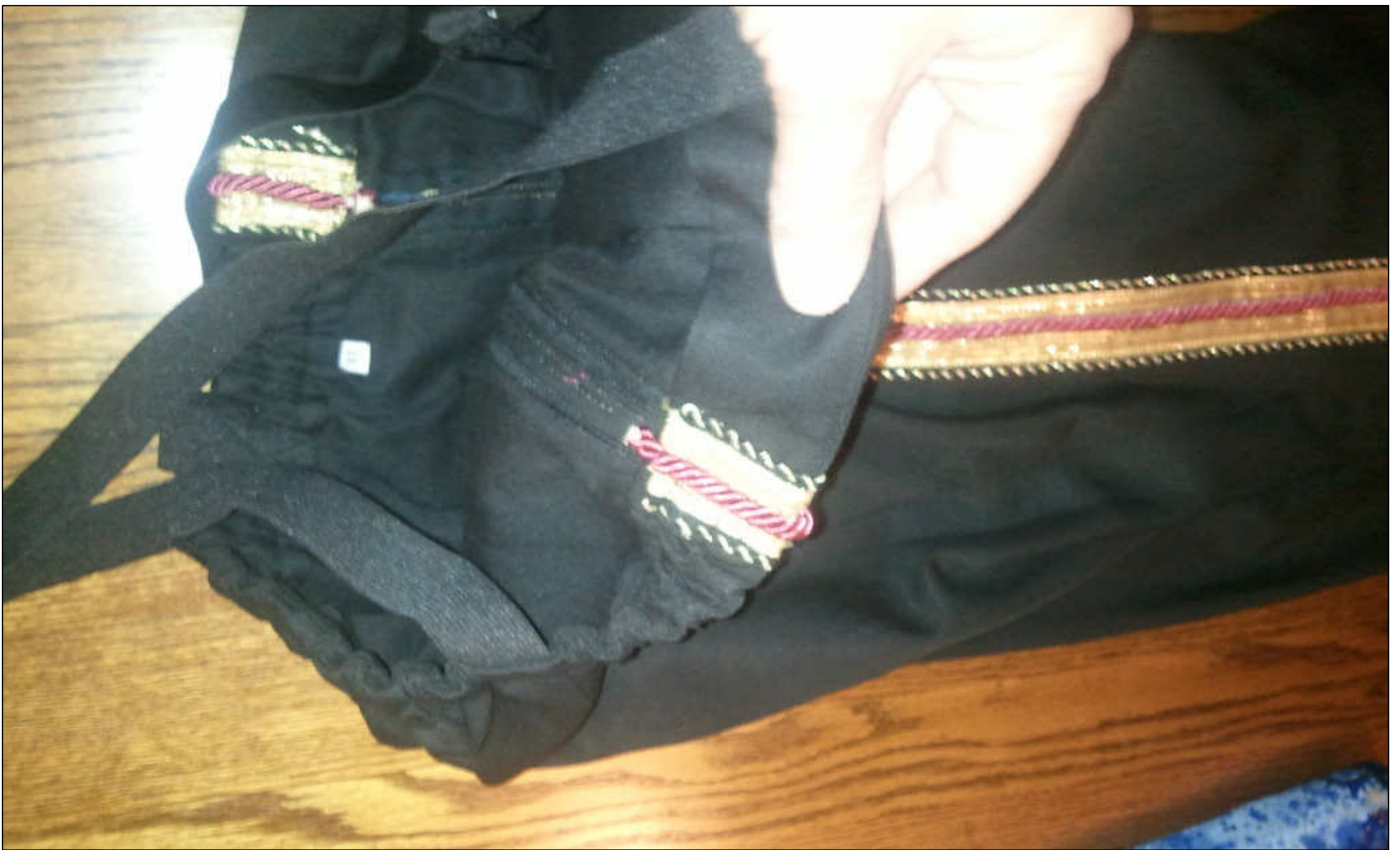
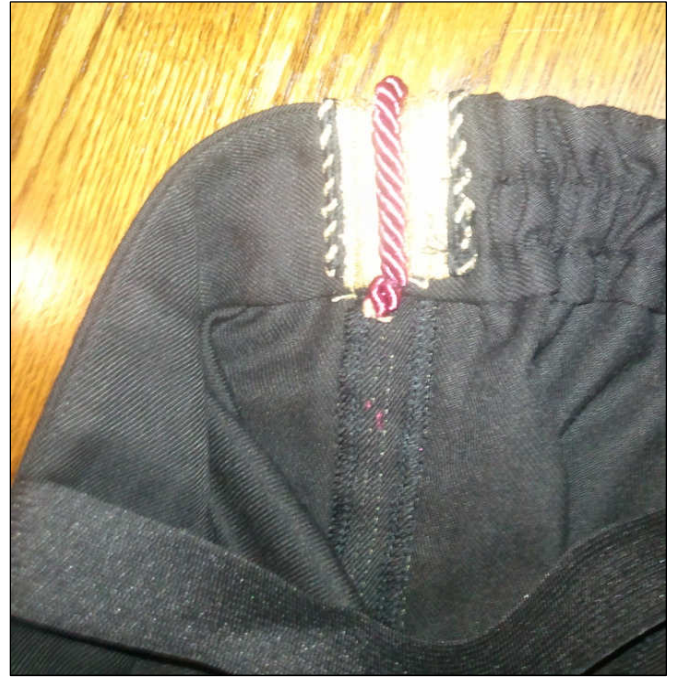
(Thank you kindly for sharing, Steve!)

As you can see, the back elastic waistband pulled the trousers taut around the wearer, and they were also stitched twice through the elastic itself, presumably to keep the elasticized fabric distributed across the back as evenly as possible.

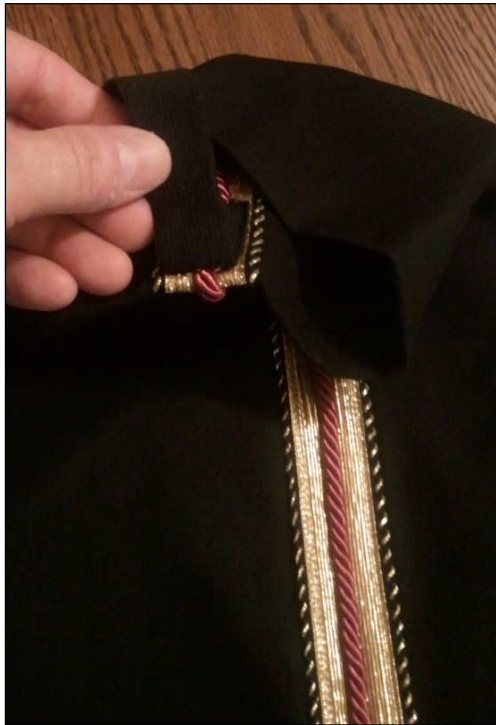
Also note the elastic suspenders, which were simply topstitched into place through all layers.

Lastly, as with the DS9/NEM and VOY duty trousers, the formal trousers had an internal waistband.

At the top of the trousers, the side trim and piping were simply turned under and secured, and the internal waistband (facing) was understitched $\frac{1}{8}$ " from the seam line/top edge.



The trousers were, of course, blind-hemmed (if they were "hemmed" at all in the traditional sense!), with the trim turned upward and secured via topstitching in the same manner as the top, and the elastic stirrup simply sewn onto the trim's hem allowance:



Thank you so much again for sharing and allowing us to use your photos in our analysis, Steve!

The women's formal trousers were different from the men's in two notable ways, which we mention in our men's formal uniform analysis solely because at least one pair of men's trousers were constructed in a similar manner (see our "Exceptions and Oddities" section).

First, the ladies' formal trousers were made from black spandex (like the DS9/NEM "female hero jumpsuits" worn by Jadzia, Ezri, Deanna, and Beverly), rather than black wool gabardine, as you can see from these close-up photos of screen-used ladies' formal trousers:



Although usually indistinguishable from the black wool gabardine of the men's uniforms on-screen, under photography lighting, the black spandex was quite a bit shinier, usually making it quite obvious whether the uniform was intended for a male or female wearer:



Secondly, the women's trousers were attached to what appears to be (and what was described as) a sleeveless black spandex undershirt, forming what it technically a jumpsuit:



This is similar to the "jumpsuits" (faux pants + undershirts) seen with some of the ladies' DS9/NEM division shirts, DS9/NEM and VOY tank tops, and VOY "female hero undershirts."

The difference here is that these "jumpsuits," rather than give the appearance of an undershirt tucked into pants, were intended to appear as trousers, since only the lower portion would be seen and the upper portion would be covered by the jacket.

Our best guess is that since the ladies' formal jackets were so short and the accompanying trousers would have to be so high to compensate, it was deemed easier and/or more convenient and/or more convenient to the wearer to just make the ladies' formal trousers full-on overalls.

Unlike the men's formal trousers, which had the upper edge of the trim simply turned under and secured into place via topstitching, it appears the ladies' formal trousers had the upper edge of the trim sewn into the trousers/undershirt seam:



Nemesis



EXCEPTIONS AND ODDITIES

Although the ideal construction standard for the DS9/NEM formal jacket appeared to be the length being the same across the back and at center front/bib, Dr. Bashir's bib extended several inches lower than the bottom back of his jacket; it appears that the UPPER edge of the bib panel aligned with the back instead of the LOWER edge:

*Nemesis*

DS9, 7x16 "Inter Arma Enim Silent Leges"

We're not sure if this was done intentionally to compensate for his slender build or if it was simply an error.

A notable exception to the differing gender standards for the trousers was the men's DS9/NEM formal uniform in this auction listing, which was described as having trousers "sewn onto a sleeveless, spandex-like shirt," which sounds an awful like the ladies' trousers:



Note that this doesn't appear to have been a case of a trousers/jacket mismatch, as the trousers don't appear to be black spandex.

Also note that, oddly, the trim and division-colored piping on the sides doesn't appear to have been sewn into the trousers/shirt seam as it was on Beverly's (see page 81).

It also appears that this "cross-dressing" construction was done at least twice, as we briefly observed a similar effect of Beverly's trousers on Admiral Ross:



DS9, 7x16 "Inter Arma Enim Silent Leges"

Of course, the formal trousers "gender swap" goes both ways!



Kind of like Tobias.

An auction listing for a ladies' DS9/NEM formal uniform was accompanied by a description of the trousers zipping up the front and having black suspenders!

Furthermore, as you can see, the trousers were the black spandex used on the "normal" ladies' trousers:



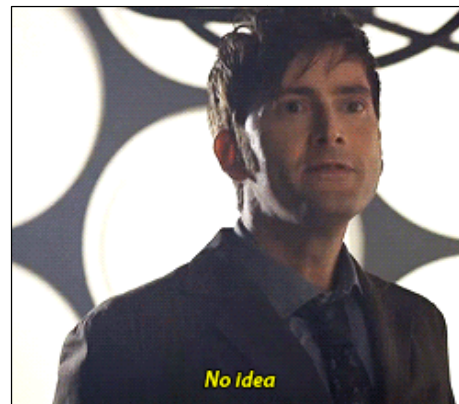
As you may recall, the DS9/NEM formal jacket's bib width appeared to be consistent regardless of size and gender, as well as attached directly to the body with the $\frac{5}{8}$ " trim hugging the bib/body seam line.

However, Geordi's formal jacket in *Insurrection* appeared to have a bib that was considerably wider than usual; although it appeared to extend all the way to the body panel seam line underneath the jacket (with the jacket being attached over it), impressions of the outermost bib "excess" were visible through the jacket:



Insurrection

What does it mean?

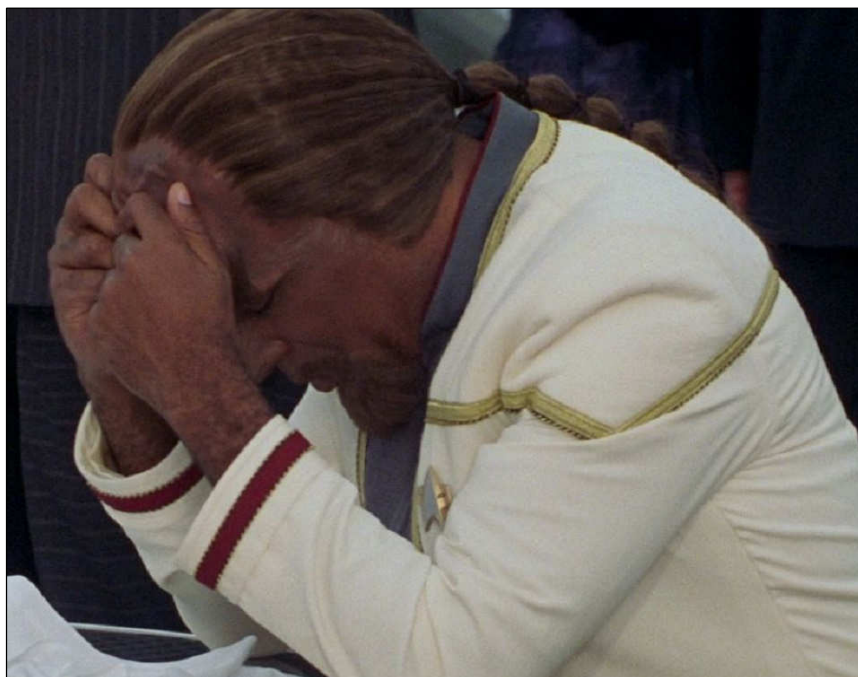


No Idea

In one auction photo, we spotted what appeared to be a spandex armpit gusset, as curiously seen on Data's VOY duty jumpsuit and DS9/NEM duty jumpsuits, as well as in some stunt doubles' DS9/NEM "captain jackets," although why a formal jacket would have them is baffling (especially when they were never featured during any action scenes):



We looked pretty hard and never actually managed to see one on-screen, so who knows?



Yeah, that's how I felt during *Nemesis*, too ...

MISC. OBSERVATIONS AND ERRORS

We believe it worth noting that the formal uniforms were actually the last uniforms to "upgrade" and join the DS9/NEM Starfleet uniform family, probably because the formal dress uniforms were probably the least frequently seen.

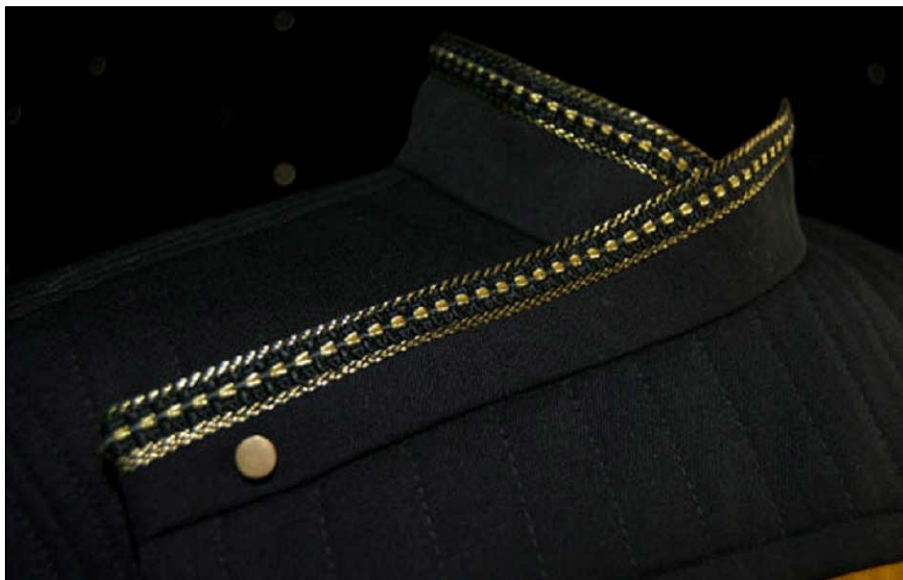
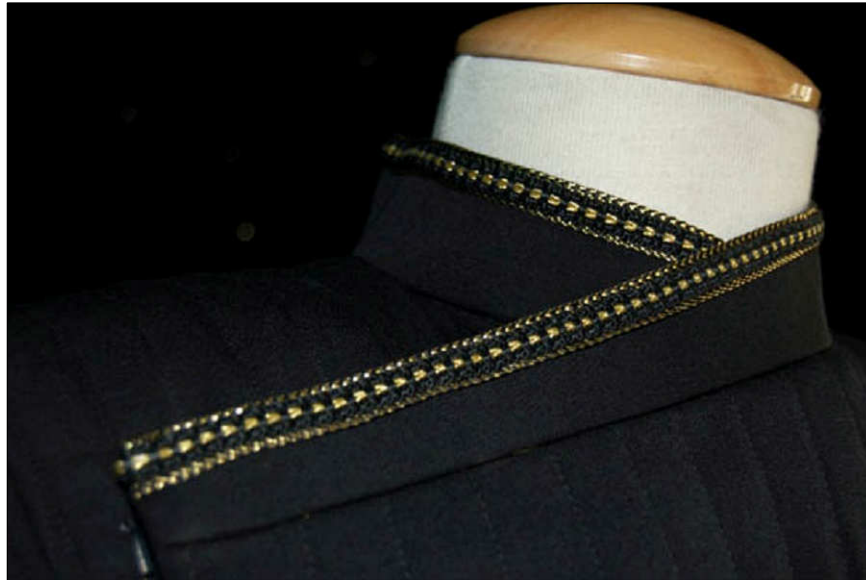
Right off the bat in *First Contact*, the VOY duty jumpsuits and undershirts upgraded to the DS9/NEM duty jumpsuits and division shirts, and the DS9/NEM "captain jacket" and "captain vest" showed up immediately as well. This was also the case when *Deep Space Nine* "upgraded" to the DS9/NEM uniforms almost halfway through its fifth season.

Early the following production year (*Deep Space Nine*'s sixth season) came the DS9/NEM admiral jackets, and later that same year came the DS9/NEM cadet jumpsuits. The DS9/NEM formal uniforms would be introduced the following production year in *Insurrection*.

Before then, a transitional version of the formal uniform was seen once in *Deep Space Nine*'s early sixth season episode, "You Are Cordially Invited," which appeared to be an adaptation of the late TNG/VOY-style formal uniform, but with a DS9/NEM-style quilted yoke.



It can be difficult to see in the auction photos on the previous page, and it was nearly impossible to see in the actual episode, but thankfully there were some closer auction photos of the yoke:



Like the transitional admiral uniform briefly seen in *First Contact*, these transitional formal uniforms were probably hasty adaptations of the late TNG/VOY-style formal uniforms due to a combination of time constraints and the fact that they were only going to be seen very briefly in a single episode.

And, just as a recurring admiral character probably necessitated (or at least expedited) a DS9/NEM admiral uniform "upgrade" on *Deep Space Nine*, most of the main characters wearing formal uniforms during several scenes of a feature film probably necessitated/expedited a DS9/NEM formal uniform upgrade.

Perhaps also of note is that the ½" metallic gold braid (naval lace) appeared to be the same as was used on the seafaring cosplay uniforms early in TNG's first feature film, *Generations*:



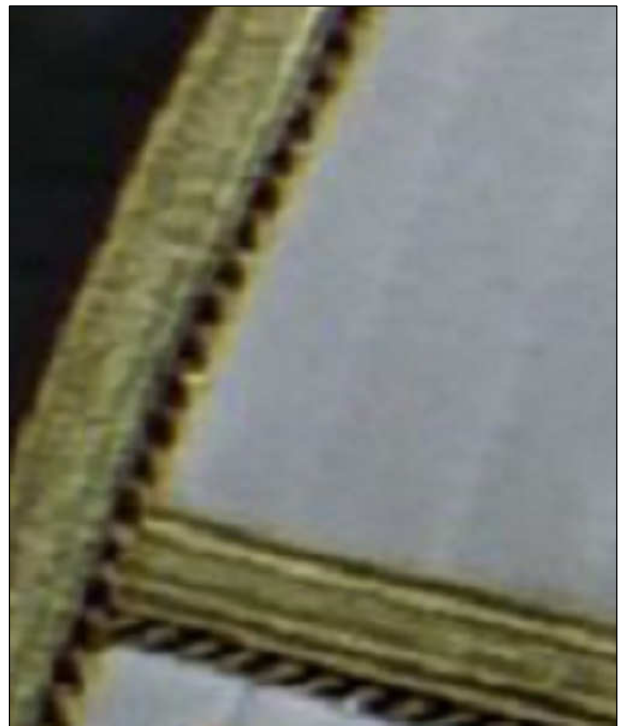
Here's an auction photo of a DS9/NEM formal jacket with a hat from *Generations* (although I don't know why the two were paired in this manner ...):



If the ½" metallic gold braid used on the DS9/NEM formal uniforms was, in fact, naval lace, then the two being the same would hardly be surprising; It's fairly easy to find, the *Star Trek* costume department might have already had some left over from *Generations* for the DS9/NEM formal uniforms, and both sets of uniforms were naval-inspired.

Although the ½" gold metallic braid (naval lace?) appeared to be consistent, it appears that several slightly different variations of the ⅛" gold/black twisted piping were used - sometimes even in the same shot!

For instance, in *Insurrection*, after Captain Picard closes the channel with Admiral Dougherty, he turns to an Ensign, and the two of them are wearing uniforms with slightly different piping:



Then, after he's finished with her, Captain Picard turns to Geordi, and we see that the two of them have slightly different $\frac{1}{8}$ " gold/black twisted piping, as well!



Note the differing widths/angles of the twists in the piping, as well as Captain Picard's piping being rounder while Geordi's was more flat.

Also of note is that, while the Starfleet division of the wearer was indicated in three places (collar, sleeve cuff division stripes, and division piping on the sides of the trousers), the three colors didn't necessary match exactly.

This is probably because, rather than being dyed to match (as was done with the gray wool elastique and wool gabardine of the bib and collar), the three were from entirely different sources.

(Hypothetically, the collar piping could have been left over from TNG, the sleeve cuff division stripes were either VOY yoke fabric or ENT division stripe fabric, and the trousers' piping was off-the-rack upholstery piping.)



We also spotted this one DS9/NEM admiral formal jacket with a weird sleeve cuff; it appeared to have two upper bands instead of one ...



Unfortunately, in the pre-*Nemesis* years, many aspects of the design and construction process had yet to be established and/or finalized, so "mistakes" by the later standards were common, as you know if you're familiar with our other analyses.

Perhaps the most common of these was mismatched quilt lines, which was by no means confined to the DS9/NEM formal uniforms:



The left sleeve of Captain Picard's formal jacket in *Insurrection* was particularly unfortunate, as the shoulder point's "center" quilt line didn't properly align with the shoulder seam (nor did his duty "captain jacket," for that matter, and they were both off by the same distance!), nor was his shoulder point's trim correctly "mitered" - odd, considering that Deanna's shoulder point and trim were handled correctly and both were perfectly visible in the same shot:



What's also odd about this was that his right shoulder point trim was 'mitered' correctly, as was Mr. Bolian's:



Lastly, as the collar/bib/zipper trim area is difficult to assemble, it should come as no surprise that not all the formal jackets were perfect - even Data's was a bit uneven!

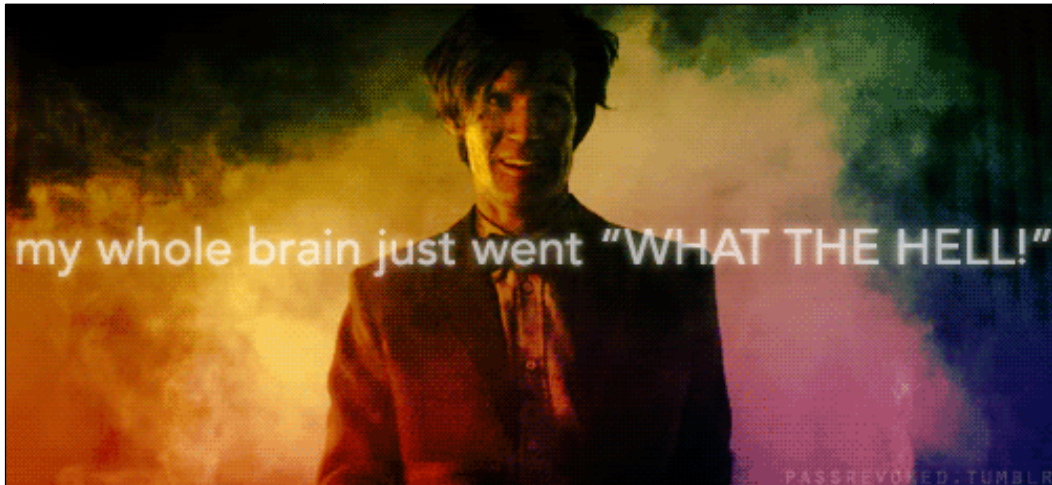


Nemesis

Somebody dropped the ball making this formal jacket, though, as the collar met the bib at the outer edge of the zipper trim instead of the centermost - whoops!



At this point, some of you probably feel like this:



But that's okay, because we accounted for all of the appropriate construction details in our DS9/NEM formal uniform pattern, and the following tutorial is thorough enough for you to construct a fantastic replica of your own!



"I've taken care of everything."

REQUIRED MATERIALS//SUPPLIES/NOTIONS/ETC.:

FABRICS

White wool gabardine = 2 yards

Black wool gabardine = 3 yards

Division color wool gabardine (sleeve cuff division stripes) = $\frac{1}{8}$ yard

White wool elastique = 1 yard for captain and admiral versions, $\frac{1}{2}$ yard for officer version

Gray wool elastique = $\frac{3}{4}$ yard (officer version only)

Gray wool gabardine = 1 yard (officer version only)

The correct dye to match the screen-used gray wool elastique and gray wool gabardine is "mouse grey" by Pro Chemical and Dye, which can be found on their web site, www.prochemicalanddye.com.

Alternatively, one can purchase gray wool elastique and matching wool gabardine from International Silks and Woolens.

Batting = $\frac{1}{2}$ yard

The original uniforms reportedly used typical low-loft batting, such as that likely available at your local fabric store, and that it is what we at Bad Wolf Costumes prefer to use.



Underlining fabric (muslin will do nicely) = 2 $\frac{1}{2}$ yards

An "underlining" is simply another cut of fabric which is cut identically to the fashion fabric then serged, sewn, or basted to the fashion fabric inside the seam allowance so the two layers act as one.

Fusible midweight interfacing = $\frac{1}{2}$ yard

Collar interfacing = $\frac{1}{2}$ yard

We recommend using "Heavyweight collar interfacing - non fusible" from B. Black and Sons.

White lining = 2 yards

TRIMS

1/8" braided collar piping, division color of choice = 3/4 yard

1/2" metallic gold braid/naval lace = 10 yards

Metallic gold naval lace isn't difficult to find; numerous Internet-based fabric and trim shops carry it in varying quality and price ranges, including but not limited to:

- * ELC Accessories (www.elcaccessories.com)
- * Samuel & Sons (www.samuelandsons.com)
- * Vanguard (www.vanguardmil.com)
- * Milford Army Navy (www.milfordarmynavy.com)
- * William Scully 1877 (williamscully.ca)
- * La Lame, Inc. (www.lalame.com)
- * eBay!!!

1/8" gold/black twisted piping = 12 yards for officer and captain versions, 14 yards for admiral version

3/16", 1/4", or 3/8" twisted/braided piping, division color of choice = 4 yards

We recommend using smaller rather than larger division-colored pipings on the trousers.

Also, check in your local fabric stores' upholstery sections! We found some decent pipings (albeit 3/8") at our local Hobby Lobby:



If you are unable to find suitable upholstery piping locally, it's easy to find online. We recommend first looking on Sew-Biz Fabrics (www.sewbizfabrics.com).

ACCESORIES, NOTIONS, SUPPLIES, ETC.:

Walking foot or quilting foot for sewing machine (or an actual quilting machine)

Zipper/piping foot for sewing machine

Quilting needles for sewing machine

Metallic/topstitching needles for sewing machine

1 spool of white (or off-white) thread matching wool gabardine and elastique

1 spool of black thread

1 spool of gray thread matching wool gabardine and elastique (officer version only)

1 spool of gold embroidery or Sulky thread matching the ½" gold braid/naval lace

Disappearing ink pen for fabric

Liquid fray preventer

1 can of temporary fabric spray adhesive

3 hook-and-eye closures (2 white, 1 black)

16"-20" lightweight separating jacket zipper (white for captain and admiral versions, gray or black for officer version)

20" black invisible zipper

1 yard of 2" waistband elastic

2 yards of ¾" or 1" black elastic

1 pair of shoulder pads

The usual stuff (scissors, seam ripper, bobbins, hand needles, etc.)

Also, a serger is HIGHLY recommended; it will not only make your workflow easier and sewing room cleaner (fewer threads, frays, etc. all over the place), but it will also prolong the life of the garment itself by keeping the pattern pieces and seams in better condition.

FABRIC NOTES:

White and black wool gabardine (superfine or regular) are not difficult to find, but the cavalry twill/wool elastique is another matter, especially in the screen-accurate gray (for the officer version of the formal jacket).

Alternatively - or, perhaps, ideally - one can purchase white or undyed wool gabardine and/or wool elastique then dye them matching gray accordingly to screen-accurate specifications.

"SUBSTITUTE" MATERIAL RECOMMENDATIONS/ALTERNATIVES

We're also aware of "vegan" sensibilities and the sometimes prohibitively expensive nature of screen-accurate materials. They may look make for a far more impressive, screen-accurate replica, but superfine wool gabardine and wool elastique/cavalry twill aren't cheap; neither is naval lace! Expenses can add up quickly.



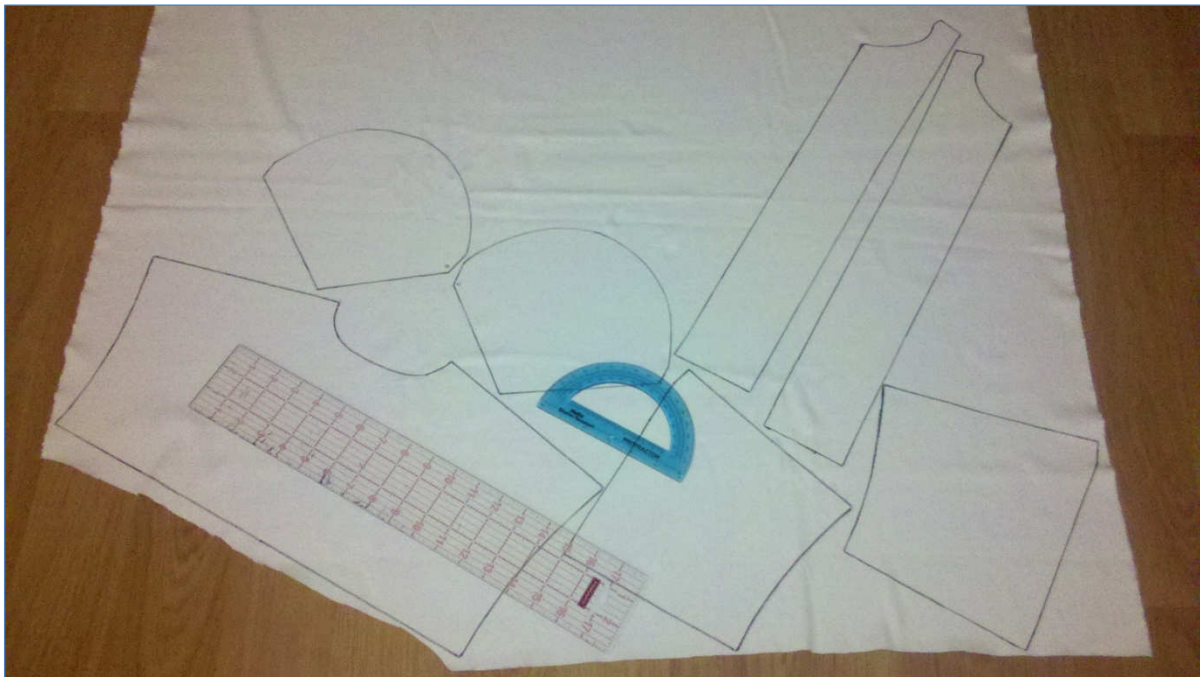
Fortunately, there are some ways to "cut a few corners" and still produce a reasonably good replica.

Perhaps the most notable cost-effective substitute is to use "regular" wool gabardine (which one can typically find for about \$10-\$30/yard) instead of "superfine" wool gabardine (which seems to hover in the \$90-\$120/yard range).

An even more cost-effective substitute would be to use white and black cotton twill or wrinklease as substitutes for the wool gabardines, as cotton twill can typically be purchased for \$6-\$12/yard.

Substituting polyester cavalry twill for the yoke and bib is another option.

Another possibility for the yoke and bib is to use corduroy or rib-knit cut at an appropriate angle (61° works nicely) so it appears to have a diagonal weave. A protractor is handy for this!



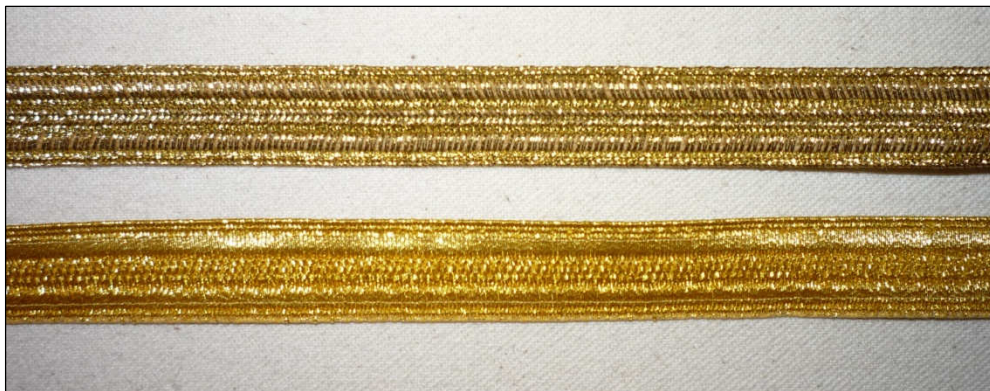
(We'd like to thank Michael Cowart for this "out of the box" idea!)



The following uniform constructed for this tutorial was 100% cotton (jacket and trousers) and bemberg/rayon (lining).
No animals were harmed in the making of this tutorial.

As mentioned previously, the ½" metallic gold braid/naval lace varies considerably in price and quality.

Below are two different naval laces from two different sources; note the difference in both shininess and color.



The lower is obviously the cheaper of the two, but it still looked good on the finished uniform!

(We used the upper naval lace on our prototype formal uniform back in 2012, and the lower naval lace on the newer jacket constructed for this tutorial in 2015.)

If you're on a really, really tight budget, any ½" metallic gold trim, braid, or ribbon can do in a pinch, such as this cheap trim from our local JoAnn:



To be honest, though, we hesitate to even mention it as an option here, because the quality is so much lower than even the cheapest naval lace we could find; below is a comparison photo of nice naval lace (top), inexpensive/midrange naval lace (middle), and the JoAnn trim (bottom):



For the 1/8" gold/black twisted piping, to be honest, you'll probably just have to scrounge around and do the best you can with whatever you can find; unfortunately, we know of no source for 100% screen-accurate piping, and the passable substitutes we have come across over the years appear to always be coming and going ...

NOTE: For the formal uniform in this tutorial, we used the following materials:

- * White cotton wrinkleless (twill) as a substitute for white wool gabardine
- * White cotton rib-knit cut at a 61° angle for the jacket yoke and bib
- * Black cotton twill as a substitute for black wool gabardine
- * 1/2" metallic gold naval lace from an eBay seller in India (we got 10 yards for about \$35)
- * Burgundy upholstery piping from our local Hobby Lobby (see page 103)
- * Heavyweight collar interfacing from B. Black and Sons

SIZING INFORMATION:

The finished garment measurements are as follows:

	S	M	L	XL	2XL
Shoulder to shoulder	18"	19 ½"	21"	22 ½"	24"
Chest (from 1" below arm hole)	43"	47 ½"	52"	57"	61"
Waist	37"	40"	43"	46"	49"
Sleeve length (from top of "center" quilt line on shoulder point)	24"	25"	26"	27"	28"
Sleeve cuff width	12"	12 ½"	13"	13 ½"	14"
Collar/neck	15"	16"	17"	18"	19"

On the printed pattern, the sizes are designated accordingly:

S _____

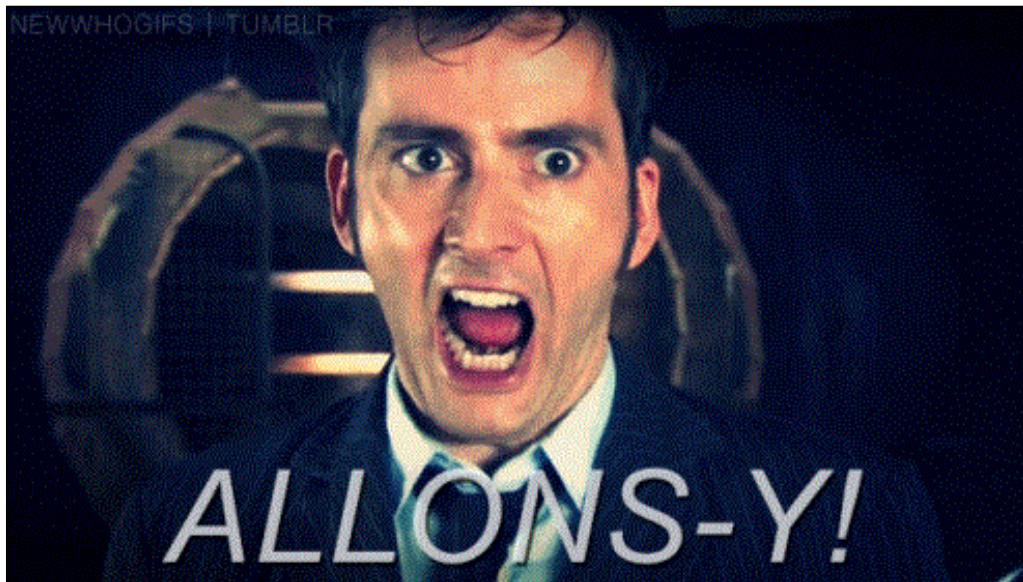
M _____

L _____

XL _____

2XL _____

Now that you've been briefed on the uniform, determined your sizing, and have all of your materials gathered:



JACKET ASSEMBLY INSTRUCTIONS:

UNLESS OTHERWISE NOTED, ALL PATTERN PIECES HAVE A $\frac{3}{8}$ " SEAM ALLOWANCE!

1 - PATTERN PIECES

For all of the jacket body panel pieces, cut two of your body fabric of choice (wool gabardine or cotton twill/wrinklease) and two of your underlining fabric of choice (we recommend muslin), so that each shell piece has an exact muslin counterpart.

(Yes, this doubles the number of pieces to cut, iron, and keep up with, but it will be well worth it; the interfacing fabric gives the garment more body, weight, dimension, and changes its drape ever-so-slightly.)

Iron all the pieces, then pair each body piece with its corresponding underlining.

Serge all of the body pieces to their underlining mates.



We also recommend serging all edges of the sleeves (piece K) and facings (pieces B, C, O, and P).

If you don't have a serger (and/or one is not reasonably available), you can also baste, stitch, or zig-zag stitch the two pieces together within the seam allowance; it's not ideal but it's something, at least!

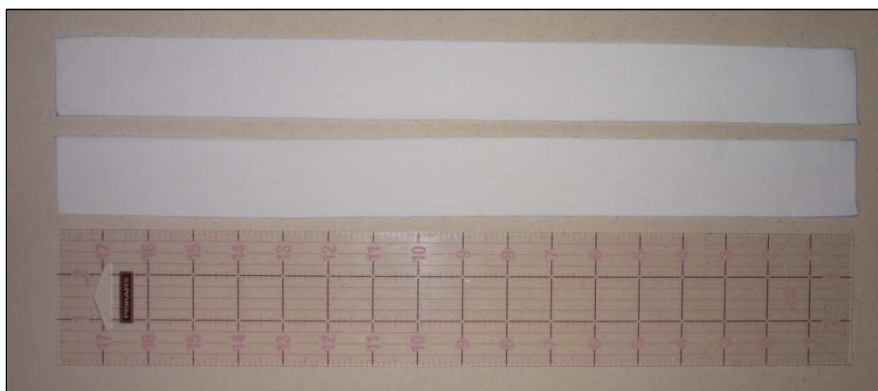
Here, you can compare a body panel zig-zag stitched to its underlining mate to one serged to it:



You should also have an underlining mate for your collar and collar facing (piece A), but don't worry about those yet. We'll cover the collar assembly process later in the tutorial.

You may also wish to underline the lower bib panel (piece C). If so, serge the layers together in the same style as with the jacket body panels.

Lastly, you will also need to cut two rectangular lengths of fabric for the zipper trim, 1 $\frac{3}{4}$ " wide and about 20" long. These should be white wool gabardine/cotton twill/wrinklease for captain and admiral versions, or gray wool gabardine/cotton twill/wrinklease for the officer version.



(We cut ours to 18" above to save time trimming them later; we constructed the size medium and didn't need the full 20".)

2 - QUILTING

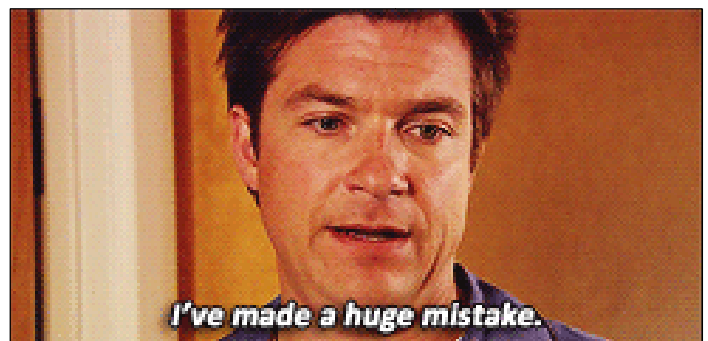


For all quilted portions of the jacket, you will need your walking/quilting foot and quilting needles.

A universal foot will not work well for this; a sewing machine only has feed dogs (the things on the sewing plate, beneath the foot, that pull the fabric forward as you sew) on the bottom, so the uppermost layers of fabric will move at a slower speed than the bottom ones, and by the time you reach the end of the quilt line, your pieces will have slid slightly, no matter how well you pin them.

(It's like trying to eat a burger while only holding the bottom half of the bun; you might get some of the top half in each bite, but it'll probably keep sliding back as you eat.)

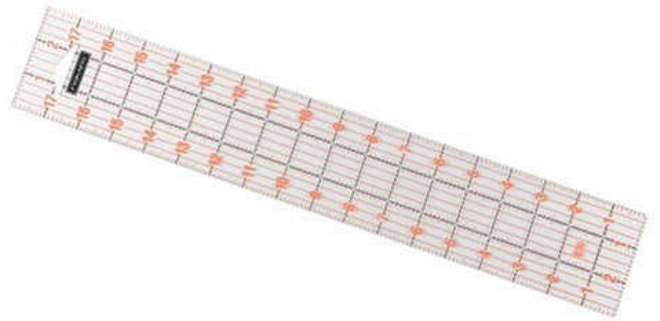
Try it if you don't believe us! You'll just be like ...



The pattern pieces to be quilted are the two front yokes (piece D), the back yoke (piece E), the two shoulder points (piece J), and the two bib pieces (piece B).

To start, you should have three cuts for each pattern piece: shell (wool elastique/cavalry twill), batting, and backing (we recommend using the jacket body fabric - wool gabardine or cotton twill).

Using your disappearing ink fabric marker, copy the quilt lines exactly from the printed pattern onto your backing fabric. The yoke and shoulder point quilt lines are precisely $\frac{3}{4}$ " apart, and the bib quilt lines are precisely $\frac{1}{2}$ " apart, so an easy way to do this is to mark the top and bottom of each piece then use a see-through quilter's ruler to mark them *and* ensure they're exactly parallel.



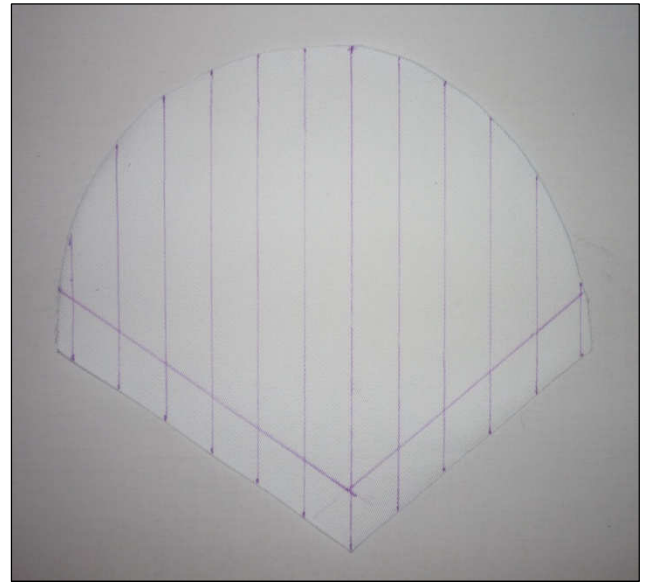
We highly recommend reducing bulk in by cutting out the batting and backing in seam allowance of the following key areas:

- * the bottom $\frac{3}{4}$ " of the front and back yokes
- * $\frac{1}{2}$ " at the upper and lower corners of the armscye on the front yokes, back yoke, and shoulder points
- * $\frac{5}{8}$ " at the front yoke/bib seam
- * $\frac{3}{8}$ " to $\frac{1}{2}$ " at the yoke/bib and collar seam allowances on the front yokes, back yokes, and bib pieces
- * $\frac{3}{8}$ " at the bib's shoulder seam

Where the seam allowance is $\frac{3}{8}$ ", we generally recommend reducing the bulk by $\frac{3}{8}$ ", plus the height of your quilted assembly (for "turn of cloth") - $\frac{1}{8}$ " should be sufficient, resulting in a bulk reduction of about $\frac{1}{2}$ " in the aforementioned areas.

We'll use a shoulder point (piece J) as a demonstration of this process.

We recommend marking the bulk-reducing area(s) on your backing pieces in addition to the quilt lines.

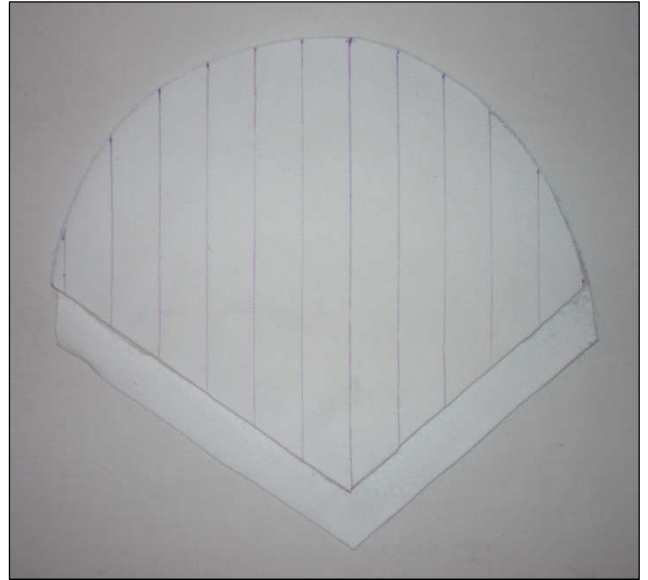


Stack the three layers of each piece on top of each other: shell, right side up, batting, and backing (so that the batting is sandwiched in the middle).

We highly recommend spraying some temporary fabric adhesive between the layers; even with pinning and the use of a walking foot, the layers can still slide around a bit, causing unsightly puckering and/or misalignment.

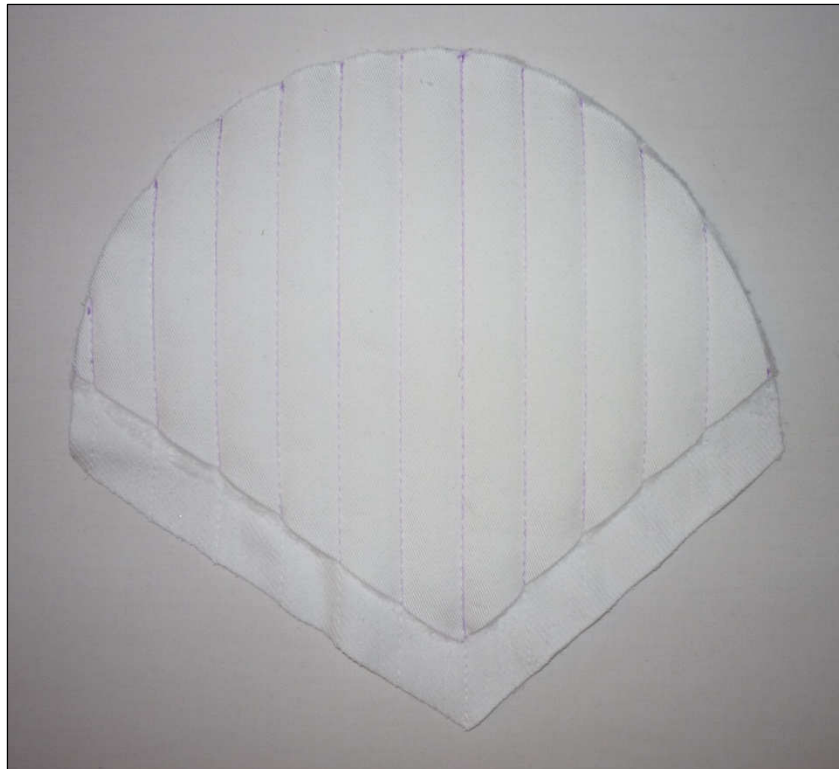


Once the layers are loosely secured together, cut away the backing and backing at the aforementioned areas as described previously.



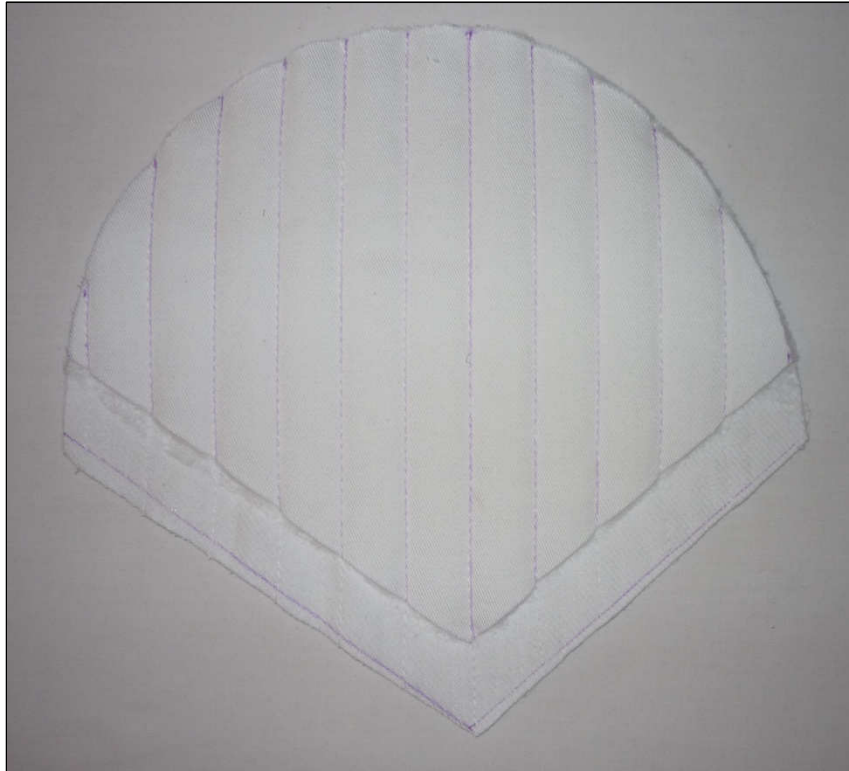
Pin the layers together, then baste the perimeter of the assembly $\frac{1}{8}$ " or $\frac{1}{4}$ " from the outside edges to further secure them.

Using your quilting/walking foot (and white thread), quilt along the lines indicated *from the wrong side*.



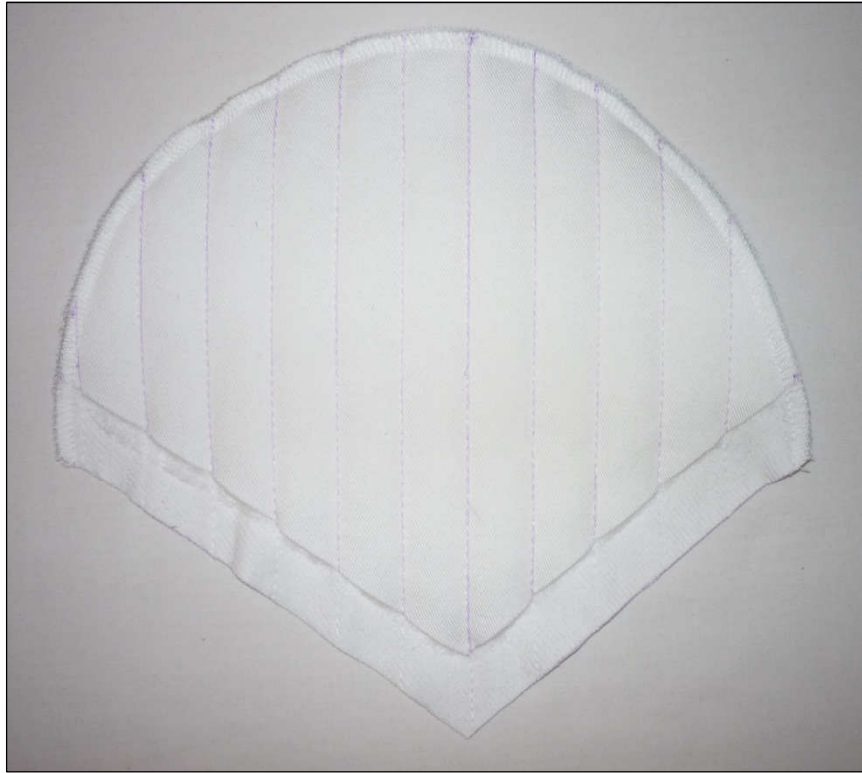
If you're using rib-knit as a substitute shell fabric for the yoke and/or bib, the seam allowances where you cut away the batting and backing may stretch somewhat while quilting.

If you find this is the case, simply use a ruler or seam gauge to measure the seam allowance and cut it back down to the correct size.

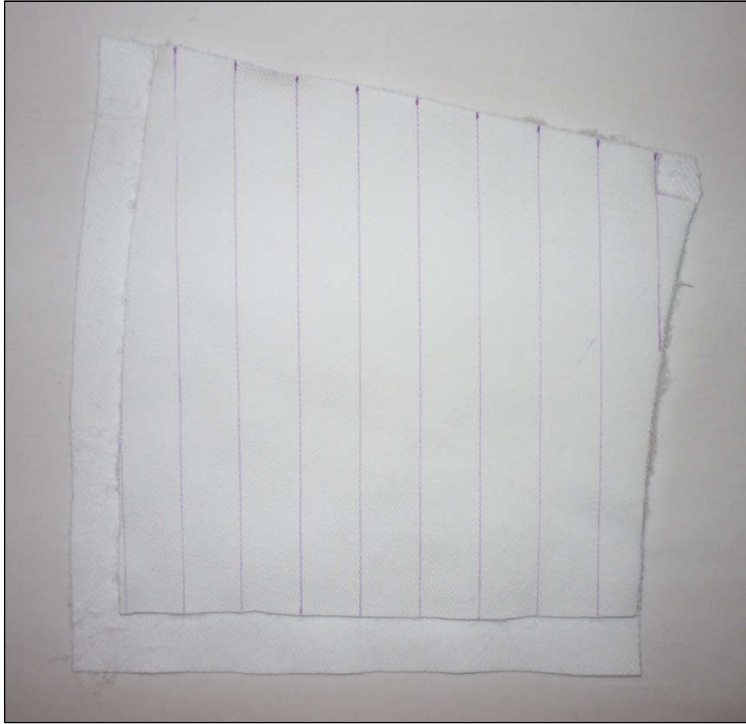


Note that the shoulder point seam allowance above stretched past the original $\frac{3}{4}$ " ; we simply used our ruler to mark lower edges (measured from the bottom of the batting and backing).

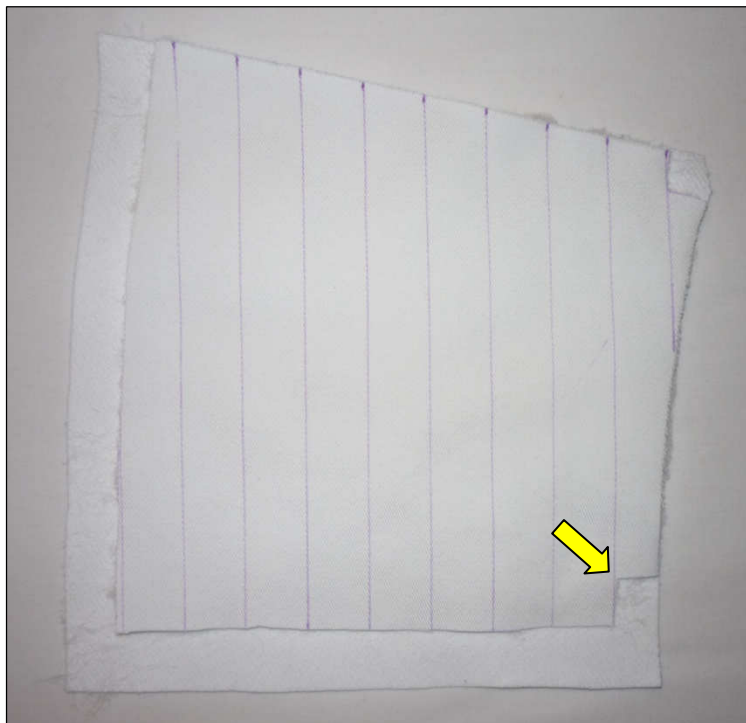
Serge the armscye (upper, rounded) edge of the shoulder point.



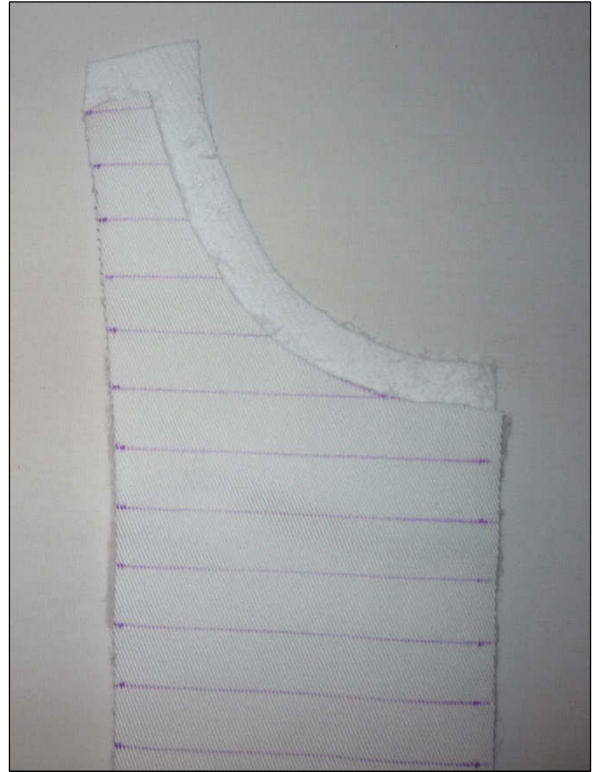
The process is more or less the same for the other quilted pattern pieces; here is what the underside of the front yoke (piece D) looks like with the bulk reduced:



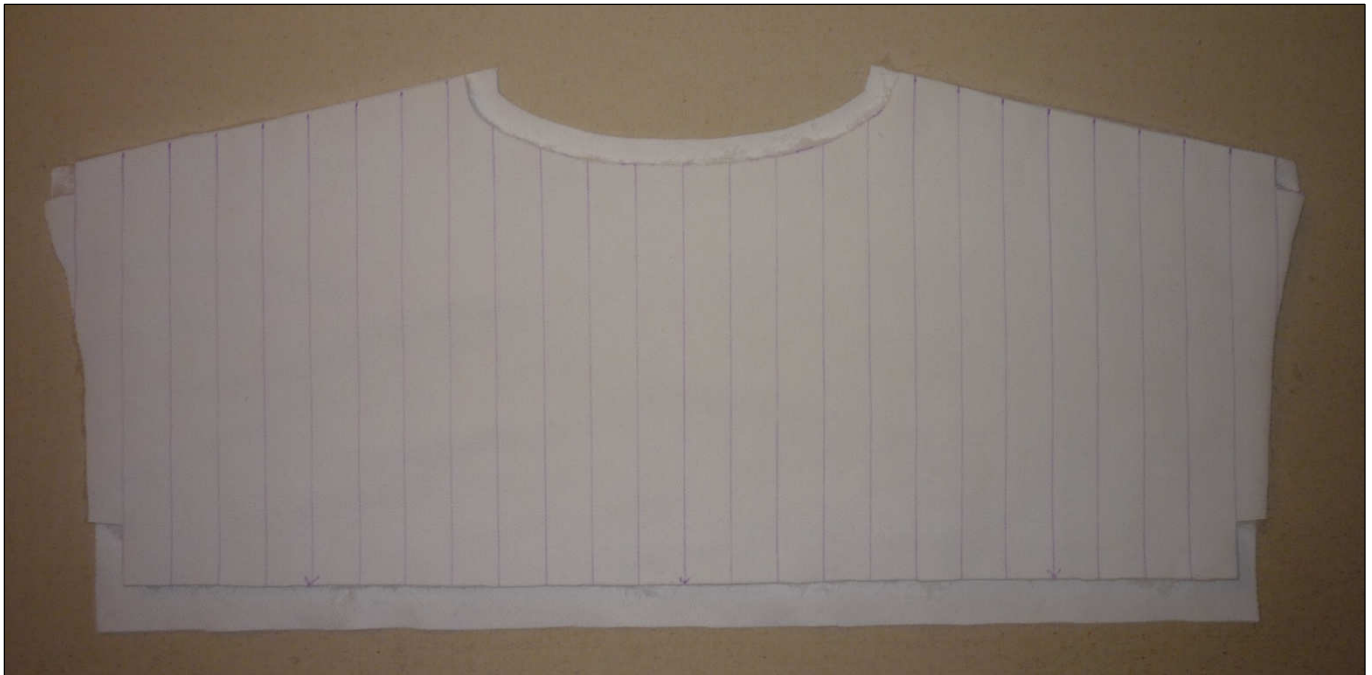
We also recommend cutting out some additional bulk in the lower corner of the armscye (in addition to the yoke/body seam allowances); about $\frac{1}{2}$ " square will do nicely.



The underside of the bib (piece B) should look like this at the top:

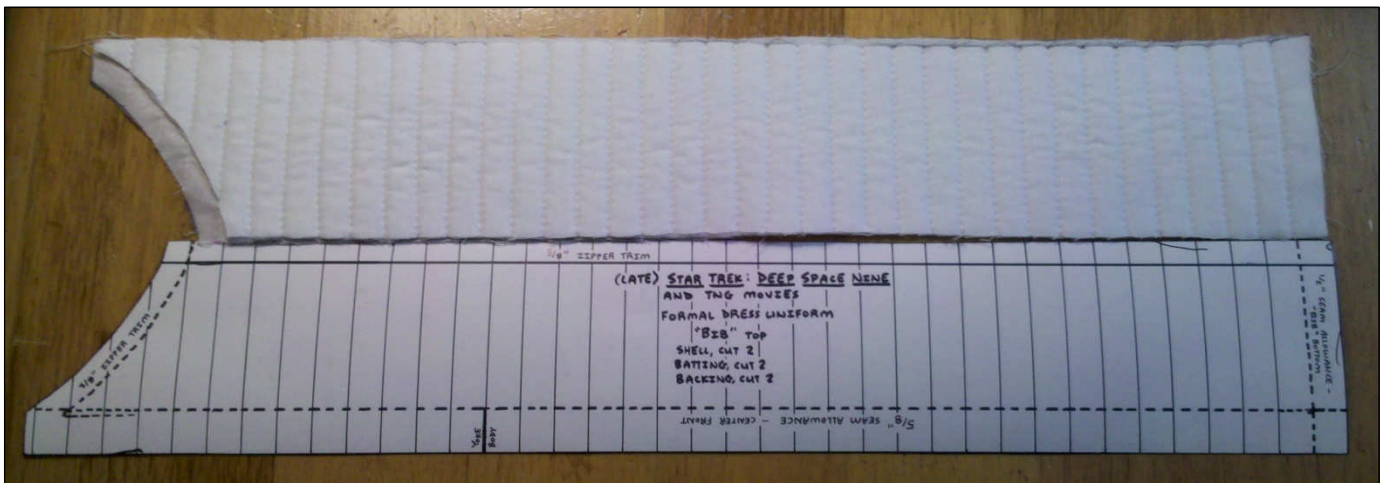


And the underside of the back yoke (piece E) should look like this:



TIP: The back yoke, and particularly the bib, will likely contract somewhat while quilting due to the compound effect of slightly curved quilt lines - i.e. the flat fabric curves slightly over the batting between the stitch lines, thus ultimately making the piece too small from one end to the other. The cumulative effect over the course of quilting these longer/wider pieces is that the finished piece is too short!

You can easily observe this unfortunate effect below, with one of our earliest bib experiments:



This might not seem like a huge deal - what's a half inch to an inch or so, right? - but aside from being inaccurate (as the bib quilt lines appear to be closer than $\frac{1}{2}$ ") the contractions develop into several, more serious issues later.

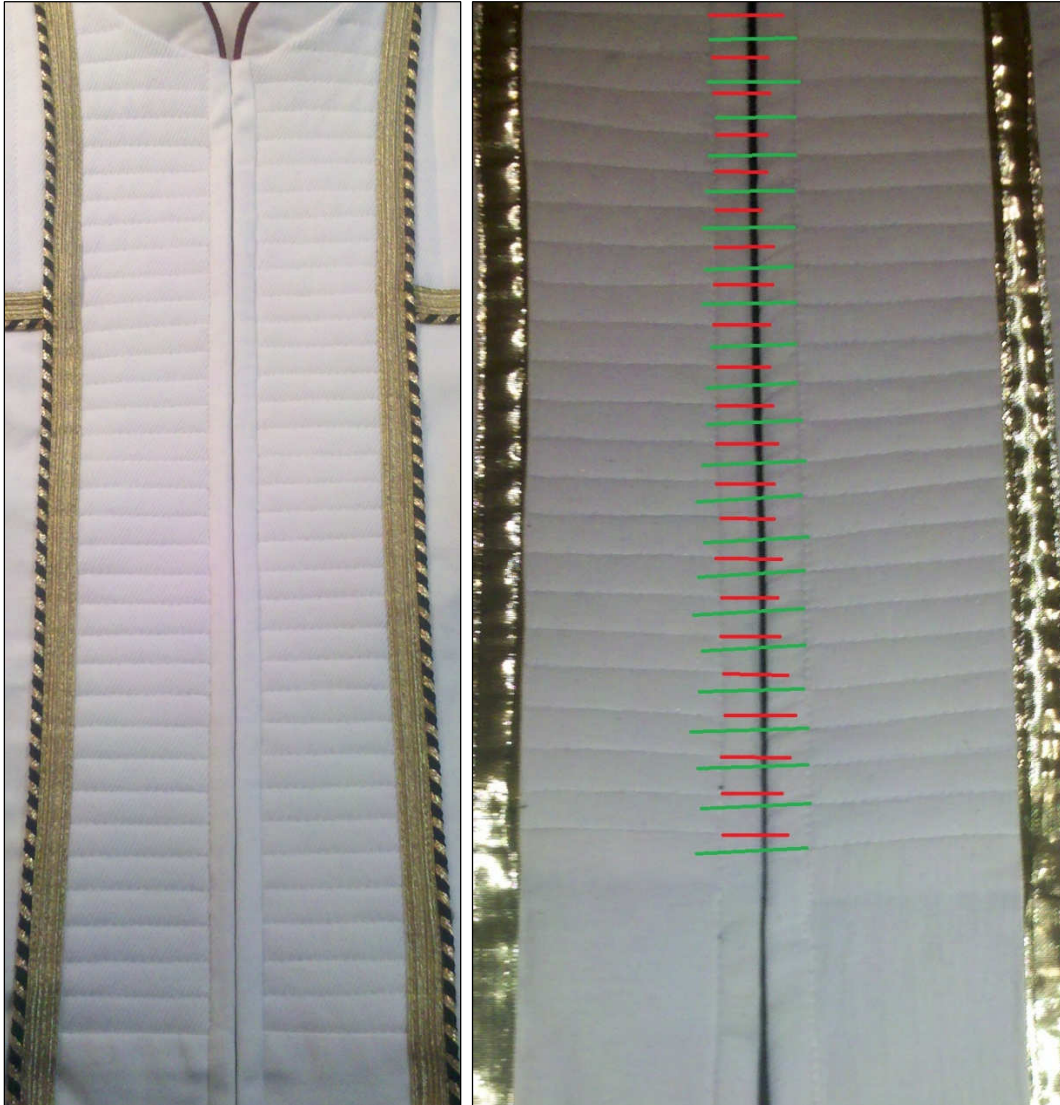


Contractions? This is not a good time.

First, it will not properly fit the jacket body and front yoke when attached later, nor will the front yoke/body seam properly align with the indicated quilt line.

It will also be even more problematic if the left and right bib pieces contract at different rates and thus do not match each other in length or even general symmetry; the horizontal quilt lines should meet each other in the middle!

Compare the quilt lines of our original formal jacket to those of our first muslin prototype test:



Furthermore, since the difference is likely to be most noticed (and detrimental) at the top, it will adversely affect the placement and attaching of the collar - almost a full inch too low in our first muslin prototype test!



Many things about this are not good.

To compensate for the "shrinkage," we offer the following tip, to be employed in this order as needed:

First, as you quilt, keep a firm hold on each side of the bib and pull the two ends away from each other. This will minimize the amount of puckering between quilt lines.



Second, we recommend quilting every other, or perhaps even every third, quilt line, then going back and "filling them in later."



Third, a small strip of fusible interfacing - say, $\frac{3}{8}$ " - added to the long edges of the backing (center front edges of the bib, bottom edge of the back yoke) before quilting may help the piece remain more stable.

Fourth, when it comes time to attach the bib assembly to the jacket's front yoke/body assembly, stretch the bib vertically as needed so it aligns properly at the points indicated on the printed pattern (yoke/body seam and bib bottom), then pin thoroughly. The bib/body seam will stabilize the outer edge of the bib to prevent contraction.

Fifth, stretching the bib vertically as needed later whilst attaching the zipper trim helps a bit.

Sixth, and lastly, a thin strip of fusible interfacing on the back of said zipper trim (or even interfacing the whole zipper trim, though we don't recommend it) will also help stabilize and maintain the bib's proper length.

We've found that the first two tips above were all that was required to produce a properly-sized bib and back yoke, but the other tips above may also be used as needed to compensate for any shrinkage.

TIP: when quilting, always begin from the same edge - preferably the bottom edge of the yokes, and the upper rounded edge of the shoulder points. Switching back and forth can result in some unattractive contortions and puckers, like these:



TIP: The spray adhesive will likely leave your finished pieces feeling rather stiff, so spray or briefly soak them in water to dissolve and/or wash out the adhesive, then set them aside to dry.

3 - FRONT BODY

Sew the middle front body panel (piece F) to the side front body panel (piece G).

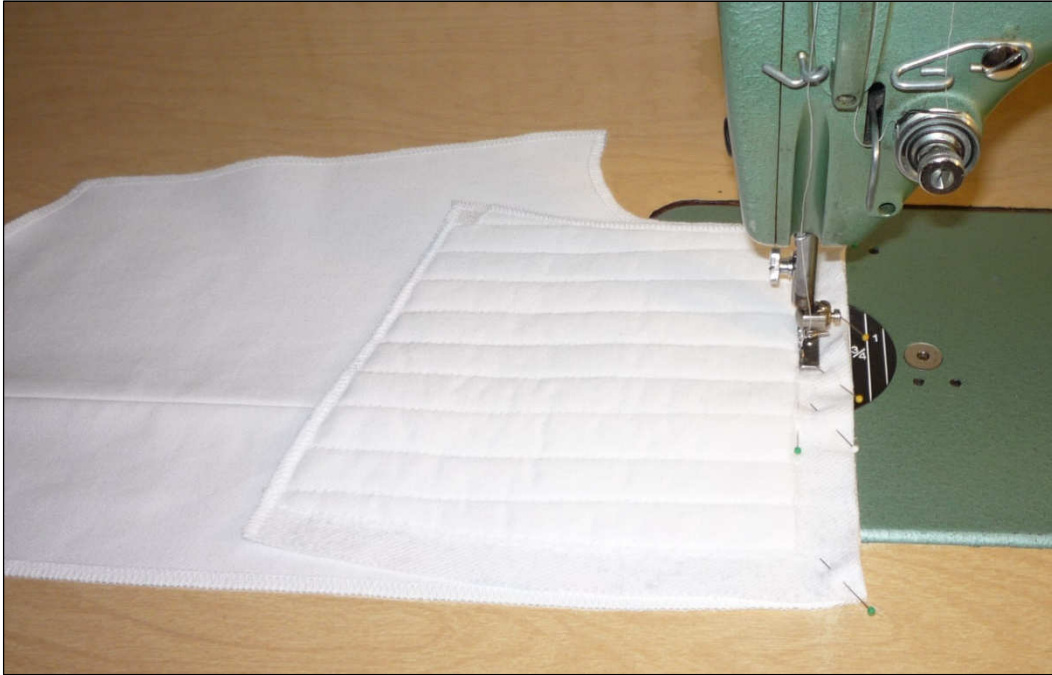
Press seam allowances open.



Sew or baste the seam allowances open about ½" from the top edge.



Using your zipper/piping foot, sew the front yoke to the front body assembly, right sides together and with $\frac{3}{4}$ " seam allowance, matching edges and aligning the body panel seam line with the appropriate quilt line.



Press the yoke/body seam allowances upward.



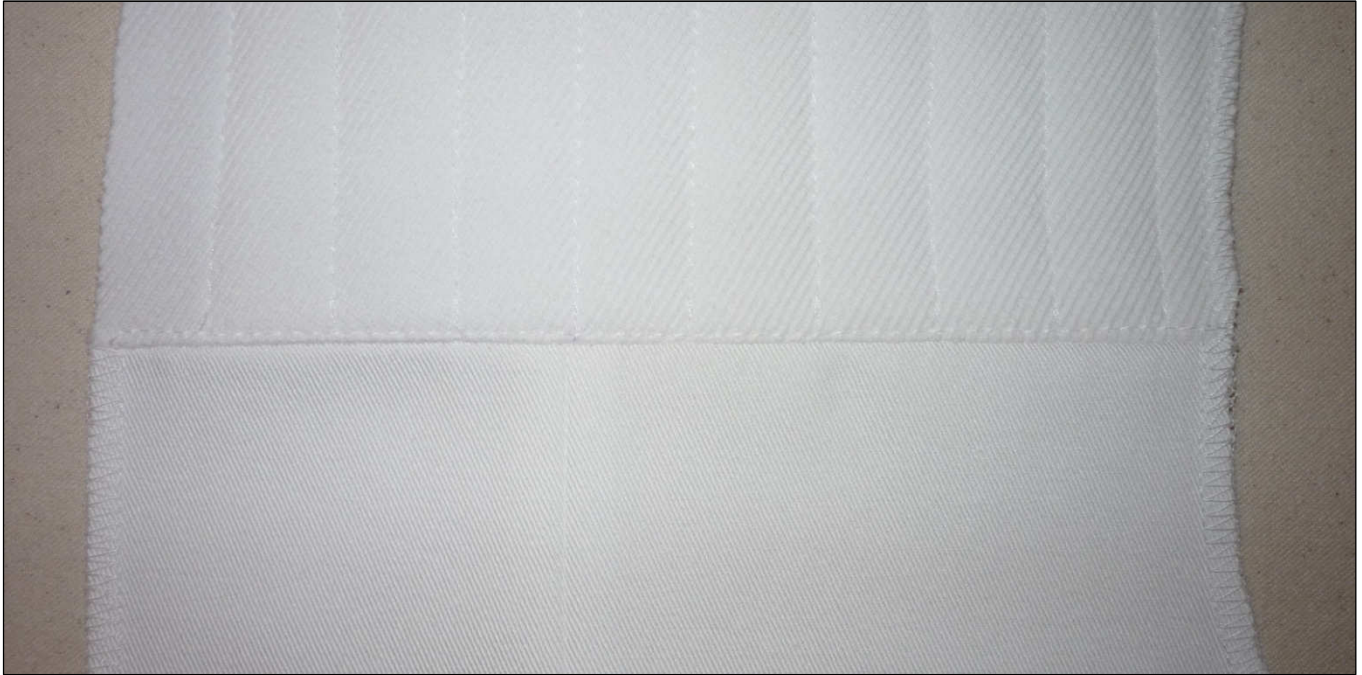
Cut out the yoke/body seam allowances at the outer edges and as close to the seam line as possible.



Now cut out the yoke/body seam allowances *another* $\frac{5}{8}$ " along the centermost edge. (Seriously, these layers really start to add up! You want the finished garment to drape comfortably, not feel like wearing body armor.)



From the right side, using your quilting/walking foot, topstitch through all layers $\frac{1}{8}$ " above the yoke/body seam line to secure the yoke/body seam allowances.



(It's okay if the body seam doesn't *perfectly* align with the appropriate quilt line, as the intersection will be covered with the $\frac{5}{8}$ " braid/trim assembly later.)

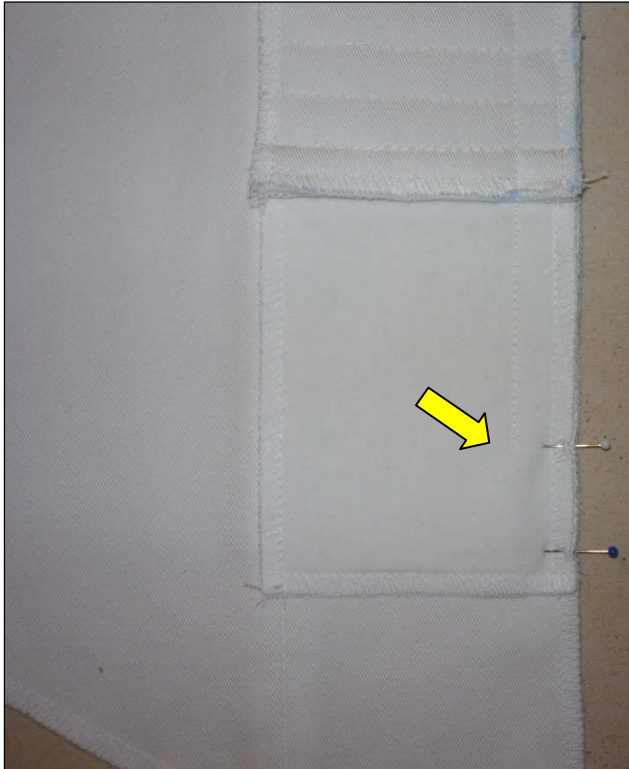
Sew the lower bib panel (piece C) to the bottom of the bib (piece B), right sides together, with $\frac{1}{2}$ " seam allowance. (The seam line should be directly over the bottommost bib quilt line.)



Press the bib panel downward.

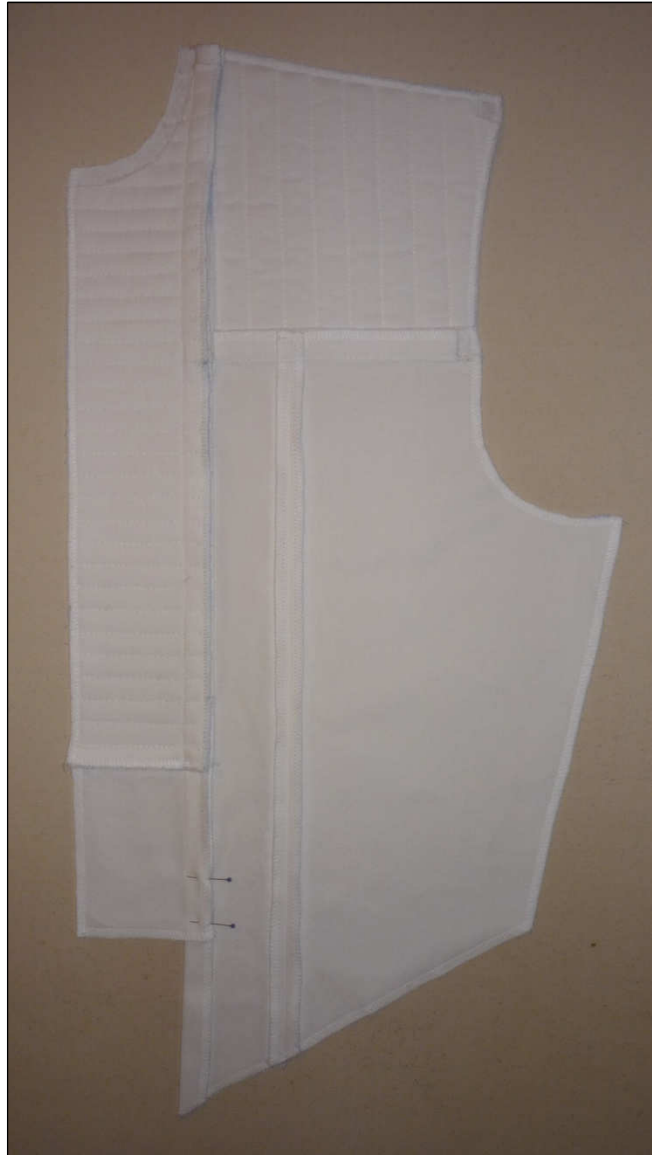


Sew the bib assembly to the body assembly, right sides together and with $\frac{5}{8}$ " seam allowance, aligning the yoke/body seam line with the appropriate bib quilt line and with the bottom of the bib assembly extending $\frac{3}{8}$ " past the line on the printed pattern. Leave the bottommost $1\frac{3}{8}$ " or so hanging free.



(Yes, that is correct; leave the bottommost portion of the bib un-sewn for now. We'll be finishing the stitch later in the construction process.)

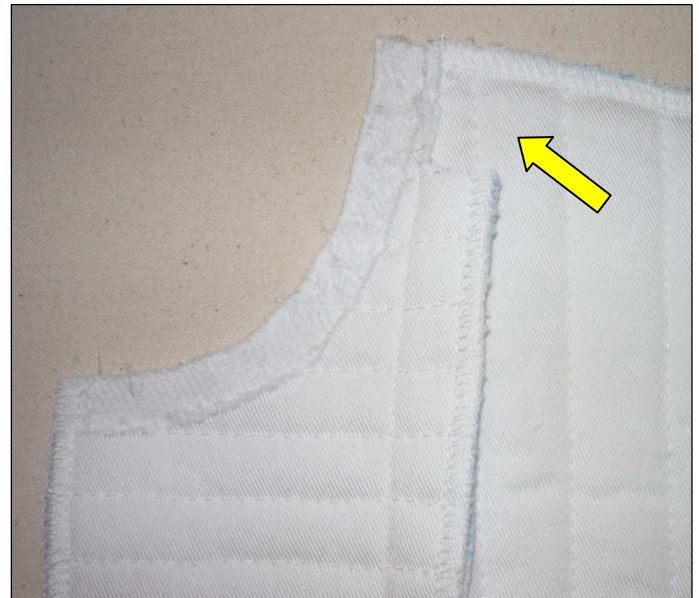
Press the bib/body seam allowance toward the body (away from center).



Press under the free bottom of the bib assembly, as well as the centermost edge of the middle front body panel, under $\frac{5}{8}$ " as well.



Remove bulk (again) by cutting out the uppermost $\frac{3}{4}$ " bib/front yoke seam allowances as close to the seam line as possible.



Clip the bib/body seam allowances horizontally directly beneath the quilted bib, as close to the seam line as possible.

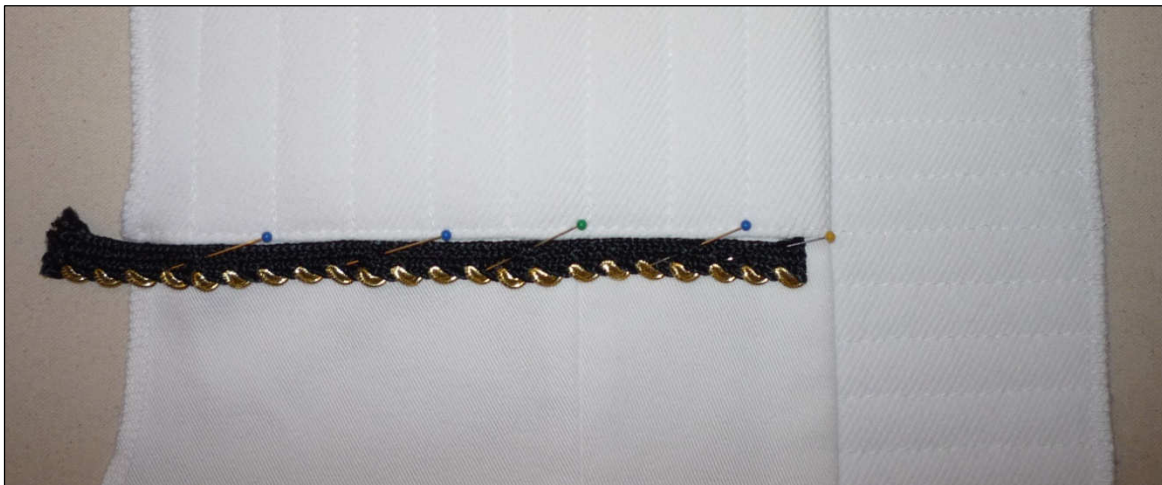


Attaching the $\frac{5}{8}$ " trim assembly to the bottom of the yokes and shoulder points, you have two options: you can attach the $\frac{1}{8}$ " gold/black twisted piping first then topstitch the $\frac{1}{2}$ " gold braid/naval lace afterward, or you can sew the two together to form the finished length of trim and attach the trim assembly in one process.

We prefer the former method for the yoke and shoulder point trims, so that is the method we'll be demonstrating here. If you wish to use the latter method, see pages 180-160 for our tips on sewing the two together.

The "one at a time" method we'll be using works best if your $\frac{1}{8}$ " gold/black twisted piping has $\frac{1}{4}$ " lip. If it doesn't, simply cut the lip down to size before beginning this process.

Cut a length of $\frac{1}{8}$ " gold/black twisted piping slightly wider than the bottom of your front yoke. Pin it to the jacket body so the edge of the lip is flush with the yoke/body seam line, and so that overhangs the armscye a bit and stops about $\frac{1}{4}$ " from the body/yoke/bib intersection.



Using your zipper/piping foot, sew the piping to the jacket body, stitching close to the cord.



Cut a similar length of ½" gold braid/naval lace and center it over the yoke/body seam line.

Switch to your gold metallic/embroidery/Sulky thread and your metallic or topstitching needles.



TIP: Before attempting to attach your braid, experiment a bit on some scraps to determine which needle type and size works best with your particular combination of braid, thread, and material thickness.

For instance, on the physical spool of thread we used for our original DS9/NEM formal uniform, Sulky recommended using a particular size topstitching needle, but we actually found that the same size metallic needle worked better when attaching the ½" gold braid/naval lace to the garment.

However, on the updated DS9/NEM formal uniform we constructed for this tutorial, we used a different ½" gold naval lace than we used on our original, and we found that we got the best results when using a universal needle to attach the naval lace to the garment.

Once you've determined your most effective needle type and size, attach the ½" gold braid/naval lace to the jacket body (centered over the yoke/body seam line) with two rows of stitching: one near its upper edge, and one near its lower edge.



Apply liquid fray preventer liberally to the raw edge of the trim overhanging the armhole.

You may also wish to dab a little bit - not much - onto the other raw edge of the trim (the edge at the bib).

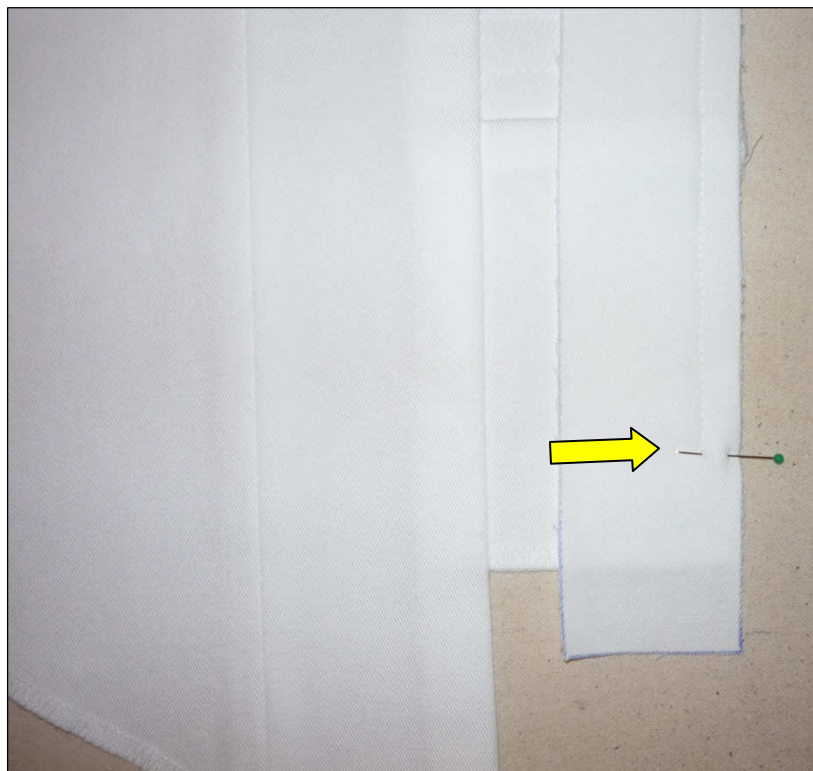
(Depending on your gold braid and piping, you may find that this stuff frays and/or unravels rapidly, so the idea with the overhang and liquid fray preventer is to keep it in good shape for as long as possible.)



Place the zipper trim on top of the bib assembly, right sides together, with top edges flush and with the centermost edge of the zipper trim flush with the center of the bib.

The zipper trim should extend beyond the bottom of the bib assembly by about 1". If your zipper trim overhangs more than this, cut off the excess.

Using your quilting/walking foot and white thread, sew the zipper trim to the bib assembly $\frac{3}{8}$ " from the center edge, leaving the bottommost 1" free.



Press the zipper trim toward center (away from the body).



Repeat for the other side.



4 - BACK BODY

Sew the side back body panel (piece H) to the center back body panel (piece I).

Press seam allowances open.



Repeat for the other side.

Sew the two back assemblies together at the center back.

Press seam allowances open.



The remainder of the back assembly construction is more or less the same as the front, but we'll walk you through it here.

Sew or baste the seam allowances open about $\frac{1}{2}$ " from the top edge.



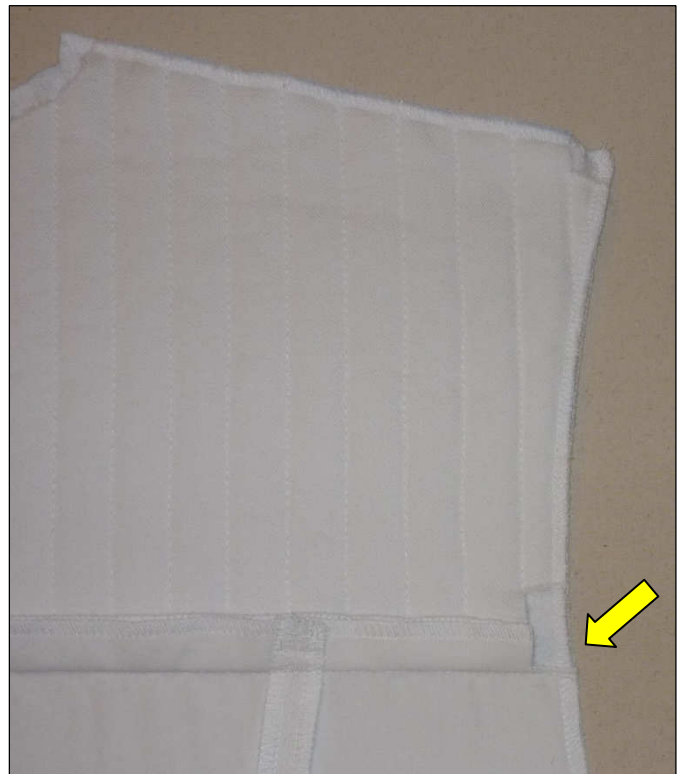
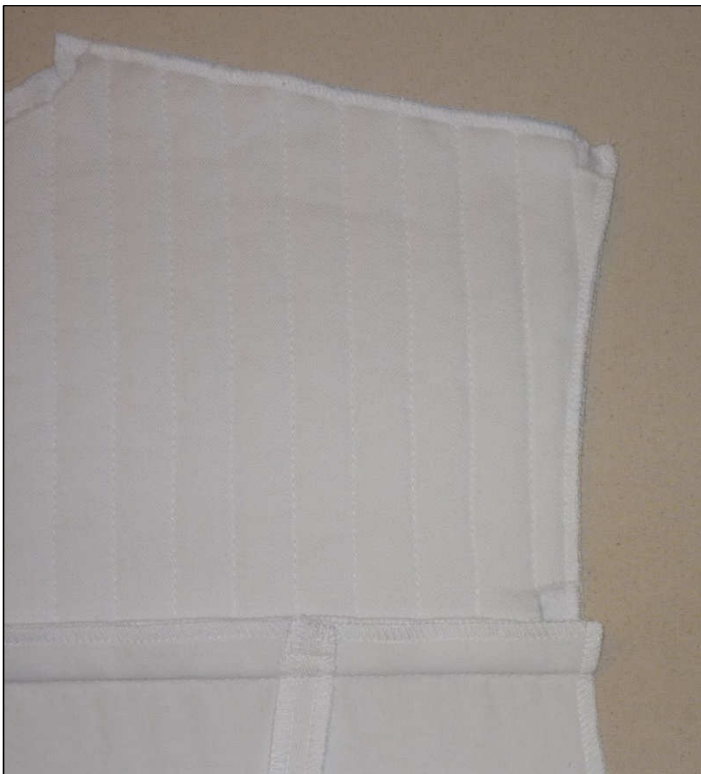
Using your zipper/piping foot, sew the back yoke to the back body assembly, right sides together and with $\frac{3}{4}$ " seam allowance, matching body seam lines to the appropriate quilt lines.



Press the yoke/body seam allowances upward.



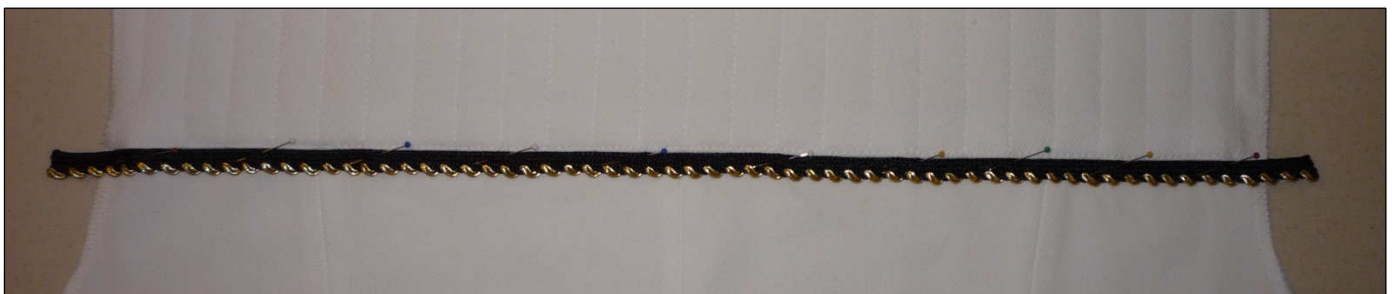
Remove bulk by cutting out a ½" (or so) square of the yoke/body seam allowances at the armholes.



From the right side, using your quilting/walking foot, topstitch through all layers $\frac{1}{8}$ " above the yoke/body seam line to secure the yoke/body seam allowances.



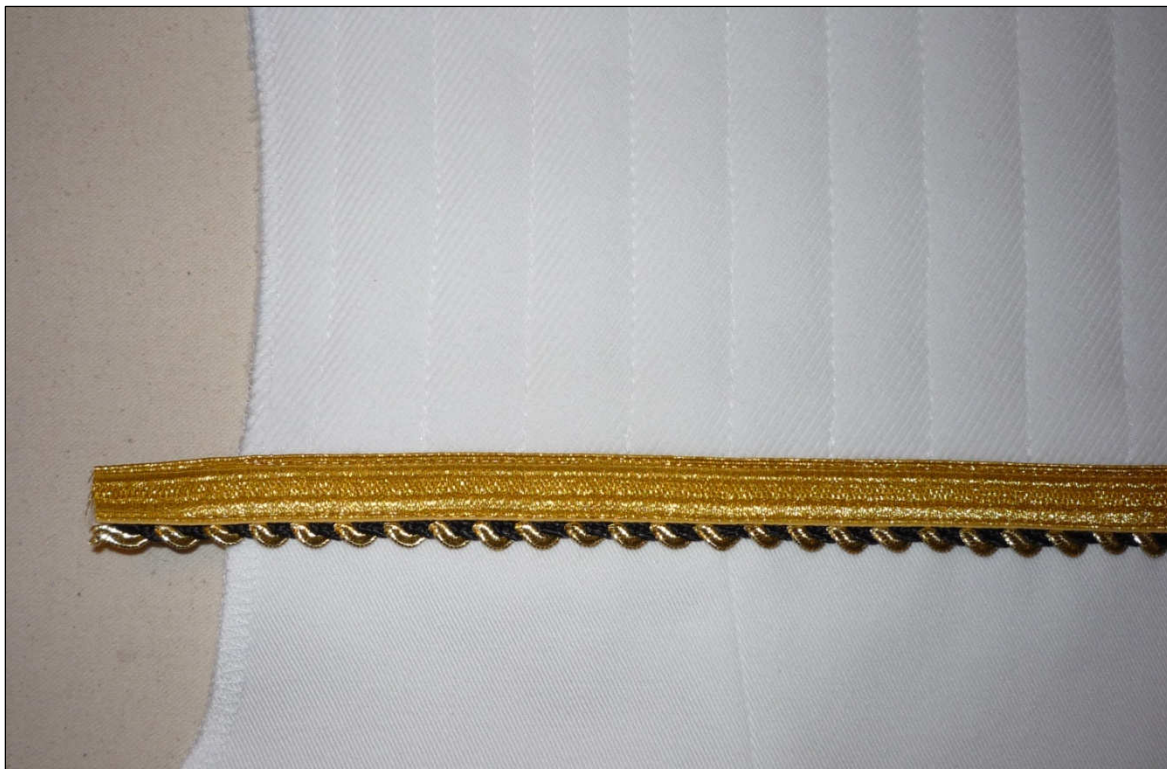
Pin and sew an appropriate length of $\frac{1}{8}$ " gold/black piping to the back in the same manner as done previously with the front.



Using your gold metallic thread and the appropriate needle, attach an appropriate length of the ½" gold braid/naval lace to the back in the same manner as with the front.



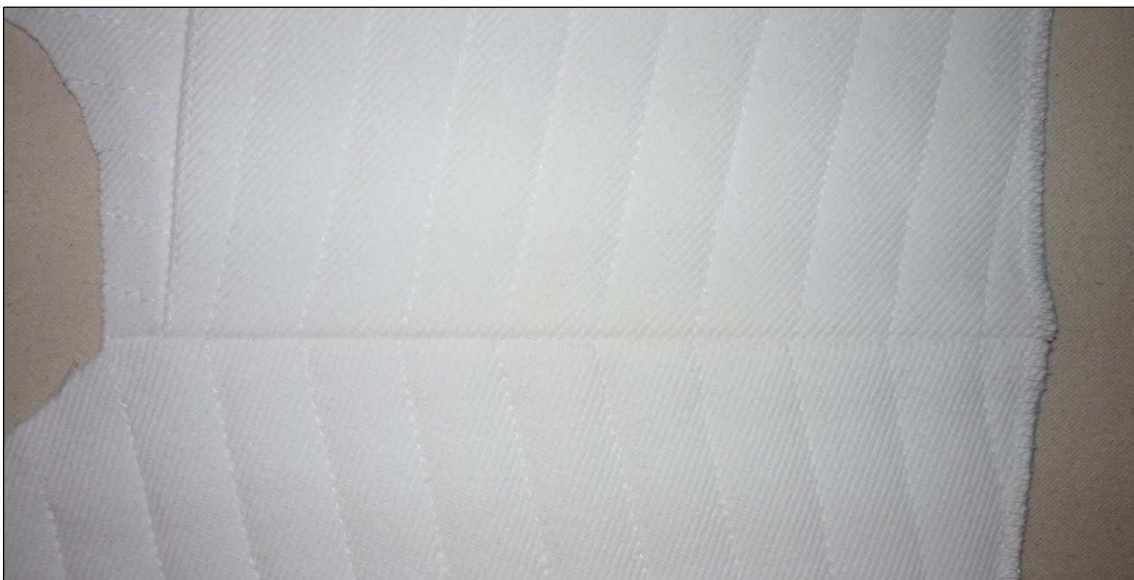
When finished, apply a liberal amount of liquid fray preventer to the raw edges of the trim.



5 - FRONT TO BACK

Place the front body assembly on top of the back body assembly, right sides facing and quilt lines meeting exactly at the shoulder seam.

Baste the front yoke to back yoke at the shoulder seam. Flip the garment around (right sides out) and inspect the quilt lines at the seam to confirm that they meet exactly.



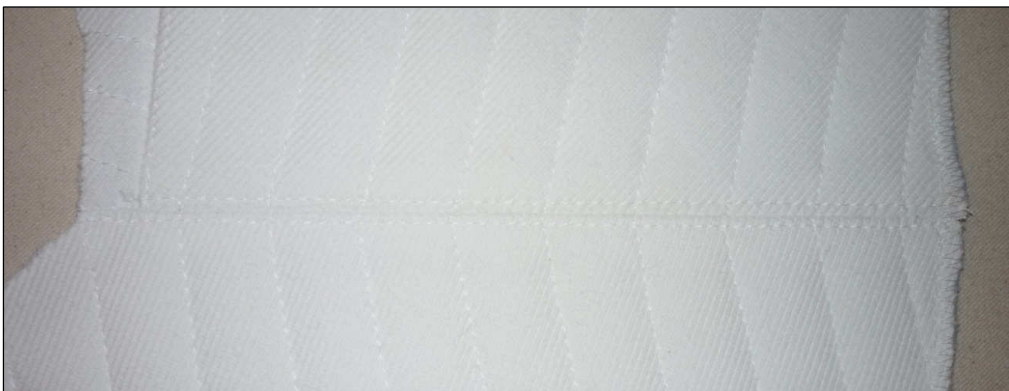
Once satisfied of their proper alignment, stitch at the shoulder seam, reinforcing the seam at the neckline and armscye. We actually recommend stitching the whole seam twice to further secure the many layers.



Press the shoulder seam allowances open.

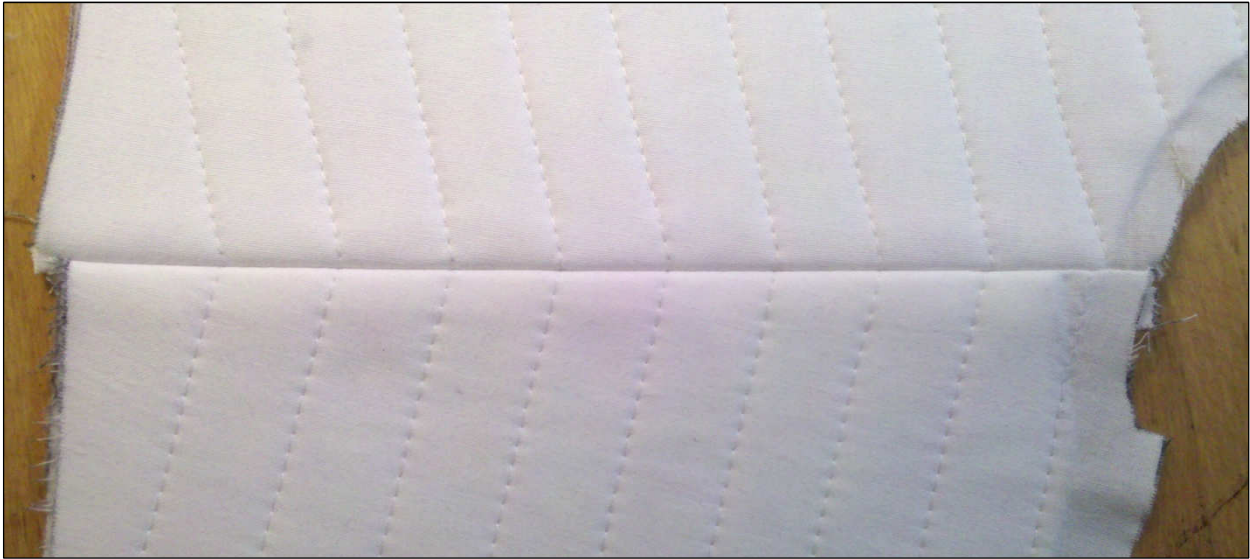


Topstitch in a parallel straight line on each side of the seam, $\frac{1}{8}$ " away, securing the seam allowances in place.

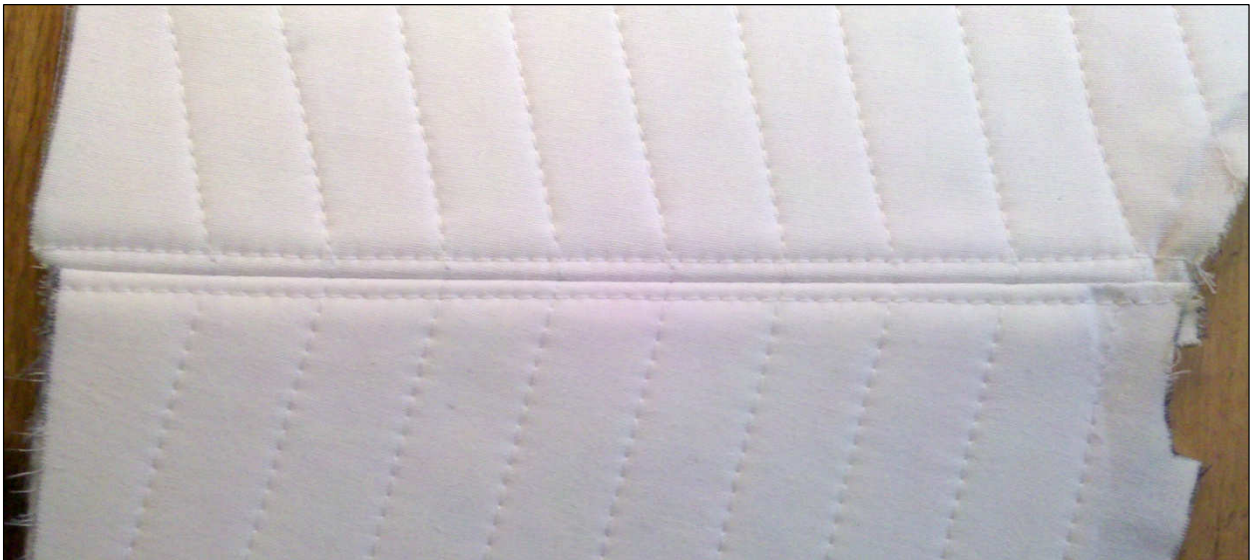


Repeat for the other side.

Ideally, the quilt lines should align exactly (demonstrated here on muslin).

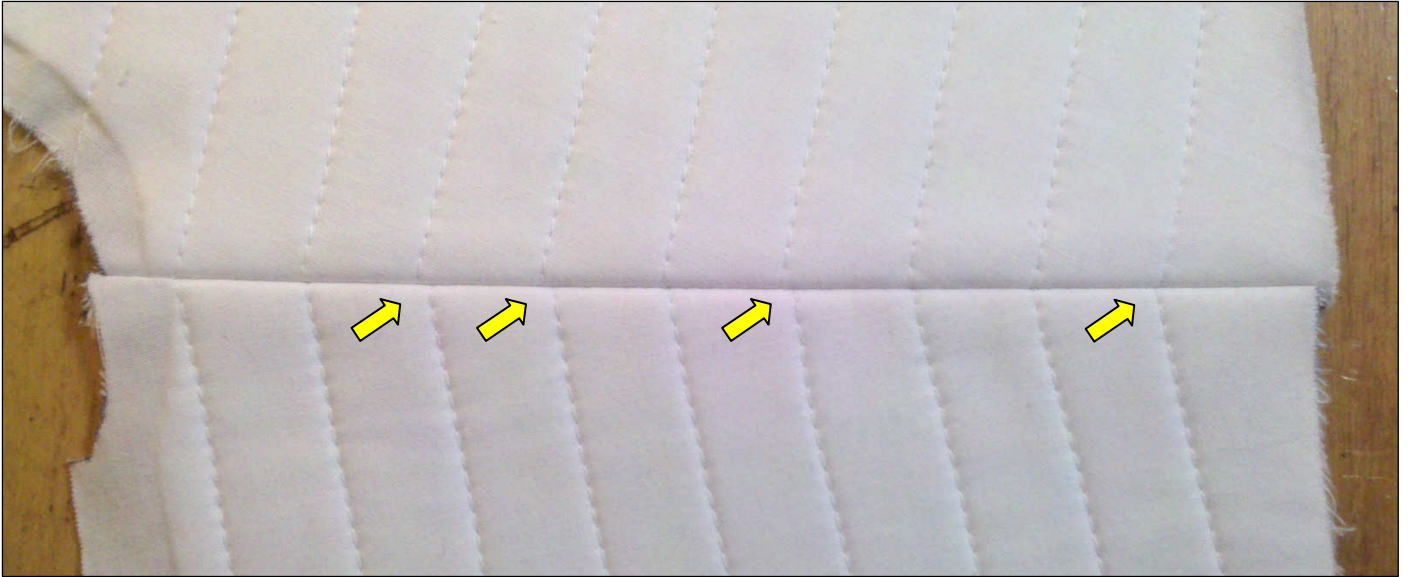


Then the $\frac{1}{8}$ " topstitching is icing on the cake.

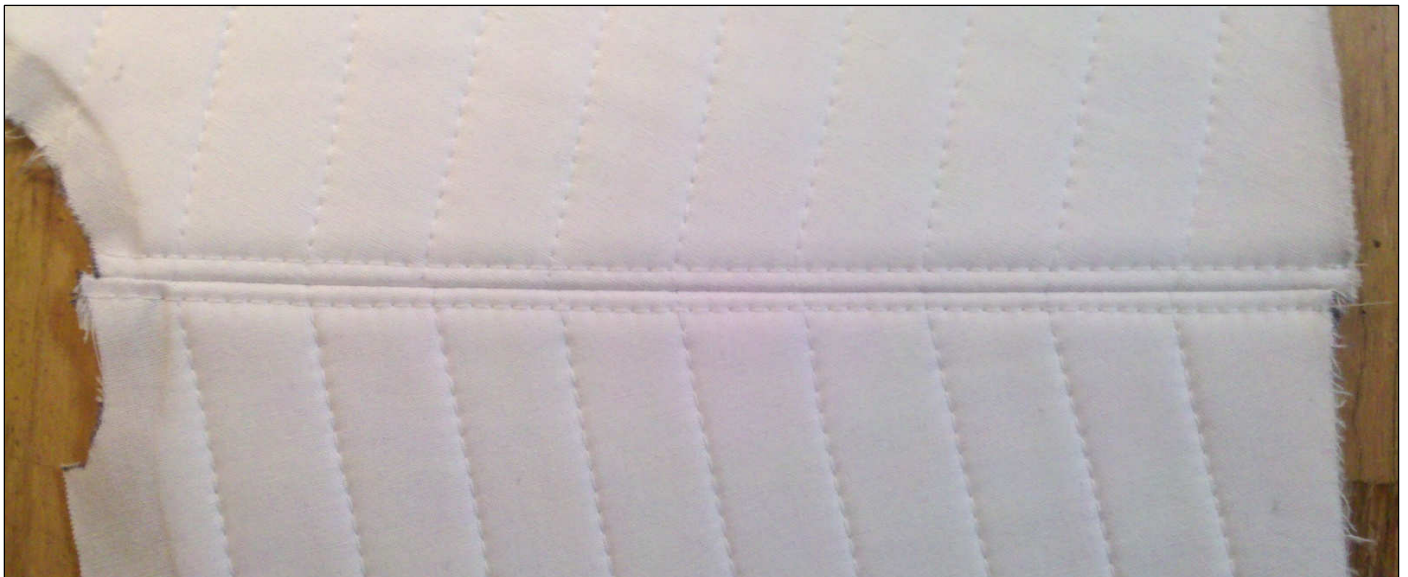


However, the $\frac{1}{8}$ " topstitching does grant a minor margin for error - that is, it "forgives" a small amount of misalignment. Not much, but just enough to slightly obscure the last stitch or so ...

For instance, note this slightly imperfect alignment:



Now note how the $\frac{1}{8}$ " topstitching slightly obscures the unsightly, mismatched lines:



Once draped over the wearer's shoulder and the wearer is moving, the slight misalignment would be practically imperceptible.

'course, it won't do you much good if you're off by more than that!

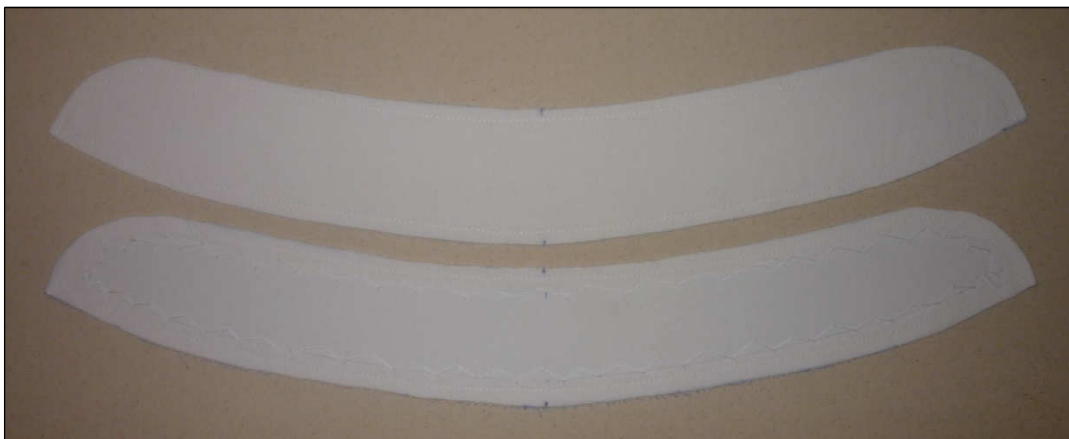
6 - COLLAR

NOTE: With our pattern, we have included a total of four collar options: a 1" collar (a la Captain Picard and Admiral Ross) and a 1 ½" collar (a la Commander Riker and Dr. Bashir), with two fitting options each. Option #1 is for people with more square neck bases, and option #2 is for people whose necks curve more gradually out from their shoulders. This should allow you to create a perfectly fitting collar for your uniform! We recommend making a couple practice collars to determine your ideal sizing/cutting option before beginning.

Sew or baste the collar and collar facing (piece A) to their underlining mates ¼" from each edge.

Cut away the seam allowances of your collar interfacing, then trim away an additional ¼".

Hand sew the collar interfacing to the collar's underlining only, *being careful not to stitch through to the right side of the garment.* (We recommend catch-stitching.) The collar interfacing's edge should be just inside the seam line.



Cut a length of your ⅜" braided, division color piping long enough to attach to the entire collar and extend a little past the front edges.

Using your zipper/piping foot, sew the division piping to the right side of the collar, stitching close to the cord.



Using your zipper/piping foot, sew the collar and collar facing together along the upper edges, right sides together and stitching close to the piping.



View from collar facing



View from collar

Note how the collar interfacing hugs the seam line but doesn't add any unnecessary, unwieldy bulk!



Notch the front seam allowances along the pronounced curve, and clip the remainder of the seam allowances as needed to effectively turn it.



Turn the collar assembly right sides out and press from the wrong (facing) side.



Cut off the excess piping and serge the bottom of the collar assembly.

You may also wish to apply a small amount of liquid fray preventer to the bottom edges of the piping.



7 - COLLAR TO BODY

Pin the collar to the jacket body assembly at the neckline, with the front edges of the piping flush with the top center edges of the bibs and matching center backs.



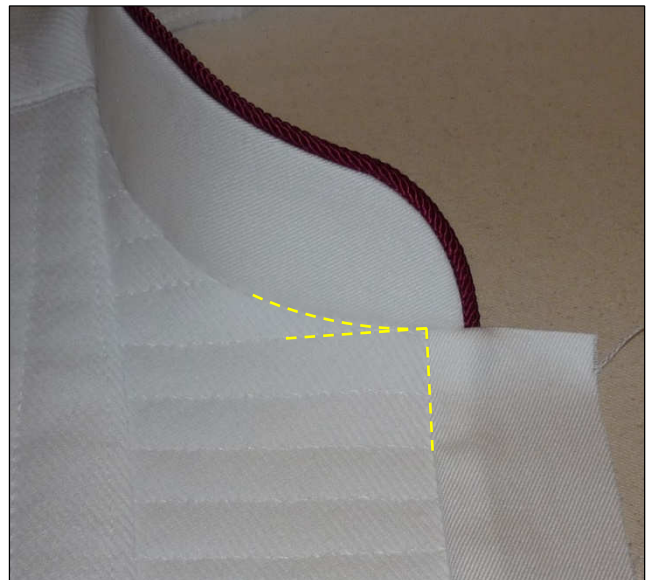
Sew the collar to the jacket body.

TIP: If you're using rib-knit as a substitute for the wool elastique, take care not to stretch the necklines of the bibs and/or yokes! With the batting and backing cut away, it's easy for the rib-knit to stretch out of shape when attaching the collar.

Turn the seam allowance downward, and press the top $\frac{3}{8}$ " of the zipper trim downward (wrong sides together).



Remember, the collar, bib, and zipper trim should form a nice three-way intersection at a bib quilt line:



8 - BIB/NECKLINE TRIM

Unlike the yoke trim, for this step, we recommend sewing the two pieces ($\frac{1}{2}$ " gold braid and $\frac{1}{8}$ " gold/black piping) together beforehand.

To determine how much trim you will need for the bib/neckline, simply drape it around the garment and cut it to size, leaving about 1-2" excess at the bottom.



To effectively attach the ½" gold braid/naval lace to the ⅛" gold/black piping with ideal results, we offer the following tips:

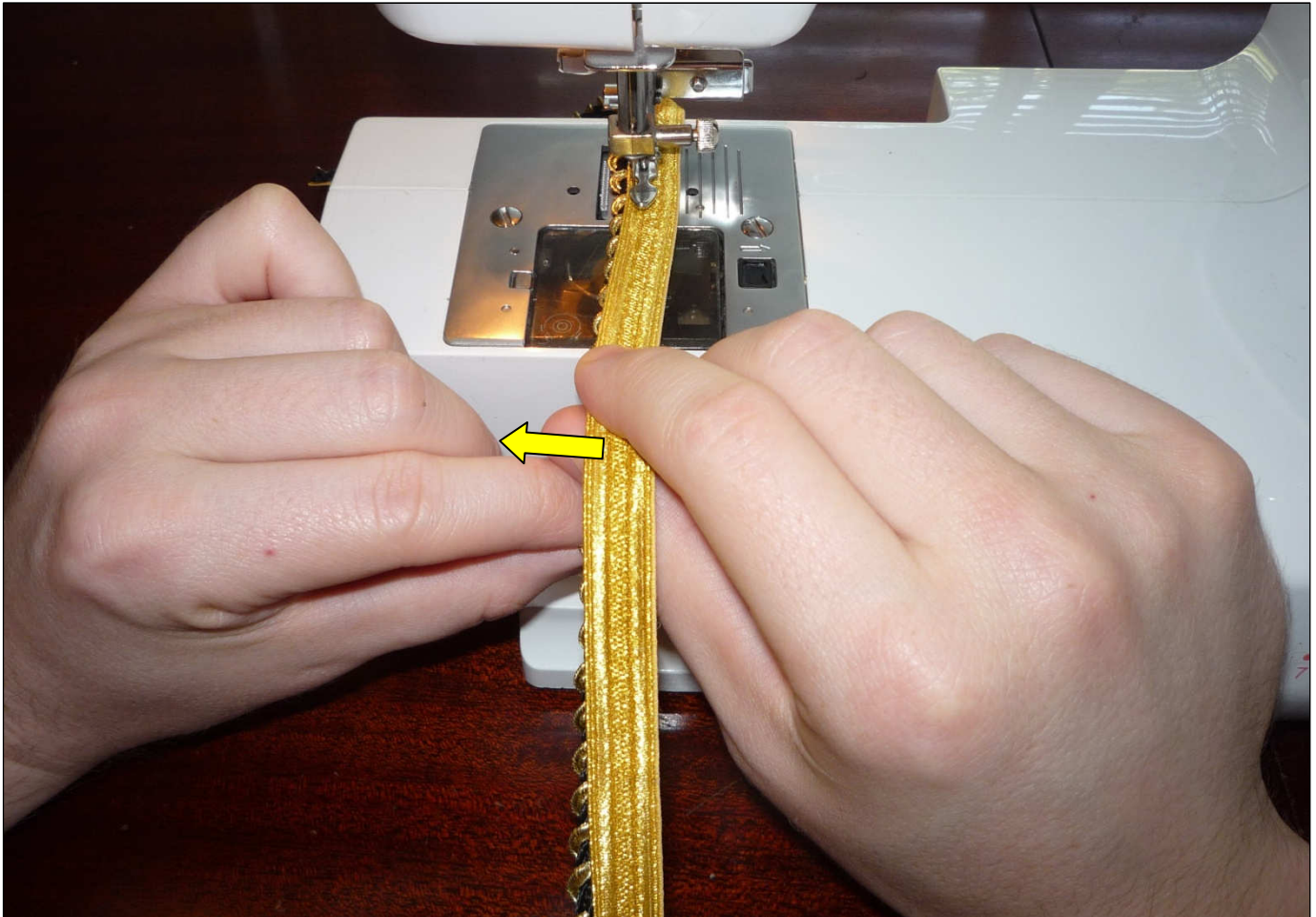
First, stitch slowly and carefully to avoid having any skipped stitches or twists in the metallic thread, it can be rather fussy if you're anything but slow and deliberate in your stitching.

Second, you may want to lower the thread tension some.

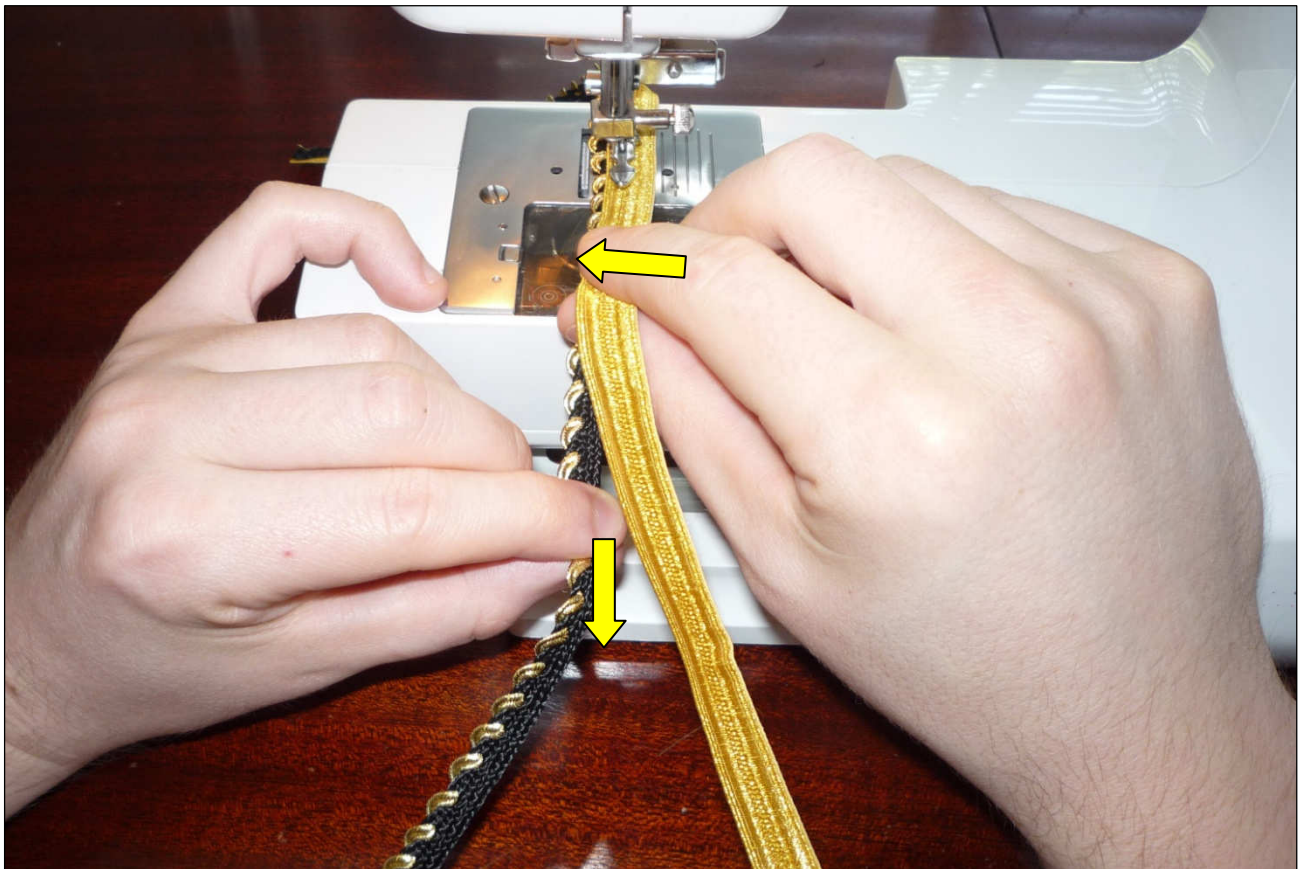
Third, as you sew the two layers together, pull the piping back (toward yourself, away from the machine) as you sew; otherwise, you may find that even though you cut the gold braid and piping the exact same length, when you get to the end of the length of trim, the piping "shrunk" to be several inches shorter than the braid - not good! Gently pulling back on the piping as you slowly sew eases it along properly.



As you're gently pulling the piping back, also pull the braid slightly to the left; this will keep the edge of the braid nice and snug with the edge of the piping and help prevent any "gaps" between the piping and braid.



Pulling the two lengths of piping and braid in different directions while simultaneously paying attention to your actual stitch line, thread tension, and the sound of your machine to confirm each stitch locks and doesn't skip, as well as your speed via the pressure of your foot on the pedal, may all seem a bit overwhelming at first, but once you get in the rhythm of it, it's not hard at all.



Now that the two pieces are sewn together to form a single length of $\frac{3}{8}$ " trim, it's time to attach it to the jacket body!

TIP: Unfold the middle front body panel/lower bib panel seam allowance and lightly mark the seam line ($\frac{1}{8}$ " from the edge) using your disappearing ink fabric marker.

This will serve as a guide when attaching the trim to the lower front jacket body.



Pin the trim into place only as much as necessary to secure it to the jacket body while sewing.

The centermost lower front edges of the trim should be flush with the centermost middle front body panel seam lines (which we lightly marked with our disappearing ink fabric marker - see above; the dotted line is where the centermost edge of the trim should be once attached).

The remainder of the trim should be positioned so that the centermost edges are flush with the bib/body and yoke/collar seam lines.

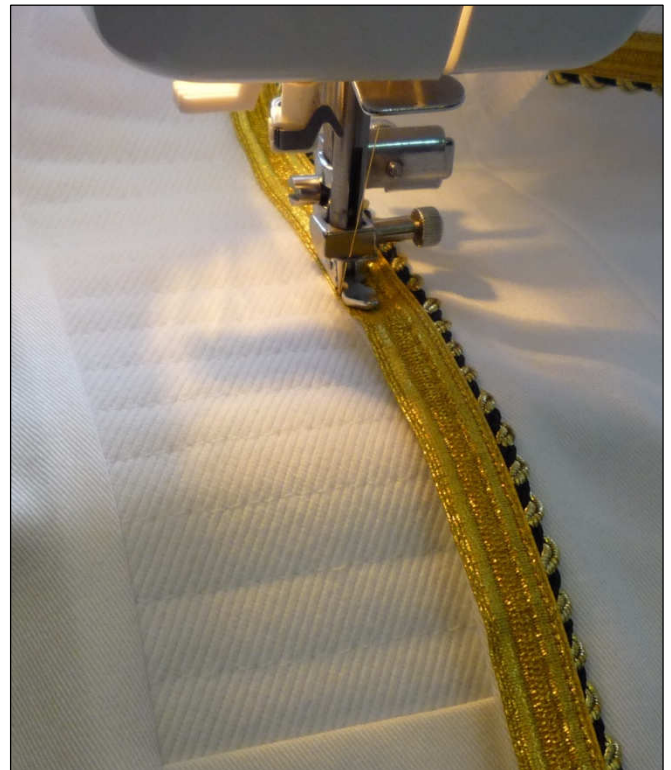
Let the length of trim overhang the bottom of the jacket by 1-2" (or however much excess is in the length of trim you cut; it'll get cut down to size later).

Beginning at the *centermost lower right* of the jacket, using your gold thread (and whatever needle gives you the best results), topstitch the braid into place as closely to the center edge as you can manage, keeping the clipped (lower front body) seam allowances and collar seam allowances free, but securing the bib/body seam allowances.

As you approach and stitch around the neckline, fold the collar out of the way as far as possible.



Again, the centermost edges of the trim should be flush with the bib/body seam lines (or perhaps just the *teeniest* hair over the seam line to further obscure it).



After the first row of stitching, we recommend stitching the second time from the *lower left*, again keeping the clipped (lower front body) and collar seam allowances free but securing the bib/body seam allowances.



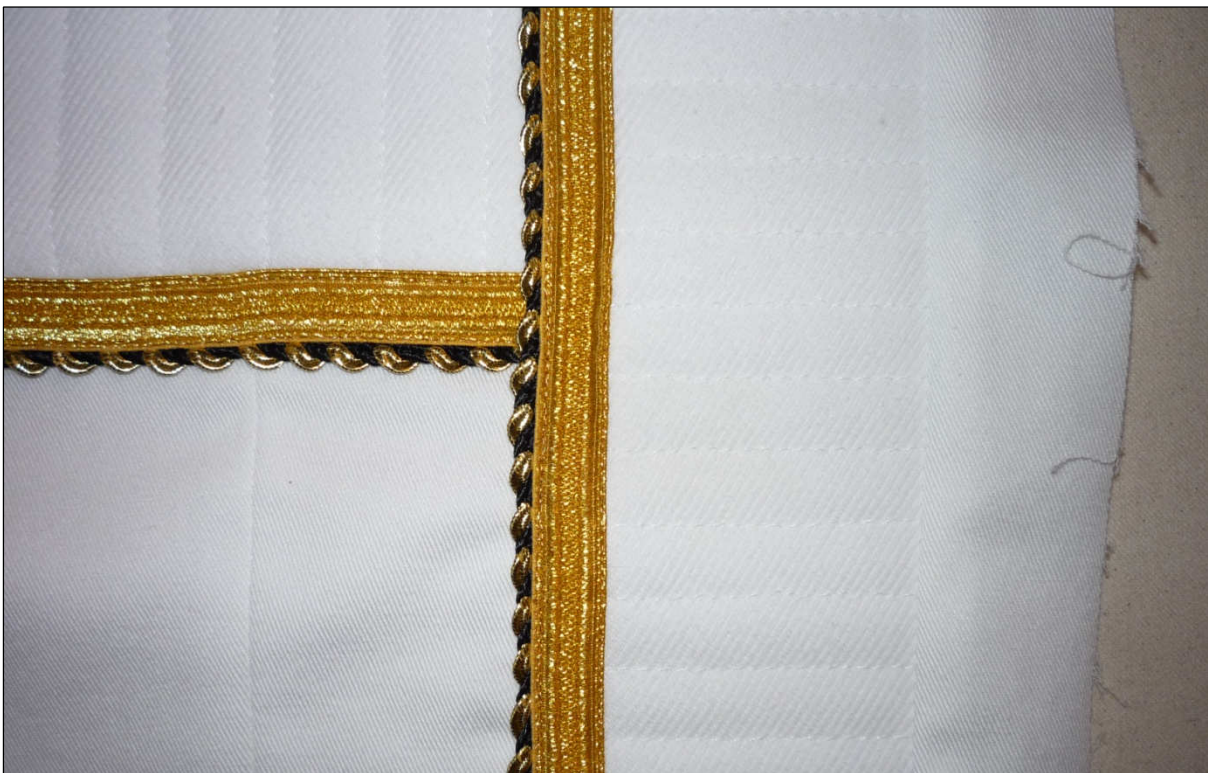
The trim should look like this around the neckline (note the collar's seam allowance is free):



The underside of your jacket should look like this (note the clipped seam allowance is still free, but the bib/body seam allowances were secured by the topstitching):



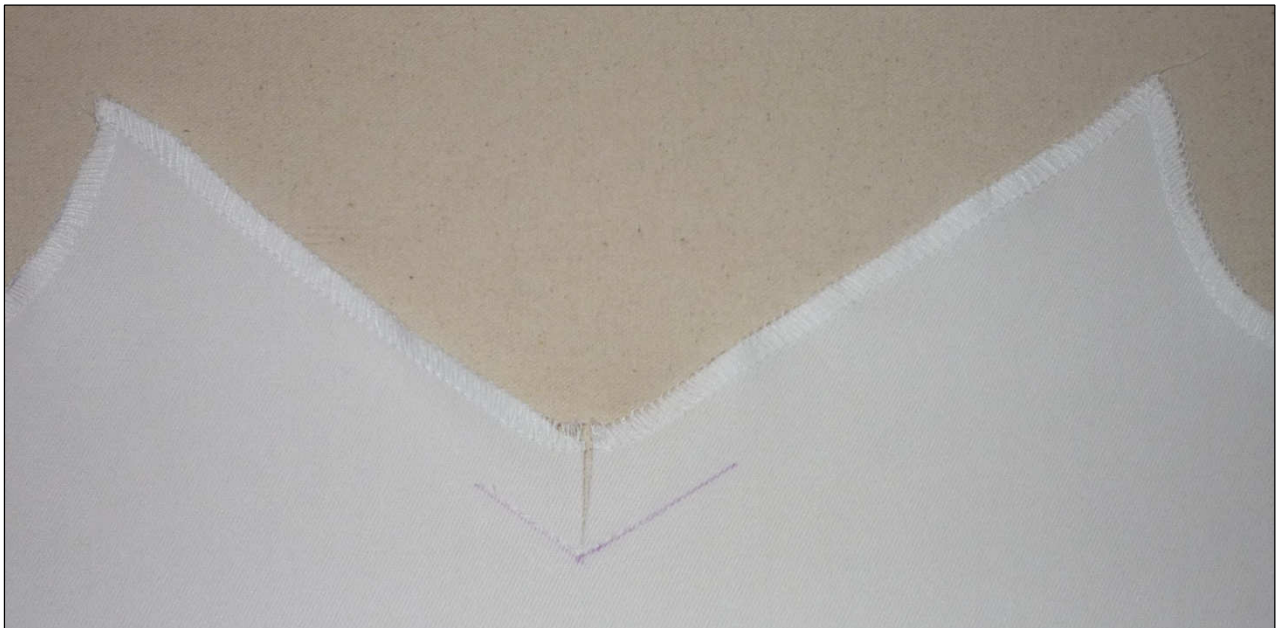
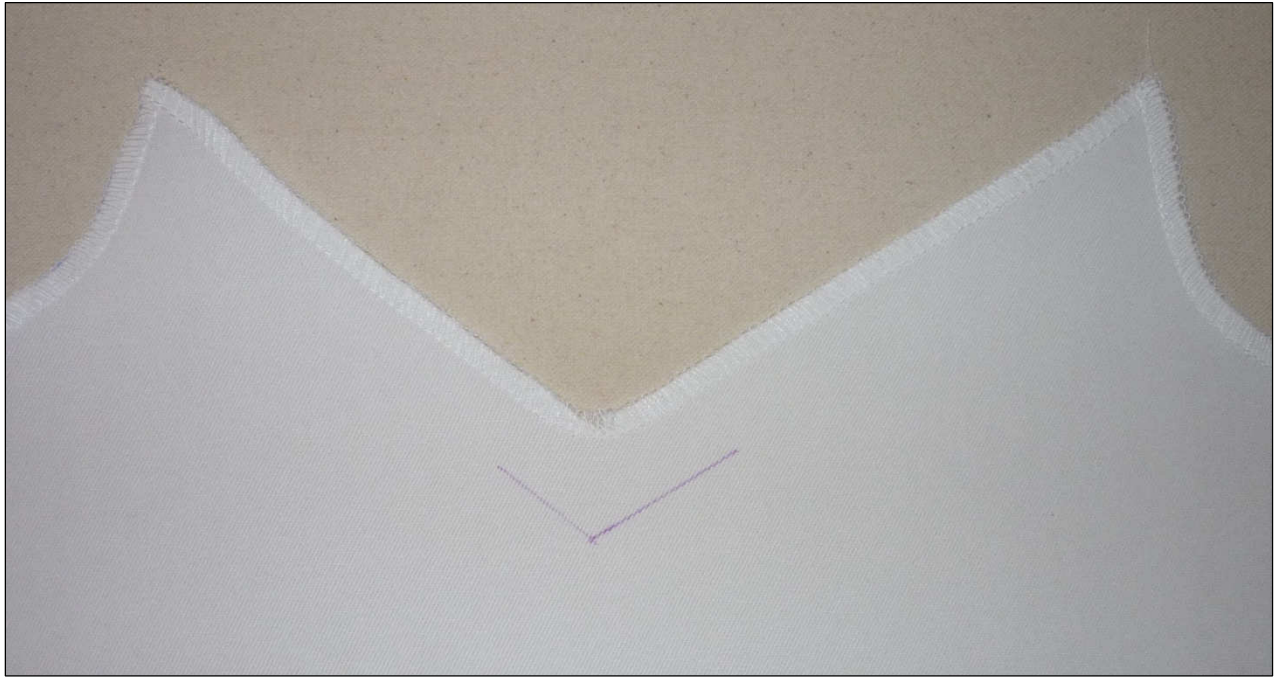
Also note that this length of trim completely enclosed the raw edges of the front yoke trims:



Apply liquid fray preventer liberally to the lengths of trim that overhang the bottom of the jacket.

9 - SHOULDER POINT ONTO SLEEVE

Stay-stitch the lower corner at the top of the sleeve, where the shoulder point will be attached, about $\frac{5}{8}$ " to $\frac{3}{4}$ " from the edges, and clip the sleeve vertically from the corner to the stay-stitch's pivot point.



Using your zipper/piping foot, sew the shoulder point to the sleeve with $\frac{3}{4}$ " seam allowance, with the open/raw edge of the shoulder point flush with the upper edge of the sleeve.



TIP: Place a pin in the trim, vertically, where the "center" quilt line and miter are, to mark exactly where the pivot point of the shoulder point is, and align this pin with the clip on the sleeve. Stop stitching at the bottom of corner of the shoulder point (where the pin is), then, with the needle still in the fabric, lift the presser foot and rotate the sleeve so that the other sleeve edge is flush with the remainder of the trim, lower the presser foot, and continue stitching.



Once the shoulder point is attached, your sleeve may initially look something like this:



And you'll feel like this:



But don't worry! A sleeve even this "bad" can be salvaged with very little effort, and we'll show you how.

First, and perhaps most obviously, gently smooth the area with your hand a bit.



Flip the sleeve over so you're looking at the underside (right side down).



Steam and press the area directly beneath the corner of the shoulder point.

If steam doesn't get the job done, you may want to lightly spray a bit of water on the area and press it again.

See how much better it already looks?



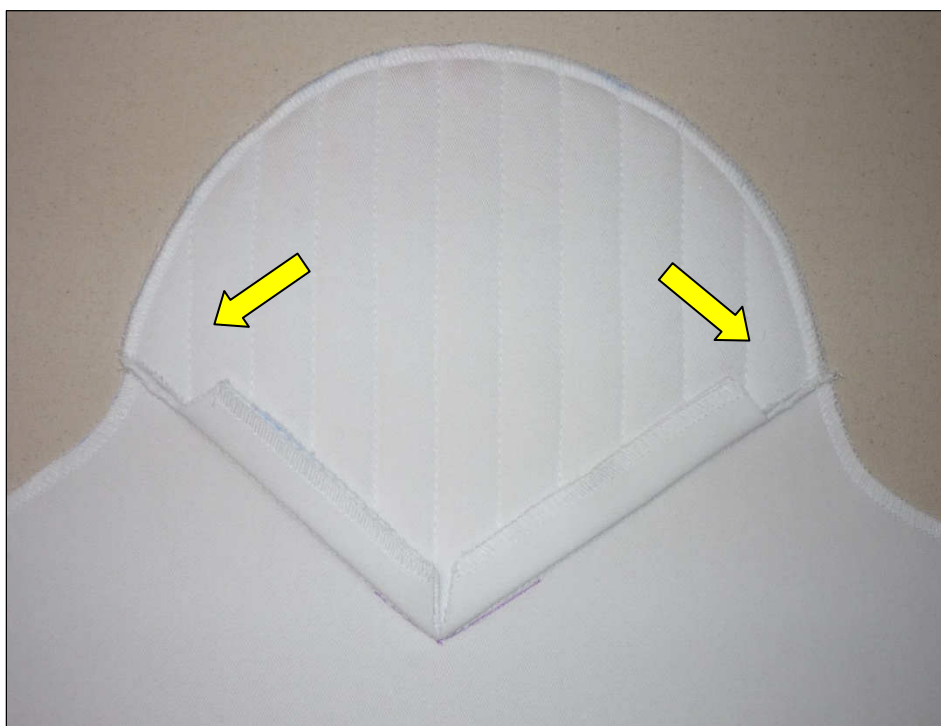
Notch (cut out) the bottom corner of the shoulder point seam allowances.



Press the seam allowances upward.



Reduce bulk by cutting away the outermost ¼" shoulder point/sleeve seam allowances.



There, now, isn't that much better?!?



From the right side, using your quilting/walking foot, topstitch through all layers $\frac{1}{8}$ " above the shoulder point/sleeve seam line to secure the seam allowances.



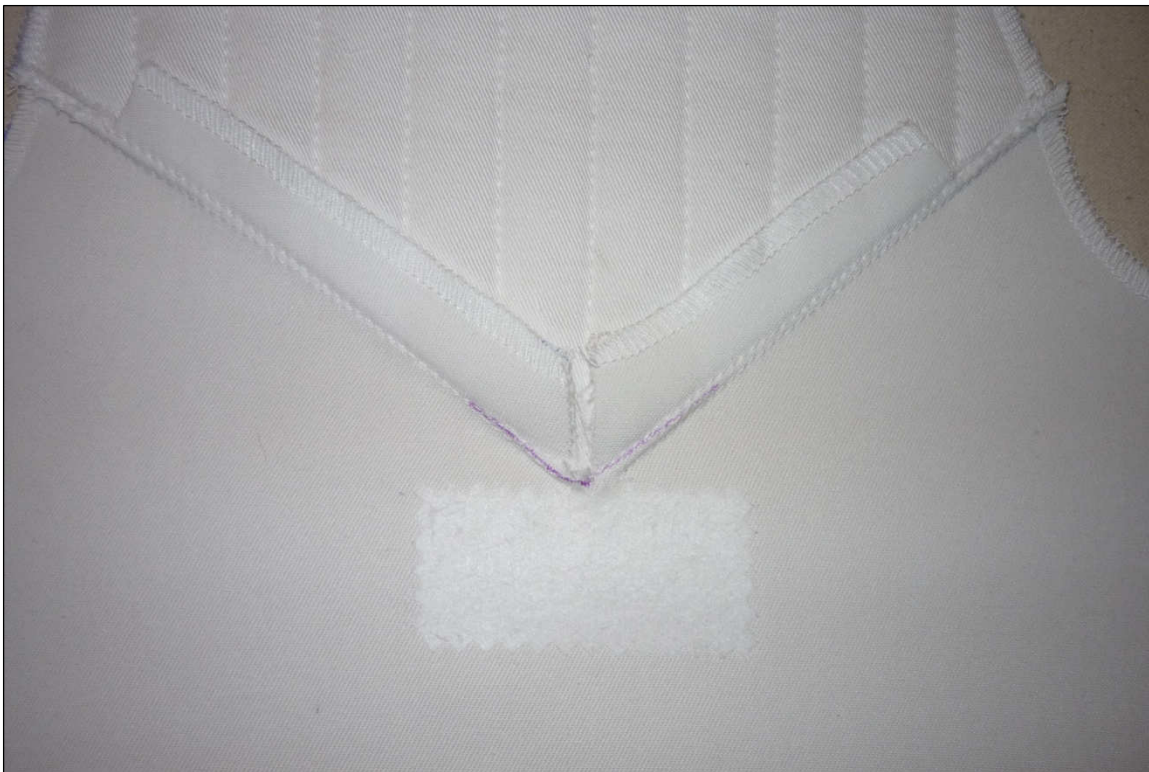
On the duty uniforms of the area, as a finishing touch, we recommend interfacing the area directly beneath the bottom corner of the shoulder point to keep it looking nice, flat, and crisp.

We do NOT recommend doing this on the formal uniform sleeves! For some reason, the little interfacing rectangles are more easily visible on the formal jacket sleeves than on the duty uniforms' (even when using white); perhaps it's because the deep black wool gabardine revealed so little on screen (even seam lines were often difficult to see). Regardless, the $\frac{5}{8}$ " trim will cover any minor imperfections in the lower corner of the shoulder point area.

Nevertheless, if you wish to additionally stabilize the area, cut a small, rectangular piece of lightweight or midweight fusible interfacing (about 2" x 1" or so).

We recommend cutting it with pinking shears ("pinking" it), thus minimizing the effect of strong, linear imprints on the right side of the garment where the edges of the interfacing are, better obscuring them.

Make sure the fabric area beneath the shoulder point is wrinkle-free, then fuse the interfacing strip to the wrong side of the sleeve. We recommend placing one of the pinked wedges directly beneath the bottom corner of the shoulder point, as high as possible.



(Again, we do *not* recommend using this procedure on the formal jacket sleeves! But this is how it will look if you do.)

Cut a length of $\frac{1}{8}$ " gold/black piping the length of your shoulder point/sleeve seam line plus an extra 1-2".

Pin the piping to the sleeve assembly with the upper edge of its $\frac{1}{4}$ " lip flush with the shoulder point/sleeve seam line and extending past each edge at least $\frac{1}{2}$ ". Turn the bottom corner as sharply as possible.



Using your zipper/piping foot, sew the piping to the sleeve, stitching close to the cord.

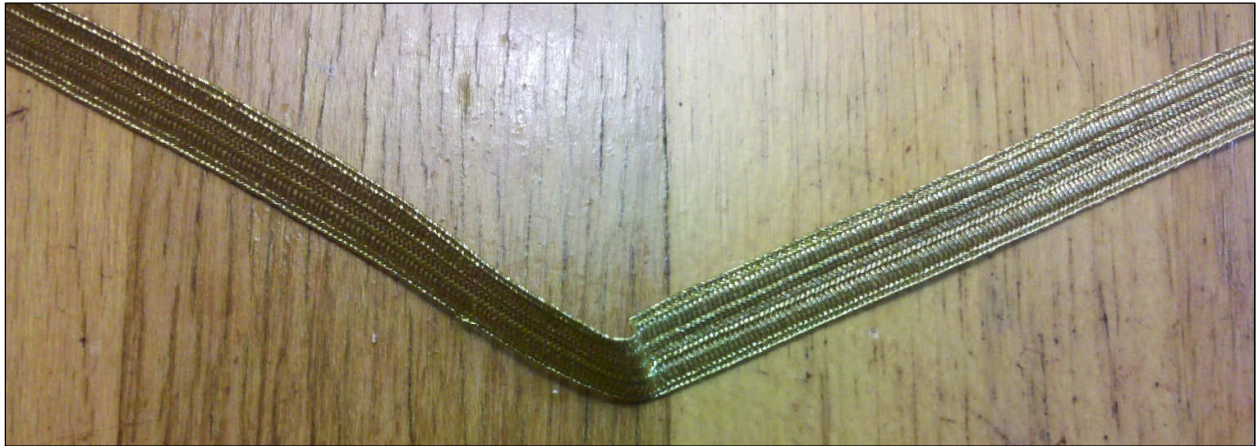


The shoulder point braid is a little tricky and may take some practice.

Cut a single piece of your braid long enough to run the entire lower length of your shoulder point plus 1-2".



Fold the two halves upward, forming the V shape of the shoulder point bottom. Excess will begin to rise.

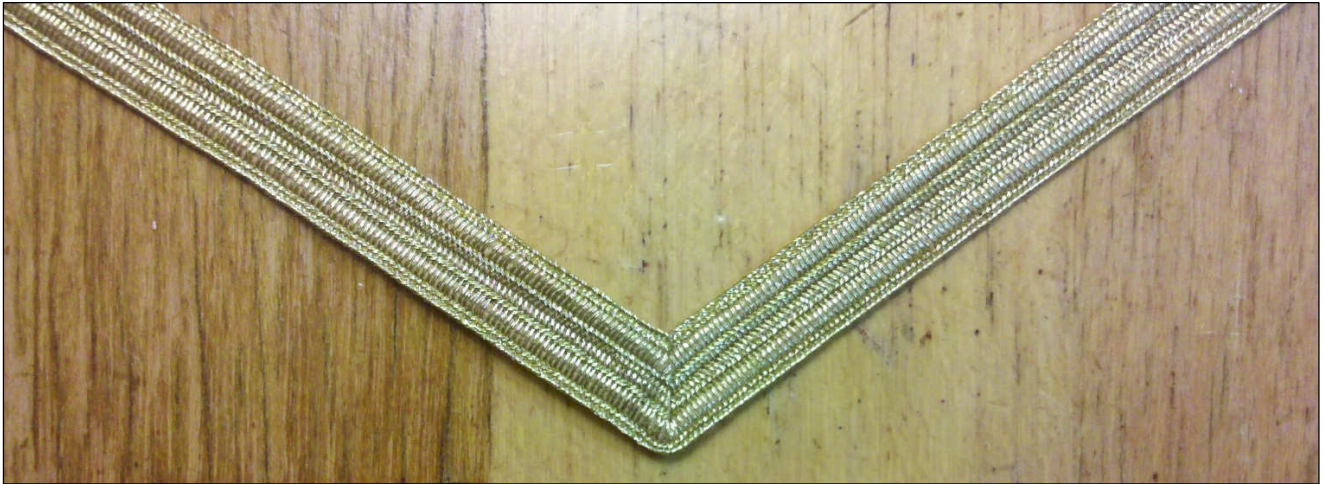


Gently push said excess behind the strip, leaving only the folded edge showing.

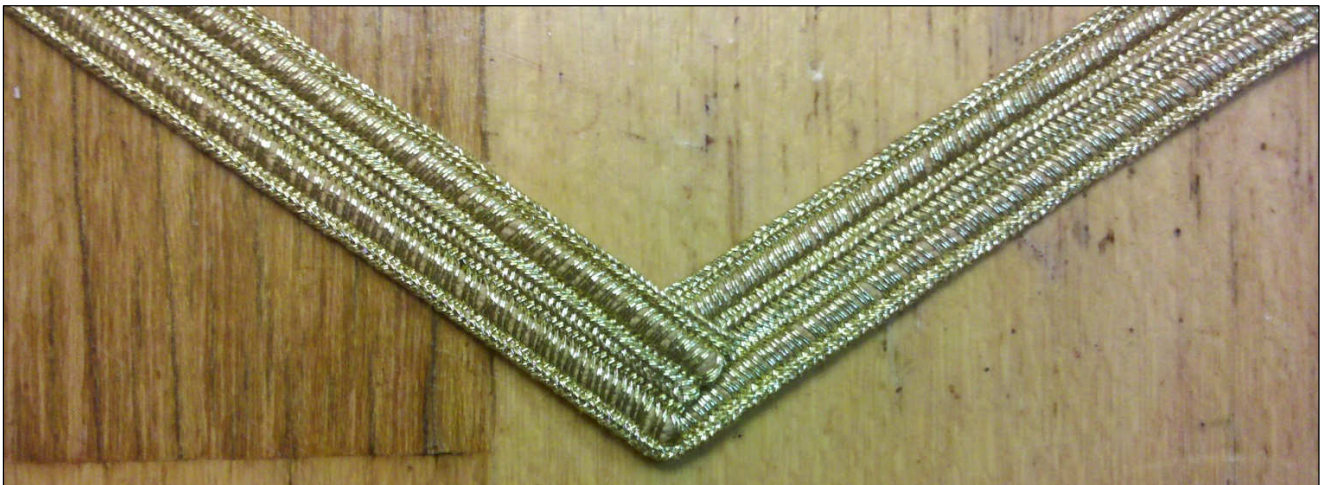


Use the actual shoulder point as a guide, and, when the desired angle is reached, gently press into place on low heat until it holds the shape on its own relatively well.

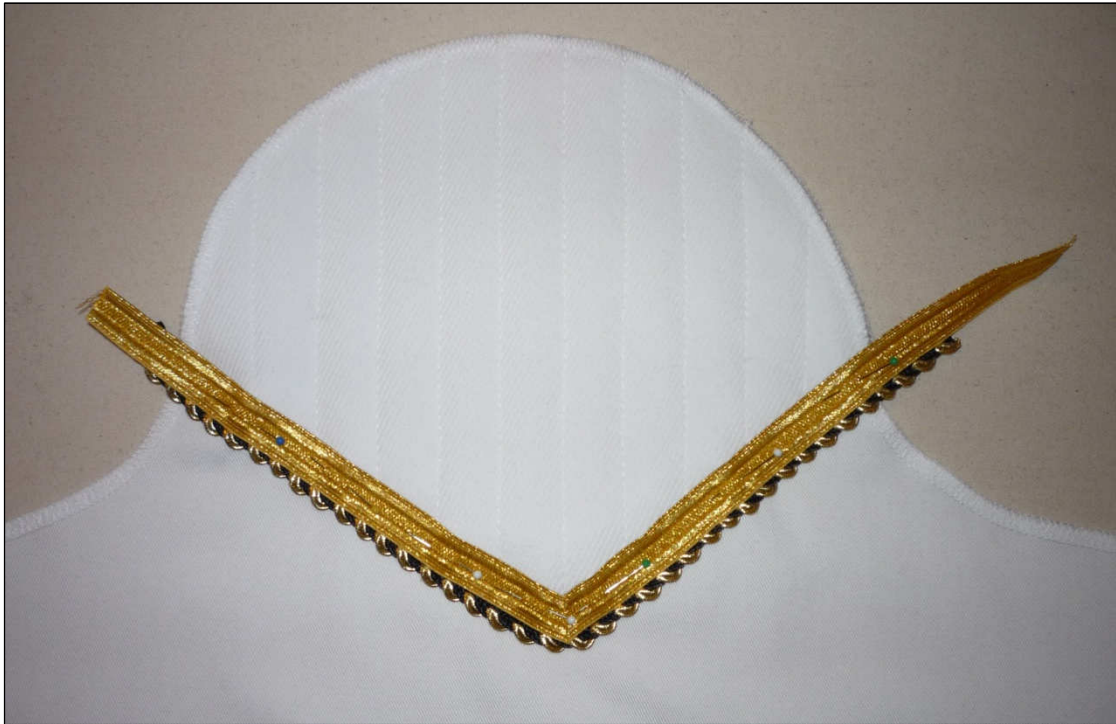
The front should have a very nice, vertical mitered look:



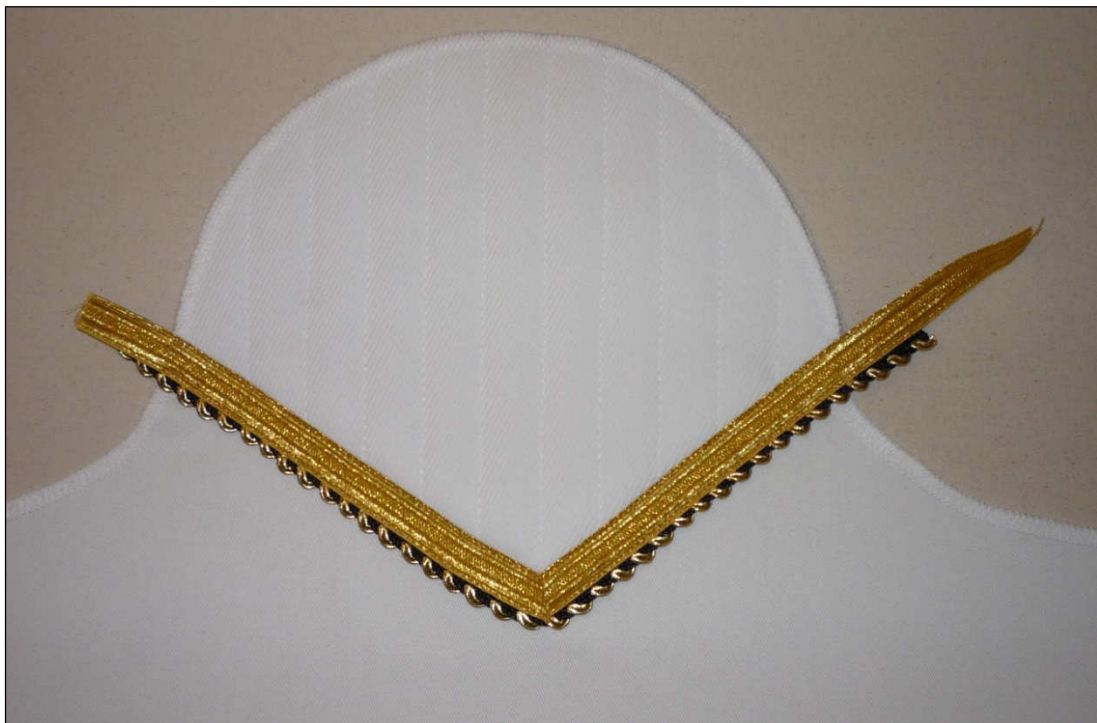
And the excess should all be in the back (pressed toward the back of the sleeve).



Center the braid over the shoulder point/sleeve seam line, with its lower edge flush with the upper edge of the piping cord and its miter properly aligning with the "center" quilt line, then pin in place.



Using your gold thread and your needle of choice, topstitch the braid onto the sleeve assembly as before (with one row of stitching along the upper edge of the braid and another row along the bottom edge).



The vertical miter should, ideally, align exactly with the "center" quilt line.



Repeat for other side.

This may take some practice before really getting the hang of it. We recommend using some inexpensive ½" trim and piping for practice before using your expensive materials.

Our very first try was hideous:



Our second try had a better miter, but it was pretty far off from the appropriate quilt line:



Just keep at it! Practice makes perfect!

10 - SLEEVES TO BODY

Cut the shoulder point and yoke trims down to size (so the edges are flush with the fabric edges) and apply a liberal amount of liquid fray preventer.



Once it's dry, pin the sleeve on the appropriate side of the jacket body, matching the "center" quilt line with the shoulder seam and the lower edges of the shoulder point with the bottom of the jacket body's yoke.

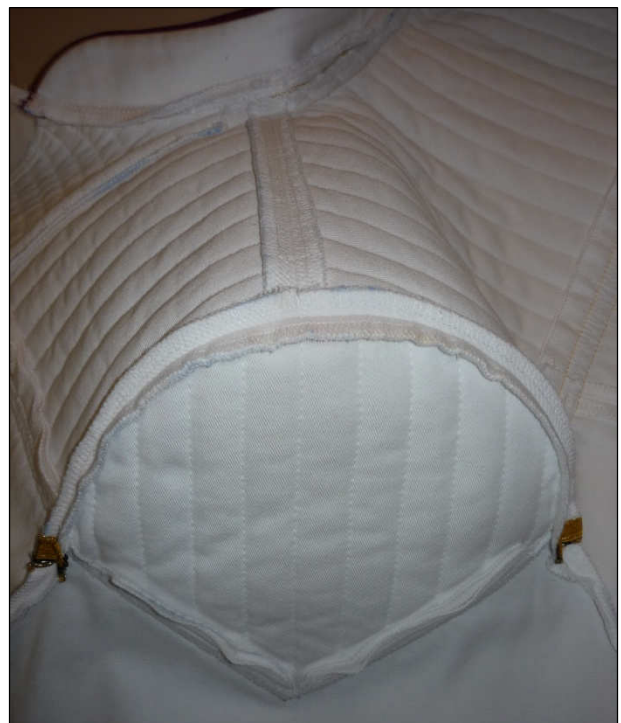
Baste the sleeve to the jacket body. Flip the garment around (right sides out) and inspect to confirm proper alignment of the "center" quilt line and shoulder seam, as well as the shoulder point trim with the body's yoke trim.

Once satisfied with the proper alignment, stitch the sleeve to the jacket body. We recommend stitching twice for thoroughness (as done before with the yoke), as well as reinforcing at the shoulder seam and bottom of the shoulder point/yoke.

Press the armscye seam allowances open using a tailor's ham.



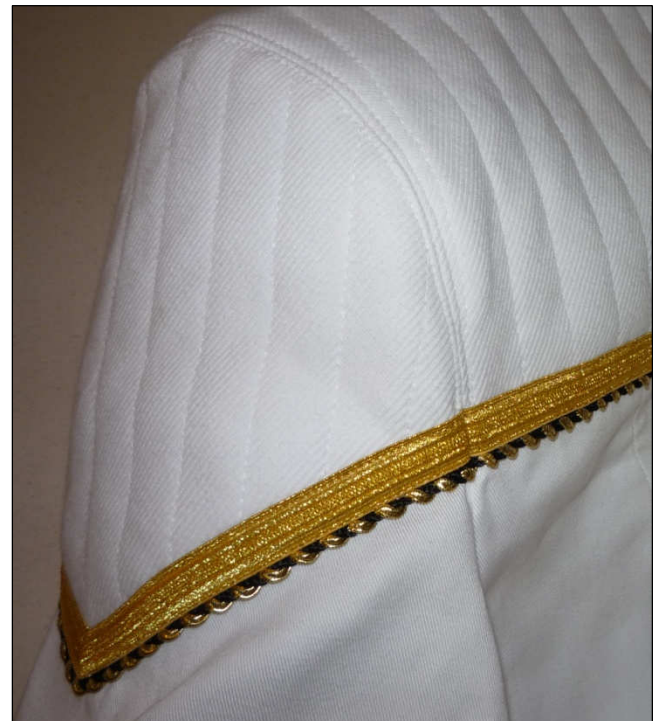
It's at this point that you'll be glad you clipped out the batting/backing in a few areas to reduce bulk!



As done previously with the shoulder seam, topstitch both the yoke and shoulder point $\frac{1}{8}$ " from each side of the armscye seam, forming three parallel lines and securing the seam allowances in place.



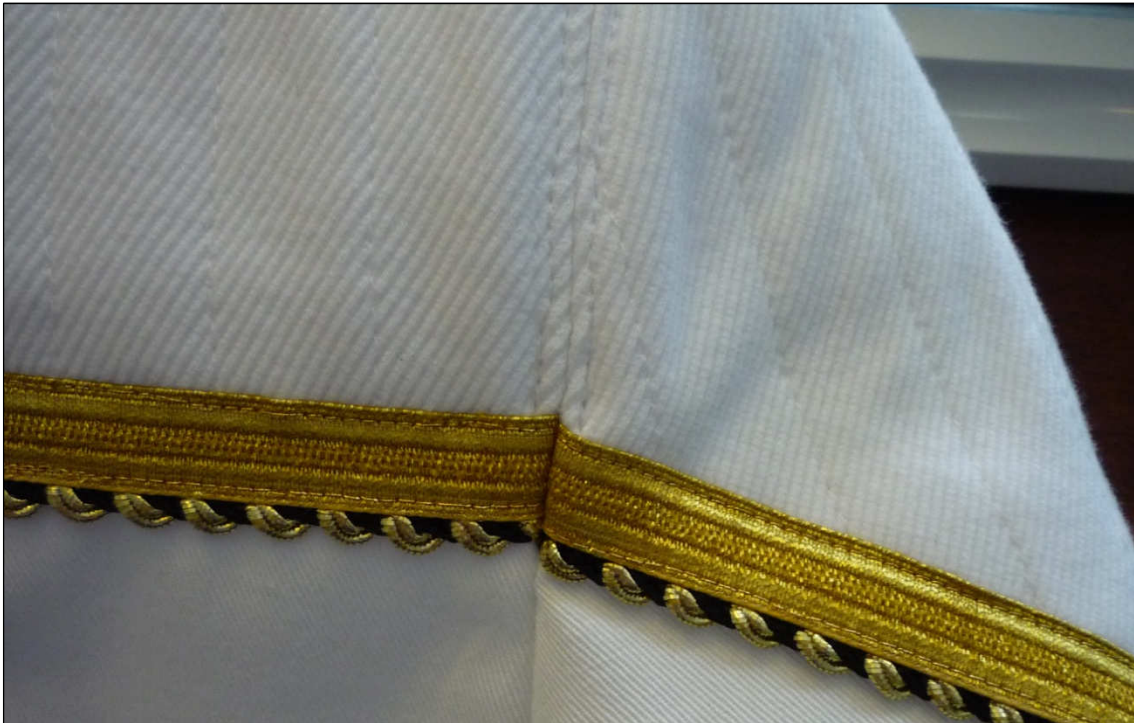
Remember, the bottom of the armscye topstitch should meet a quilt line or a mid-quilt line on the yoke and, and at the shoulder seam the yoke topstitch should "peak" where the next quilt line would be.



Also, ideally, the yoke and shoulder point trims should meet *exactly*:



However, if they're off by a hair, nobody's likely to notice ...



Repeat for other side.

11 - CLOSE SIDES

Sew the jacket closed along the sides, from the bottom of the side body panels to the bottom of the sleeve and matching seams, in one continuous stitch.



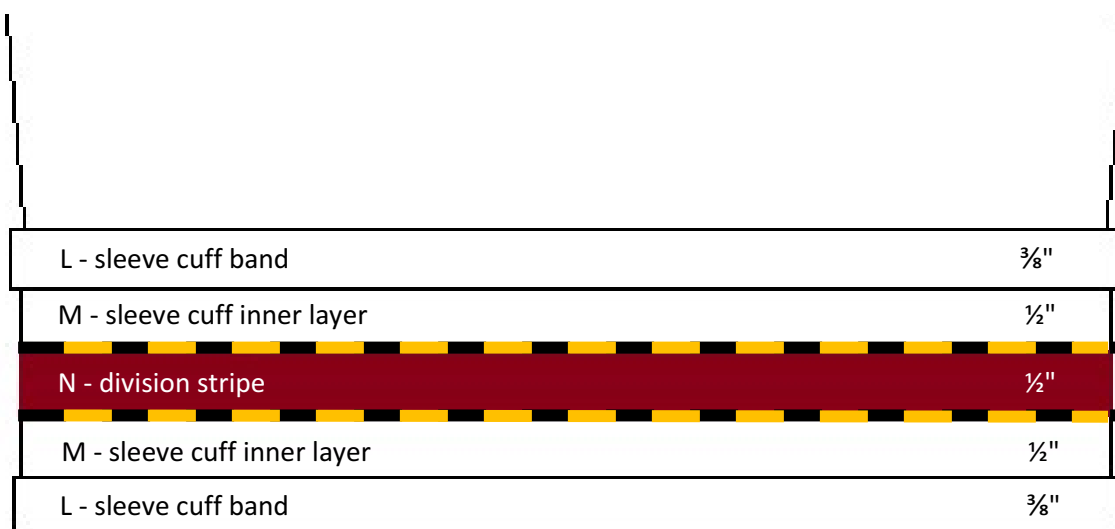
Press the seam allowances open.

12a - OFFICER AND CAPTAIN SLEEVE CUFFS

Both versions of the sleeve cuffs are prime examples of assemblies that might seem dauntingly complicated at first but actually aren't very difficult after actually practicing once or twice.

We'll start with the officer/captain version, as their construction was the same as their duty uniform counterparts' except for the $\frac{1}{8}$ " gold/black twisted piping embellishing the division stripe.

The assembly itself is in five pieces, plus interfacing and the $\frac{1}{8}$ " gold/black piping cuts.



OFFICER and CAPTAIN SLEEVE CUFF

First, fuse the interfacing to the sleeve cuff bands (piece L).

This will give them more dimension, as they tend to look disappointingly flat without it. It will also make the cuff sturdier, which is particularly important for the upper band; you don't want it to flop around!

Then cut two lengths of your $\frac{1}{8}$ " gold/black twisted piping the width of your sleeve cuff assembly plus 1-2".

The sleeve cuff pattern pieces, "in order," will look like this:



Start by sewing the upper band (piece L) to the inner layer (piece M), right sides together and edges flush.



Press the seam allowances upward, and press the inner layer down.



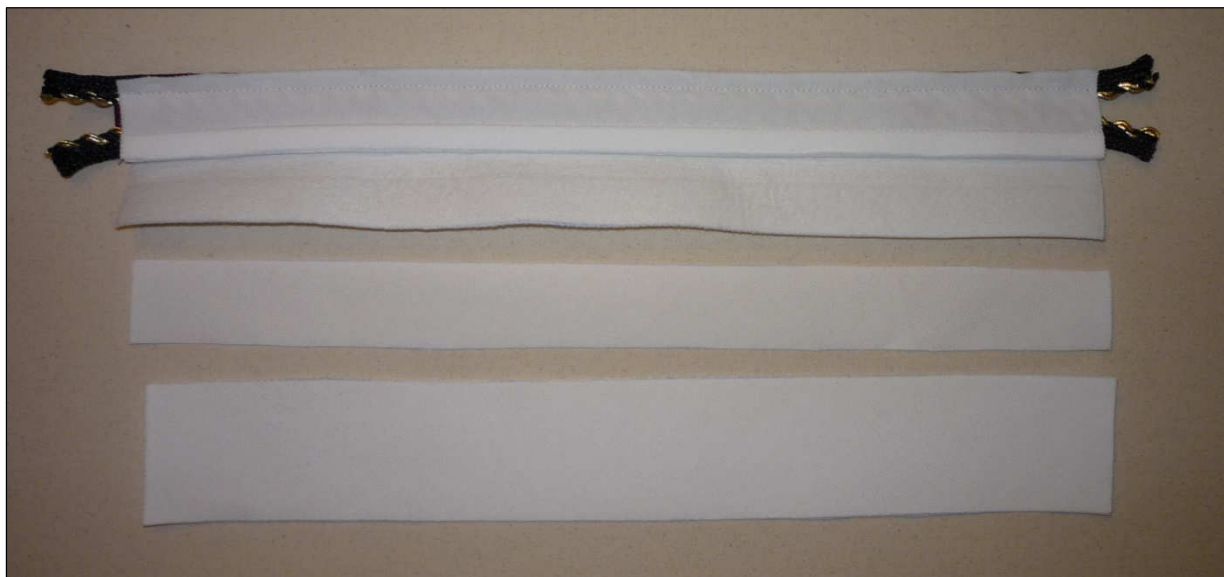
Fold the band piece over the seam allowances and press it down toward the underside, so that the wrong sides of the band and inner layer are facing and their lower edges are flush. This forms the actual band.



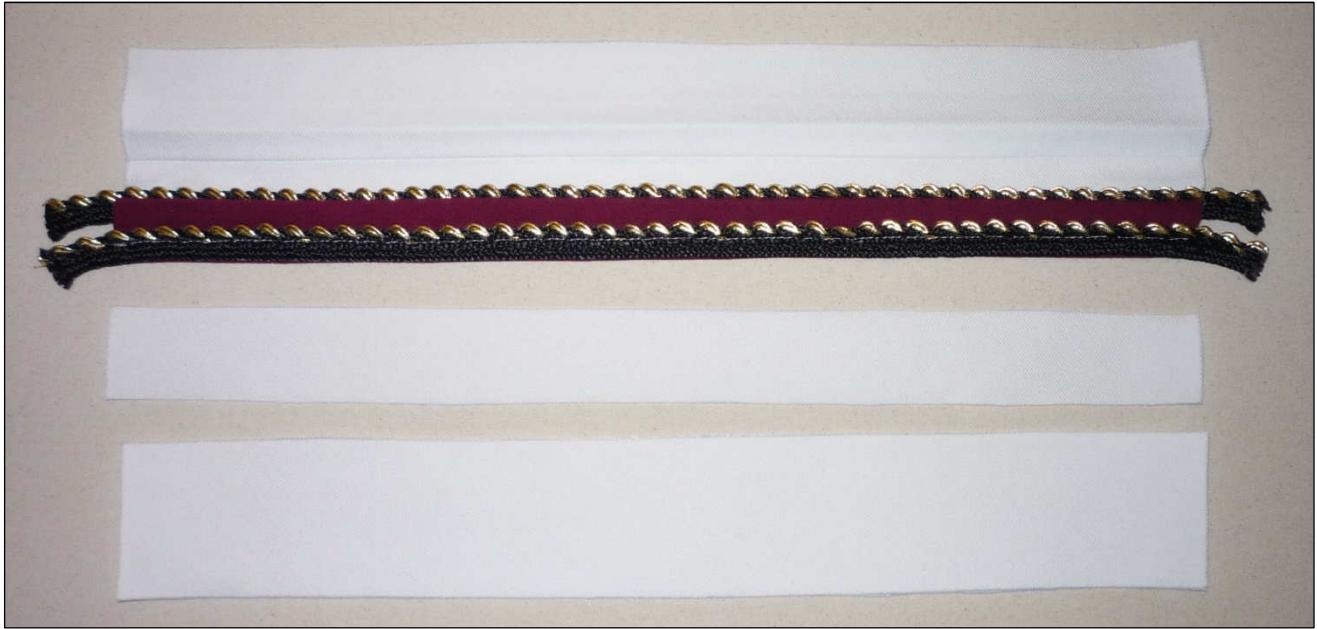
Using your zipper/piping foot, sew the two lengths of $\frac{1}{8}$ " gold/black twisted piping to the right side of the division stripe (piece N), with $\frac{1}{4}$ " seam allowance, edges flush and with a bit of the piping overhanging at each end. (Remember, your piping either needs to already have a $\frac{1}{4}$ " lip or been cut down to size.)



Sew the upper inner layer to the division stripe with $\frac{1}{4}$ " seam allowance, with the long edges of the division stripe and the inner layer flush and right sides together.



Press the seam allowances toward the division stripe.



Repeat for the bottom half of the cuff.



Cut off the excess piping and apply a liberal amount of liquid fray preventer to the raw edges.

Sew the sleeve cuff closed along the sides (with the bands open), matching seam lines and right sides facing.



Press the seam allowances open.



Turn the sleeve cuff assembly right side out.



Fold the bands under again and pin the undersides of the bands in place along the band/inner layer seam lines.



"Stitch in the ditch" along the band/inner layer seam lines to secure the undersides of the bands.

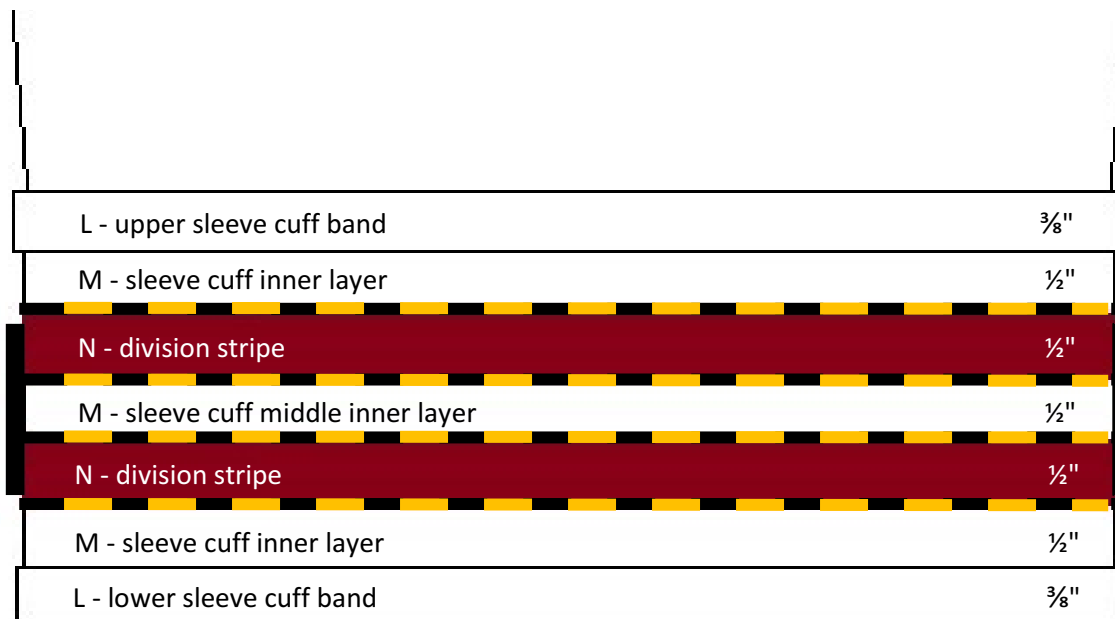


Repeat for other side.

12b - ADMIRAL SLEEVE CUFFS

The admiral/flag officer version of the formal jacket sleeve cuffs was similar in construction to the officer/captain versions, except it had an additional division stripe and inner layer.

The assembly itself is in seven pieces, plus interfacing and the $\frac{1}{8}$ " gold/black piping cuts.



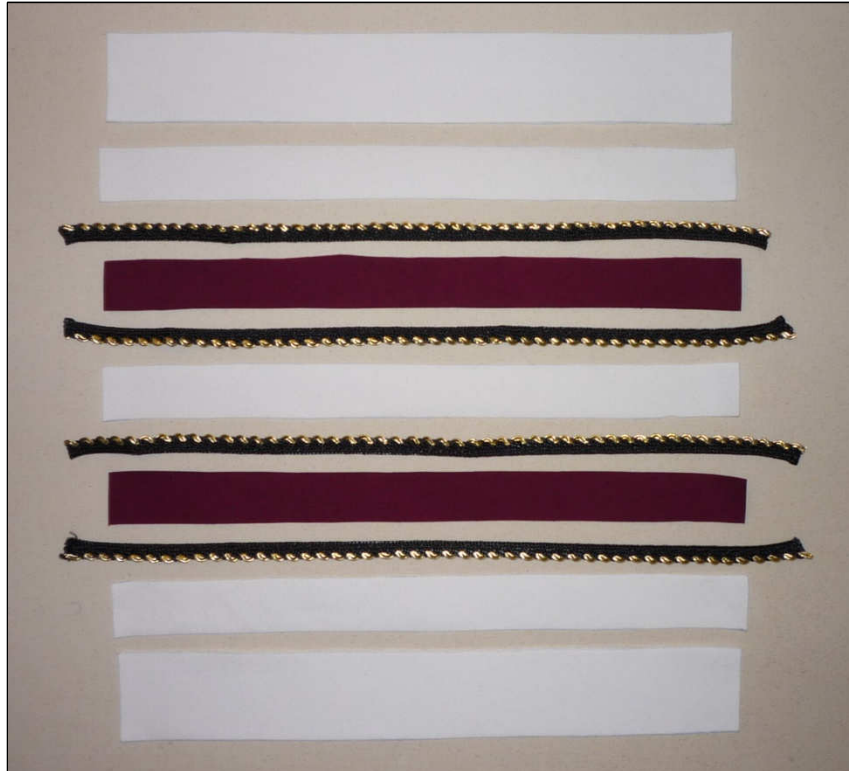
ADMIRAL SLEEVE CUFF

First, fuse the interfacing to the sleeve cuff bands (piece L).

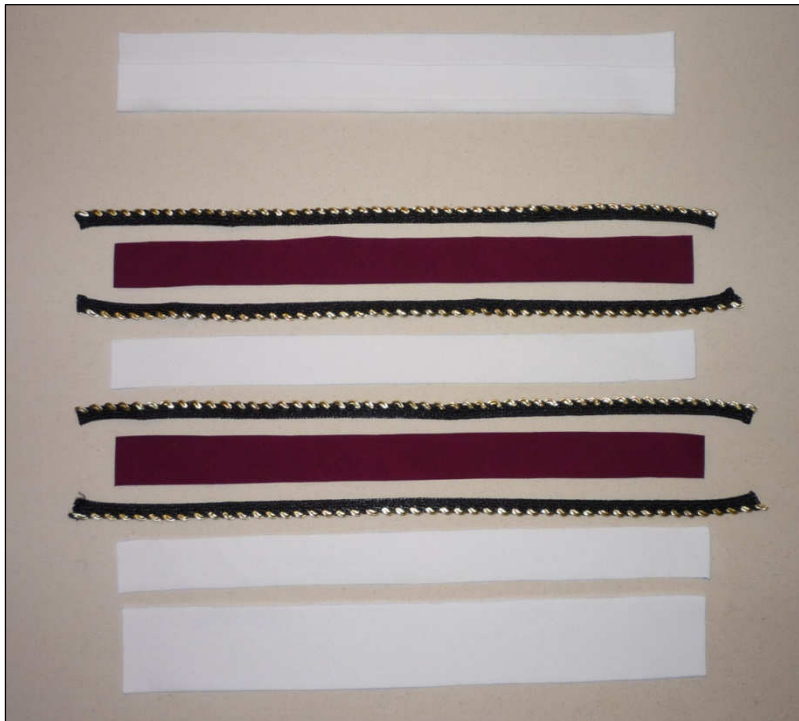
This will give them more dimension, as they tend to look disappointingly flat without it. It will also make the cuff sturdier, which is particularly important for the upper band; you don't want it to flop around!

Then cut four lengths of your $\frac{1}{8}$ " gold/black twisted piping the width of your sleeve cuff assembly plus 1-2".

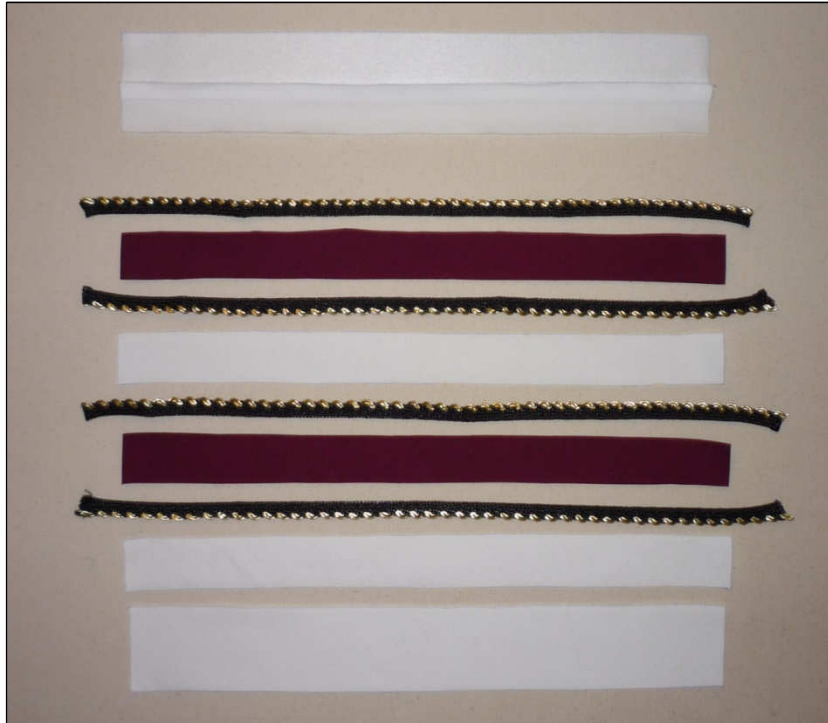
The sleeve cuff pattern pieces, "in order," will look like this:



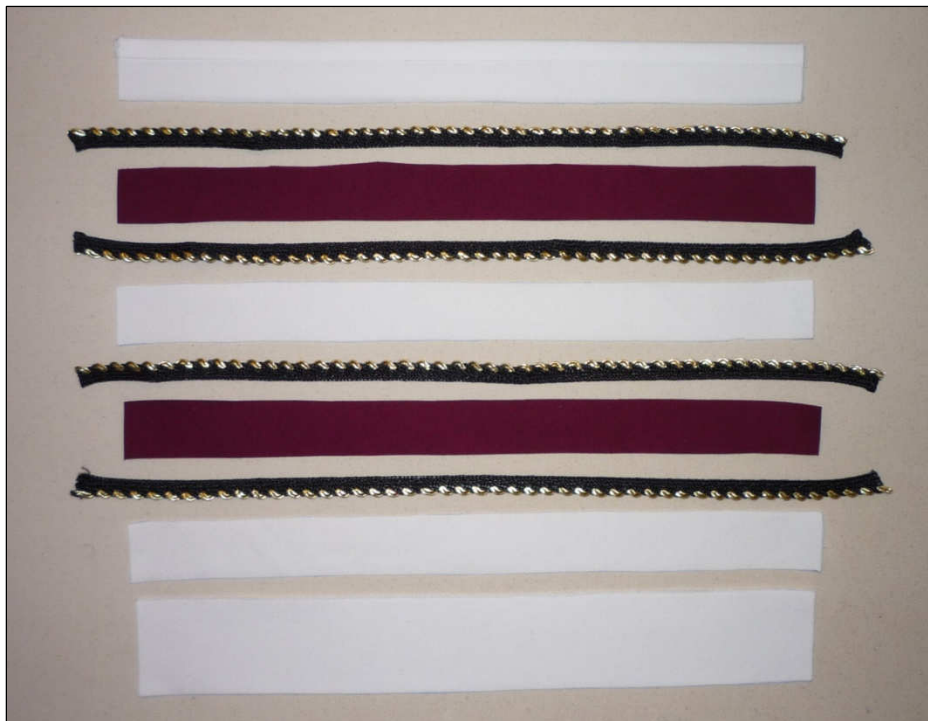
Start by sewing the upper band (piece L) to the inner layer (piece M), right sides together and edges flush.



Press the seam allowances upward, and press the inner layer down.



Fold the band piece over the seam allowances and press it down toward the underside, so that the wrong sides of the band and inner layer are facing and their lower edges are flush. This forms the actual band.



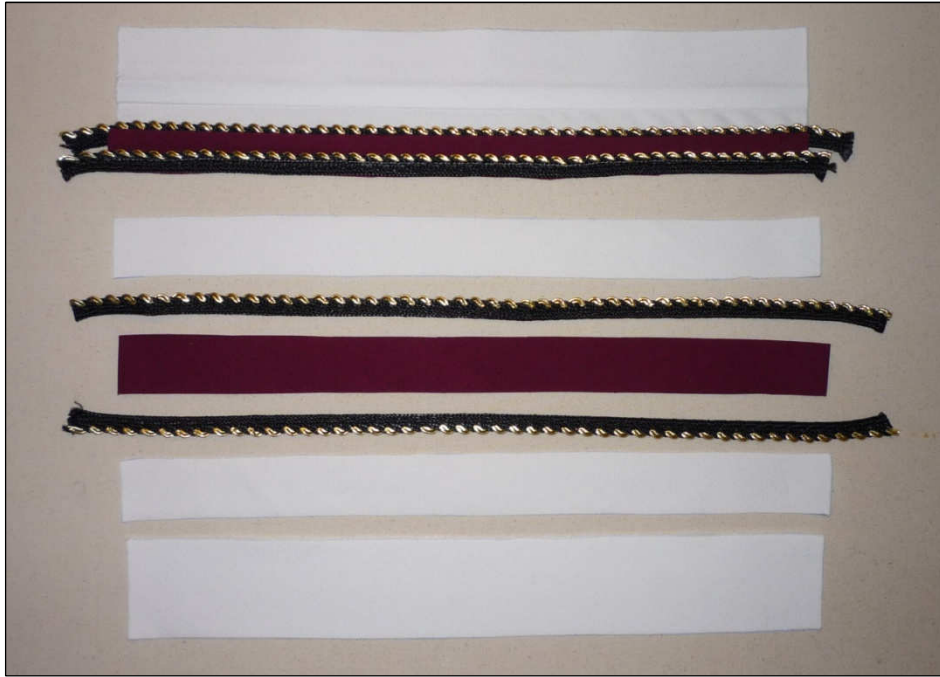
Using your zipper/piping foot, sew two lengths of $\frac{1}{8}$ " gold/black twisted piping to the right side of the upper division stripe (piece N), with $\frac{1}{4}$ " seam allowance, edges flush and with a bit of the piping overhanging at each end. (Remember, your piping either needs to already have a $\frac{1}{4}$ " lip or been cut down to size.)



Sew the upper inner layer to the division stripe with $\frac{1}{4}$ " seam allowance, with the long edges of the division stripe and the inner layer flush and right sides together.



Press the seam allowances toward the division stripe.



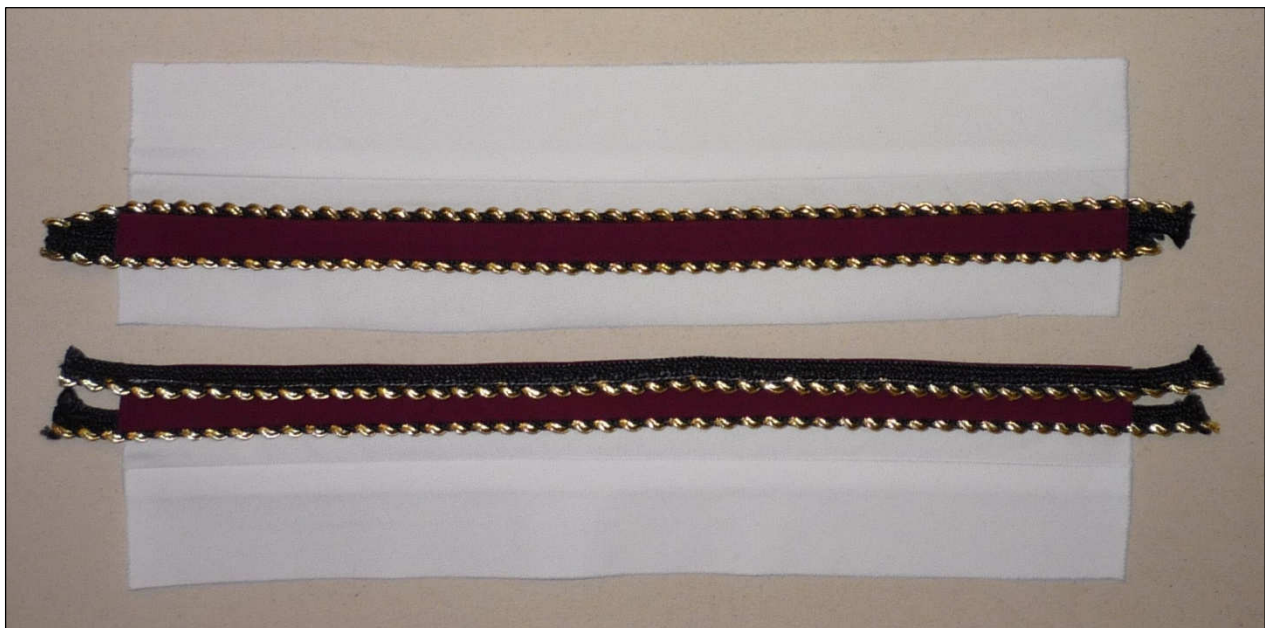
Sew the upper cuff assembly to the middle inner layer.



Press the seam allowances toward the division stripe.



Repeat the assembly process for the lower half of the sleeve cuff assembly.



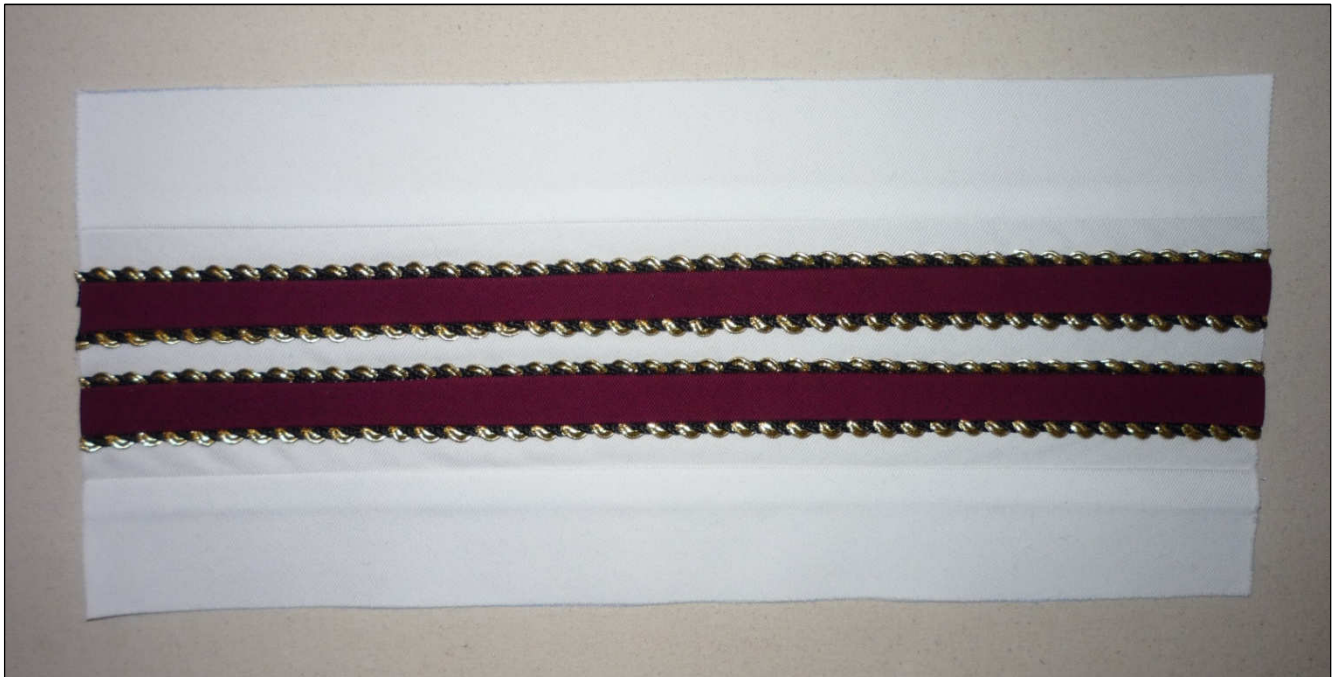
Sew the lower sleeve cuff assembly to the upper sleeve cuff assembly along the lower edge of the middle inner layer and the upper edge of the lower division stripe, right sides together and with $\frac{1}{4}$ " seam allowance.



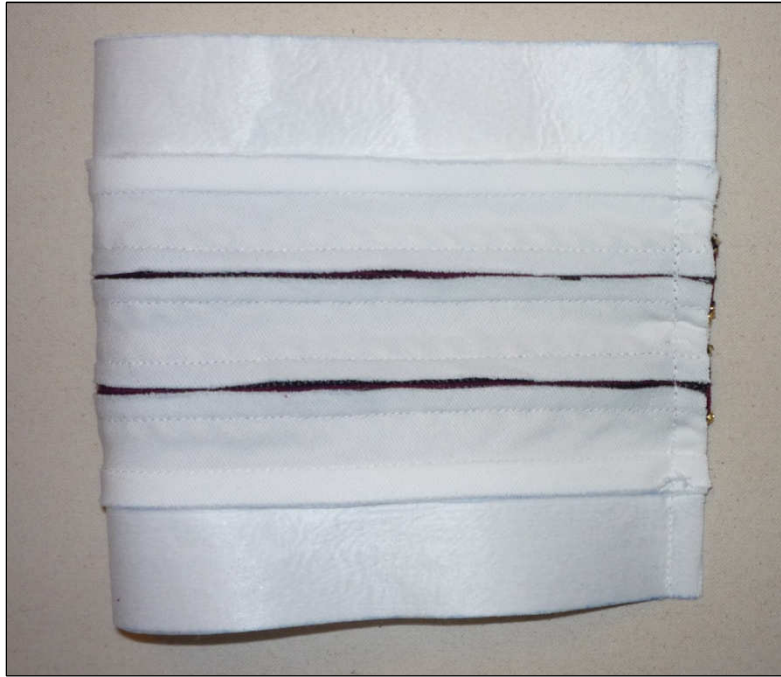
Press the lower half of the sleeve cuff assembly down, with the seam allowances toward the lower division stripe.



Cut off the excess piping and apply a liberal amount of liquid fray preventer to the raw edges.



Sew the sleeve cuff closed along the sides (with the bands open), matching seam lines and right sides facing.



Press the seam allowances open.



Turn the sleeve cuff assembly right sides out.



The edges should all align perfectly at the seam line.



Fold the bands under again and pin the undersides of the bands in place along the band/inner layer seam lines.



"Stitch in the ditch" along the band/inner layer seam lines to secure the undersides of the bands.



13 - ATTACHING SLEEVE CUFFS

Press the sleeve hem allowance (3") upward and pin.

Topstitch the hem allowance in place about 2" from the bottom.

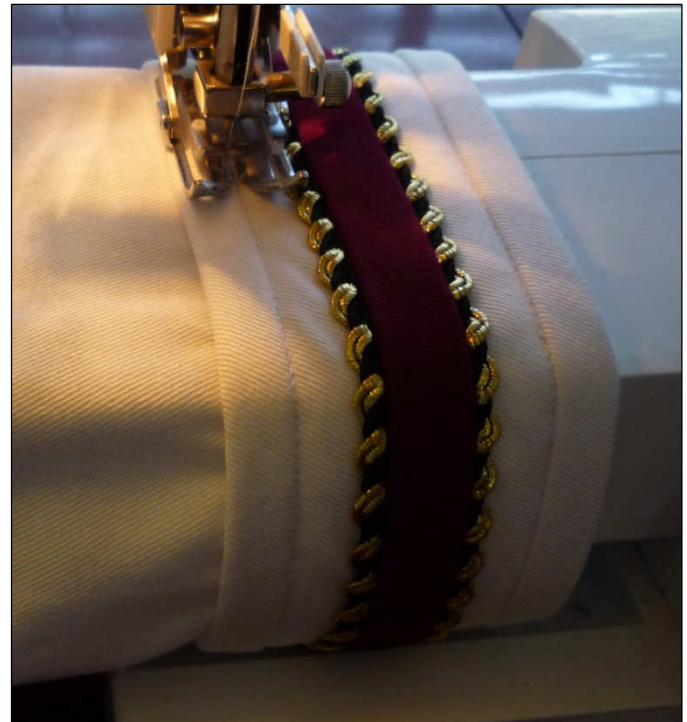


You'll be able to see the stitching on the right side of the sleeve, but don't worry; it'll be covered by the sleeve cuff once it's attached!

"Mount" the sleeve cuff onto the sleeve, matching bottom edges and seam lines, and pin into place.



"Stitch in the ditch" again along the band/inner layer seam lines to secure the sleeve cuff to the sleeve.



14 - SHOULDER PADS

The necessary loft of the shoulder pads will depend on the wearer's physique (as will the precise angle of the shoulder seam, for that matter); most non-raglan shoulder pads will work nicely, though, like these:



Place the shoulder pad inside the jacket so that the pad's long edge is flush with the jacket's armscye seam, and the pad's seam (if it has one) is flush with the jacket's shoulder seam.

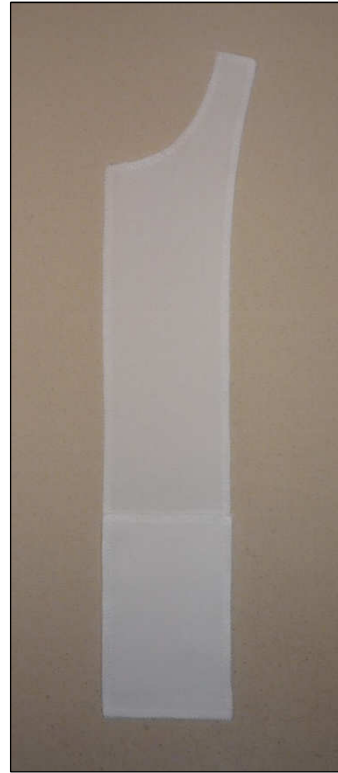
Hand-stitch the pad securely in place to the shoulder and armscye seam allowances and/or the backing layer of the quilting, *being careful not to stitch all the way through the quilted layers to the outside of the garment.*

Repeat for the other side.

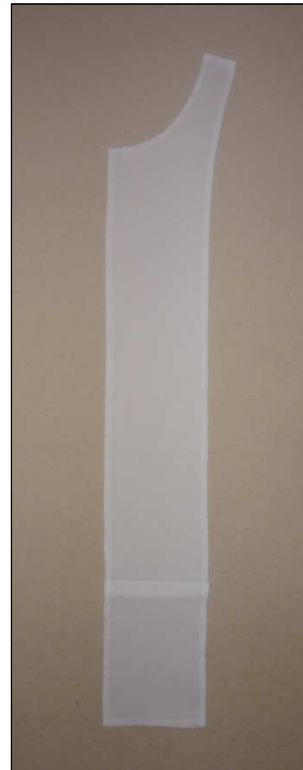
TIP: We recommend securing the shoulder pad to the jacket in only two places: the centermost and outermost portions of the shoulder pad along the shoulder seam. This will prevent any unsightly puckering along the armscye caused by slightly misplaced or poorly sewn pads.

15 - LINING ASSEMBLY

Sew the lower bib panel facing (piece C) to the bottom of the bib facing (piece B), right sides together, with $\frac{1}{2}$ " seam allowance.



Press the lower bib panel facing and seam allowances downward.



Sew the bib facing assembly to the front lining (piece Q), right sides together, with $\frac{5}{8}$ " seam allowances, leaving the bottommost 3-4" free.

The bottom of the bib assembly should extend $\frac{3}{8}$ " past the bottom of the front lining.



TIP: You may wish to taper the $\frac{5}{8}$ " seam allowances to as little as $\frac{1}{4}$ " an inch or two from the beginnings and ends of the seam lines to give the lining body some additional fullness and avoid any pulling/contorting/etc. of the garment body once the two are "married" later.

Press the seam allowances toward the body (away from center).



OPTIONAL: add pockets in a style of your choice. On the pattern, we have included recommended pocket placements for $\frac{1}{2}$ " by 5" welt or double-welt pockets.

Depending on your physique, you may wish to move the pocket placements, and those with larger hands may wish to widen the pocket opening, but these should at least be a good place to start. The pocket should begin immediately below the breast, and the pocket pouch should not extend into the hem facings.

We recommend using the shell fabric (white wool gabardine or white cotton twill) for the welts, and any fabric should do nicely for the pocket pouches; we like to use the white lining fabric, but white muslin would work well, too.

Repeat for the other side.



Sew the two back linings (piece R) together along the center back, right sides together, with the standard $\frac{3}{8}$ " seam allowance. Press seam allowances open.



Sew the front lining assemblies to the back lining assembly at the shoulders. Press seam allowances open.

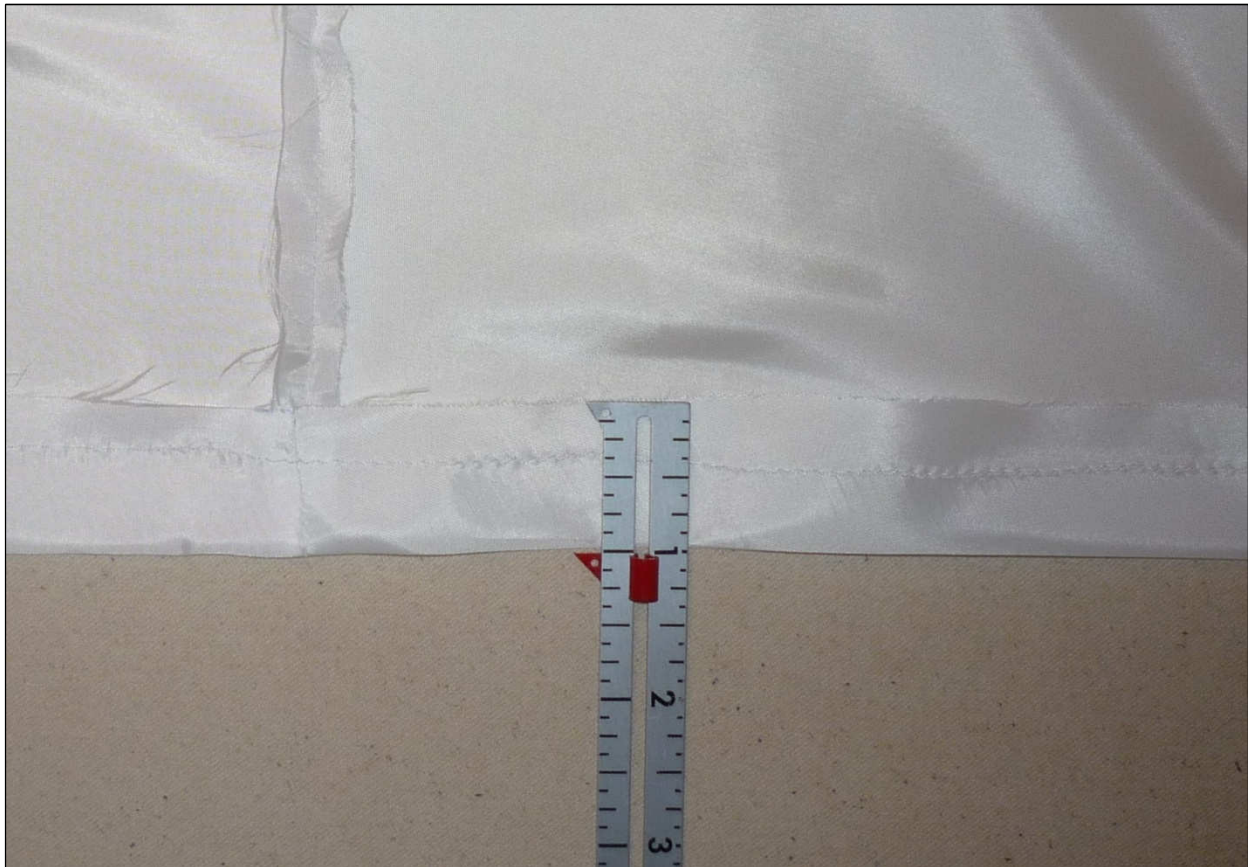
Sew the sleeve linings (piece S) to the lining body assembly, matching notches. Press seam allowances open.

Sew the lining body sides closed, matching edges and seam lines. Press seam allowances open.

TIP: Rather than pressing the lining seam allowances open, you may instead wish to serge them together.

TIP: With the exception of the front lining/bib facing assembly, the lining pieces all have our standard $\frac{3}{8}$ " seam allowance, but, as mentioned previously, you may wish to taper them to $\frac{1}{4}$ " an inch or two from the beginnings and ends of the seam lines to give the lining body some additional fullness.

Baste $\frac{3}{8}$ " from the bottom edges of the lining body and sleeves, then press the bottom upward 1".



16 - LINING TO BODY

It's a bit dodgy, this process.

Sew the lining assembly to the jacket at the collar, stitching over the previous stitch line.

Clip the collar/body and collar/lining seam allowances as needed.



Your jacket assembly should now look like this:



To attach the bottom of the bib facing assembly to the lower bib panel, first pull the bib facing assembly out from the jacket body a bit.



Turn the bib facing assembly so that its wrong side and the right side of the jacket are together.



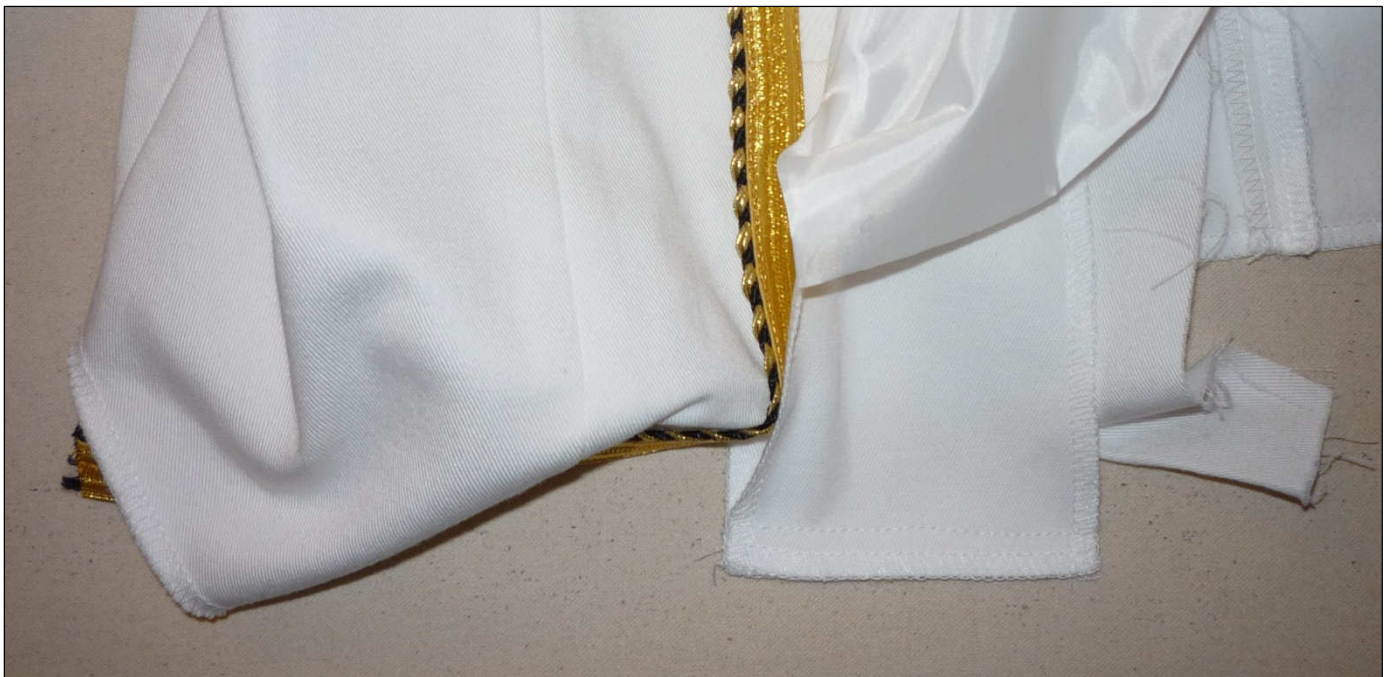
Twist the bib facing assembly around one more time so the bottom of the bib facing assembly and the bottom of the lower bib panel are right sides together.



Pull the middle front body panel, zipper trim, and front lining out of the way, then pin the bottom of the lower bib panel and bottom of the bib facing assembly together.



Sew the lower bib panel to the lower bib panel facing with $\frac{3}{8}$ " seam allowance, right sides together.



Turn (or, rather, "unwind") the front lining assembly back to the inside of the jacket and gently press the bottom of the bib/bib facing assembly.



Pin the bib assembly and bib facing assembly together along the center front.



Sew the two together $\frac{3}{8}$ " from the center edge, over and completing the previous stitch line (i.e. sew the zipper trim all the way to the bottom this time).

Repeat for the other side.



Cut the lower front trims down to size and liberally apply liquid fray preventer.



Sew the front hem facing (piece O) to the back hem facing (piece P).

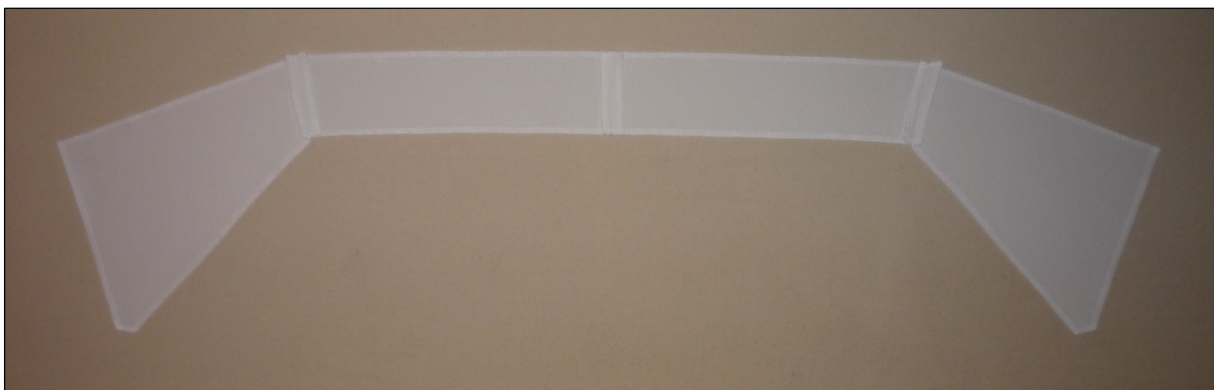
Press seam allowances open.



Repeat for the other side.

Sew the two hem facing assemblies together along the center back.

Press seam allowances open.



Sew the hem facing assembly to the bottom of the jacket body along the front and lower edges, right sides together.

NOTE: The front edges of the hem facing assembly have $\frac{5}{8}$ " seam allowance, and we recommend using a zipper/piping foot to ensure the stitch line is exactly flush with the centermost edge of the trim. Also note that the front body/hem facing stitch line should complete (and slightly overlap) the original bib assembly/body stitch line that was previously left un-sewn at the bottom.



Trim and notch the seam allowances as needed (especially at the bottom of the front corners), then turn the bottom of the jacket/hem facings right sides out and press.



TIP: Practice on some scraps a few times before trying to turn that corner; the fabrics, underlining, and especially the $\frac{5}{8}$ " trim can really accumulate into some bulk that resists turning into a nice, sharp corner. Compare our very first practice attempt with our second:



Hand sew the top edge of the hem facing assembly to the jacket body's underlining, *being careful not to stitch all the way through the layers to the outside of the garment.*



Pin the lower edge of the lining into place so that the raw edge (which was previously pressed upward) is flush with the upper edge of the hem facing assembly (which was just secured to the jacket underlining).

Hand sew the lining to the hem facings along the basting stitch, taking care to only catch the inner layer of the lining and *again being careful not to stitch all the way through the layers to the outside of the garment.*



Press the centermost un-sewn, excess length of lining downward, forming a jump pleat.

Slip stitch the front edge of the lining to the front facing along the lower edge and press.



17 - FRONT CLOSURE

At the lower center front, cut the zipper trim so that only about 1" extends past the bottom of the lower bib panel.

Fold the 1" excess length upward and press.



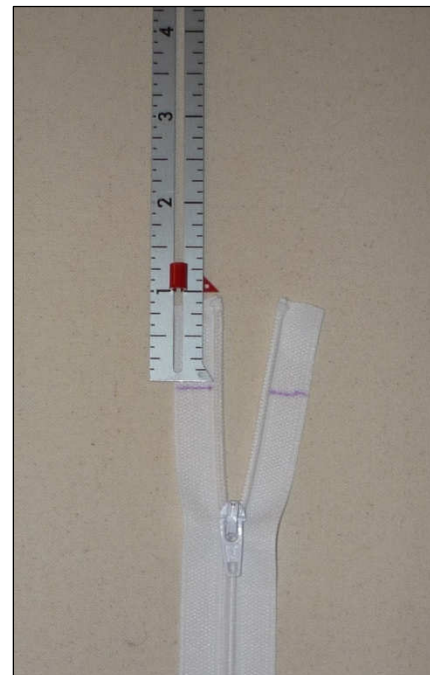
NOTE: The zipper should extend from the bottom of the bib to about ½" below the neckline at the center front.

If your jacket zipper is longer than that, you will need to cut it down to size. You can simply pull the metal brackets off of the top and replace them accordingly, or you can do a bar tack (i.e. zig-zag stitch with the stitch length set to 0) over the top of the zipper to keep the zipper pull from coming off.



Cut off the excess zipper tape from the top of your jacket zipper (even if you didn't have to shorten it) and apply liquid fray preventer to the new top edge.

TIP: Since the top 1" of your zipper will be left hanging free, mark a horizontal line 1" from the new top edge using a disappearing ink fabric marker.



Attaching the zipper is a very exact, delicate process; too far behind the zipper trim and the two sides mash together in the center front, but too close to center and/or too loose behind the zipper trim and the zipper teeth are plainly visible.

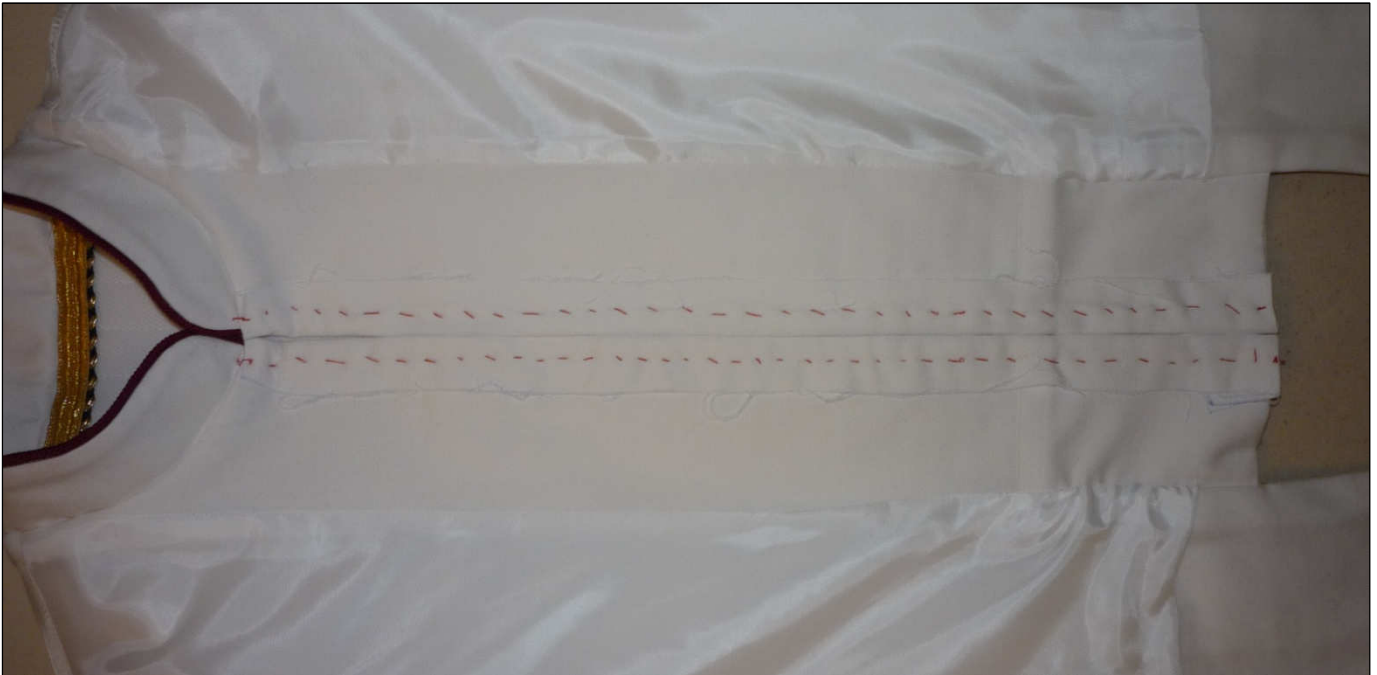
One with enormous patience may prefer to experiment, basting repeatedly with the trial-and-error method to determine the ideal zipper placement, but for those who aren't interested in installing and removing the zipper several times, we suggest the following method for determining the "sweet spot" for the zipper:

Fold the raw edge of the zipper trim under to the wrong side and press.

"Baste in the ditch" the zipper trim into place (shown here with red thread for demonstration purposes).



Turn your jacket inside out and position the center front edges so they are exactly flush and their upper and lower edges are perfectly even.



Attach some double-sided Wonder Tape to the fronts of the zipper tape, from the bottom to 1" beneath the top.

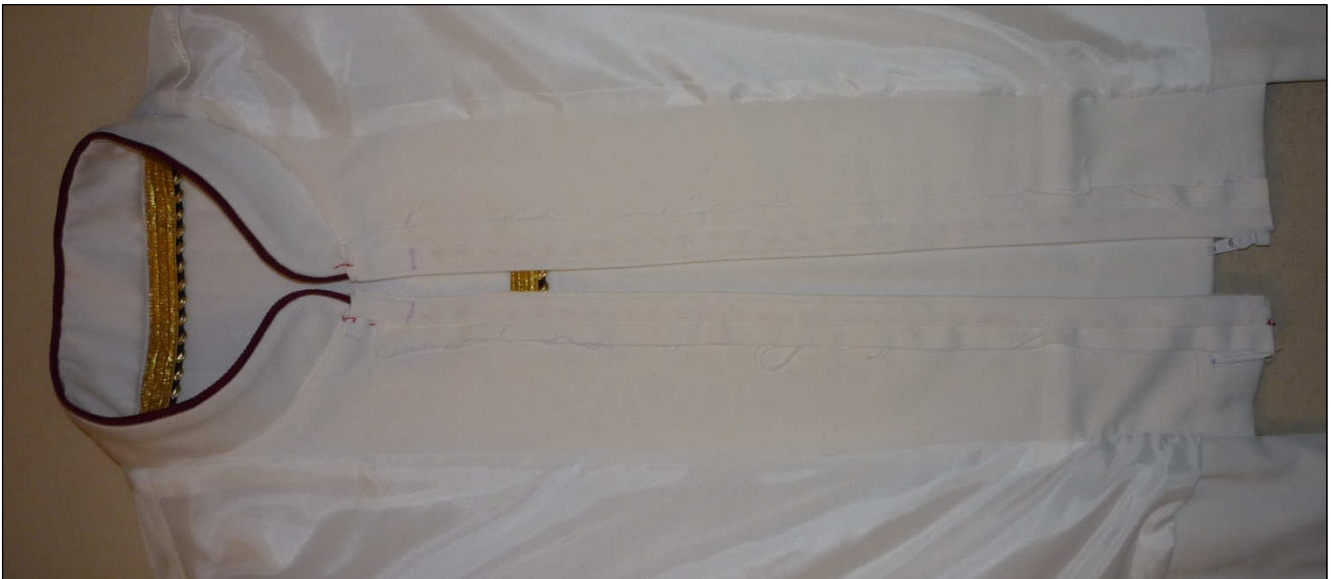
This will hold your zipper in place enough for you to test and determine its ideal placement, then to secure it sufficiently while sewing it.



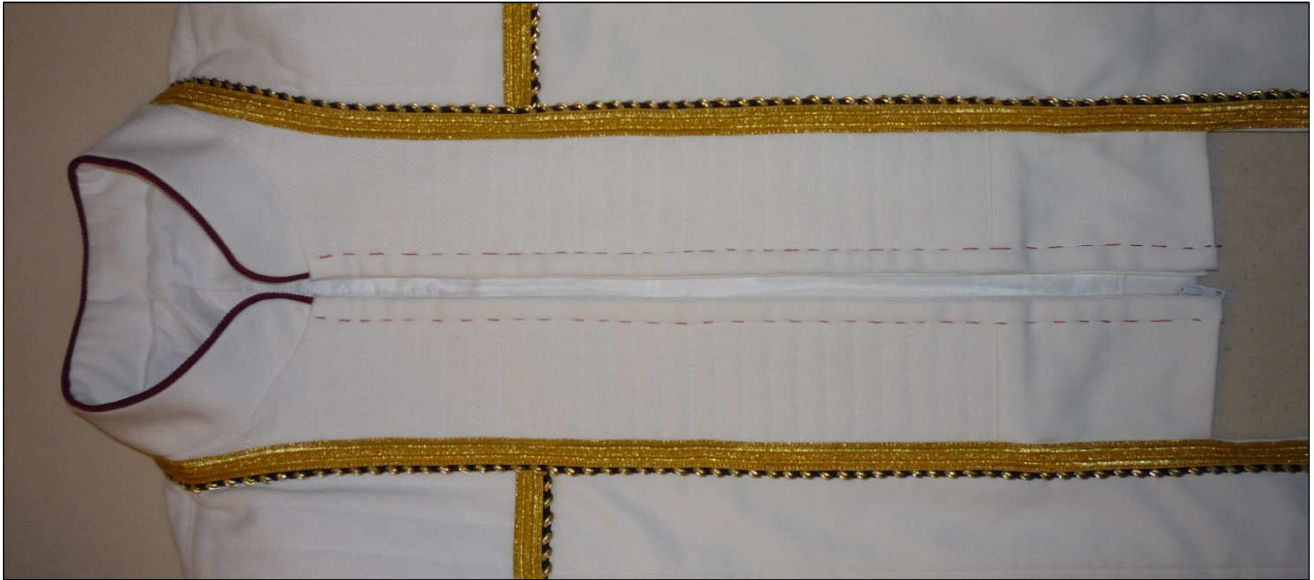
Carefully center the zipper over the wrong side of the zipper trim and press into place with bottom edges flush.



Gently separate (unzip) the zipper.

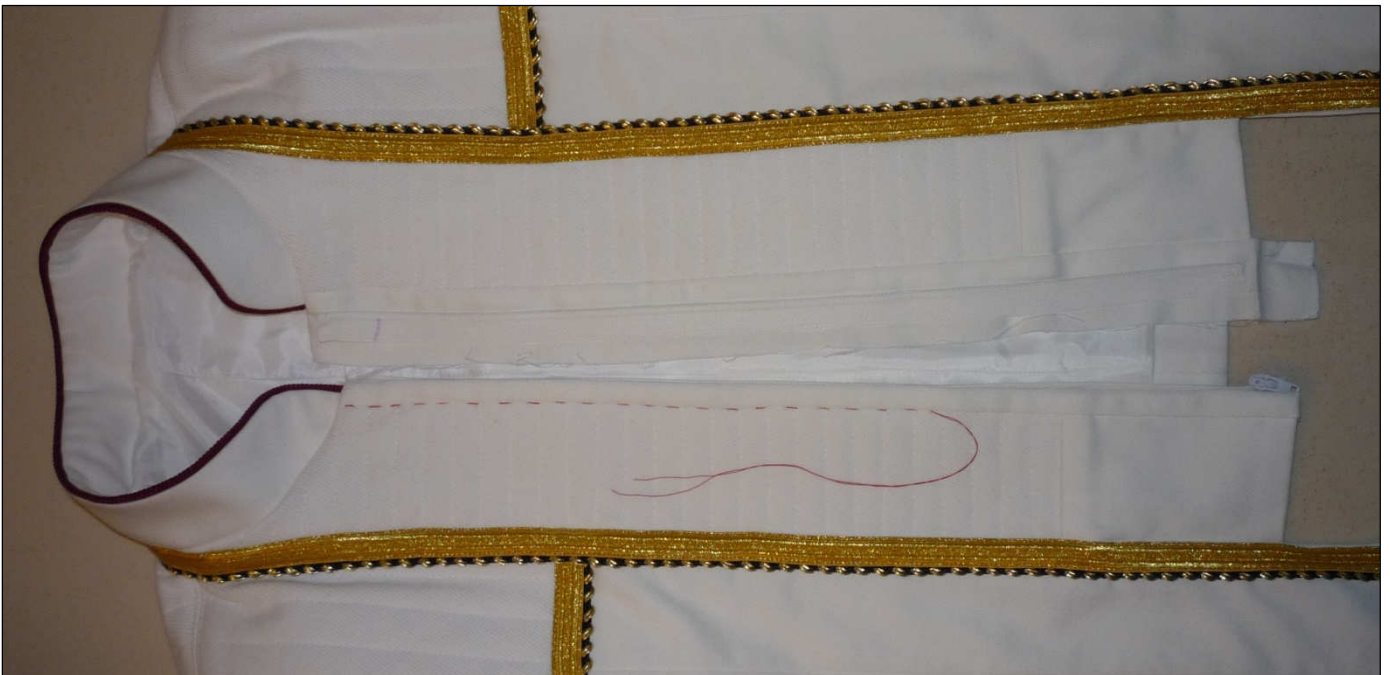


Turn the jacket right side out.



Gently zip and unzip the zipper (we recommend checking both while the zipper is flat and while it's on your dress form, if possible), adjusting as needed until you've found the "sweet spot" where the zipper is completely hidden but not so tightly that the edge of the zipper trim mash against each other .

Once satisfied with the zipper placement, remove the basting thread.



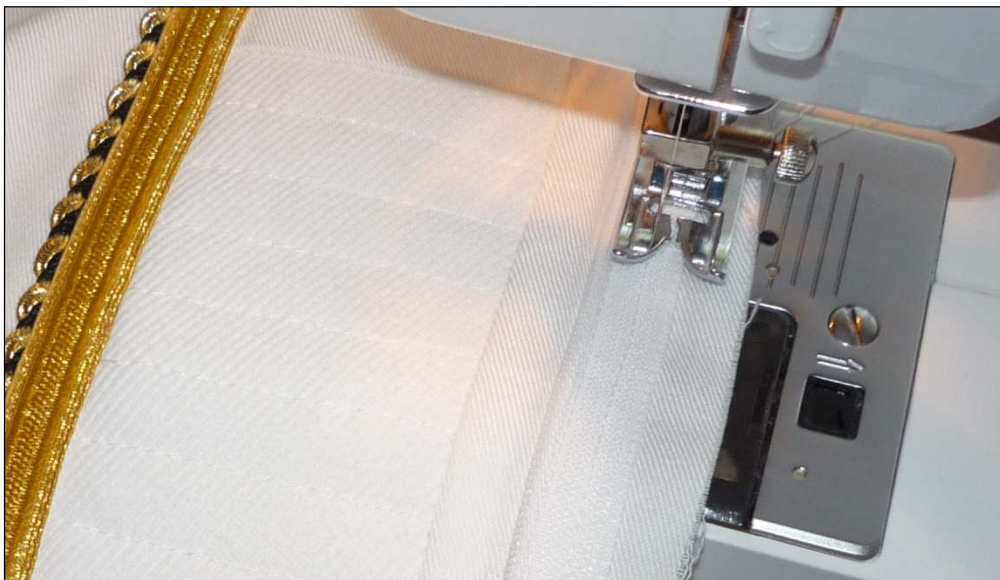
Using your zipper/piping foot, sew the zipper to the zipper trim, stitching close to the zipper coils/teeth, and leaving the top 1" hanging free.



TIP: Sew from the same direction on both sides of the zipper trim (i.e. from top to bottom, or bottom to top) to minimize the risk of anything shifting or stretching out of shape!

TIP: Reinforce the stitch several times at the top and bottom.

TIP: After attaching the zipper, further secure the zipper tape to the zipper trim using a regular sewing foot.



TIP: Further secure the top of the zipper by stitching horizontally over the 1" line you drew with your fabric marker.

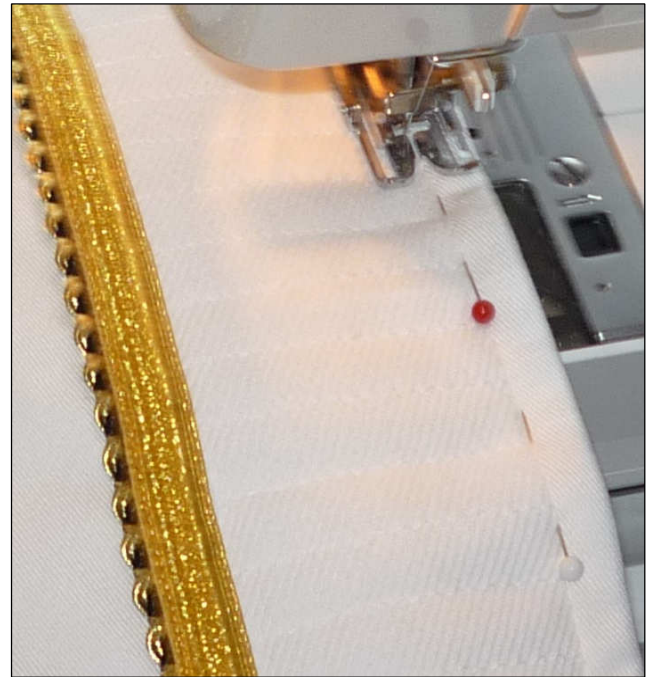
Once the zipper is attached, fold the zipper trim back underneath the jacket, then fold the raw edge under again (just as you would if you were sewing double-fold bias tape).

Pin the zipper trim into place.



Using your quilting/walking foot, "stitch in the ditch" from the right side of the jacket along the outer edge of the zipper trim to secure the undersides of the zipper trim and zipper tape.

This will need to be done in two segments on each side; once along the length that the zipper was sewn (right) and once at the top, with the un-sewn uppermost 1" of the zipper tape pulled out of the way (below).



You *really* want to take your time and do this well! It simply won't do to take your time and do everything else beautifully prior to this step, only to get excited so near the end and rush to slap the zipper on as soon or as quickly as possible, only for a poor zipper installation to practically ruin an otherwise lovely, high-quality jacket.

Properly placing and attaching the zipper can be incredibly satisfying when done correctly, or it can be incredibly frustrating and disappointing when done poorly.



Well that's the real trick, isn't it?

You want it to look like the lower left example, not the lower right one:



Finally, hand sew a couple white hook-and-eye closures to the underside of the zipper trim beneath the collar, where the top of the jacket zipper was left hanging free.



The jacket is finished!

Now onto the trousers! Huzzah!

TROUSERS ASSEMBLY INSTRUCTIONS:

ALL SEAM ALLOWANCES ARE $\frac{3}{8}$ " EXCEPT THE SIDE SEAMS, WHICH HAVE $\frac{5}{8}$ " SEAM ALLOWANCE!

1 - PATTERN PIECES

Cut out the pattern pieces as indicated on the printed pattern.

We highly recommend serging every edge of the trousers front (piece T), trousers back (piece U), and trousers back waistband facing (piece W).

We also recommend underlining each of the front waistband facings (piece V) with a lightweight fabric such as muslin and applying fusible interfacing to the underlining (with the seam allowances trimmed away).

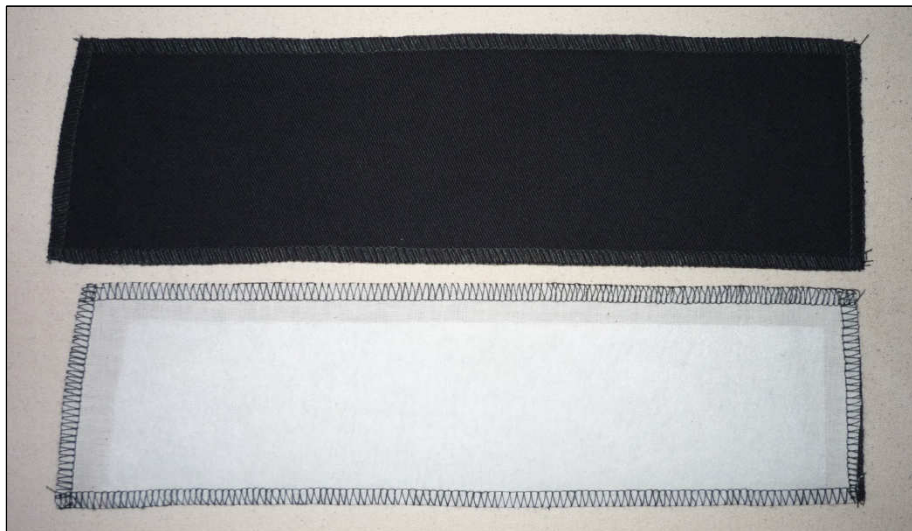
To accomplish this, cut out the two front waistband facings (piece V).

Cut another of each front waistband facing piece in muslin, so that each facing has an exact underlining (muslin) counterpart.

"Marry" the underlinings to the front waistband facings by serging along the edges.

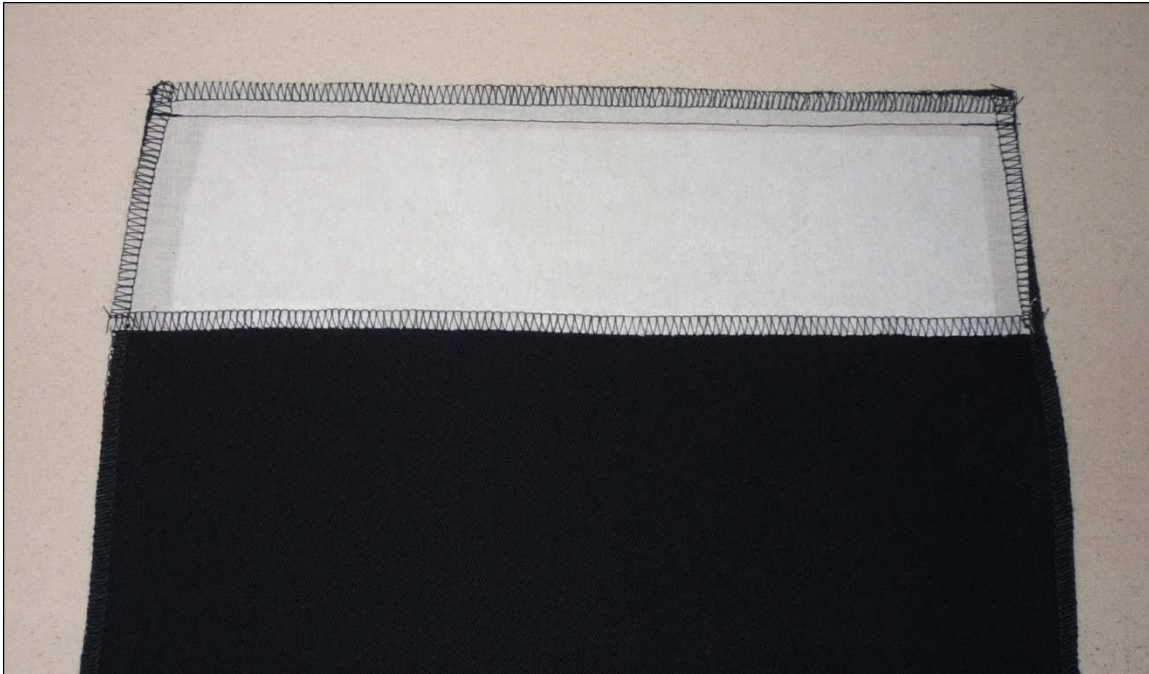
Cut two more of each front waistband facing piece out of some lightweight or midweight fusible interfacing, and trim away the upper and side seam allowances. (This will prevent unnecessary bulk from accumulating in the seam allowances.)

Fuse the interfacing to the underside of the front waistband facing, onto the underlining:



2 - WAISTBAND FACINGS TO TROUSERS

Sew the underlined, interfaced front waistband facing (piece V) to the front trousers (piece T), right sides together and with top edges flush.



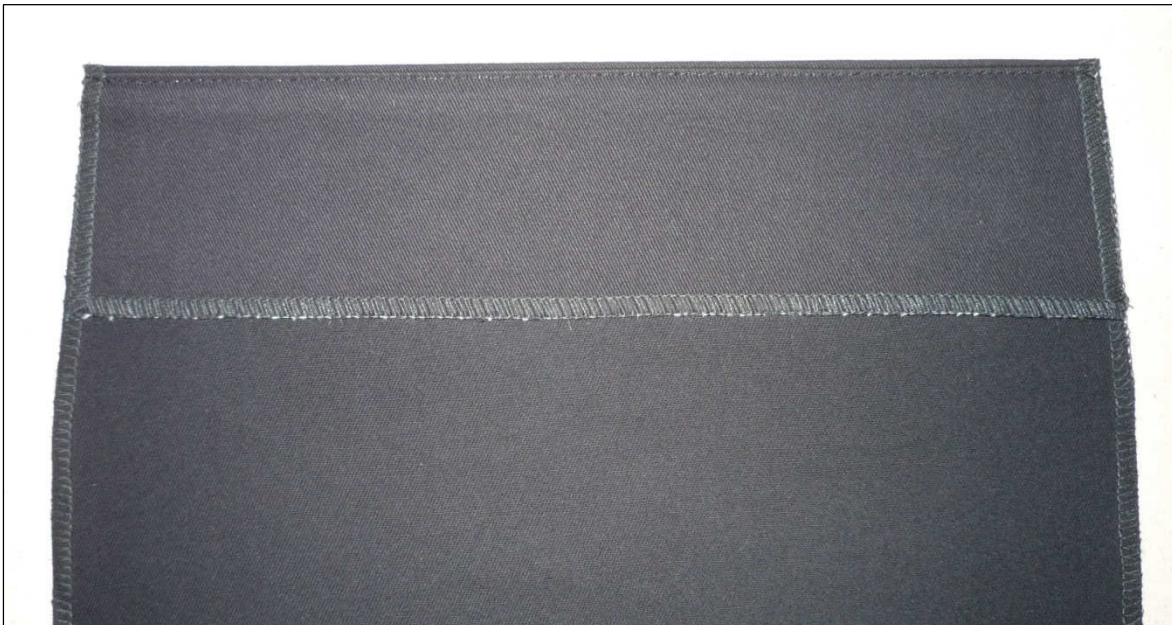
Press the front waistband facing and seam allowances upward.



Understitch the front waistband facing to the seam allowances $\frac{1}{8}$ " from the seam line.



Press the front waistband facing downward.



Repeat for the other side.

Repeat the process to attach the back waistband facings (piece W) to the back trousers (piece U).

3 - DIVISION PIPING

NOTE: As mentioned in our "Required Materials (etc.)" section (page 103), we recommend using piping with a smaller rather than larger diameter; we're using $\frac{3}{8}$ " piping for these tutorial trousers, but we recommend using $\frac{3}{16}$ " or $\frac{1}{4}$ ".

Cut a length of (upholstery) division-colored piping the length of your trousers' side seam plus 2-3".

Using your zipper/piping foot, sew the piping onto the right side of the front trousers (piece T) along the side seam with $\frac{5}{8}$ " seam allowance, leaving at least 1" excess on each end of the trousers, stitching close to the cord.



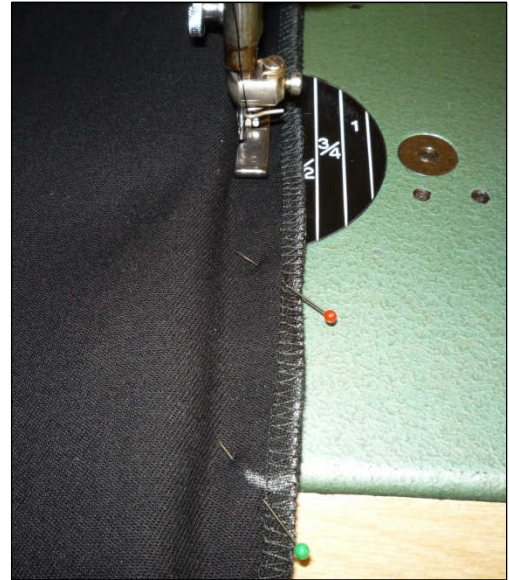
NOTE: We increased our standard $\frac{3}{8}$ " seam allowance to $\frac{5}{8}$ " on the trousers' side seams to accommodate for the larger lip typically incorporated into upholstery piping.

TIP: Pull the fabric toward you as you attach the piping and/or slightly lower your thread tension to prevent the fabric from contracting!

Repeat for other side.

4 - FRONT TO BACK

Using your zipper/piping foot, sew the front trousers (piece V) to back trousers (piece U) along the side seam with $\frac{5}{8}$ " seam allowance (over the previous stitch line, effectively "sandwiching" the division-colored upholstery piping between the front and back pieces).



TIP: Use the lengthen/shorten lines on the printed trousers pattern pieces as alignment points by marking the edges of the cut fabric pieces with chalk and matching them before sewing.



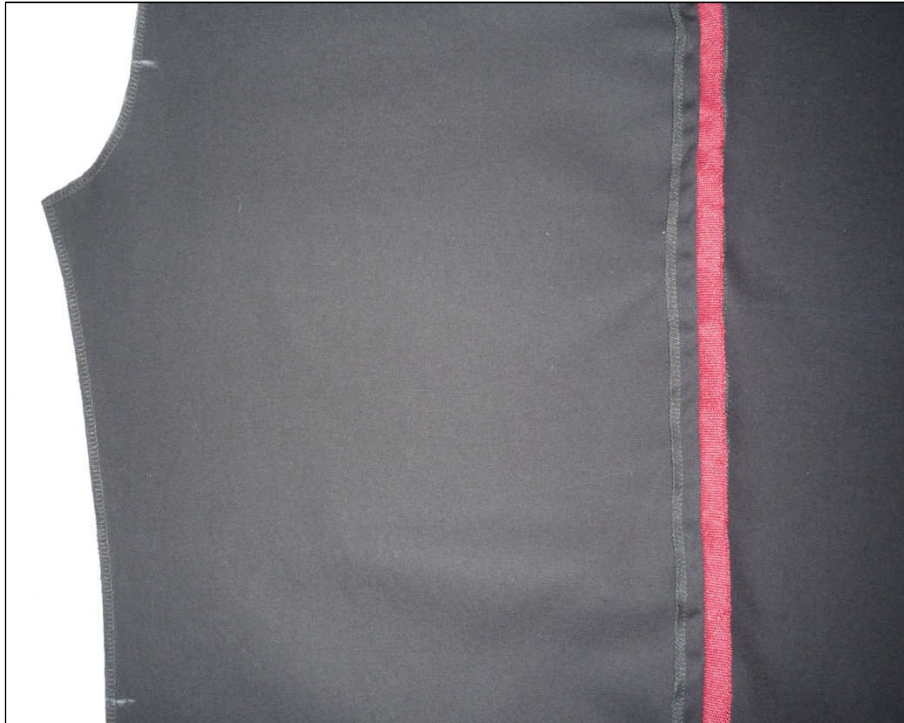
TIP: As done previously when attaching the division piping to the front, pull the fabric toward you as you and/or slightly lower your thread tension as you sew the front and back together to prevent the trousers assembly from contracting. A little puckering isn't the end of the world:



But you *definitely* don't want your side seam to look like this:



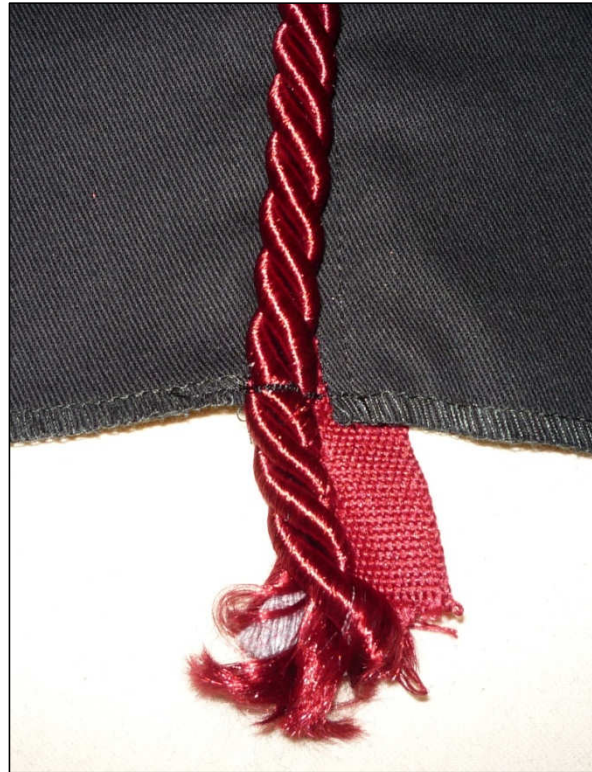
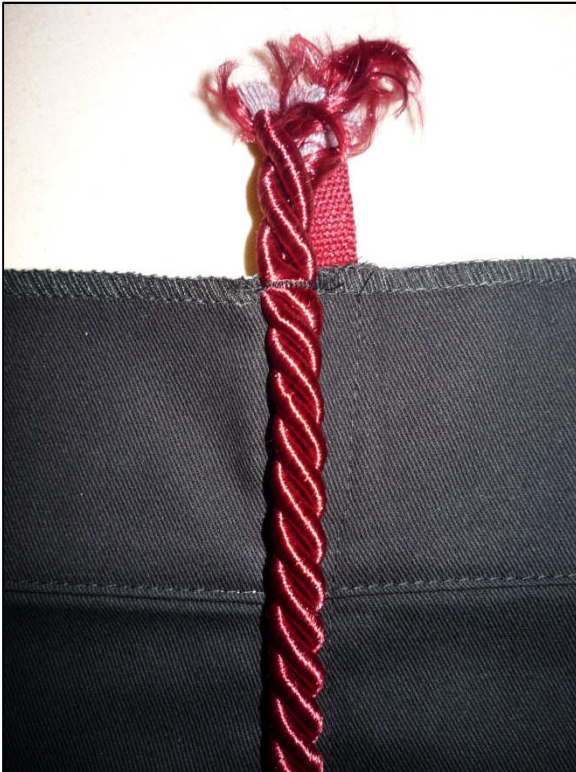
Press the side seam allowances open, with the piping lip toward the back of the trousers.



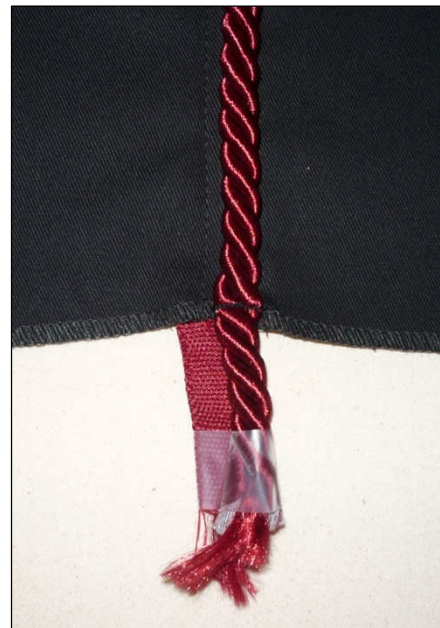
TIP: Using your regular sewing foot, topstitch the side seam allowances into place about ¼" from the seam line.



TIP: If (and only if) your sewing machine can handle sewing over upholstery piping, topstitch over the top and bottom of the piping about $\frac{1}{8}$ " to $\frac{1}{4}$ " from each edge with a very short stitch length to help prevent unraveling.



TIP: Wrap some clear tape around the ends of the piping to help prevent unraveling for the time being.



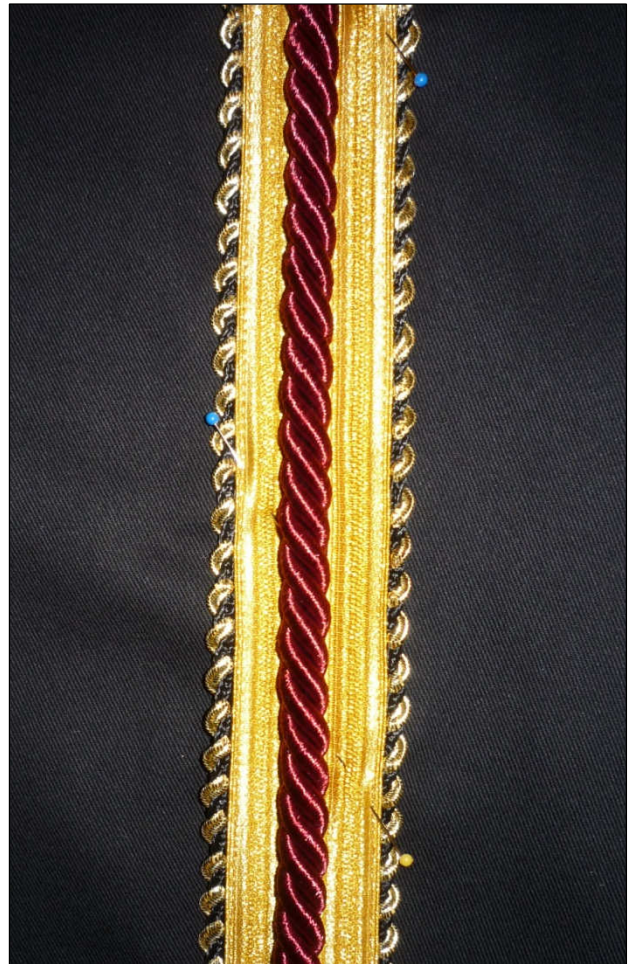
Repeat for the other side.

5 - TRIMS

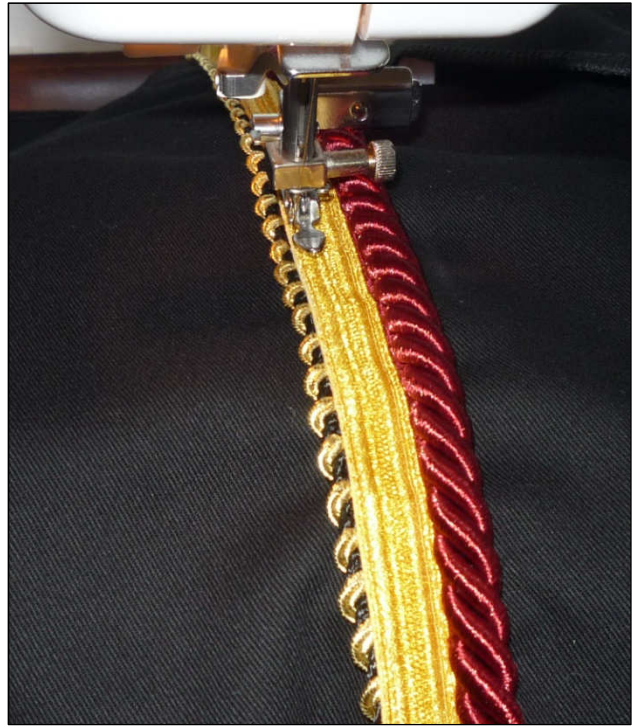
Cut four lengths of both the $\frac{1}{8}$ " gold/black piping and the $\frac{1}{2}$ " gold braid/naval lace equal to the length of your side seam plus 2-3".

Sew the piping and braid together to form four lengths of $\frac{3}{8}$ " trim as per our tips in the jacket bib/collar trim section (pages 158-160).

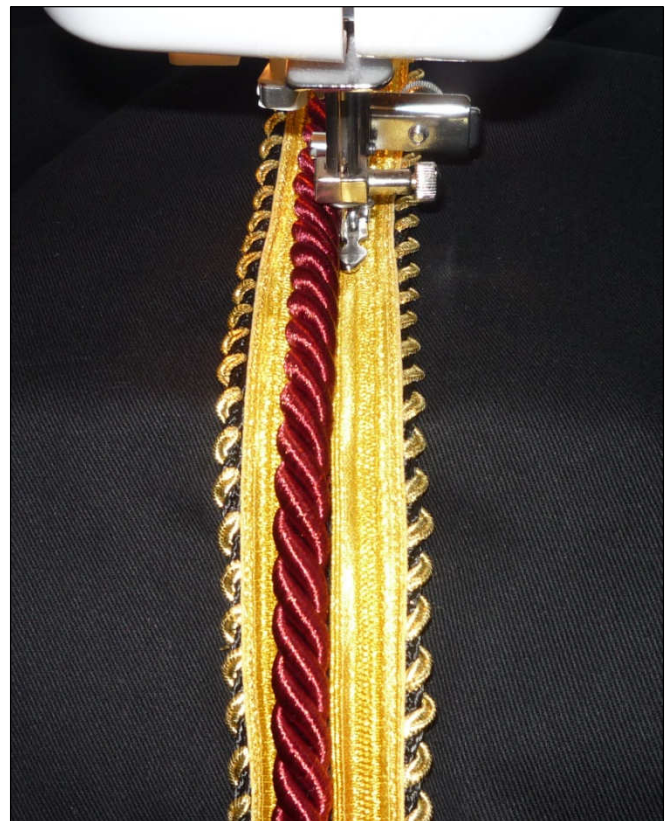
Pin a length of trim to each side of the side seam, with the open edges of the gold braid as close to the division-colored piping as possible and extending past the upper and lower edges of the trousers 1-2".



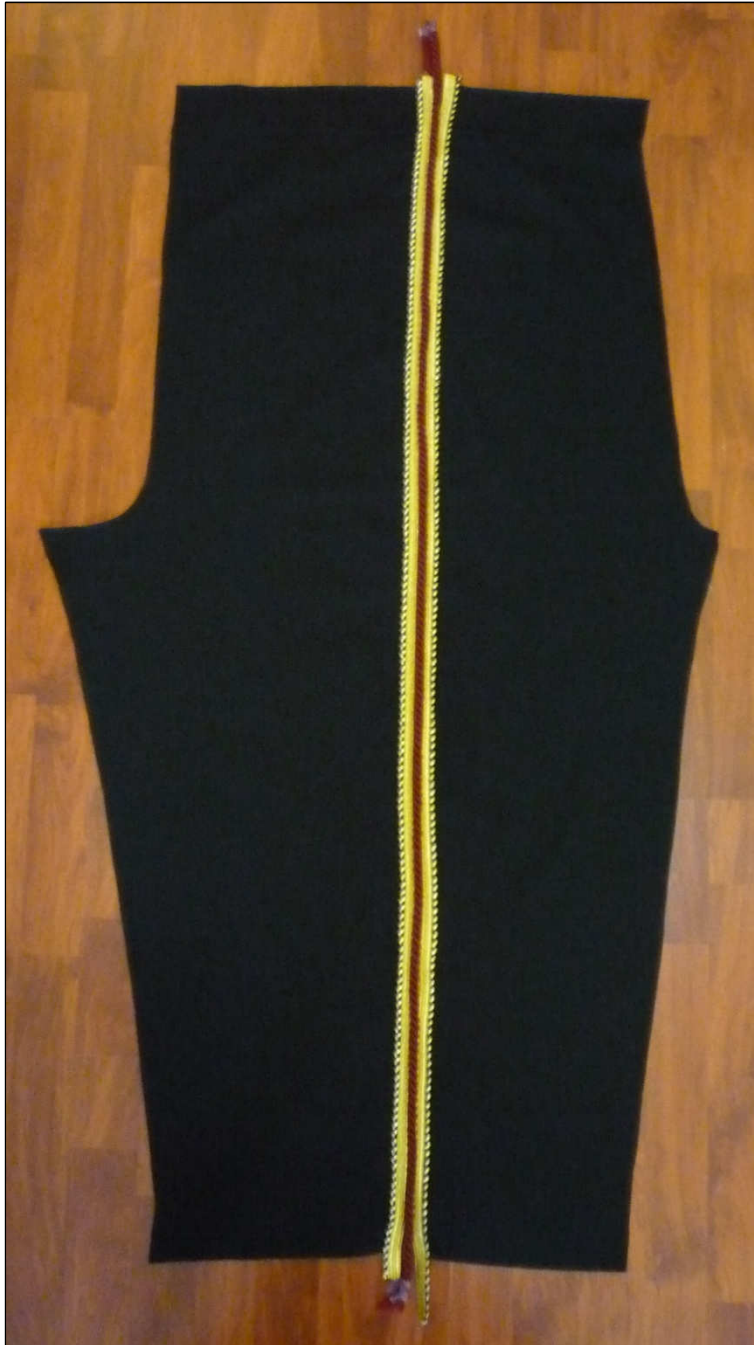
Using your zipper/piping foot, gold thread, and the needle that gives you the best results, topstitch the $\frac{5}{8}$ " trim into place close to each side of the $\frac{1}{2}$ " gold braid.



TIP: Rather than pinning both lengths of trim to the trousers' side seam, you may find it easier to first do one and then the other (as pictured above and to the right).



The side of your trousers should now look like this:



Repeat for other side.

6 - ZIPPER

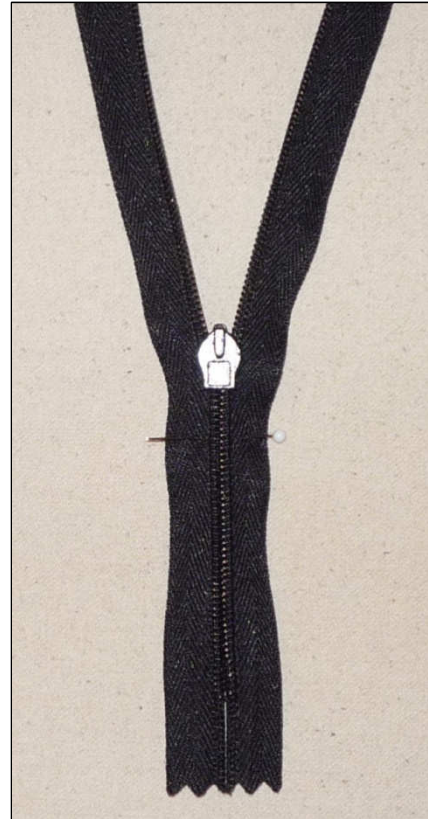
Cut off the excess zipper tape at the top of your invisible zipper and apply liquid fray preventer.

Align your zipper at the center front so its top edge is $\frac{7}{8}$ " from the top edge of the trousers.



Your zipper will likely be a bit too long and need to be shortened.

Determine how low you desire the zipper to extend down into the crotch area (probably a few inches from the inseam) and either pin or chalk mark the appropriate point on the zipper.



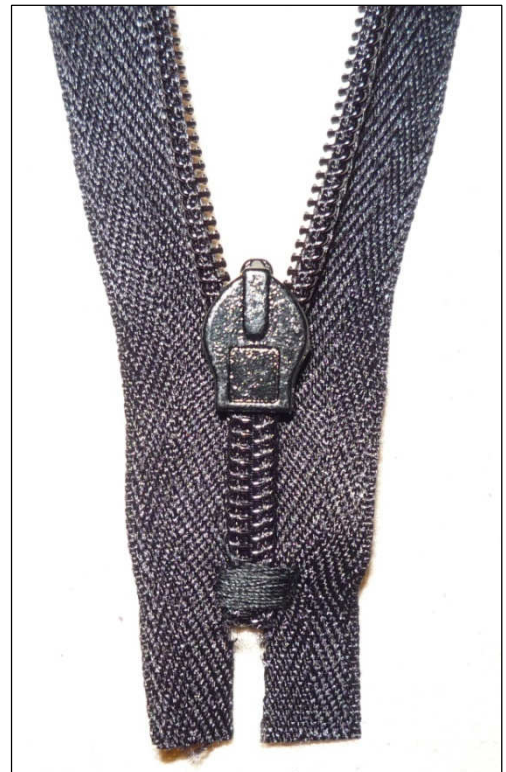
Form a new zipper stop at the point you pinned or marked by sewing a bar tack - that is, set your machine to a zig-zag stitch with a width sufficient to extend over the zipper coils/teeth and a length of 0.



Cut off the excess zipper length from about 1" beneath the bar tack.



Cut out the zipper teeth from the zipper excess beneath the bar tack.



Now install the invisible zipper as you normally would, with the top edge of the zipper $\frac{7}{8}$ " beneath the top edge of the trousers, and close the lower center fronts beneath the zipper.



Press the lower center front seam allowances open.

7 - CLOSE BACK

Sew the trousers closed along the center back seam, right sides together.

Press the seam allowances open.



8 - BACK ELASTIC

Cut an appropriate length of 2" elastic as required for comfortable wearing plus about 1" (and you know exactly how long you need it to be because you made a muslin test first, right?!?).

For instance, I (Alex) have about a 37" waist and require an 18" long cut of elastic.

Position the ends of your elastic so it overlaps the side seams by about ½" and its upper edge is flush with the trousers/waistband facing seam line.

Then, using gold thread (it's okay if it's not metallic gold), sew the elastic to the back trousers through all layers (piping lip, back seam allowance, back trousers, and ⅝" trim).



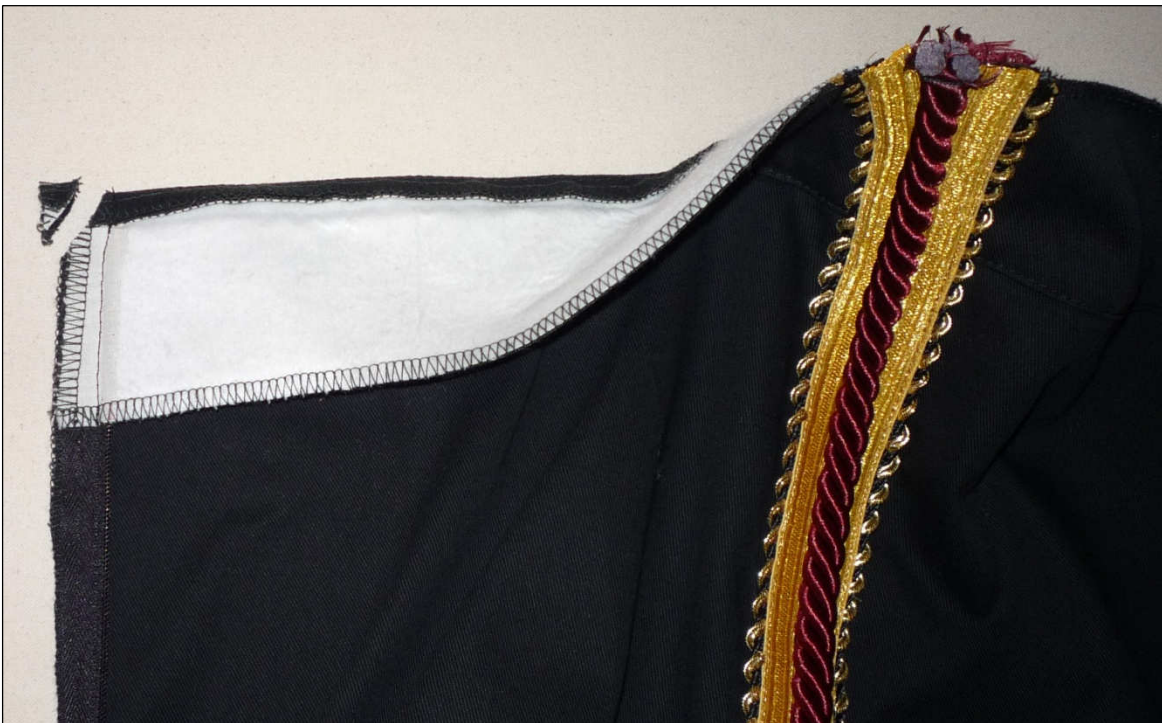
Repeat for other side.

9 - TURN FACINGS UNDER

Using your zipper/piping foot, sew the center front edge of the front facing to the trousers front.

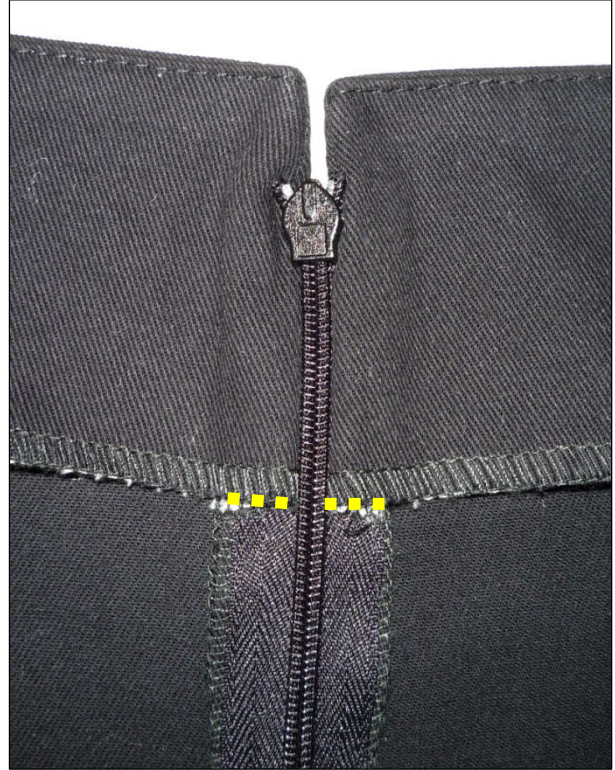


Diagonally clip away the seam allowances at the upper center front.

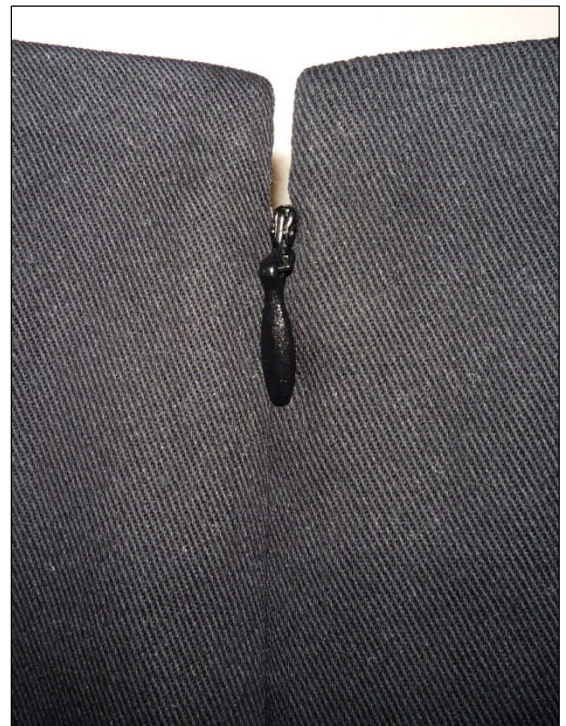


Turn the facing assembly under (wrong sides together) and press.

Hand sew the centermost $\frac{3}{8}$ " bottom of the front facings to the center front seam allowance/zipper tape.



When closed, the zipper should extend to $\frac{1}{2}$ " from the top of the trousers.

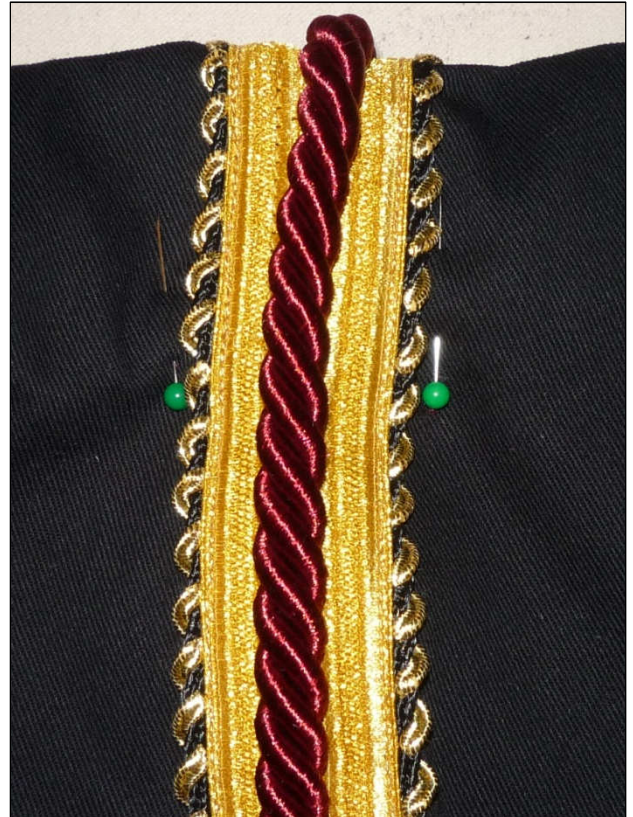


Unzip the zipper and hand sew a hook-and-eye closure to the top of the trousers, above the top of the zipper.



Using gold thread (again, it's okay if it's not metallic - this is difficult enough as it is without having to worry about the fussy metallic thread), fasten the sides of the waistband facing to the trousers by sewing through all layers along the uppermost 2" or so of the $\frac{3}{8}$ " trim.

TIP: We found it *extremely* helpful to pin the waistband facing assembly in place outside each side of the trim before actually sewing the two together.



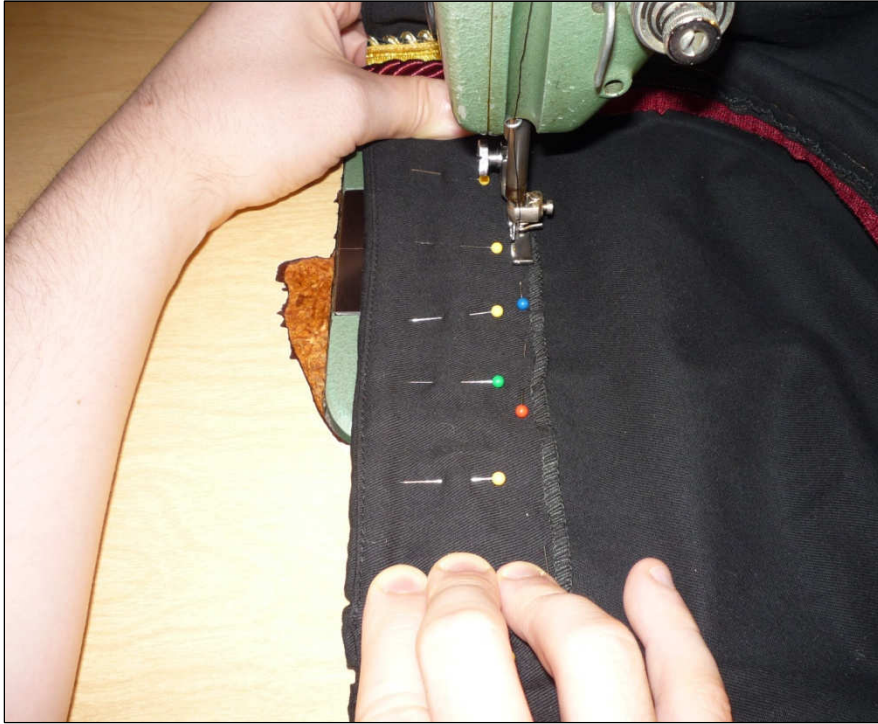
(For the record, aesthetic reasons aside, this - and the hemming process - is why we prefer to work with the thinner division piping over the wider stuff; folding the $\frac{3}{8}$ " piping in on itself, in addition to the all the other layers involved, can result in a very unwieldy assembly to sew!)

The bottom edge of the back waistband facing should extend past the bottom of the waistband elastic by $\frac{3}{8}$ ". Pin it into place.

TIP: Distribute the gathered fabric as evenly as possible by vertically pinning the back waistband facing to the back trousers at the center back, then halfway between the center back and side seams, then halfway between each of those pins, etc. until the gathered excess is more manageable.



Using your zipper/piping foot, topstitch the back waistband facing to the back trousers $\frac{3}{8}$ " from the bottom of the facing (flush with the bottom edge of the elastic), fully stretching out the waistband and fabric as you go.



Once secured, the inside of the back trousers should look like this:



To permanently distribute the gathered excess fabric as evenly as possible, sew two additional rows of stitching through all layers - one about $\frac{3}{4}$ " from the top of the trousers, and one about $\frac{3}{4}$ " below that - fully stretching out the waistband and fabric as you go.



The finished back elastic waistband will look something like this:



10 - HEM

Turn up the trousers' hem allowance (our pattern's "default" hem allowance is 2") and press.

Sew the hem allowance at the side in the same manner as done previously at the top of the trousers (page 256).

Hand sew the hem allowance to the pant legs.



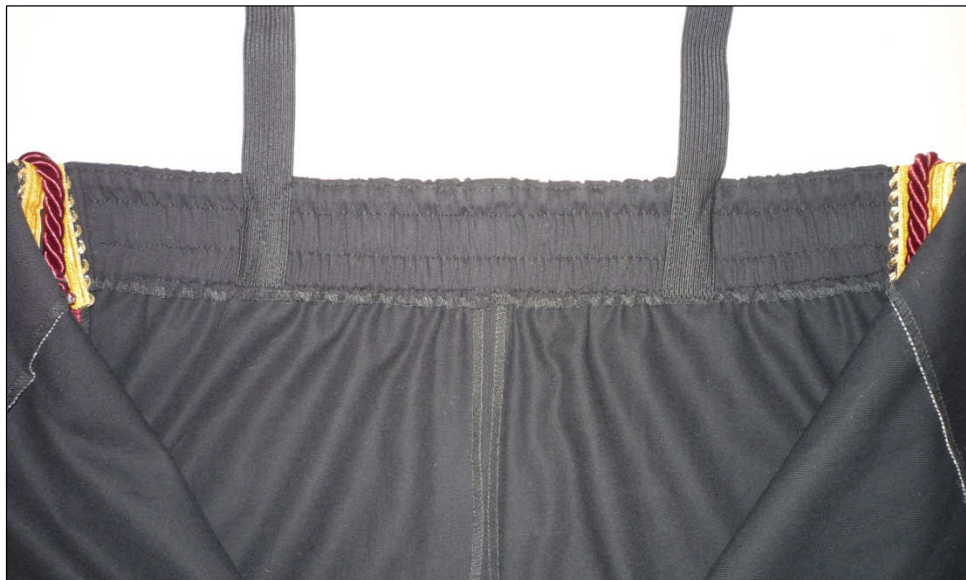
11 - ELASTIC SUSPENDERS



Almost there ... almost there ...

Cut two lengths of $\frac{3}{4}$ " black elastic (or 1", if you prefer) at least a yard long.

Topstitch them to the inside of the back waistband about halfway between the side seams and center back seams through all layers.



Put on your trousers, cross the suspender straps at the back (forming an X shape), pull them over your shoulders, and determine the length necessary for a comfortable (and effective) fit, taking into account that they'll be likewise sewn to the underside of the front waistband facing (and thus extend to about 2" beneath the top of the trousers' front).

Cut the elastic suspenders down to size and fasten them to the front in the same manner as done previously in the back, remembering to cross the suspender straps at the back.

12 - ELASTIC STIRRUPS

Cut two lengths of $\frac{3}{4}$ " elastic (or 1", if you prefer) for the "stirrup" at the bottom of the pant legs.



The exact length needed may vary from person to person depending on the length of the pant legs and the width of the wearer's boots, but we generally recommend cutting these about 8" long.

Sew the elastic stirrups to the bottom of the pant legs at the side seams with a triangular stitch (with the "flat" side of the triangle on bottom).



TIPS FOR ACHIEVING AN IDEAL FIT

While some costumers may find a perfect fit in one of the "default" pattern sizes, it is somewhat unlikely due to variations in height, weight, build, musculature, neck size, and general physique.

That's why we highly recommend making a muslin test or a "practice" garment of some kind (other than to familiarize yourself with its construction, that is!) - you can make the necessary sizing observations (e.g. sleeves need to be an inch longer, waist needs to be loosened, neckline needs to be taken in a bit, etc.).

All this fitting does require extra time and effort on the part of the costumer, but the finished garment's custom-tailored look will definitely be worth it!

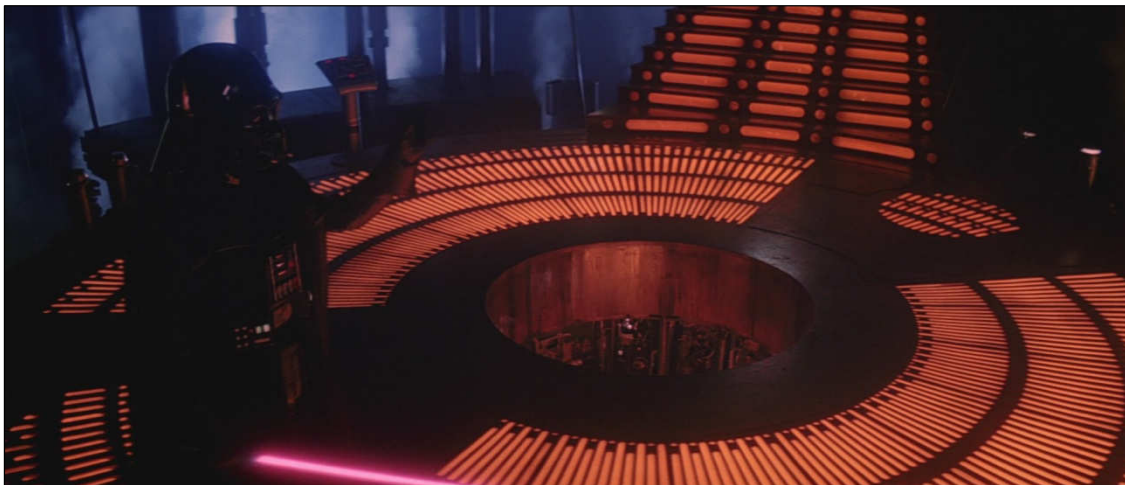
There are four main aspects of the garment that may need adjustment and/or the original pattern need be altered: the collar/neckline, the chest, the waist, and the sleeves.

As mentioned previously, we've included four collar options with our pattern: 1" collar for straighter necks, 1" collar for more curved necks, 1 ½" collar for straighter necks, and 1 ½" collar for more curved necks, and each of those in all five size options. Each collar option is graded in increments of 1" for each of the five sizes.

One *should* be able to find a perfect fit with the available sizing options, but should the collar itself require adjustment (probably because it is uncomfortably tight), the actual "circumference" of the collar can be enlarged a bit by adding onto the center back and simply eased into the existing neckline.

In fact, if the neckline is comfortable but the collar is too tight, you might be able to simply use the collar option of your choice in the next size up combined with your jacket size!

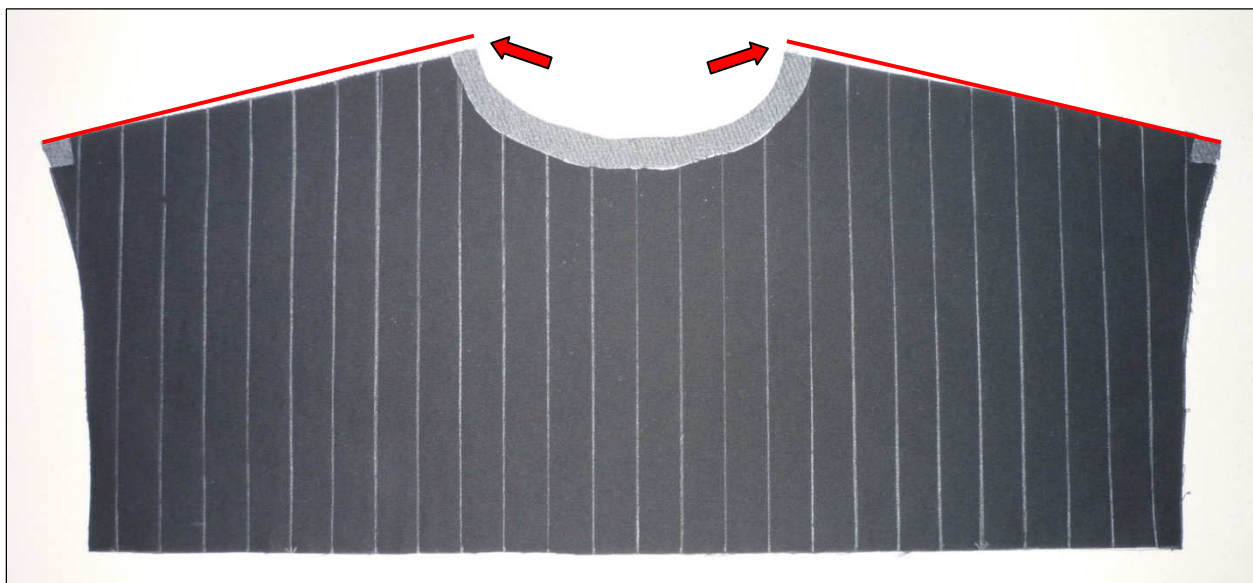
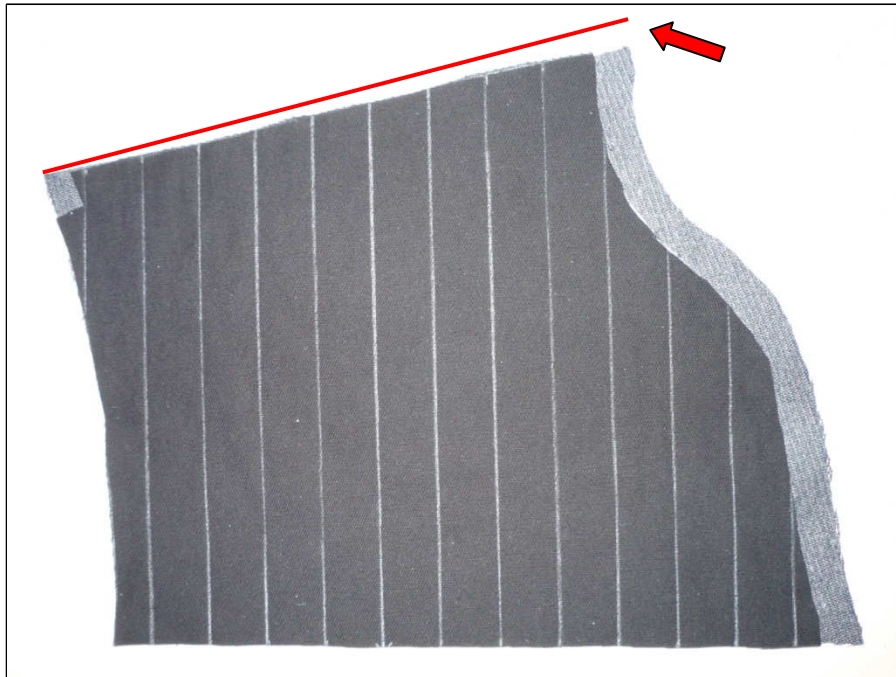
(On the formal jacket in this tutorial, for instance, we cut the jacket as a size medium but used the size large collar with no problems; we just eased the large collar around the medium neckline.)



All too easy.

If, for some reason, your neckline needs to be lengthened in the other direction, it is a simple matter of adding the appropriate length to the shoulder seam on each side.

For instance, if your neckline needs to be lengthened (as opposed to widened, sideways) by $\frac{1}{4}$ ", simply add $\frac{1}{8}$ " to the front yoke and the back yoke on the neckline side of the shoulder seam.



(DS9/NEM admiral jacket pictured above)

The opposite would be the case if you need it let out a bit at the shoulder/armscye.

Just remember to adjust the seamline of your shoulder point accordingly!

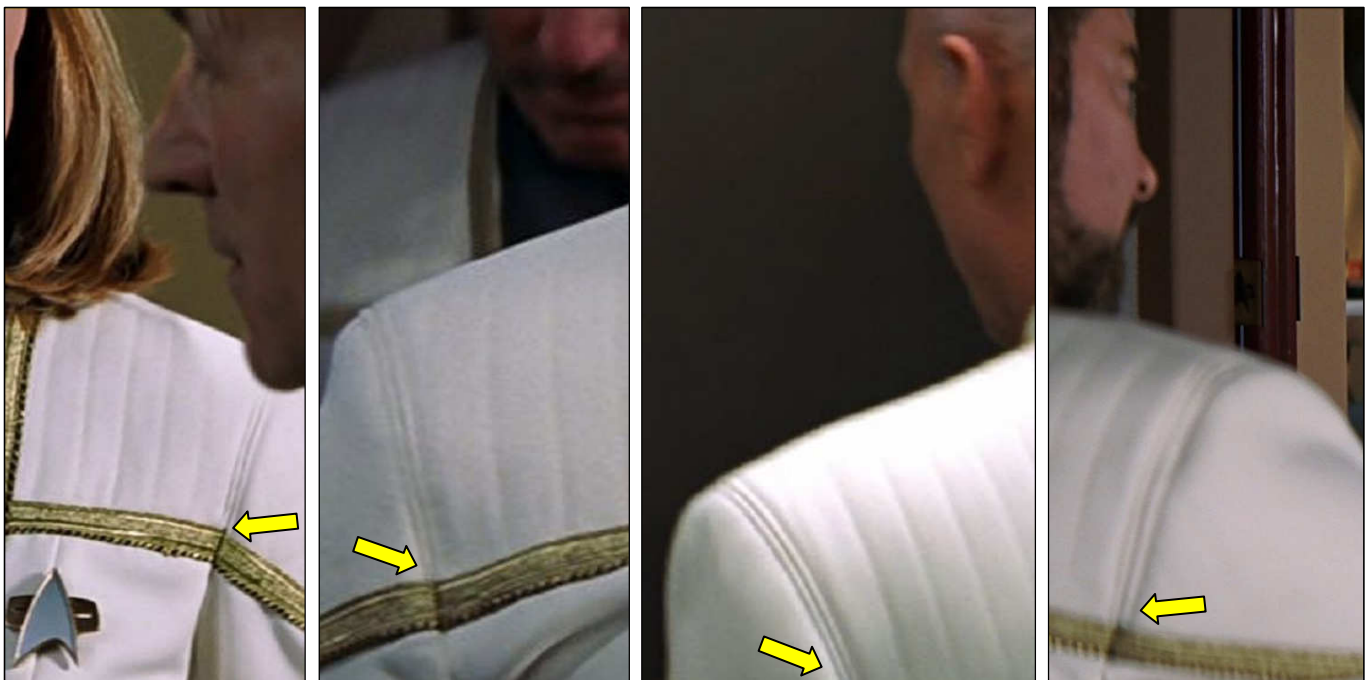
Adjusting the chest at the bottom of the yoke is a fairly simple matter, too.

The chest sizes of the printed pattern are graded in increments of $4\frac{1}{2}$ " - that is, one additional $\frac{3}{4}$ " quilt line on each front yoke, one additional $\frac{3}{4}$ " quilt line on each side of the back yoke, and $\frac{3}{8}$ " on each side of the underarm/side front/side back seam and on both sides.

Any chest alterations - between the "default" sizes on the printed pattern, that is - are easiest to make in increments of $\frac{3}{4}$ ". This is most effectively done by taking in the armscye seam in by $\frac{3}{8}$ " on either the back or both front yokes (wherever there's more excess), thus moving the seam's $\frac{1}{8}$ " topstitching from on a quilt line to a mid-quilt line.

(All of the "default" printed pattern sizes place the yokes' armscye seam's topstitching on a quilt line, as we believe it to be ideal, but as noted in the construction analysis, a mid-quilt line is acceptable.)

In other words, the printed pattern piece will look like this in every size, in the front and the back:



Quilt line - *Insurrection*

But you can add or remove $\frac{3}{4}$ " to or from the chest by moving the seam to a mid-quilt line, in either the front or the back:



Mid-quilt line
DS9, 7x16 "Inter Arma Enim Silent Leges"



Mid-quilt line
Insurrection

Of course, you can add or remove $1\frac{1}{2}$ " to or from the chest by doing in both the front AND the back.

Remember to adjust your shoulder point, side front and/or back body panels, and lining panels accordingly.

Another option, for minute chest alterations, is the top of the side front/side back seam (under the arm) - adjusting the sleeve (and sleeve lining) accordingly, of course!

The waist is, likewise, an easy aspect of the garment to alter.

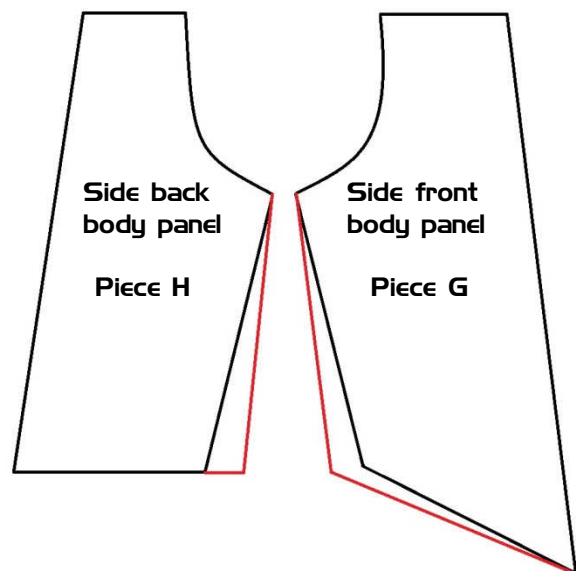
Of course, as waist sizes vary widely amongst people, it's also, perhaps, the most likely to need adjustment.

The waist sizes on the printed pattern are graded in increments of 3". This means that each pattern size may need up to 2 ½" or so added or subtracted to the waistline.

The best place to take the waist in a bit is at the side front/side back seams; hypothetically, if you needed to take the waist in by 1", we recommend taking the side seam in ¼". That would be ½" for each side, or 1" total.

Adding to the waist is a similar process and can be done anywhere, though the easiest place to add is, by far, the side front/side back seam.

As is, the pieces are angled inward considerably, but they can be adjusted as needed with relative ease, even up to about 1" on each piece (a total of 4"):



Remember to adjust the angle of the front corner "flare" accordingly on the middle front body panel (piece F) and side front body panel (piece G), as well as the corresponding facings and lining pieces.

The length of the sleeves may need to be adjusted, depending on the wearer's arm length.

This is relatively easy, however!

The sleeves on our pattern are graded in increments of 1".

The sleeve is wider at the top and gradually narrows toward the wrist, but the bottommost 3" is a consistent width for both versions of the sleeve cuff.

To length or shorten, simply move said 3" rectangle upward or downward as needed and change the angle of the sleeve's narrowing accordingly.

CONGRATULATIONS!

YOU'RE FINISHED!

