

The Drape Line Approach for Pants Fit: Analyze, Adjust, and Create.

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December 21, 2024

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Publisher

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Dedicated to Christine,

Your invaluable insights and tireless dedication have shaped this work in ways words alone cannot express. This book stands as a testament to your unwavering support and exceptional contributions. Thank you for being an integral part of this journey.

With deepest gratitude,

Naomi

Preface

Whether you're new to sewing or trying your hand at a different type of garment, it's common to encounter a range of questions about construction and fit. While the internet provides a wealth of information, it can often feel overwhelming to sift through endless resources and figure out which advice is the most helpful. The responsibility falls on you to decide, weighing factors like the quality of the instructions, the clarity of images, your previous experience with the source, or even just chance.

The project, 'The Drape Line Approach for Pants Fit: Analyze, Adjust, and Create', is designed to guide you through a fresh approach to fitting pants for a variety of body shapes. While some steps build on the knowledge passed down by previous generations of sewists, this method introduces new ideas in a clear, step-by-step process to help you achieve the perfect fit.

Current Project Goals

'The Drape Line Approach for Pants Fit: Analyze, Adjust, and Create' has several key goals that work together to create an effective, inclusive approach to fitting pants:

1. Developing a New Method for Fitting Pants

- a) **Standardized Measurement System:** The primary goal is to develop a precise, consistent way to measure how pants fit. This will involve setting specific criteria and measurements to assess how well the pants fit the wearer's body.
- b) **Structured Fitting Process:** A clear, step-by-step process will be established for fitting pants. The method will be organized and systematic, ensuring that anyone, regardless of experience, can follow it and achieve great results.

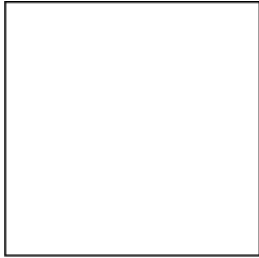
2. Creation of a Comprehensive and Descriptive Guidebook

- a) **Clear and Respectful Language:** The guidebook will thoroughly explain the new fitting method using inclusive, respectful language and imagery that embraces all wearers, regardless of gender, age, or body size.
- b) **Embracing Body Diversity:** It will feature a variety of body shapes and sizes, reinforcing the message that there is no single "ideal" body type. The focus will be on positivity and celebrating individual differences.
- c) **Accessible to Everyone:** The guidebook will be written to support both beginners and experienced sewists, ensuring the method is easy to understand and use across different skill levels.

Future Project Goals

'The Drape Line Approach for Pants Fit: Analyze, Adjust, and Create' is aimed at achieving several important future goals. If you would like to contribute, I invite you to email me photos, images, or feedback about your experience with this process. Your input is invaluable and will help shape and improve the manual. Updates and revisions will be made regularly to reflect new contributions and ideas.

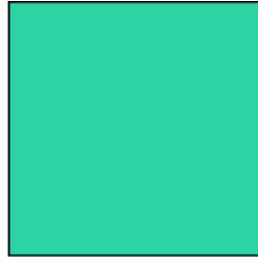
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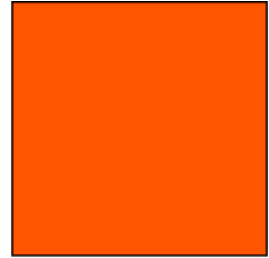
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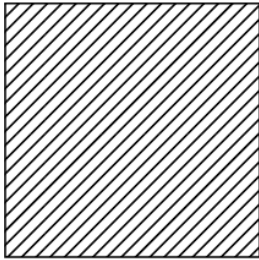
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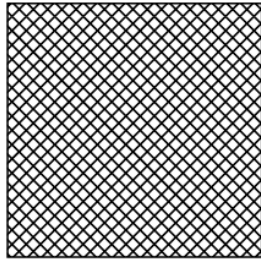
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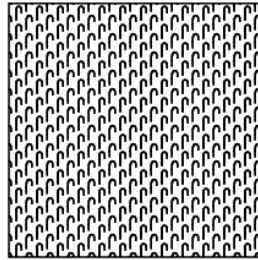
REMOVE



INTERFACE



LOOP TAPE



HOOK TAPE



MARKER
LINE



BOLD
STITCH LINE

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Tools and Supplies

1 Tools

1.1 Measuring Tape

A measuring tape is one of the most important tools you'll need. Use it to take measurements of your body and to measure longer lines in your patterns.

1.2 Circumference Measurement Tool

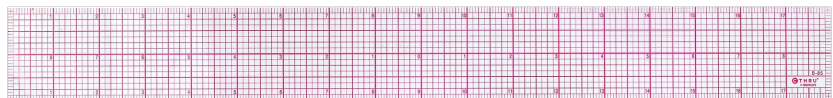


For more details
on measuring
your full hip
circumference.

To measure around your torso accurately, it's a good idea to make a circumference measurement tool. This tool can give better results than just measuring the widest part of your hips. Check out the post 'A Guide to Measuring Your Full Hip Circumference: Poster Board' post from HandmadePhD for step-by-step instructions and a supply list.

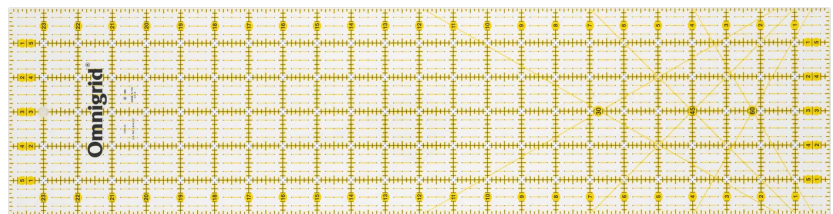
1.3 Rulers For Pattern Work

Figure 1.1: Westcott Beveled Ruler for Precision Measurement Markings



You'll need a 2-inch wide by 18-inch long ruler to draw straight lines and make accurate measurements (Figure 1.1).

Figure 1.2: Omnigrid Ruler with Clear Grid Lines for Drawing Long Straight Lines



A 24-inch quilting ruler or similar straight ruler is helpful for longer lines and lining up your pattern on fabric (Figure 1.2).

For curves, a pattern-drafting curve like the Dritz ruler helps redraw curved lines after adjusting your pattern (Figure 1.3).

For advanced pattern work, you can try a Stitch Buzz pattern ruler, which includes seam allowance guides for sizes such as 3/8 inch, 1/2 inch, 5/8 inch, and 1.5 cm (Figure 1.4).

1.4 Markers

Here are some markers you'll need:

- ▶ A fine lead erasable pencil for working on your pattern
- ▶ A colored pencil (red, orange, or green) with a sharp point
- ▶ Fabric chalk (rolling markers or sharpened chalk pencils)
- ▶ Permanent markers in at least two colors

1.5 Safety Pins

If you don't want to use hook-and-loop tape, you'll need sturdy safety pins to close the waistband and attach pant legs. Look for large, strong pins—quilt basting pins may not be strong enough.

1.6 Laser

A self-leveling laser is an essential tool for this project. A simple construction-grade laser will help ensure accuracy in your measurements. If you don't own one, it's worth investing in or borrowing, as it will be useful for various tasks, such as leveling skirt hems.

Laser levels are available online or in home improvement stores, and you might be able to borrow one from a local tool-lending library (Figure 1.5).

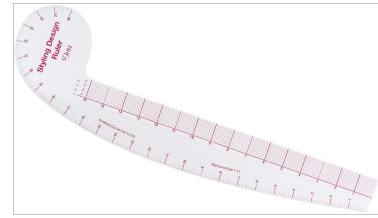


Figure 1.3: Dritz Ruler for Drawing Curved Lines



Figure 1.4: Stitch Buzz Pattern Making Ruler for Drawing Curved Lines



Figure 1.5: Bosch GLL30 Self-Leveling Cross-Line Laser Level

1.7 Camera

Taking pictures of yourself is better than using a mirror when checking the fit of your pants. Photos make it easier to spot problems and track your progress. You can use your phone or any camera that you have.

1.8 Tripod or Other Device to Mount Camera

A tripod is the easiest way to take pictures of your fit. If you don't have one, you can use a sturdy surface like a table to hold your camera.

1.9 Optional Tools

- ▶ Pattern notcher for marking pattern pieces
- ▶ Transfer paper for copying markings onto fabric

1.10 Patterns

This guide uses three specific pant patterns that have these features: separate front and back pieces, grainlines parallel to the fabric, and curved side seams. This guide doesn't cover patterns with no side seams, straight side seams, or grainlines that aren't parallel.

- ▶ Elbe Textiles Fremantle Pants
- ▶ Stokx Patterns Square Pants
- ▶ Itch to Stitch Upland Trousers



**Elbe Textiles
Fremantle Pants**

**Stokx Patterns
Square Pants**

**Itch to Stitch
Upland Trousers**

2.1 Pattern Paper

You'll need a supply of large-format paper to trace your pattern. The paper should be at least as wide as your widest pattern piece, durable enough to handle frequent manipulation, and thin enough to allow tracing lines through it. There's no need to invest in specialized paper—here are a few options:

- ▶ Pacon Spectra ArtKraft Duo-Finish Paper
- ▶ Tracing Paper for Sewing Patterns
- ▶ Wide-format printer paper
- ▶ Mood Exclusive Dotted Pattern Paper



Pacon
Easily acquired.



Tracing Paper
Less durable.



Mood Exclusive
My preference.

2.2 Fabric

Use unbleached cotton muslin, 7–8 oz weight, for your project. You don't need to wash the fabric first, but press it to remove wrinkles. To check the grainline, pull a thread or tear the fabric from selvage to selvage. This ensures the grain is straight.



Seamwork, 'How to Get Your Fabric On-Grain', July 25, 2022

2.3 Notions

While your pattern will specify the notions needed for the final version of your project, you'll need the following supplies specifically for the fitting process:

Interfacing

You'll need a medium-weight iron-on, non-woven interfacing for constructing an interim waistband during fitting. Choose a weight that complements your fabric. BanRol is also a good choice to stabilize the waistband, provided the waistband isn't curved.

Hook and Loop Tape

For the waistband fitting, you may opt to use hook and loop tape. Apply the loop side along the bottom edge of your waistband, then place short strips of the hook side at 3–5 points around the first pant leg during fitting. Decide if this method suits your approach after reviewing the entire process below. Use 1/2 or 3/4 inch wide tape; both are easily accessible and will work for most projects. You'll need your waist circumference plus 12 inches of loop tape and approximately 28 inches of hook tape.

Elastic

If the fitting process calls for an elastic waistband, you'll need flat elastic of a suitable width. Use the width recommended in your pattern.

Zipper

For the fitting muslin, we'll simplify by installing a basic zipper in the center front seam, instead of constructing a zipper fly. If you're working on the Stokx Square Pants or Itch to Stitch Upland Trousers, you'll need at least two 8-inch zippers.

Initial Steps

3

Measuring

3.1 Waist

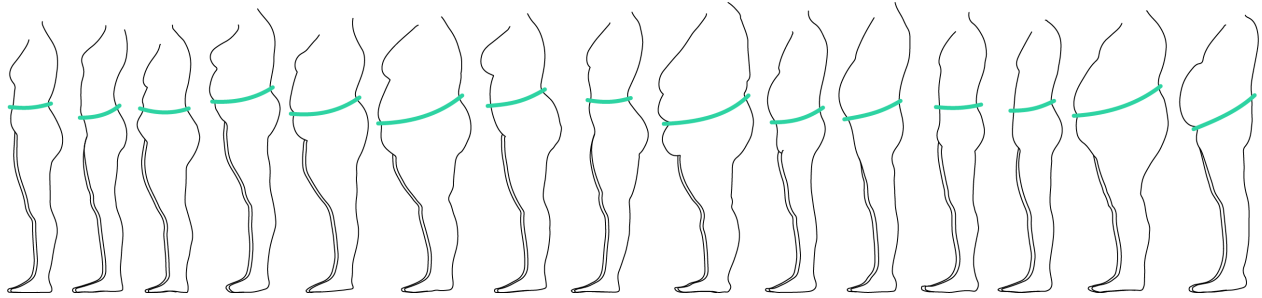


Figure 3.1: How to Measure Waist Circumference with a Flexible Tape Measure

1: Chapter A (Table of Personal Measurements) on page 90.

Wrap a flexible tape measure around your body where you think your waistband will sit (Figure 3.1). If you want the waistband to sit at an angle, let the tape follow that line. Don't worry about being perfect now. You'll fine-tune this later with a fitting waistband. Write down this measurement under 'Waist (Measured)' ¹

3.2 Hips

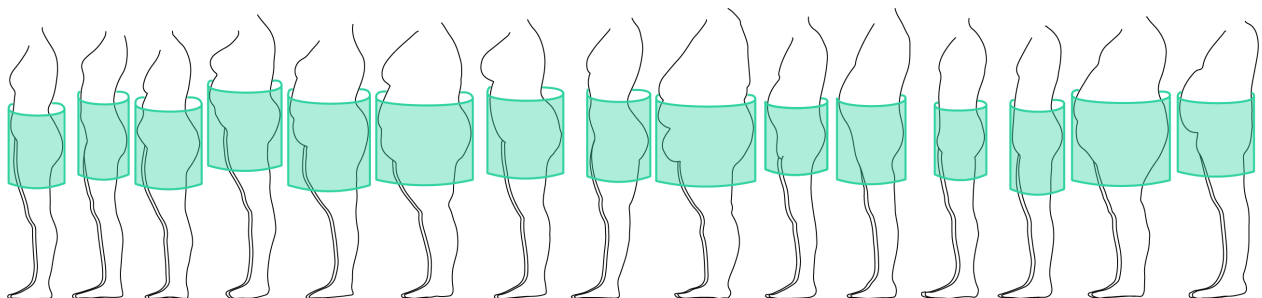


Figure 3.2: How to Measure Torso Circumference with a Poster Board Measuring Band

2: Chapter A (Table of Personal Measurements) on page 90.

You will have better success in selecting a size and fewer fitting chores if you utilize the largest circumference (see Section 1.2 (Circumference Measurement Tool) on page 2) of your lower torso as your 'hip' measurement (Figure 3.2). Record this measurement under 'Hip / Lower Torso Circumference (Measured)' ²

3.3 Knee Point

Wear a pair of pants that are similar to the style you're making. Make sure the hem length matches what you want for your new pants. Have a helper find the middle of your knee by gently pressing a blunt object (like a pencil eraser or knitting needle) against the front of your knee until you feel it. Ask your helper to mark this spot with chalk. Measure from the bottom hem of your pants to the chalk mark (Figure 3.3). Write this number down under 'Distance from Knee Point to Hem (Measured)'.³

3: Chapter A (Table of Personal Measurements) on page 90.

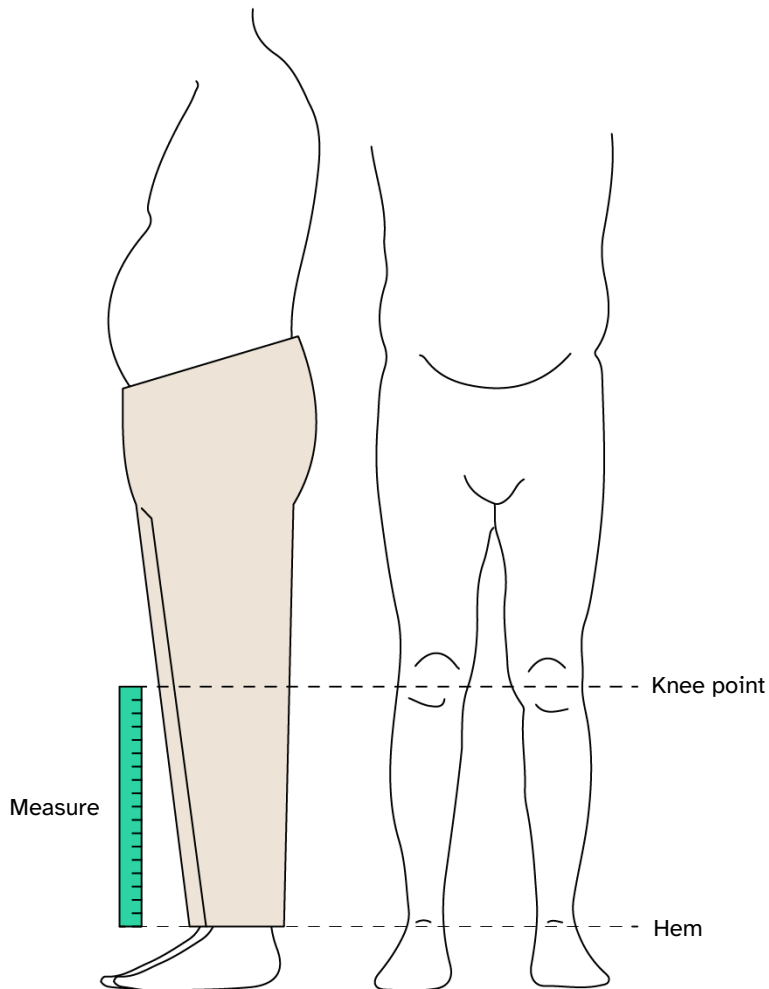


Figure 3.3: How to Measure Knee Point

4

Fitting Waistband

The waistband is arguably the most important element of your pants. A well-fitted waistband is comfortable, holds the pants in place, and stays in the same spot every time you wear it. If you reflect on the number of times you have deemed a pair of pants uncomfortable, you will probably realize that many of the issues started with the waistband: too loose, too tight, too high, too low, too straight, too curved, too wide, too narrow, too rigid, too soft. A telltale waistband issue is the number of times a day you fidget with your waistband. You might pluck it away from your belly, pull it up in the back, or straighten a band that has folded over.

Making and adjusting a standalone waistband can solve many of these problems. Start with a waistband similar to the one in your pattern. Later, you can try different widths, shapes (straight vs. curved), or constructions (like two-piece or fold-over styles). As you continue to explore pant fitting, you will likely create a selection of waistbands that can be used over and over again.

The value of time spent on the construction and evaluation of a fitting waistband cannot be overstated. Focus on what feels good for your body, not on fashion trends or what the pattern suggests. Let your body be the guide.

Use a firm muslin or other similar woven fabric to construct the fitting waistband. You do not want to risk stretching as you handle and use it.

4.1 Waistband Construction

You can make either a fixed-length or an elastic waistband. The choice you choose will be partially related to the style of pants you are making, but may also be influenced by your personal preferences. In general, a fixed length (non-stretch) waistband is recommended for fitting most pants. You can easily switch to an elastic waistband when you construct the final garment.

Fixed Length

Start by cutting a piece of fabric that is six or so inches longer than the waist circumference (Figure 4.1). For instructions, see Section 3.1 (Waist) on page 8. For measurement, see Chapter A (Table of Personal Measurements) on page 90, and the width specified in the margin table (Table 4.1).

Table 4.1: Waistband Width

Pattern	in.	cm
Fremantle	4-1/3	11
Square	4-3/4	12
Upland	4-1/2	11-1/2

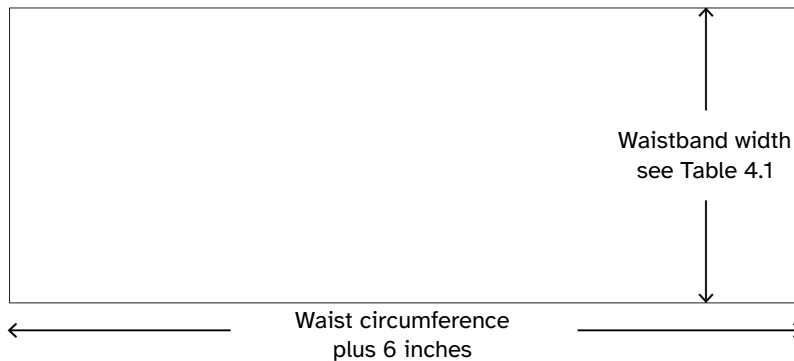


Figure 4.1: Cut Out Fixed Length Waistband

Apply interfacing to the entire strip (Figure 4.2).

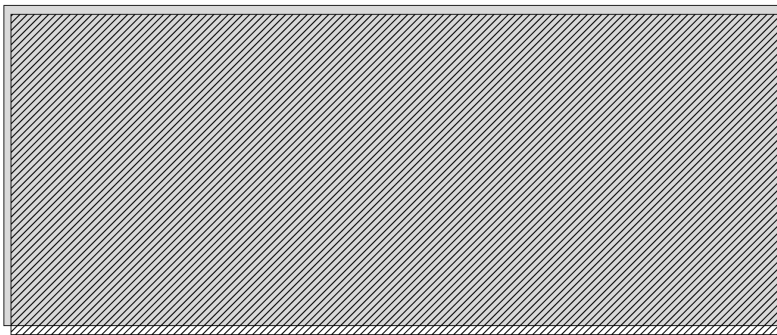


Figure 4.2: Interface Fixed Length Waistband

Fold the fabric in half, the right sides together (Figure 4.3).

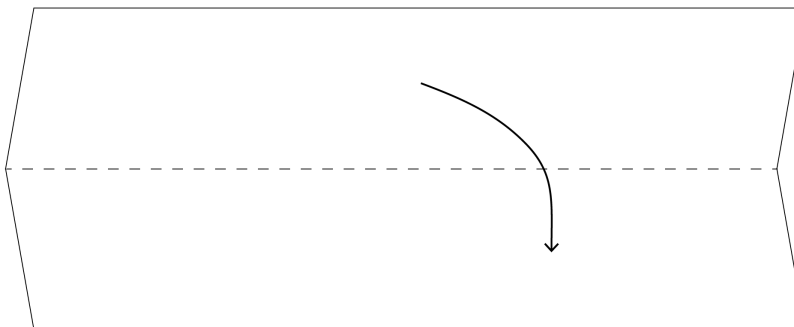


Figure 4.3: Fold Fixed Length Waistband in Half

Sew a 1/4-inch seam along the short ends (Figure 4.4).



Figure 4.4: Sew Short Edges of Fixed Length Waistband

Table 4.2: Pattern Seam Allowance

Pattern	in.	cm
Fremantle	3/8	1
Square	1/2	1-1/4
Upland	1/2	1-1/4

Turn the waistband right side out. Press it neatly in half. Sew a line of stitching along the open edge at the seam allowance in your pattern (Figure 4.5). Refer to Table 4.2 for specific values.



Figure 4.5: Turn and Stitch Bottom of Fixed Length Waistband

Find the middle of the waistband. Sew a contrasting line of stitching from the top to the bottom edge (Figure 4.6). You will later match this line with the center back of your pants.

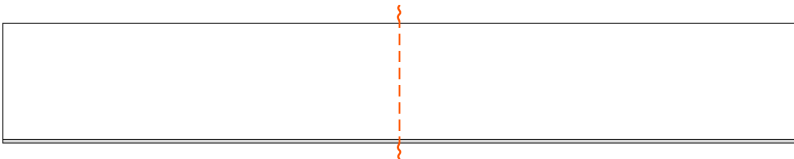


Figure 4.6: Stitch Center Back Guide on Fixed Length Waistband

Hook and Loop Application

If you are using the hook-and-loop method of fitting the leg to the waistband, sew loop tape inside the seam allowance. The top edge of the tape should line up with the stitching (Figure 4.7).

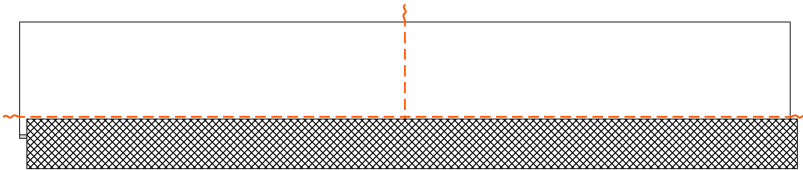


Figure 4.7: Attach Hook and Loop Tape to Bottom of the Fixed Length Waistband

You may need to trim some of the width of the tape to fit within the seam allowance (Figure 4.8). Note that if you are going to be using the hook-and-loop method for fitting a pair of elastic waist pants, the loop tape must be on the skin side of the waistband. That way, when you tuck the pant leg under the waistband, the hooks and

loops will be in contact. If you do not use the waistband for elastic waist pants, it is your preference to which side you apply the loop to.

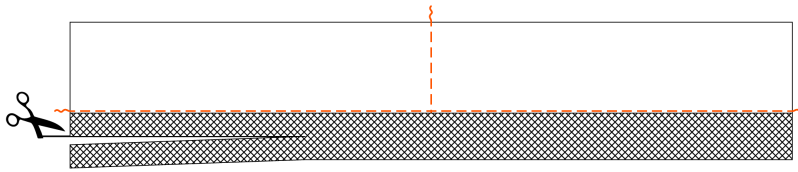


Figure 4.8: Trim Excess Tape from the Seam Allowance of the Fixed Length Waistband

Apply several rows of loop tape (4 inches long) at one end of the waistband at least on the top and bottom edges (Figure 4.9).

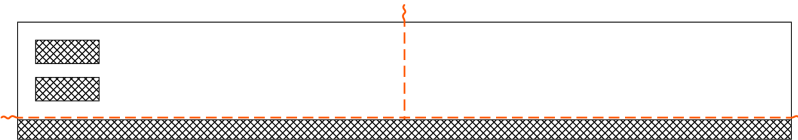


Figure 4.9: Attach Loop Tape to Fixed Length Waistband

Apply a similar pattern of hook tape to the other end of the waistband (Figure 4.10) so that these strips can be used to create an adjustable closure.

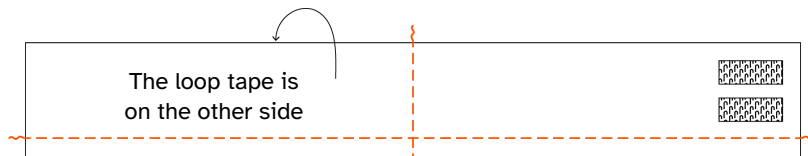


Figure 4.10: Attach Hook Tape to Fixed Length Waistband

The finished waistband should look like this (Figure 4.11):

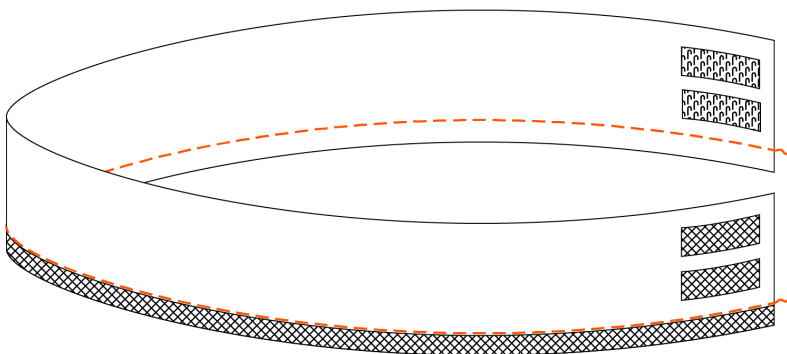


Figure 4.11: Completed Fixed Length Waistband

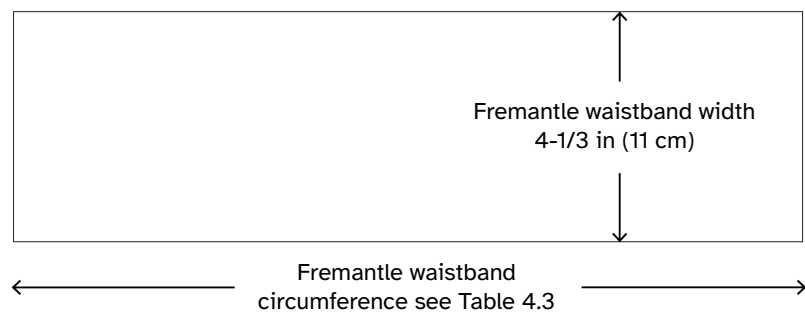
Table 4.3: Fremantle Waistband Length

Size	in.	cm
A	35	89
B	37	94
C	39	99
D	41	104
E	43	109
F	45	114.5
G	47	119.5
H	49	124.5
I	51	129.5
J	53	134.5
K	55	139.5
L	57	145
M	59	150
N	61	155
O	63	160

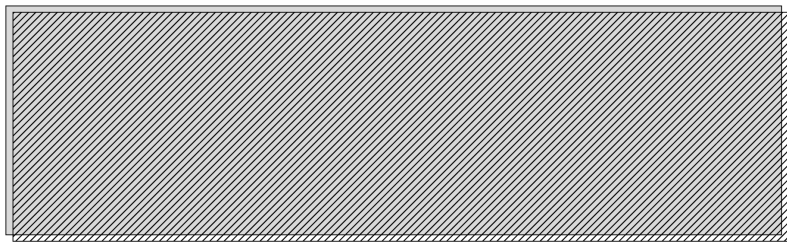
(Optional) Elastic Waistband

If you are going to make pants with elastic around the entire circumference of the waist, you can make a stand-alone waistband that mimics the one in your pattern.

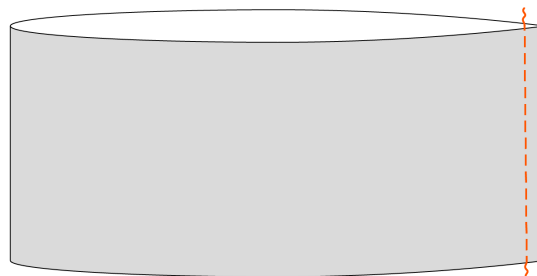
Start by cutting a piece of fabric 4-1/3 inches (11 cm) wide and the length specified in the margin table (Table 4.3). Don't be tempted to shorten the waistband. Always remember that an elastic waist has to be long enough to go over the widest part of your lower torso.

**Figure 4.12:** Cut Out Elastic Waistband

Apply interfacing to the entire piece (Figure 4.13). If you are using lighter fabric, make sure that you use lighter interfacing.

**Figure 4.13:** Interface Elastic Waistband

Sew the short ends with a 3/8-inch (1 cm) seam allowance. Press the seam open (Figure 4.14).

**Figure 4.14:** Sew Short Ends Together of Elastic Waistband

Fold the waistband so that the wrong sides face one another (Figure 4.15).

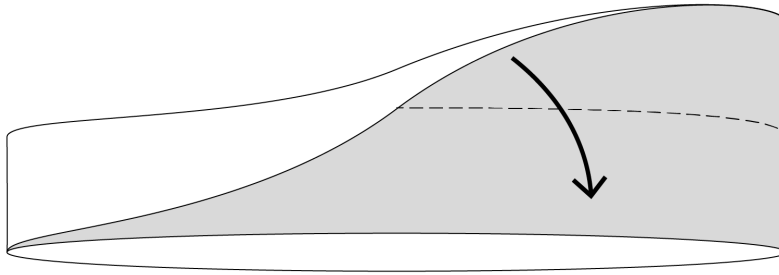


Figure 4.15: Fold Elastic Waistband in Half

Stitch with a contrasting thread at $\frac{3}{8}$ in (1 cm) from the bottom edge. Leave a 2 to 3 inch gap in the seam allowance near the joining seam (Figure 4.16).

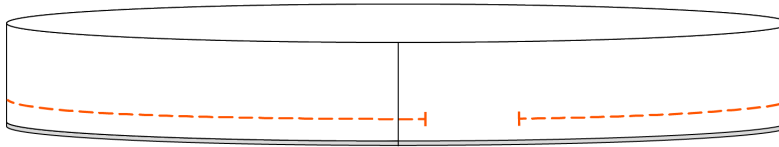


Figure 4.16: Sew Bottom of Elastic Waistband

Fold the waistband in half and mark the halfway point from the joining seam using a permanent marker (Figure 4.17).

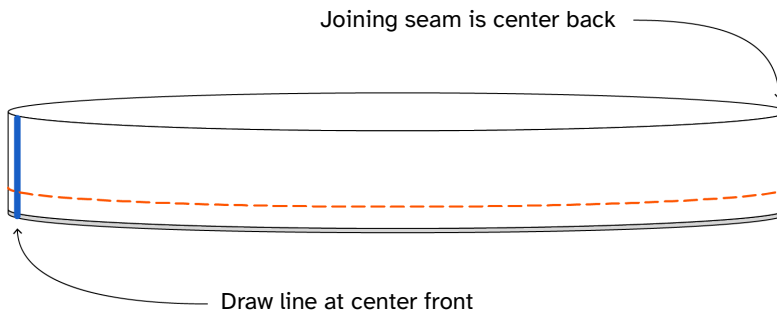


Figure 4.17: Mark Center Front on Elastic Waistband

Cut a piece of elastic several inches longer than is called for in your pattern (Table 4.4). Thread it into the waistband through the gap you have left in the seam allowance. Try on and wear the waistband. Adjust the elastic for length until it is comfortable. When you have found a good length for the elastic, pull the ends out of the waistband casing and sew across the elastic in a box, and cut off the ends. Let the elastic relax into the waistband, and then finish the seam allowance line. Confirm that the fabric is evenly distributed along the waistband.

Stitch a line from the top to the bottom edge of the waistband right next to the joining seam, using a fairly long stitch length. Make another vertical line of stitching at the marked halfway point (Figure 4.18).

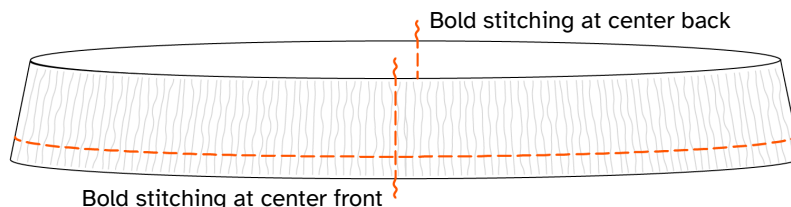


Figure 4.18: Completed Elastic Waistband

Table 4.4: Fremantle Elastic Length

Size	in.	cm
A	28	71
B	30	76
C	32	81
D	34	86
E	36	91
F	38	96
G	40	101
H	42	106
I	44	111
J	46	116
K	48	121
L	50	126
M	52	131
N	54	136
O	56	141

Remember that you are in charge. Try first with the recommended fabric and elastic width in the pattern. Changes in elastic width can have a big impact on comfort, so feel free to make additional waistbands. You will have to select finished waistband widths that ‘match’ available elastics. Generally, there should be 1/8 inch of ease, so the finished waistband should be two times the elastic width plus 1/4 inch. Add two times the seam allowance to determine the width of the fabric to cut.

Note that it seems like an elastic waistband will make your fitting experience easier. However, elastic waistbands tend to move a lot when they are not attached to the legs of the pants. You may find it easier to fit with a fixed length waistband as described above.

4.2 Finding Your Preferred Waistband Length and Position

Wear the waistband against your body (not over clothing) for extended periods. Use the hook and loop tape or safety pins to adjust the circumference of the band. Experiment with the circumference as well as the position of the waistband at both center front and back. Be open-minded with this process. Your brain will tell you that some placements of the waistband are silly. Listen to your body and find what works for you. You are searching for a position that feels comfortable and stable – does not shift a lot with everyday movement, including standing, sitting, walking, picking up children, or pets.

When you have found a comfortable position for the waistband, take an informal picture or two to remind you of what position you found comfortable at center front and back. If you are using a fixed-length band, use a chalk pencil to mark the overlap at

the ends of the waistband so that you can easily reproduce the length.

At another time of day, and on another day entirely, put on the waistband and adjust the circumference using the chalk marks and/or your notes. Evaluate the fit and feel again.

Documenting Your Decisions

When you have identified a consistently comfortable position and length for the waistband, take good notes. You will need to record the closed circumference and, if possible, the vertical position of the waistband on your body at the center front and back. A measurement of the top of the waistband relative to the center of your belly button is usually sufficient. With a known circumference and that center front point, the waistband should fall to your preferred place at the back.

5

Selecting a Size

Start by selecting a size based on the pattern's size chart. Use the lower torso circumference you measured earlier as your 'hip' measurement. You may be tempted to go a step further and look at final waist measurements, but for this fitting method, there's no need to grade the pattern before starting.

Once you have selected your size, print out your selected size and cut out the pattern pieces.

Projector Sewing

Projectors are becoming increasingly popular. If you use a projector, you can either trace your pattern pieces onto paper, print your pattern as a PDF and assemble it, or send the pattern to a copy shop. This tutorial does not provide detailed instructions for making adjustments digitally.

Getting to Work

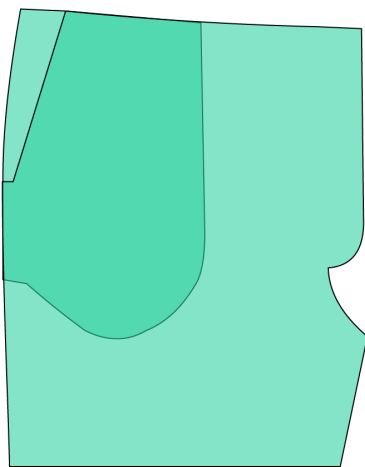
6

Prepare Your Pattern

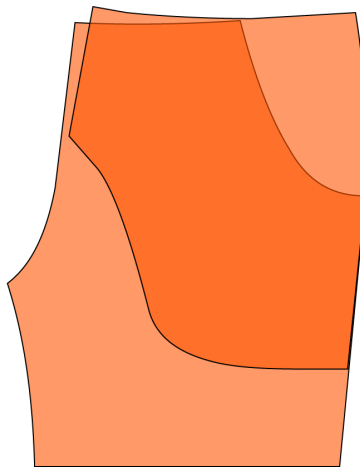
6.1 Trace Your Pattern

Start by tracing your pattern. Make sure to include all construction markings.

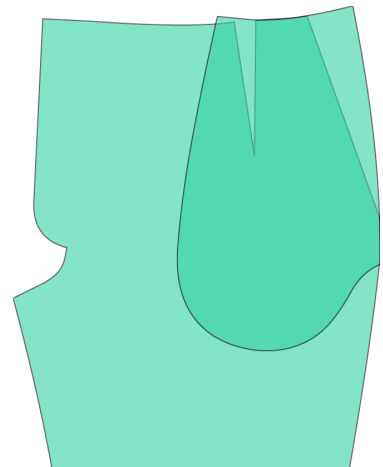
- ▶ For Elbe Textiles Fremantle and Itch to Stitch Upland, you can combine the front piece and the internal pocket to complete the side seam and part of the waistband.
- ▶ For Stokx Square, keep the front piece and the internal pocket separate. Together, these pieces create an invisible dart.



Elbe Textiles Fremantle front piece and pocket can be combined



Stokx Square front piece and pocket cannot be combined



Itch to Stitch Upland front piece and pocket can be combined

Figure 6.1: Guide to Completing Front Side Seam

6.2 Additions to Your Pattern

After tracing, draw your seam allowance and hem allowance on all pattern pieces. Finally, add the following markings.

Line That Bisects the Hem

Find the midpoint of the hem, not including the seam allowance. Draw a straight, vertical line from the midpoint up the length of the pant leg. Do this for both the front and back pieces (Figure 6.2).

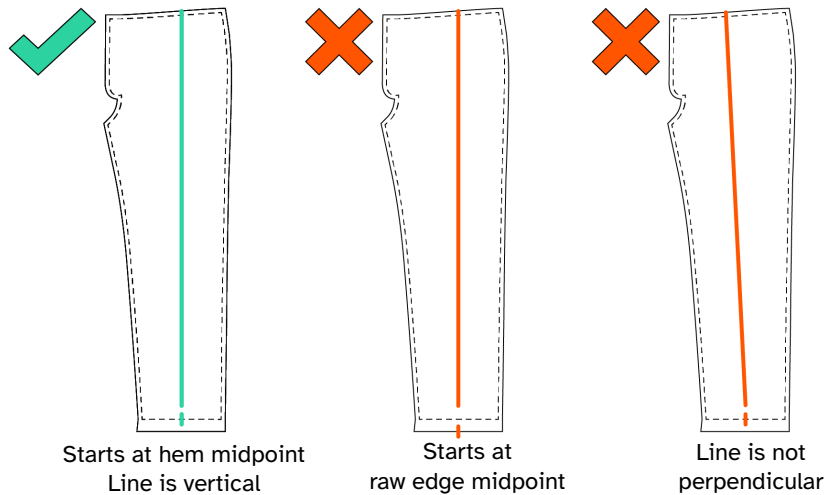


Figure 6.2: Drawing a Line that Bisects the Hem

Crotch Line

Draw a horizontal line from the crotch point (at the seam allowance) to the side seam. This line should be parallel to the hem (Figure 6.3).

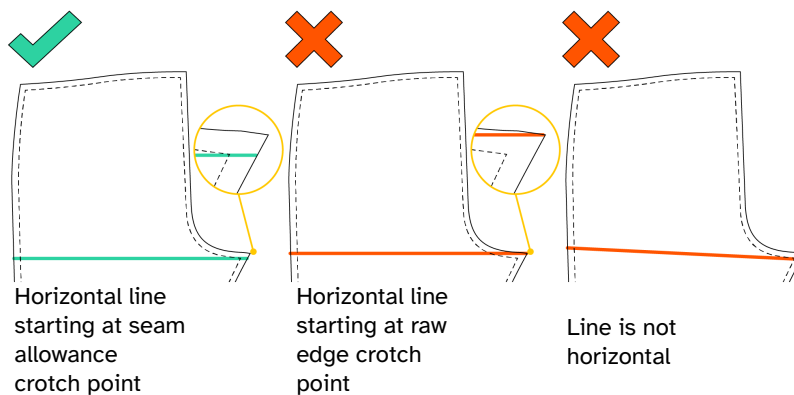
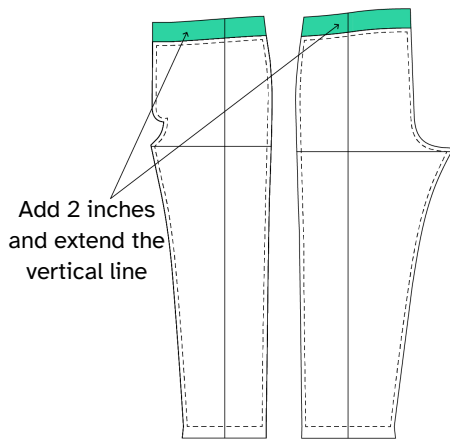
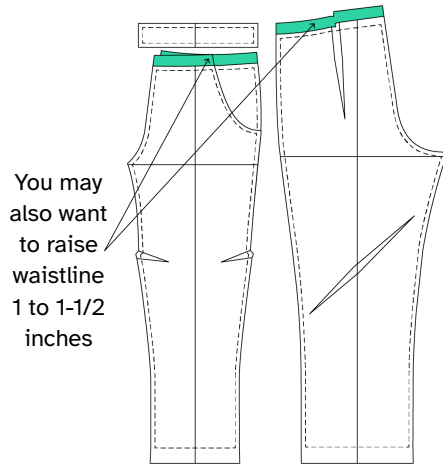


Figure 6.3: Drawing the Crotch Line



Add 2 inches
and extend the
vertical line

Figure 6.4: How to Extend Waist Height on Elbe Textiles Fremantle



You may
also want
to raise
waistline
1 to 1-1/2
inches

Figure 6.5: How to Extend Waist Height on Stokx Square

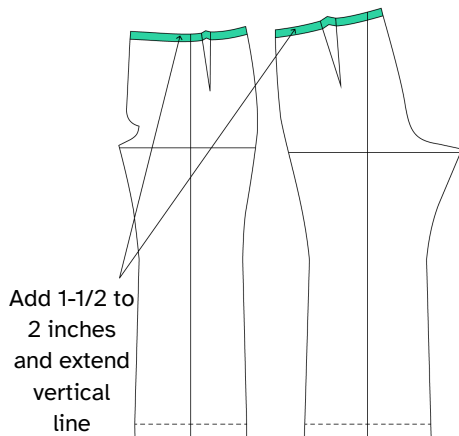
Extend Waist Height

Ensure that the original markings are traced. Depending on your pattern, you will extend the waistline differently. In general, extending the waistline will help ensure that you have the flexibility to place the waistband in the perfect place for you.

For the Elbe Textiles Fremantle Pants, extend the sides of the pants two inches at the waist (Figure 6.4). You will make this change on both the front and back pattern pieces.

Although the Stokx Square Pants have a moderate to high waist, you may still want to raise the waistline from 1 to 1-1/2 inches. You will need to raise the waistline on the 'Front', 'Back', and 'Under Pocket Lining' (Figure 6.5).

For the Itch to Stitch Upland Trousers, the waistband is already integrated into the front and back pattern pieces. However, you still may want to extend the waistline 1-1/2 to 2 inches, since the trousers only have a moderate rise (Figure 6.6).



Add 1-1/2 to
2 inches
and extend
vertical
line

Figure 6.6: How to Extend Waist Height on Itch to Stitch Upland

6.3 Checking Your Pattern

When you are working on your own with a new-to-you pattern, you should check the pattern for several things. With the bottom hems aligned, check:

- ▶ Do the side seams match from the hem to the knee?
- ▶ Are the top edges of the side seams level?
- ▶ Are the vertical lines that bisect the front and back hems parallel?

With the bottom hems of the inseams aligned, check:

- ▶ Do the inseams match from the hem to the knee?
- ▶ Is the bottom of the crotch curve level?
- ▶ Are the front and back inseams the same length?

Since you will be making pattern alterations as you progress through this project, it is a good idea to check your pattern and familiarize yourself with these steps. You will have to repeat them each time you make a change to the pattern. Also, confirm that the notches on the corresponding pattern pieces align. The exact location of most notches (except for pockets and fly) isn't critical, but they must align between pieces.



For more details on checking your pattern and understanding pant balance.



Threads Sewing, 'How to Walk the Seamline to Ensure Pattern Accuracy', February 12, 2021.

Using One Leg to Confirm the Waistband Position

Cut One Leg

7

The first sewing step is to cut, mark, and sew one leg of your pants. You will use this leg, along with your fitting waistband, to find the best waistband position for your pattern.

Use the pattern to cut out one front and one back leg piece. (These should form one leg when sewn together. If you make a mistake with unbleached cotton it won't matter, but get accustomed to thinking through which side is which). For this tutorial, use the right leg as your standard.

Make sure that the grainline marked on your pattern is aligned with the fabric grain.

You may leave off the hem allowance by folding it out of the way and cutting your fabric on the pattern's hemline. Refer to the instruction for the hem allowance if it is not marked on the physical pattern.

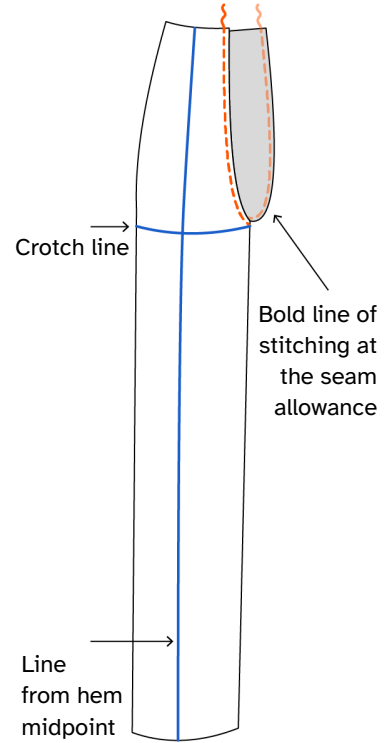


Figure 7.1: Marking One Leg Muslin

7.1 Mark the Muslin

Use a black or blue permanent marker to mark your fabric as follows (Figure 7.1):

- ▶ Mark the vertical line from the hem midpoint to the top of the pants as shown on the pattern.
- ▶ Mark the crotch line as shown on the pattern.

Sew a bold line of stitching (in a contrasting color or a heavier thread) at the seam allowance on the back and front rise and crotch curve (Figure 7.1).

7.2 Sew Up the Leg

Sew the front and back pieces together, following the seam allowance specified in your pattern. Match all notches carefully.

Add a bold line of stitching at the original waist stitching line (Figure 7.2). This line will help you align the waistband later.

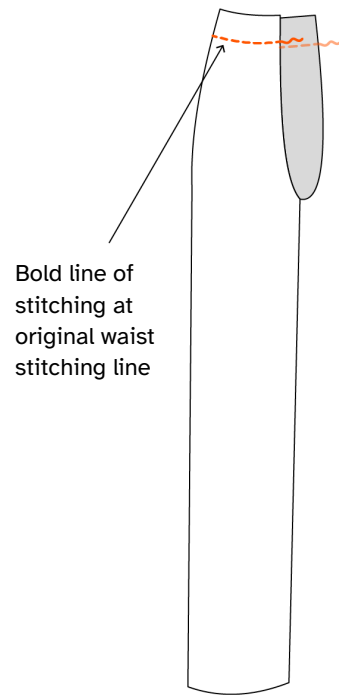


Figure 7.2: Marking Original Waistline on One Leg Muslin

7.3 Add Hook and Loop Tape, If Desired

If you are using hook and loop tape to adjust the waistband, you will need to add sections of hook tape that will adhere to the loop tape on the waistband. If your loop tape is on the outside of the standalone waistband, the hook tape needs to go on the inside of the pant leg. If the loop tape on the waistband is against the skin, the hook tape will need to be on the public side of the pants leg.

Add a 4 inch strip of hook tape at center front and back (you may need to trim to make it fit inside the seam allowance). Also, add 4 inch strips at the side seam and midway between the side and the center front and back section (5 strips total; Figure 7.3).

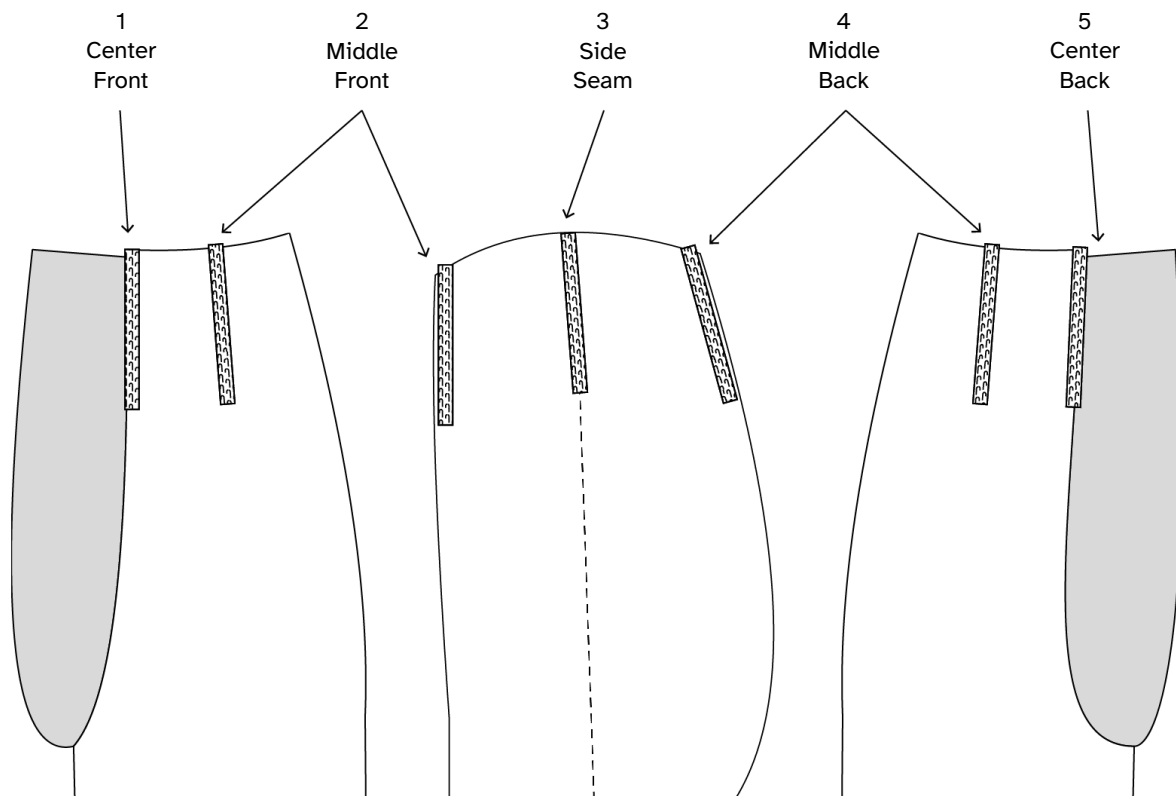


Figure 7.3: Hook and Loop Tape Placement on One Leg Muslin

Determine Waistband Position

8

Put on your waistband using the notes you had previously made. Ensure that it is sitting where you want it to. Slide the pant leg on to your right leg. Pin or stick the leg onto the waistband at center back, lining up the midpoint of the back waistband with the back seam allowance. Wrap the waistband to the front, lining up the midpoint of the center waistband with the front seam allowance. If you are not making elastic waist pants, you can slip the pant leg behind the waistband or let it cover the waistband. On elastic waist pants, the leg will have to sit behind the waistband.

If you are shorter, the bottom of the pant leg might rest on your foot or drag on the floor, which will affect the way the pant drapes and fits. Carefully trim the fabric at the bottom of the pant leg so it no longer drags. Make sure to cut parallel to the hemline. Keep the fabric you remove; you'll measure it later to adjust the final length of the pants.

Once the waistband is attached to the pant leg, begin to refine the fit. You are looking for a waistband placement that achieves several key goals. (Figure 8.1):

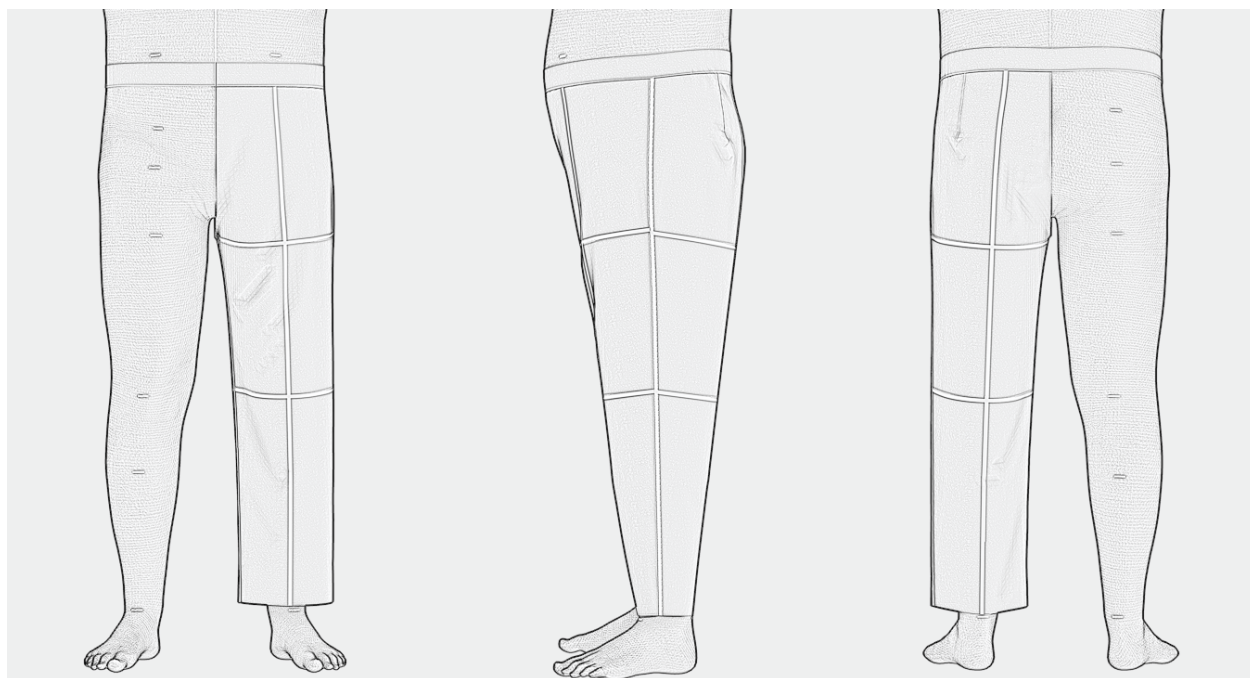


Figure 8.1: Ideal Draping of One-Leg Muslin with a Fixed Waistband

- ▶ The center front and back seams should be vertical and aligned with your body's midline (Figure 8.2, Figure 8.3).
- ▶ Appropriate (for you) ease in the crotch front and back. You can consult the pattern photos for an idea of what the designer had in mind, but ultimately, it is your preferences that count (Figure 8.4, Figure 8.5).
- ▶ Minimal to no gaping or pulling in the front and back rise (Figure 8.6, Figure 8.7, Figure 8.8, Figure 8.9).
- ▶ Side seam hangs straight from the waistline to the crotch line – does not angle to the front or the back (Figure 8.10).
- ▶ Crotch line is level – does not tip up or down at the side seam (Figure 8.11, Figure 8.12).



**J. Stern Designs,
'A Separate
Fitting Waistband
Makes Pants
Fitting Easier',
June 20, 2023.**

Once you have found a starting position that meets these goals, use the hook-and-loop tape or many safety pins to secure the waistband to the leg. Wear the waistband and pant leg together for an extended period. Move around in it—sit, squat, walk, take long steps, or even dance. Pay close attention to how it feels and how the fabric moves. Adjust the waistband position as needed to improve both comfort and fit.

Repeat this process on another day to confirm the fit. A second session will help ensure that your adjustments are consistent and that the placement feels right over time.

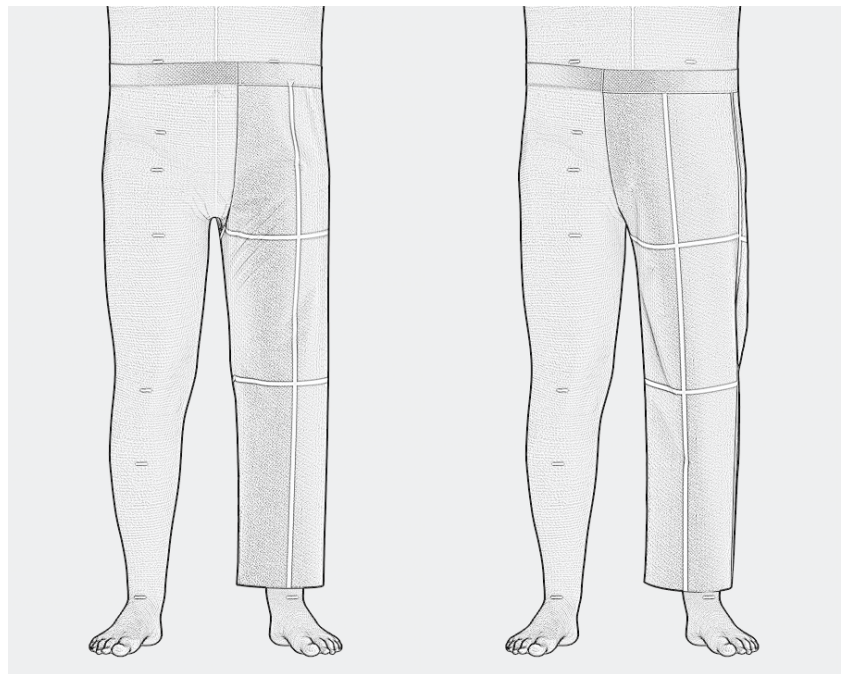


Figure 8.2: Center Front of the One Leg Muslin and Waistband Aren't Aligned. Left: Center Front Is Too Far to the Side and Does Not Reach the Midline. Right: Center Front Goes Past the Midline.

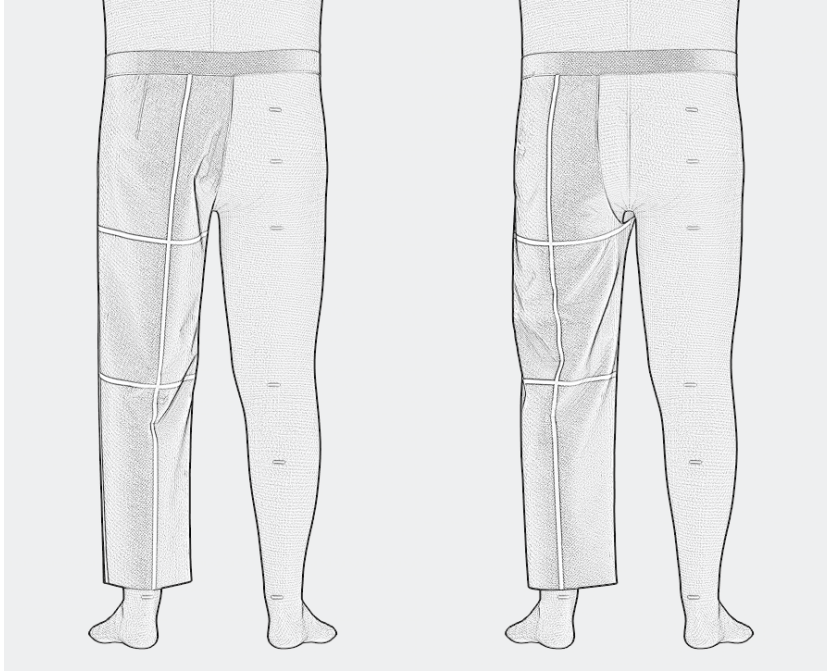


Figure 8.3: Center Back of the One Leg Muslin and Waistband Aren't Aligned. Left: Center Goes Past Midline. Right: Center Back Is Too Far to the Side and Does Not Reach the Midline.

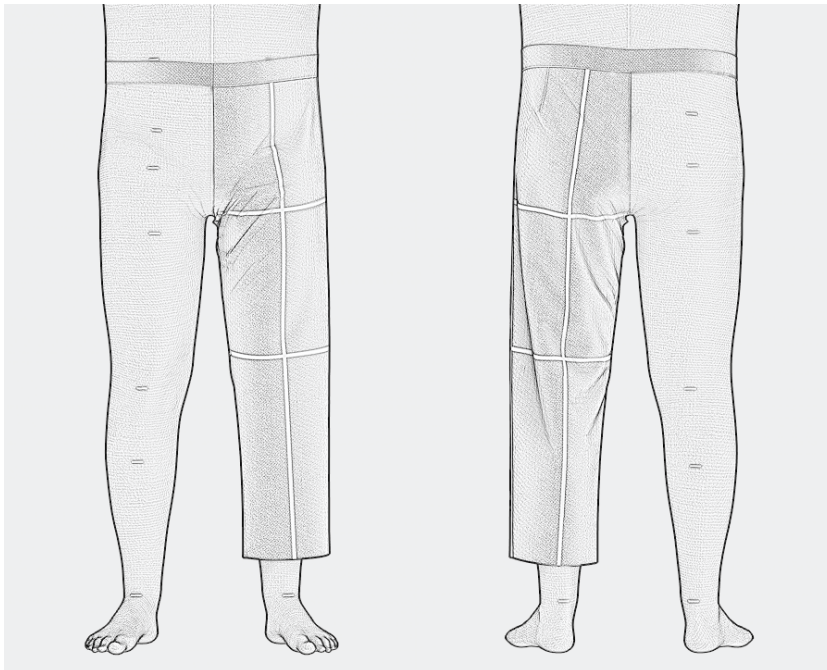


Figure 8.4: Bottom of the Crotch Curve is Too Close To the Body

Figure 8.5: Bottom of the Crotch Curve is Too Far Away From the Body

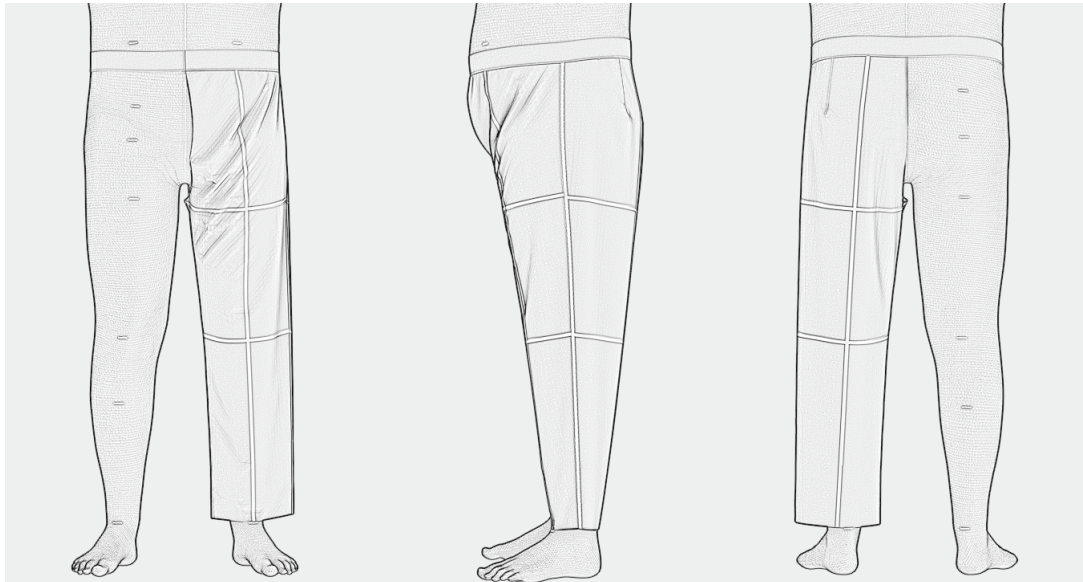
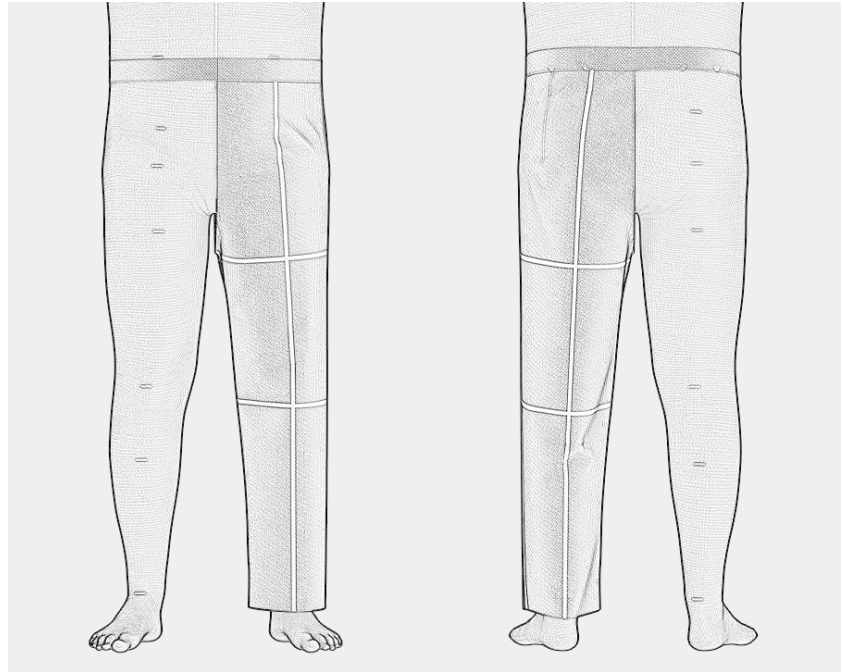


Figure 8.6: Center Front of the One Leg Muslin Is Not Pulled Up Enough

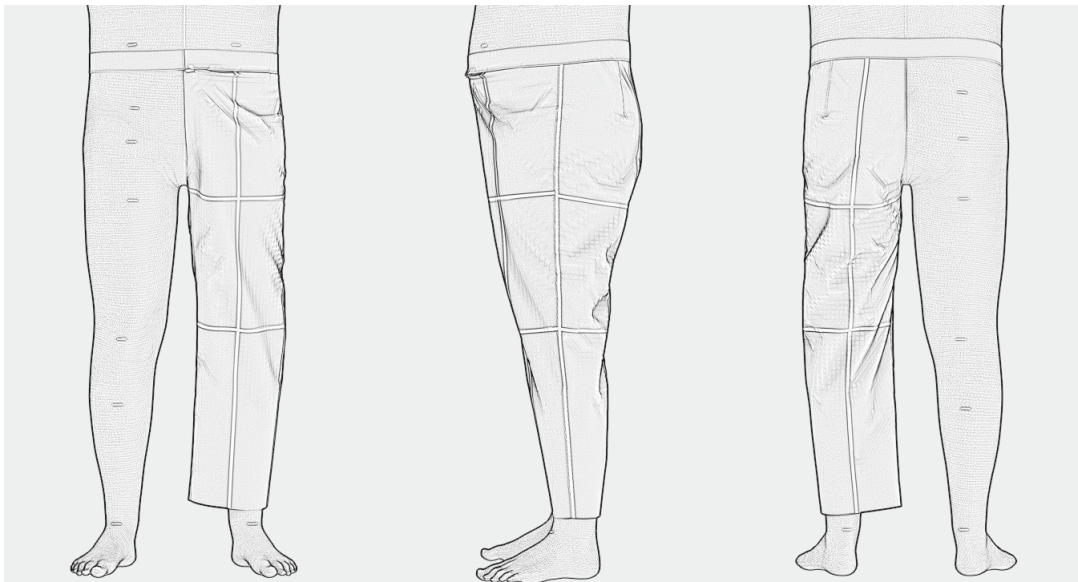


Figure 8.7: Center Front of the One Leg Muslin Is Pulled Up Too Much

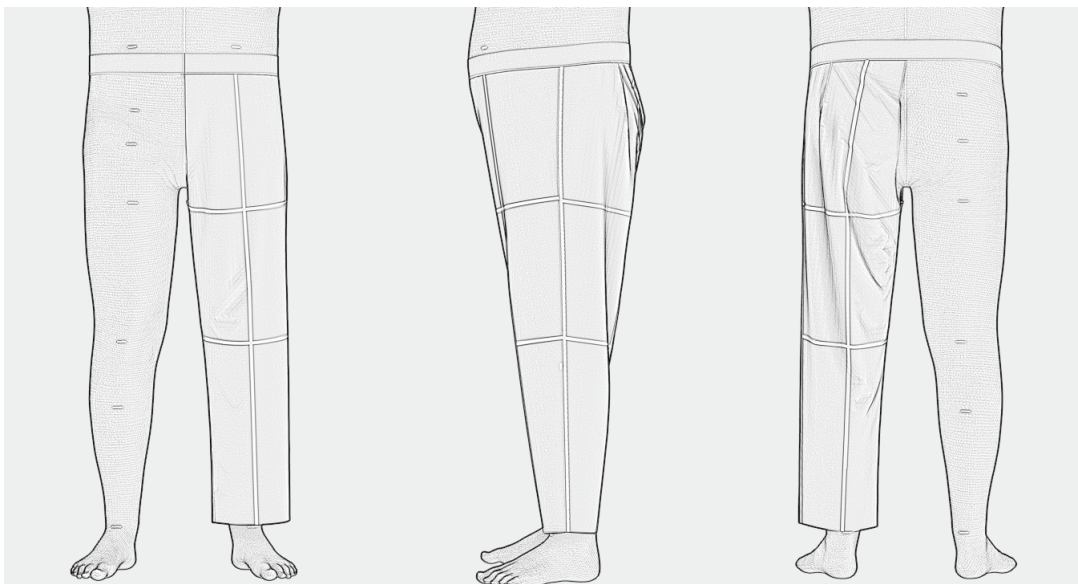


Figure 8.8: Center Back of the One Leg Muslin Is Not Pulled Up Enough

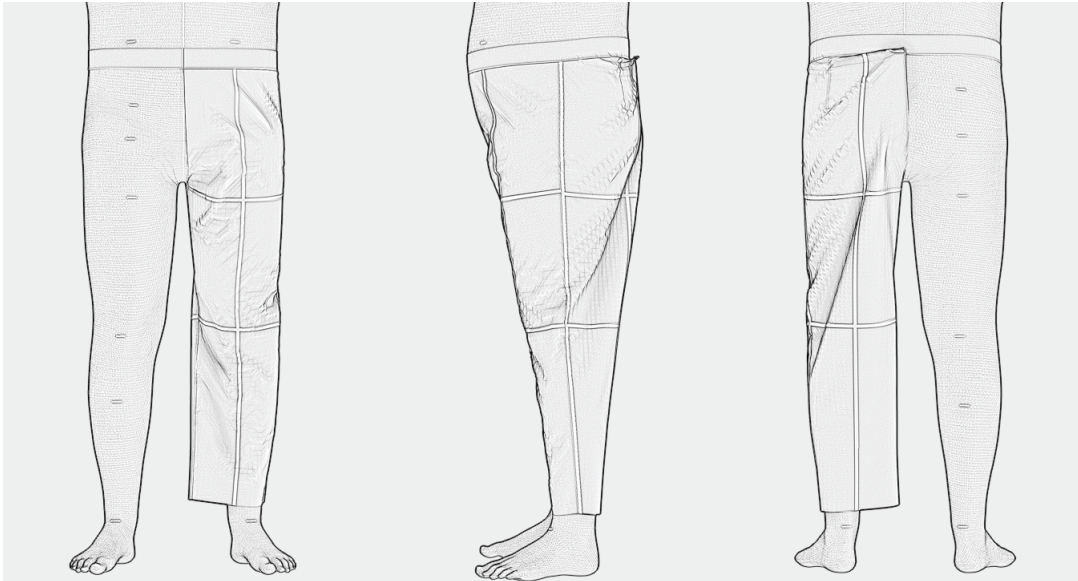


Figure 8.9: Center Back of the One Leg Muslin Is Pulled Up Too Much

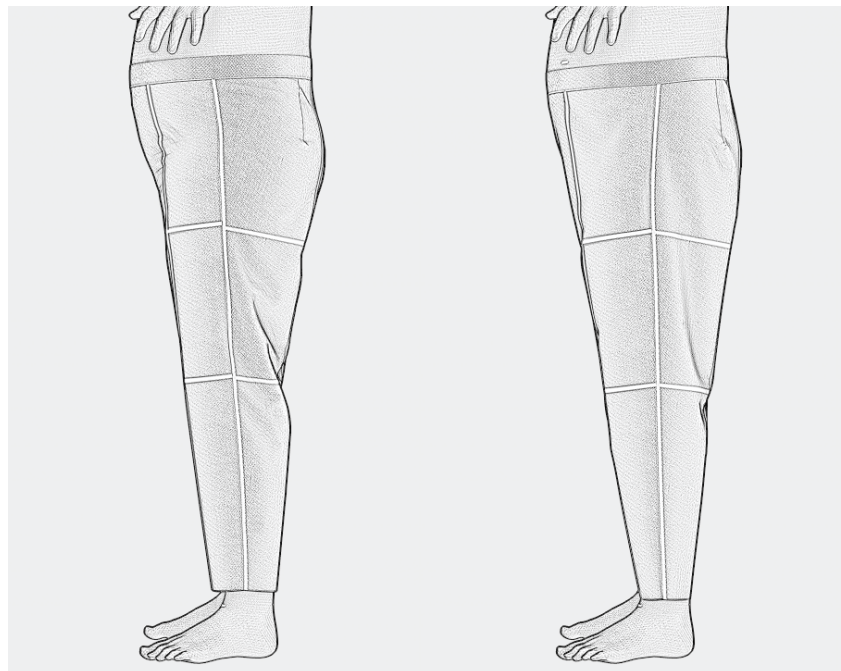


Figure 8.10: Side Seam of the One Leg Muslin Is Not Vertical

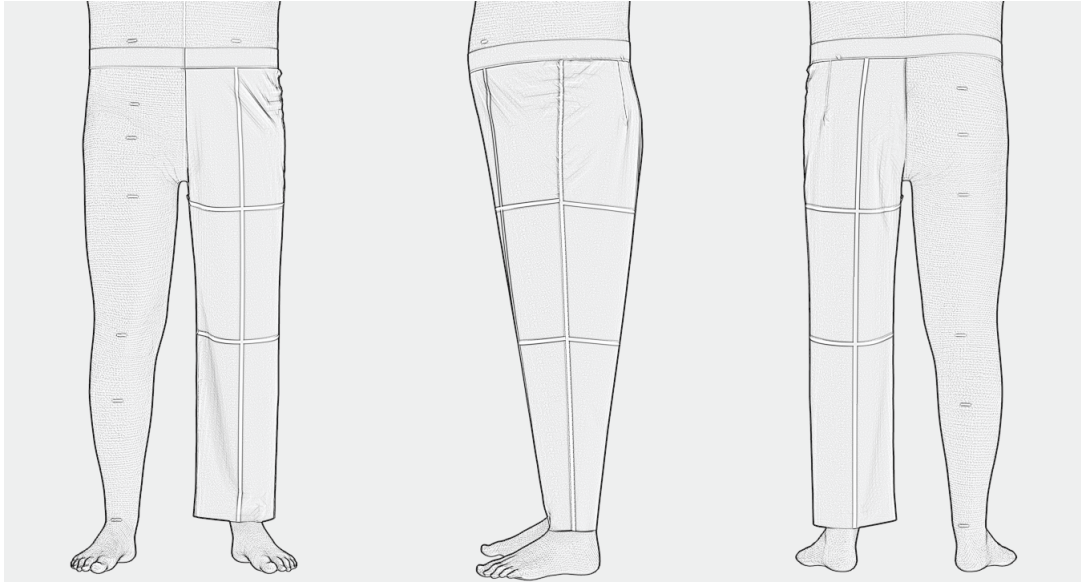


Figure 8.11: Side of the One Leg Muslin Is Not Pulled Up Enough

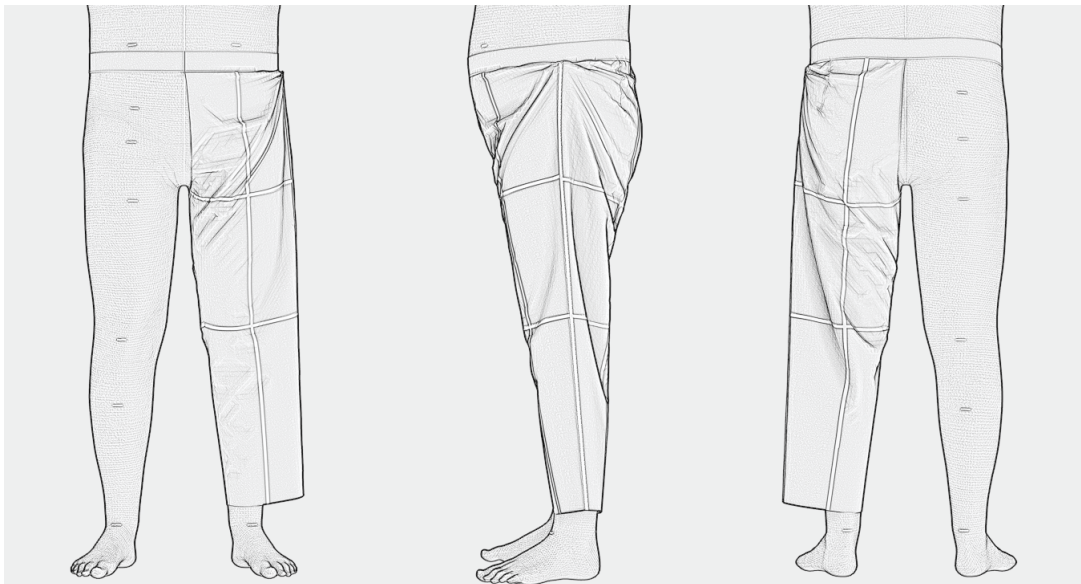


Figure 8.12: Center Back of the One Leg Muslin is Pulled Up Too Much

9

Adjustment of Waist Circumference on Leg

As you decide on the position of your waistband on the pattern, you might also need to adjust the waist area of the pants. If you are making elastic waist pants, you can likely skip this step. For non-elastic waistbands, evaluate where there is too much or too little pant fabric at the waistband.

If there is too much fabric, you will need to reduce it. This can be done by adding to existing darts, creating new darts, or removing fabric along the outseam (Figure 9.1).

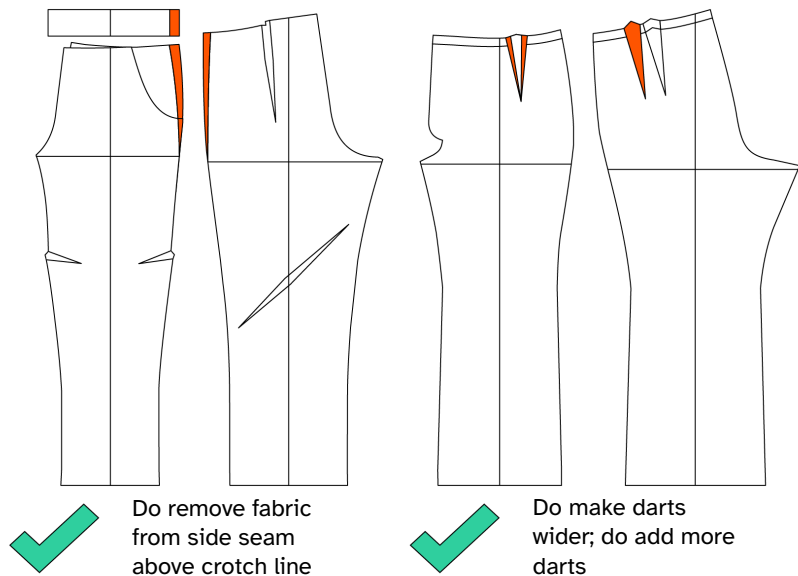


Figure 9.1: Dos for Reducing Waist-line Circumference

As you experiment with these changes, make sure that you do not change the relationship/position of the waistband on the leg (Figure 9.2). Pin out and mark your desired changes on your muslin.

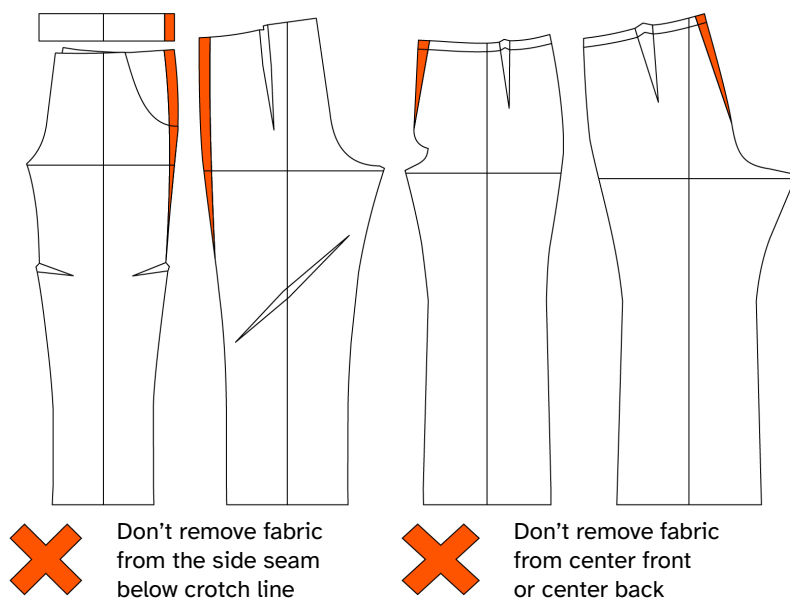


Figure 9.2: Don'ts for Reducing Waistline Circumference

If there is too little fabric at the point where the waistband attaches, open the outseam down to the horizontal crotch line, but no further. Ensure that the center front and center back seams remain vertical and aligned with the center of your body. Measure the gap created at the outseam where the waistband will be attached (Figure 9.3).

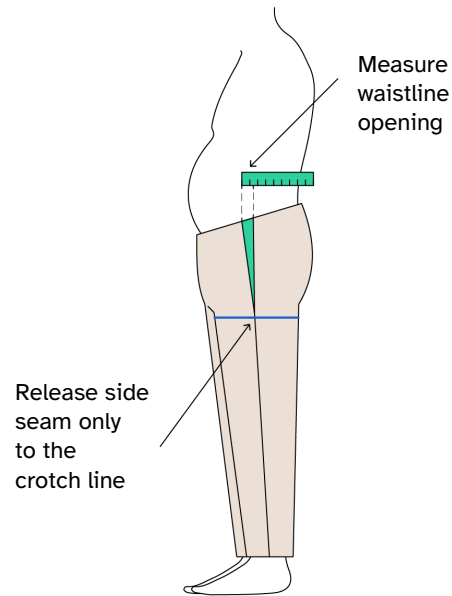


Figure 9.3: Measuring Increased Waist Circumference at the Side Seam

You can also reduce the size of the darts or remove the darts entirely to increase the overall waistband circumference (Figure 9.4).

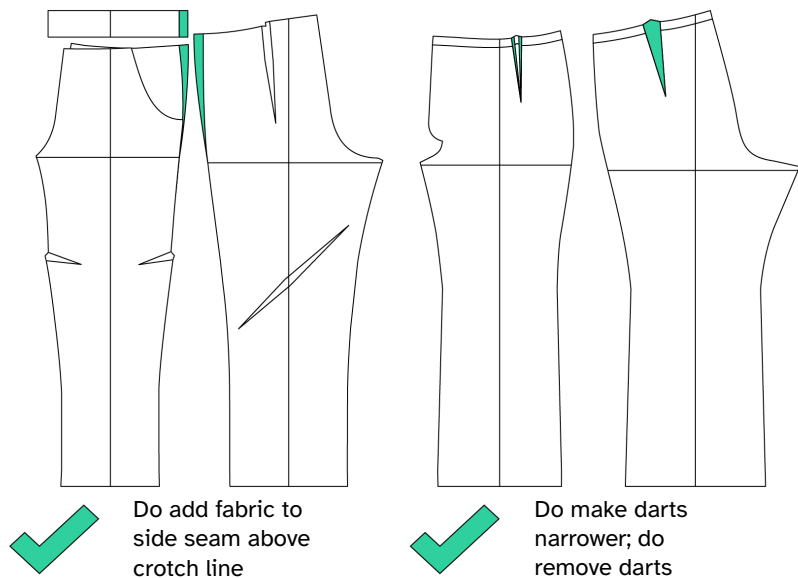


Figure 9.4: Dos for Increasing Waist Circumference

However, avoid making changes to the side seam below the crotch line or making alterations along the center front and center back seams (Figure 9.5).

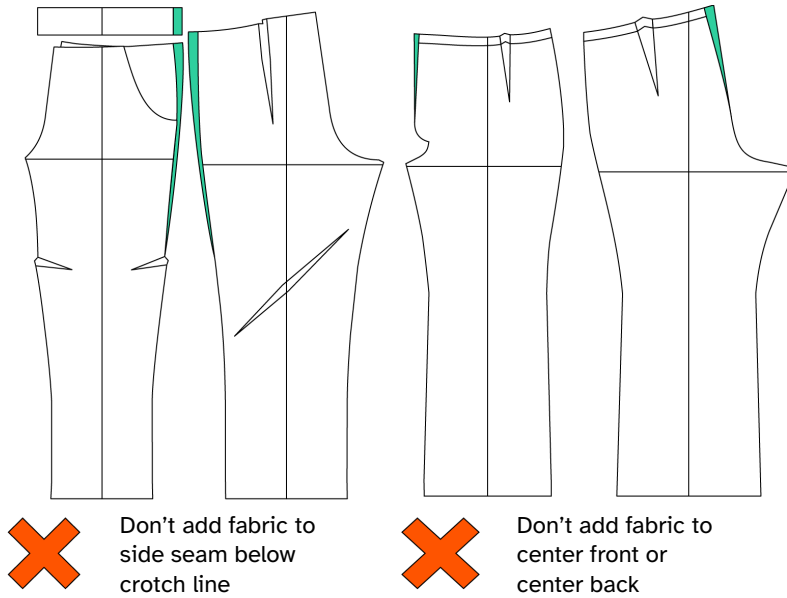


Figure 9.5: Don'ts for Increasing Waist Circumference

10

Verifying Leg Length and Knee Point

If you are taller or shorter than the pattern was designed for, this is the time to adjust the hem to approximate your final pant length.

If you are tall, approximate how much you need to add to achieve your desired hem position.

If you are short, measure the fabric that you have removed to let the hem sit where you like it.

This is also a good opportunity to check and adjust your knee point measurement from Section 3.3 (Knee Point) on page 9. On your one-leg muslin, measure up from the hem and mark a dot at the center of the front and back legs. Check if this dot is roughly at the center of your knee. If it isn't, measure how far the knee point needs to shift up or down to align properly.

Helpful Aside

For the Square pants, your knee should align with the front dart points and the widest part of the back dart.

First Two-Leg Muslin

11

Pattern Work

You can work directly on your original traced pattern or create a new tracing, including the extra height that you added at the waist, for this step. The following instructions assume that you are creating a new tracing.

11.1 Transferring Fitting Information to Your Pattern

Once you've determined the waistband position on the pant leg, carefully transfer this information to your pattern.

Marking Waistband Position

There are several ways to mark the waistband position on your muslin. The simplest method is to trace along the bottom of the waistband onto the pant leg using a pencil or marker (Figure 11.1).

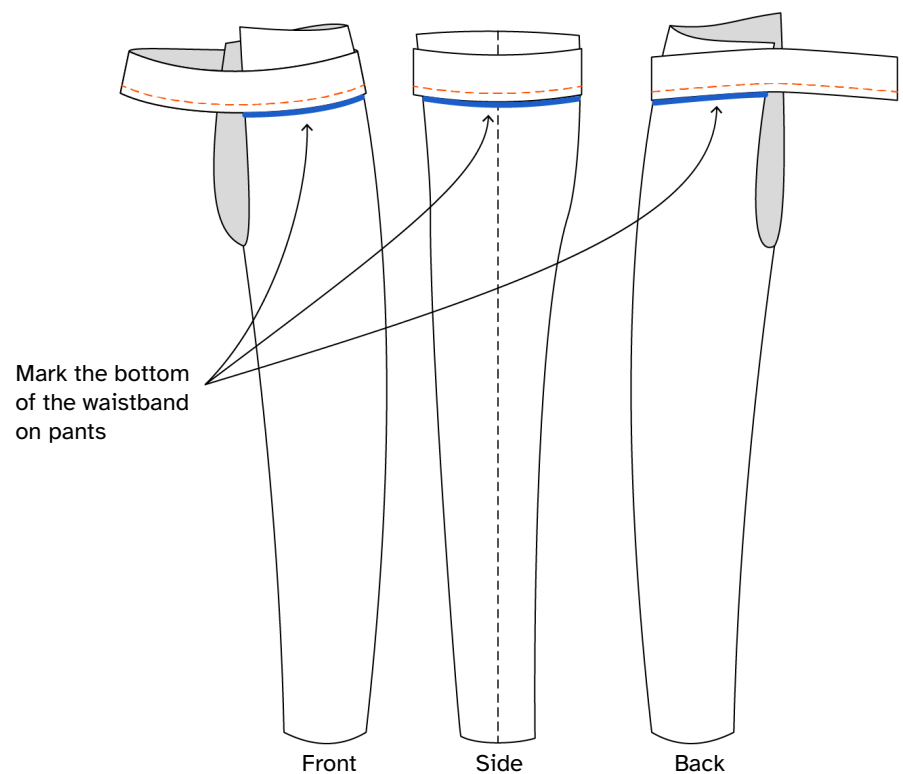


Figure 11.1: Mark Waistband Position on Leg

After removing the waistband, unpick the side seam and lay the front and back pieces flat. Align them with your pattern and trace the line you marked for the waistband position (Figure 11.2).

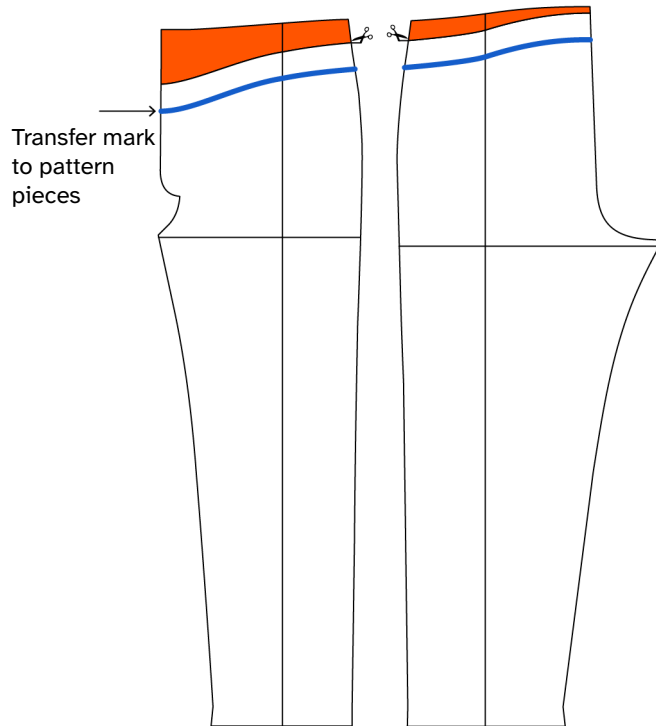


Figure 11.2: Transfer Waistband Mark to Pattern Piece

Add a second line two seam allowance widths above the first to indicate the cutting line (Figure 11.3).

Remove the excess waistline above the cutting line to finalize your pattern adjustments (Figure 11.4).

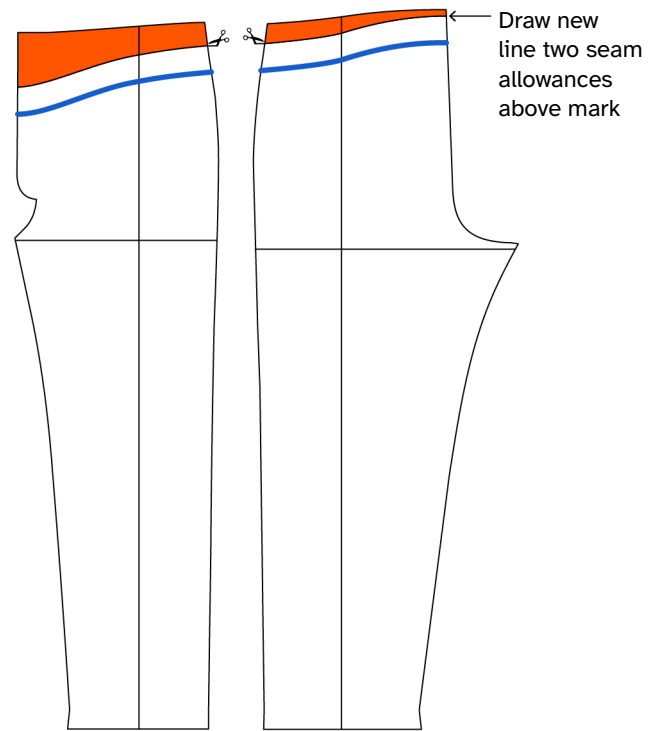


Figure 11.3: Draw New Waistline Based on One Leg Muslin Fitting

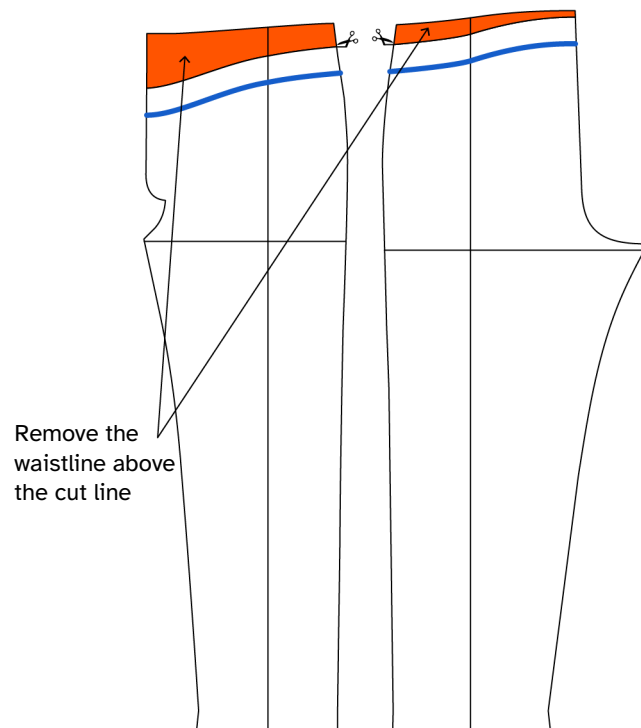


Figure 11.4: Remove Unneeded Waistline Extension on One Leg Muslin

Marking Waist Circumference Changes

Carefully transfer, using a ruler to confirm measurements or by tracing, the changes you will need to make at the waist so that you can attach the waistband in the position that you have determined is best for you.

If you need to make changes to the outseam, use your curve tool to blend the new lines into the leg line (Figure 11.5).

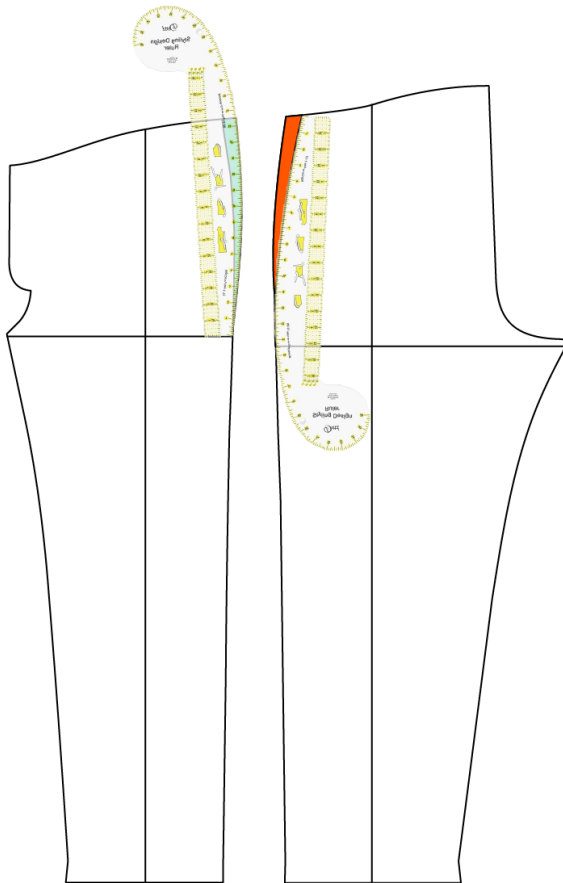


Figure 11.5: Redraw Outseam with Curved Ruler if Altered

11.2 Adjust Pant Length

Ideally, your pattern includes lengthen/shorten lines to adjust the leg length. Refer to the pattern instructions and use the measurements from your waistband fitting sessions to make these adjustments. Cut along the lengthen/shorten lines and add or remove fabric as needed to achieve your desired leg length.

11.3 Mark the Pattern

The following instructions focus on the front pattern piece, but you must apply the same markings to both the front and back pieces.

Knee Line

Use a pencil to draw a knee line on your pattern pieces. Use the measurement of your knee point (see Section 3.3 (Knee Point) on page 9 and Chapter 10 (Verifying Leg Length and Knee Point) on page 38) and draw a line, parallel to the hem, that distance from the hemline (not the bottom of the pants, which also includes the hem allowance; Figure 11.6).

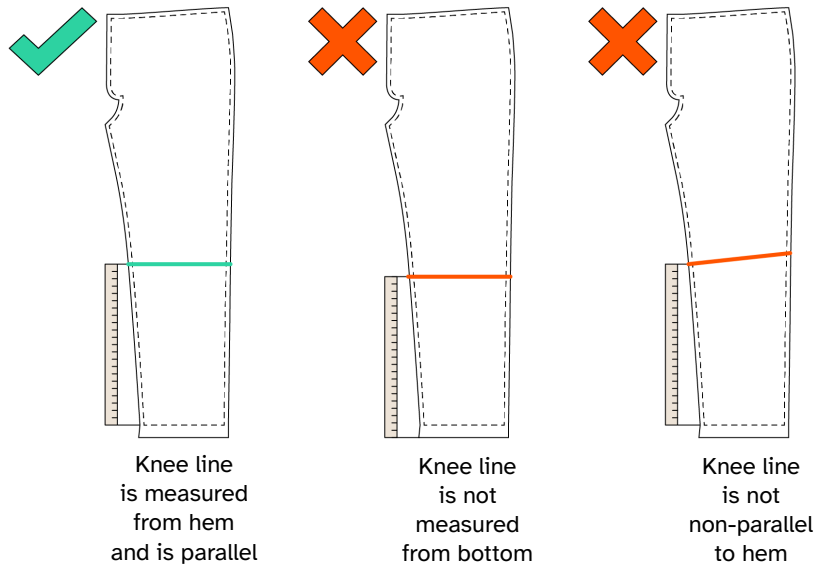


Figure 11.6: Draw a Horizontal Line at the Knee Point

Crotch Line

Reproduce the crotch line that you drew on your first traced pattern.

Hem Bisection Line

Measure the width of the pant at the hem line (not the bottom of the pant) from seam allowance to seam allowance. Use a pencil to draw a line that is perpendicular to the hemline and passes through the midpoint of the hem up to the knee line (Figure 11.7).

Mark Center Point of Knee Line

Measure the midpoint of the knee line between the seam allowances. Mark it with a colored pencil.

11.4 Creating the Drape Line

If the vertical line from the hem does not align with the knee midpoint, adjust your pattern as follows:

Adjustment at Knee Line

Cut the pattern across the knee line. Slide the upper part of the pattern (the waist section) so that the knee midpoint aligns with the vertical line of the hem. Do not move the lower part (Figure 11.8).

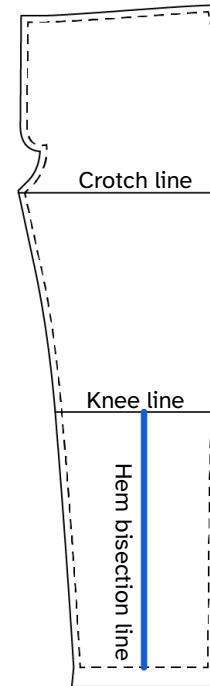


Figure 11.7: Draw a Vertical Line from Hem Midpoint to Knee Line

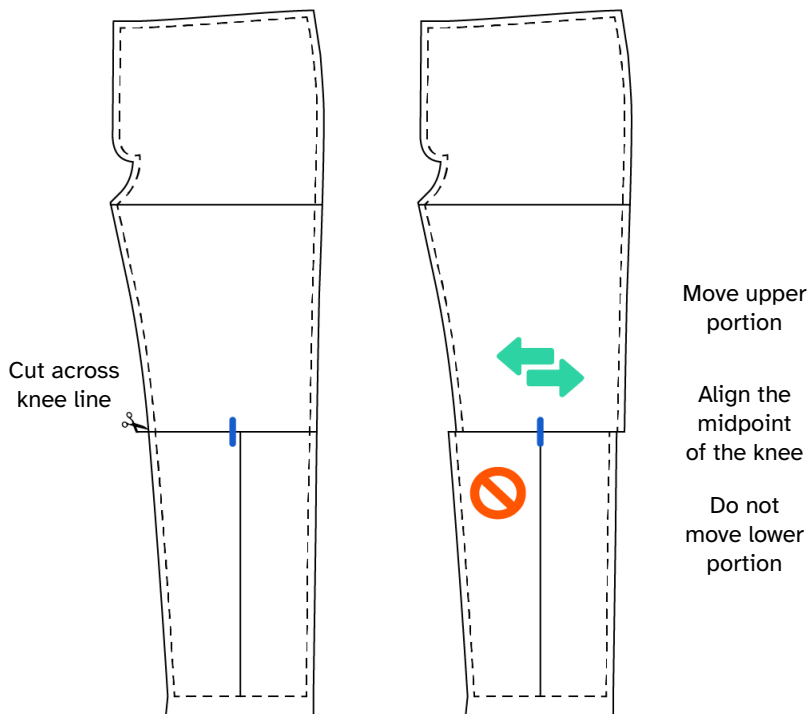


Figure 11.8: Find the Midpoint at the Knee Line

Tape your pattern back together and extend the perpendicular line you drew from the hem up through the rest of the leg. Make sure that you use a long straight tool and that it genuinely continues a line perpendicular to the hem. This new line will be called the 'drape line' for the rest of this project (Figure 11.9).

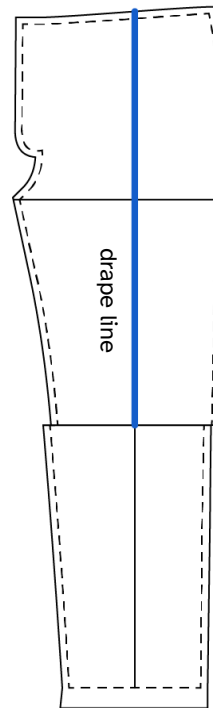


Figure 11.9: The Drape Line

Redrawing the Lower Leg

You will need to adjust the inseam and outseam from the knee to the hem. The width of the top piece governs the lines you will draw. You will almost always be able to use a long ruler to link the end of the knee line with the hem line. This will add fabric on one side of the leg and remove it on the other (Figure 11.10).

Note that if you are making a pant with a very tapered leg, this may change the angle of the leg sufficiently that you will also need to change the angle of the hem allowance. Fold along the hem line and trace the new in or outseam line onto the hem allowance to create a new cutting line for that area (Figure 11.11).

If you are using a pattern with very obvious curves in the lower leg, do your best to follow the curves as you adjust the inseam and outseam (Figure 11.12).

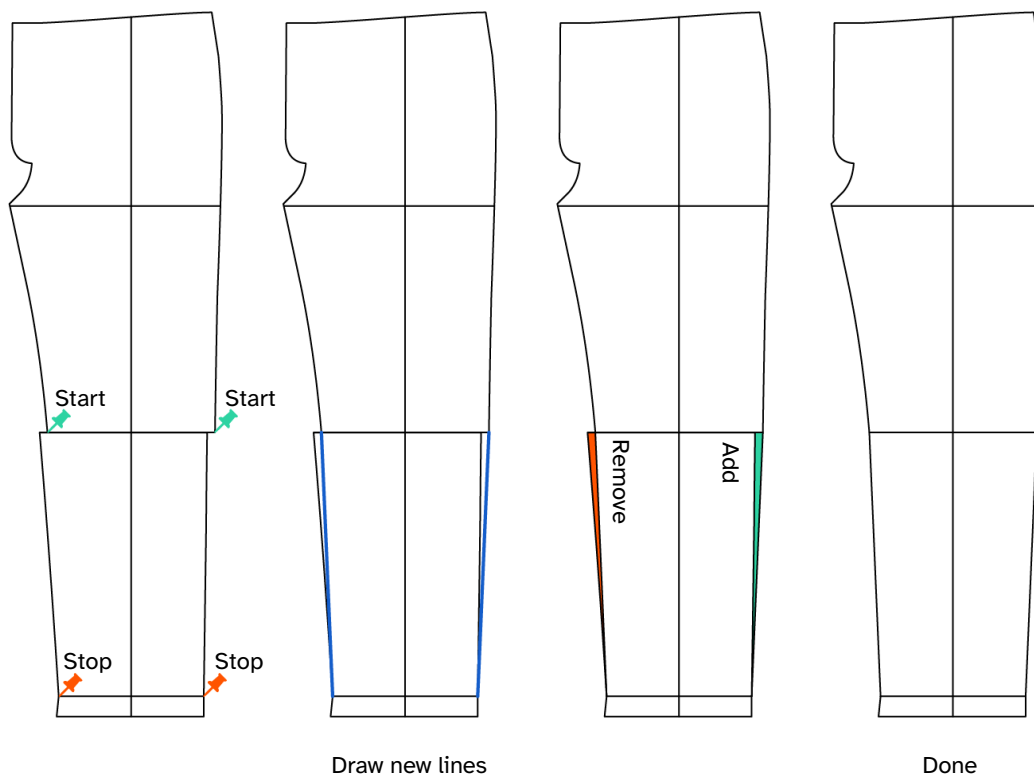


Figure 11.10: How to Redraw a Lower Leg that is Straight

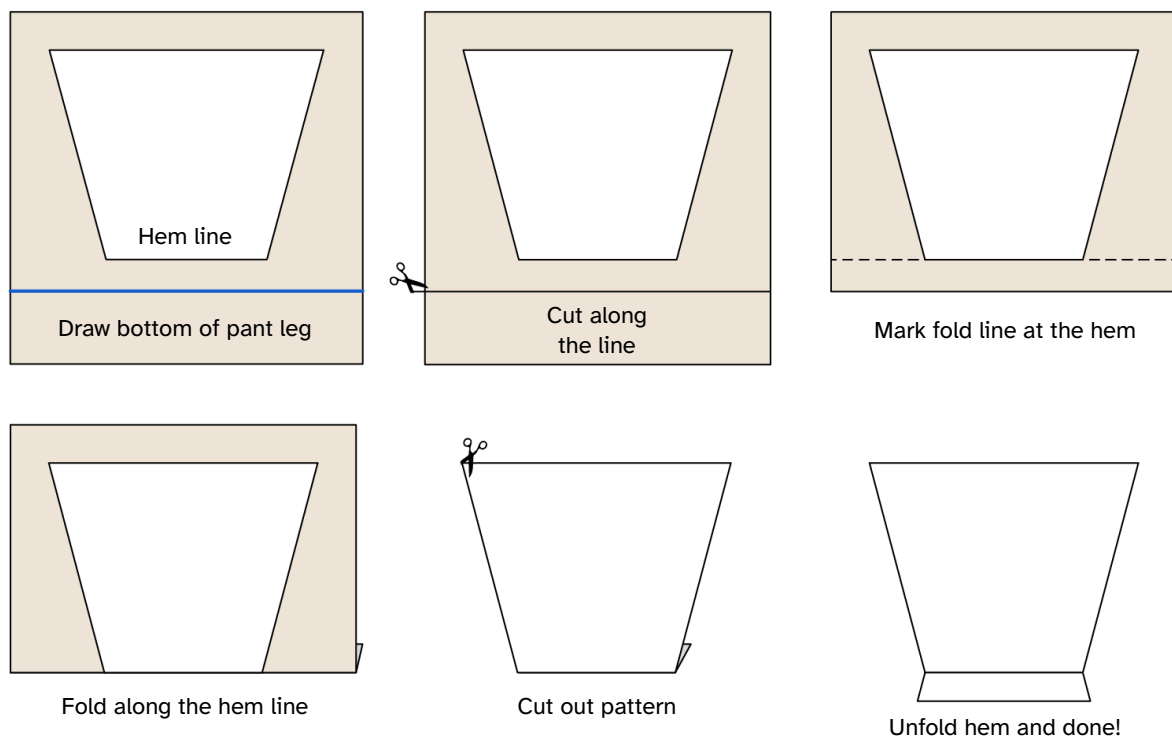
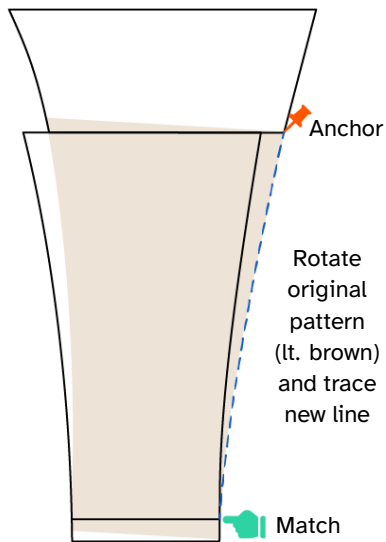


Figure 11.11: How to Redraw a Hem



Truing the Pattern

When you have made these changes on the front and back, check to make sure that the inseams and outseams are still the same lengths on the front and back.

Figure 11.12: How to Redraw a Lower Leg that is Curved

Use your modified pattern (waist position and drape line) to cut two legs. Use the drape line as your grainline when determining the position of the pattern pieces on the fabric.

It is your choice whether to cut the fabric at the final hem line or leave the hem allowance and hem.

12.1 Mark the Fabric

Add the following marks to your muslin using a black or blue permanent marker. Mark the front and back of both legs. Ensure that you have also transferred all the construction markings you may need.

- ▶ Sewing line for waistband
- ▶ Drape line from hem to waist
- ▶ Knee line
- ▶ Crotch line

12.2 Construct the Pants

In general, prepare your front and back pieces following the pattern instructions. Sew darts, tucks, or pleats on the front and back pieces as marked on the pattern. Attach pockets if making the Stokx Square Pants. Construct each leg by sewing the outseam and inseam. You can then insert one leg into the other, right sides together to sew the entire crotch seam.

If you are making the Stokx Square Pants or the Upland Trousers, we suggest that you baste a simple zipper into the front center seam, letting it extend above your marked waistband position to control the extra fabric you have incorporated (in case you want to make fitting changes later.)



Wendi Gratz, 'How to Sew a Zipper In a Seam', July 31, 2011.

Waistband

Construct a waistband according to the pattern instructions (including interfacing if called for), with any changes you may have made to the overall circumference. Baste the waistband on the pants, matching the seam lines. If you have still included the extended fabric above the waistline, you will have fabric protruding above the waistband. It is easiest to have the fabric tucked inside the waistband next to your body and not on the outside flopping around.

Becoming Familiar with Techniques Required to Use Laser Level

13

The setup of your laser and camera is very important. If you spend time on them at the beginning and practice before you put on your muslin, you will reduce frustration and increase the precision of your work. The time spent experimenting with the setup will save frustration and wasted time and materials down the line.

13.1 Creating Laser Setup

Find a location in your house where there is blank wall space to provide a good background for photos. Sometimes all you have to do is close an interior door and use that as a backdrop. The backdrop you choose should be located so that you can consistently set up a camera at a distance that will allow you to capture images of your body from the floor to slightly above your waist.

It will be helpful to have a friend or family member help you at this point. First, we will be drawing a reference line that is perpendicular to the backdrop. Start by placing the bottom of the laser level against the backdrop. Turn the laser level on. The laser line should project towards the floor and will create a line perpendicular to the wall (Figure 13.1).

Helpful Aside

If you find it difficult to see the laser line, darken your room by turning off the lights and covering the windows.

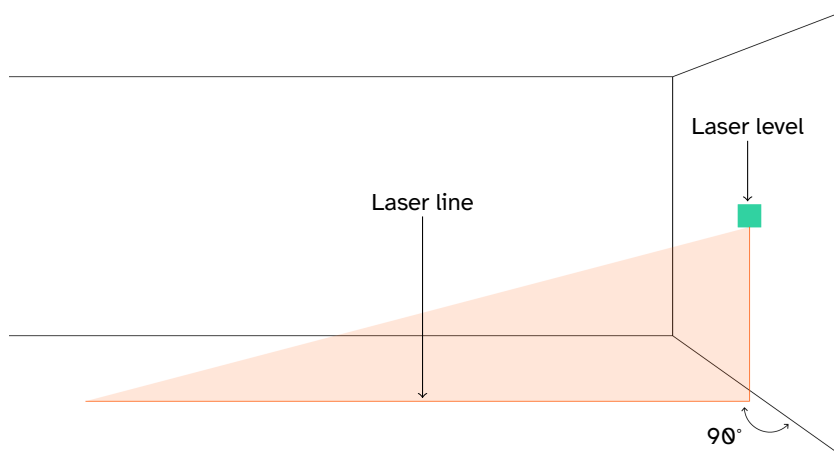
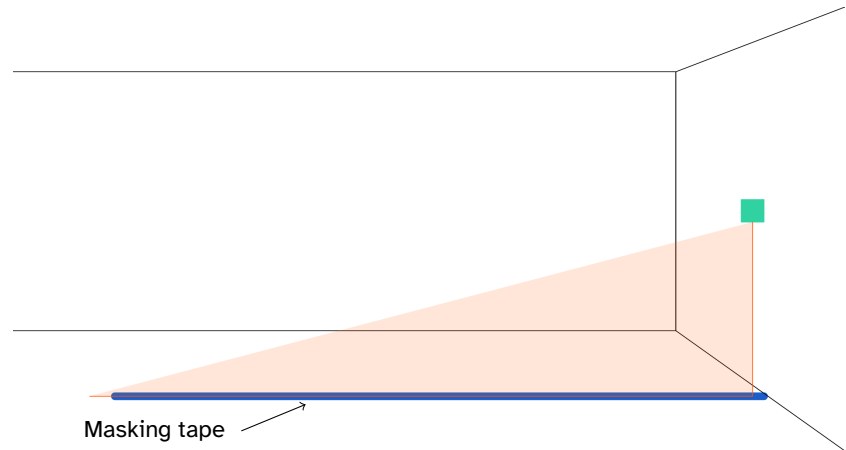


Figure 13.1: Use Laser Level to Create Perpendicular Line from Wall

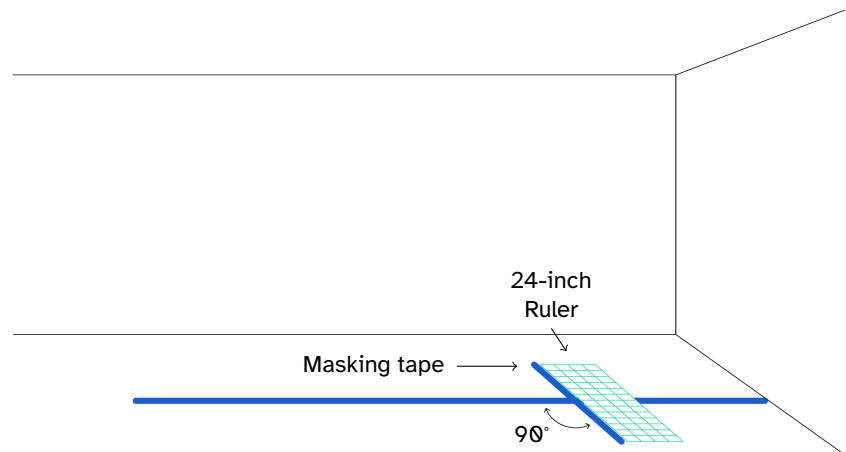
Use masking tape to mark a line on the floor along the laser beam. For a more precise line, draw a line on the masking tape that follows the laser line (Figure 13.2).

Figure 13.2: Mark Laser Line with Masking Tape



Next, mark a line where you will stand. This line should be perpendicular to the laser line and parallel to your backdrop (Figure 13.3).

Figure 13.3: Mark a Line Where You Will Stand



The final placement of the laser level will be on the floor 3-4 feet from where you will stand (Figure 13.4). The laser level should be pointed at you.

Helpful Aside

The strength of most basic laser levels is not strong enough to damage your eyes. But, while working with the laser, you may want to wear protective glasses if the beam is directed at your eyes too much.

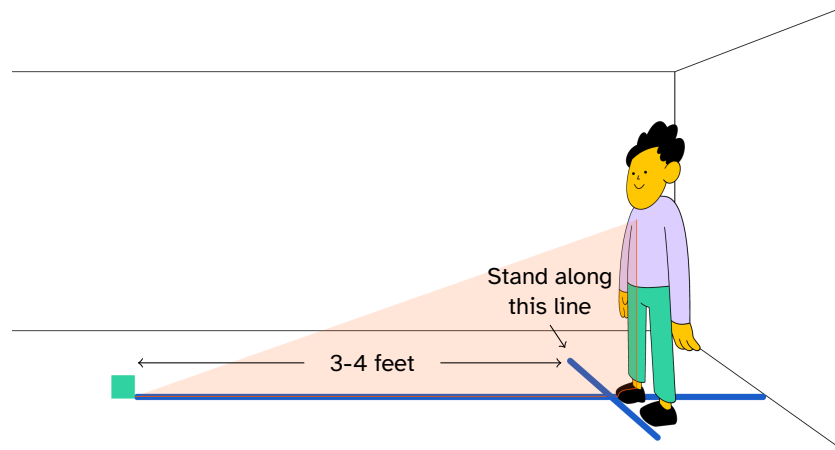


Figure 13.4: Laser Level Placement for Pattern Work

13.2 Adding Your Camera to the Laser Level Setup

You will find it easiest to take photos if you have a system that will allow you to attach the camera to a tripod or place it in a consistent position on a flat surface. You can also use any reproducible system of props. Your camera should be far enough away from you to capture images of your body from floor to slightly above your waist.

Before we talk about phone alignment, let us review orientation in terms of pitch, roll, and yaw (Figure 13.5). Pitch refers to turning along the y-axis. A positive pitch angle means that the object is tilted upward, while a negative pitch angle means it is tilted downward. Roll refers to turning along the x-axis. A positive roll angle means that the object is tilted to the right, while a negative roll angle means it is tilted to the left. Yaw refers to turning along the z-axis. A positive yaw angle means that the object is rotated to the right, while a negative yaw angle means it is rotated to the left.

When adding your camera to the laser level setup, you want the camera to be level. That means the camera is balanced because it is not pitching up or down, rolling to the left or right, or yawing to the left or right.

Helpful Aside

If using a phone camera, set the zoom to 1x or 2x. If you set the camera to 0.5x, this will distort the image.

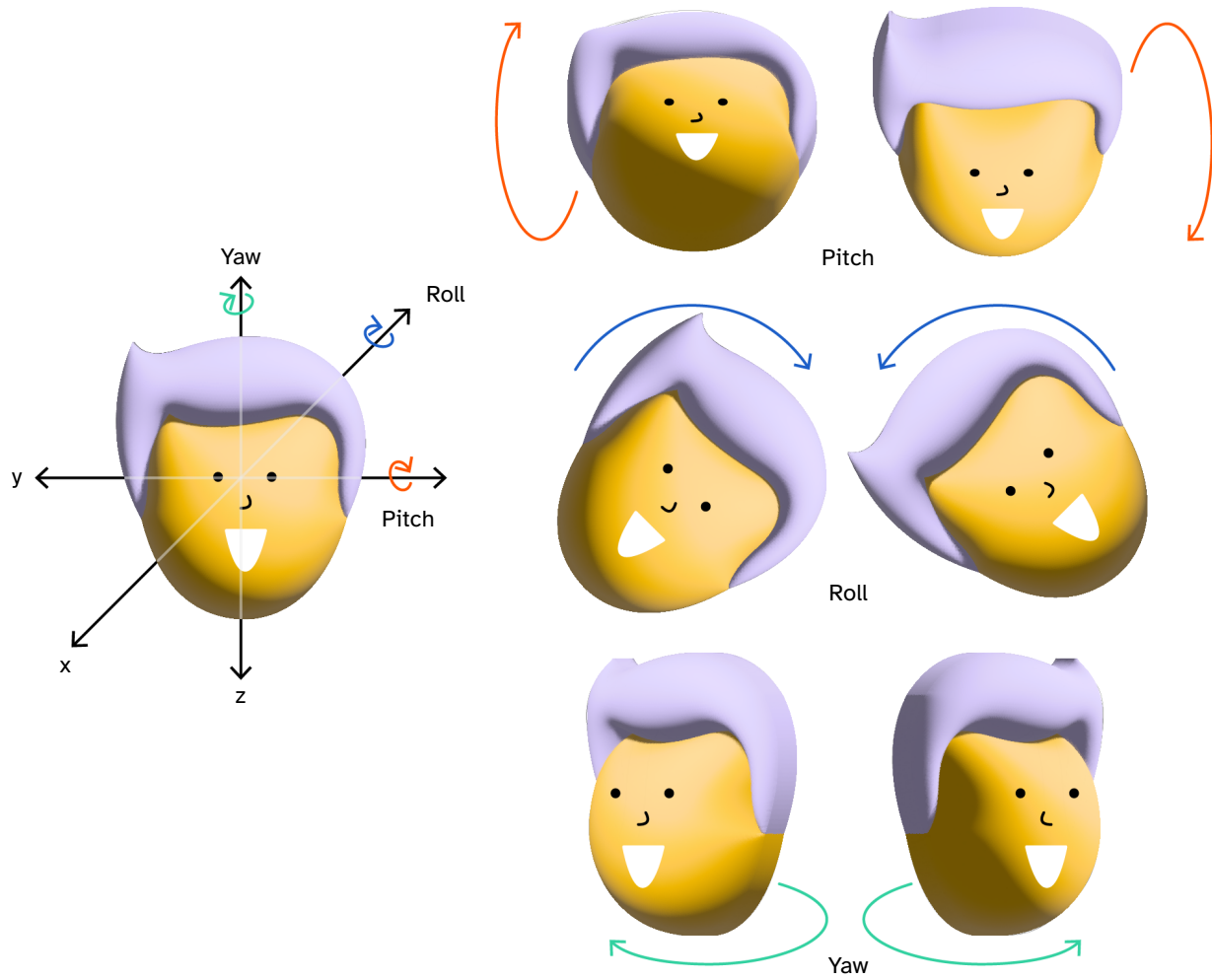


Figure 13.5: Pitch, Roll, and Yaw

Start by placing the laser beam in the center of your camera's viewfinder (Figure 13.6).

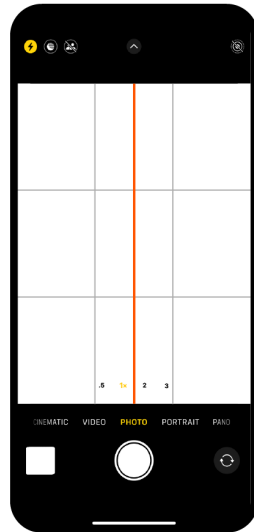


Figure 13.6: Place the Laser Beam in the Middle of Camera's Viewfinder

Using a level attached to your camera or a level app on your phone, balance your camera in terms of pitch and roll. Your camera should not be tilted up, down, left, or right (Figure 13.7).

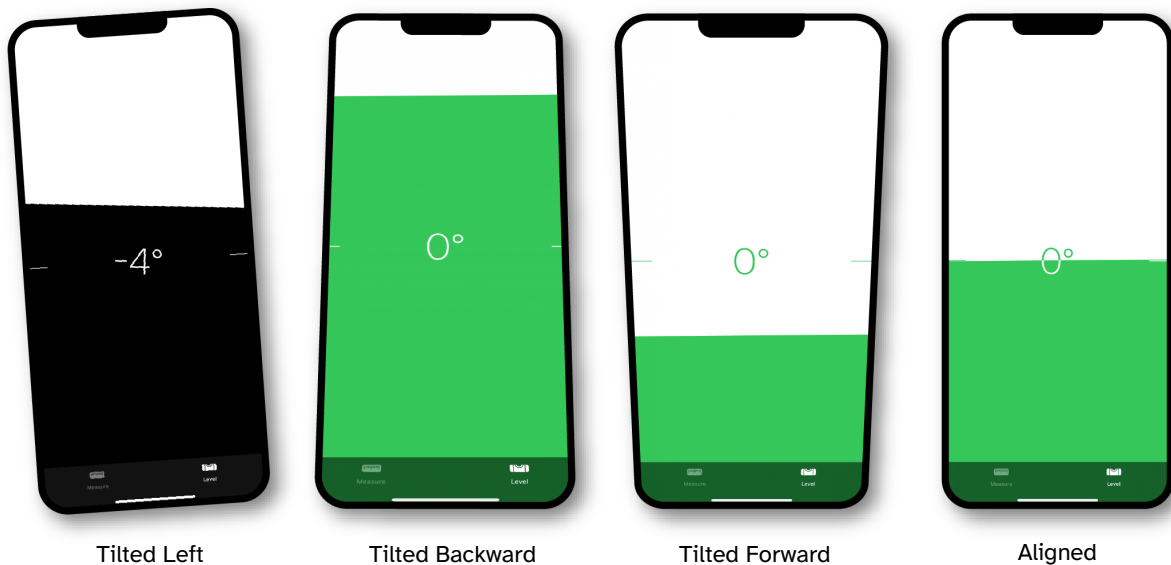


Figure 13.7: Use iPhone Level App to Balance Pitch and Roll

Use the masking tape line parallel to your background to balance the rotation from left to right (i.e., yaw). The phone should not be rotated (Figure 13.8).

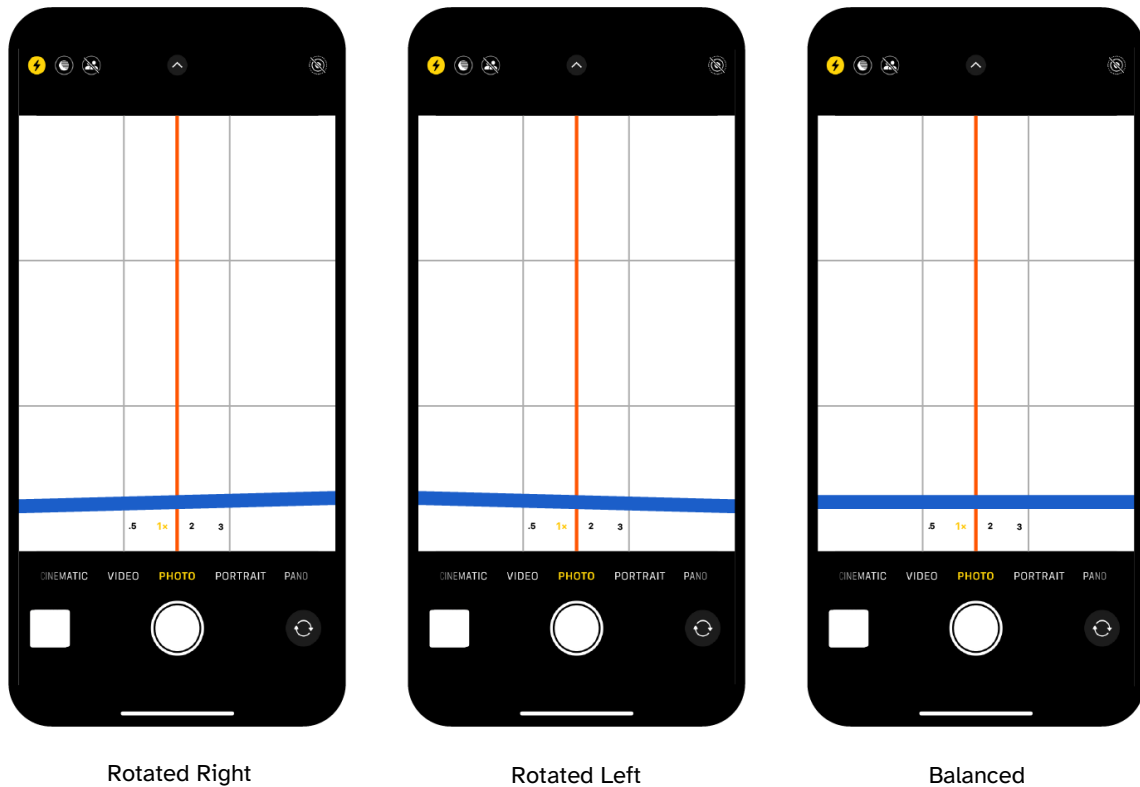


Figure 13.8: Use the Masking Tape on the Floor to Balance Yaw

When you have established a position for the camera and the laser, mark the floor with painter's tape and do what you can to document the setup of the camera.

13.3 Alone or With Help?

You have two options for making the info marks on your muslin. You can do it yourself or recruit a helper. However, we strongly recommend that on your first few tries, you try to find someone to help you. As you become more familiar with this method, you will be better able to do the contortions necessary to mark your pants. We have intentionally not included instructions for adding a mirror to the laser level and camera setup because we have found standing in front of a mirror can result in unnatural postures and biased results.

13.4 Training You and Your Helper

You will need to recruit an assistant to help you mark your pants using the laser. Your helper does not need to understand sewing but should be patient and jolly since this will be a new process for you both.

The first step will be to show your helper how to make a mark on the fabric. They should use a chalk marker or pencil that makes a thin, erasable line. The mark should be oriented vertically and should be dark enough for you and them to see.

In advance of working with your muslin, set up your camera/tripod and have your helper find and mark the following landmarks as practice.

Front Ankle, Knee, and Crotch

Stand so that the laser beam runs across the floor and intersects the center of your ankle. Then have your helper follow the line up and mark the point where that line crosses the hem of your pants (Figure 13.9).

Next, ask your helper to make a chalk mark where the line crosses the middle of your knee (Figure 13.10).

Finally, have your helper make a chalk mark where the line crosses your front thigh approximately opposite your crotch (Figure 13.11).

Back Ankle, Knee, and Crotch

Turn 180 degrees and stand so that the laser passes through your Achilles tendon. Have your helper mark the point where the laser crosses the hem of your pant (Figure 13.12). Again, this is just for practice. There is no need for precision.

Next, ask your helper to make a chalk mark where the line crosses the middle of your knee (Figure 13.13).

Finally, have your helper make a chalk mark where the line crosses your back thigh approximately opposite your crotch (Figure 13.14).

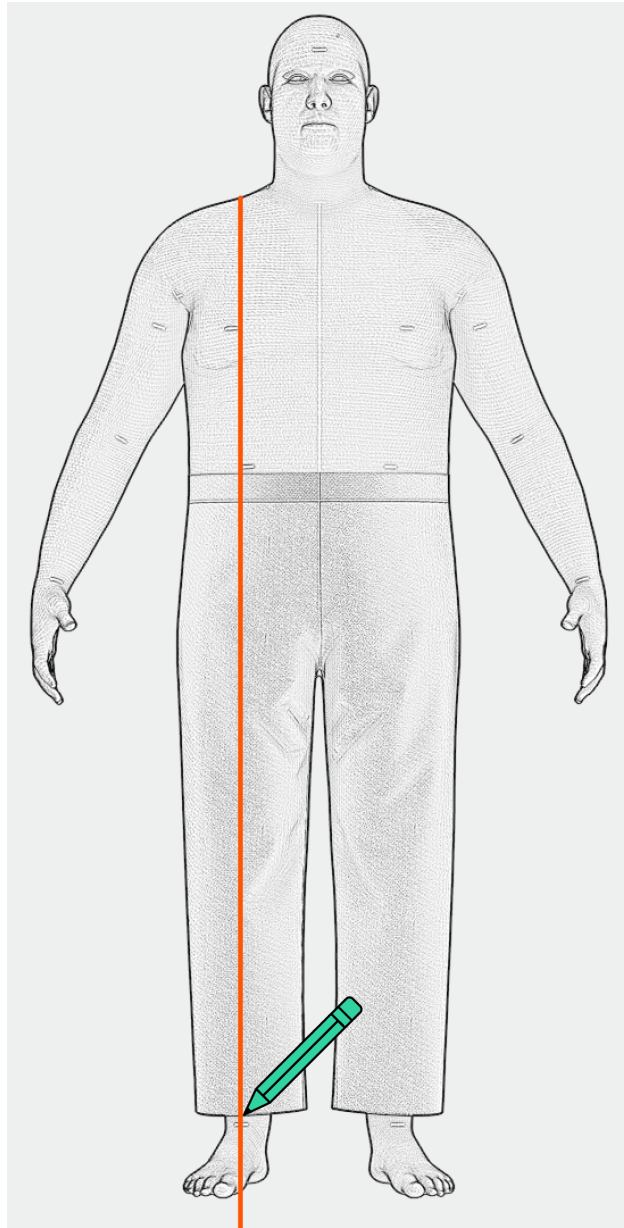


Figure 13.9: Practice Marking Laser Level at Front Ankle

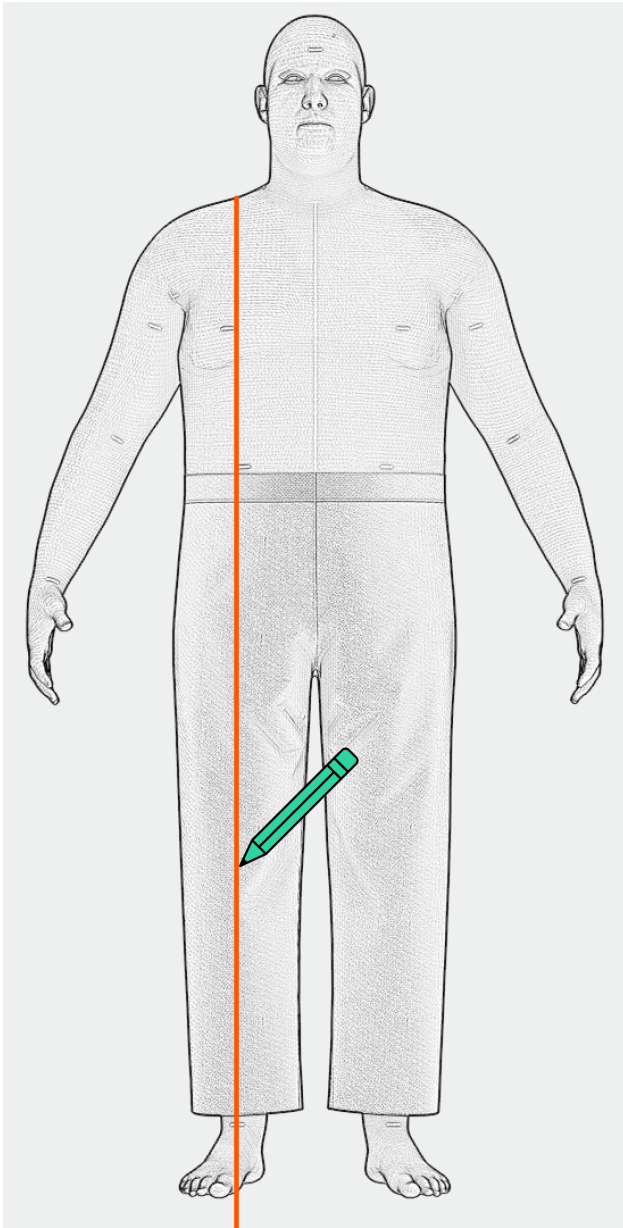


Figure 13.10: Practice Marking Laser Level at Front Knee

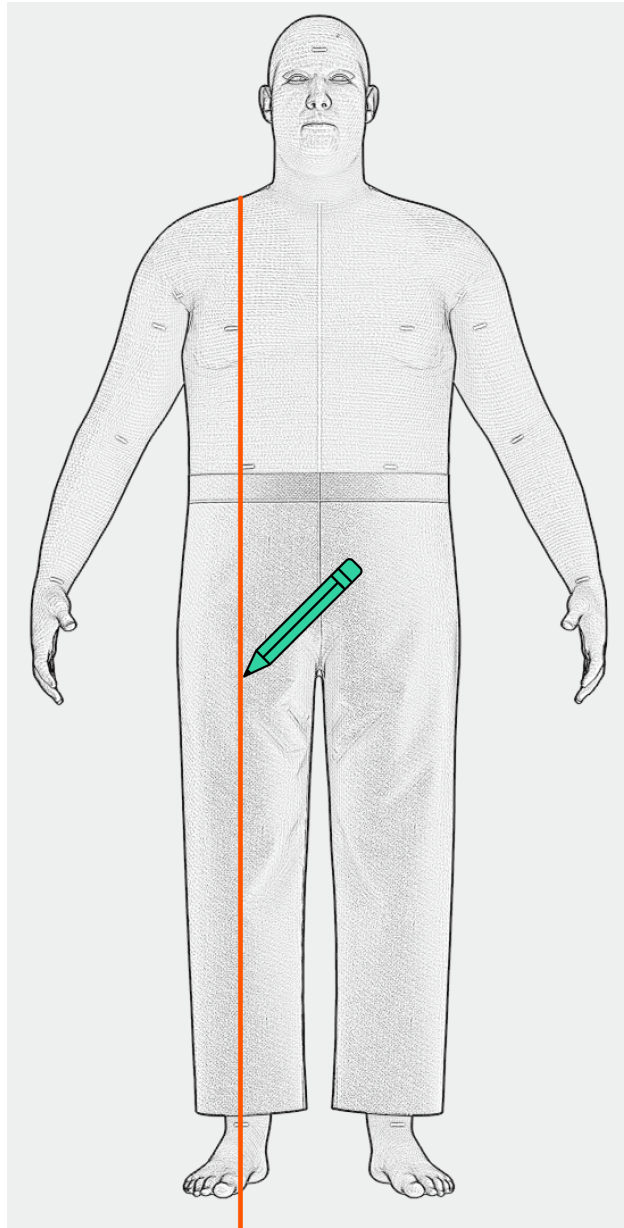


Figure 13.11: Practice Marking
Laser Level at Front Crotch

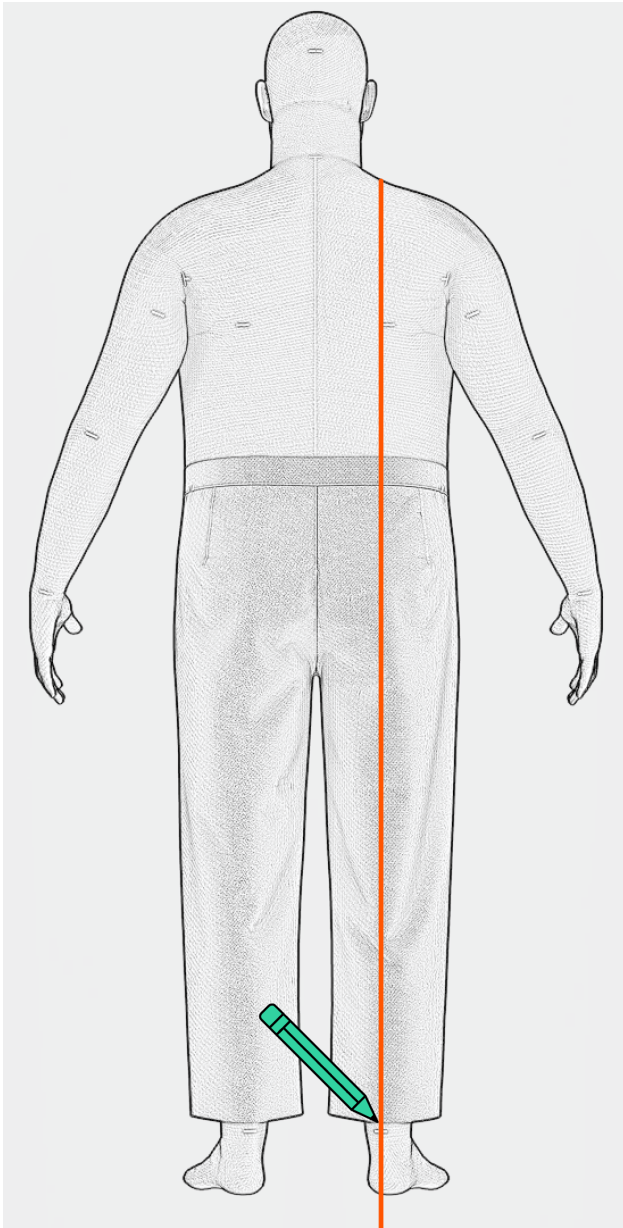


Figure 13.12: Practice Marking
Laser Level at Back Ankle

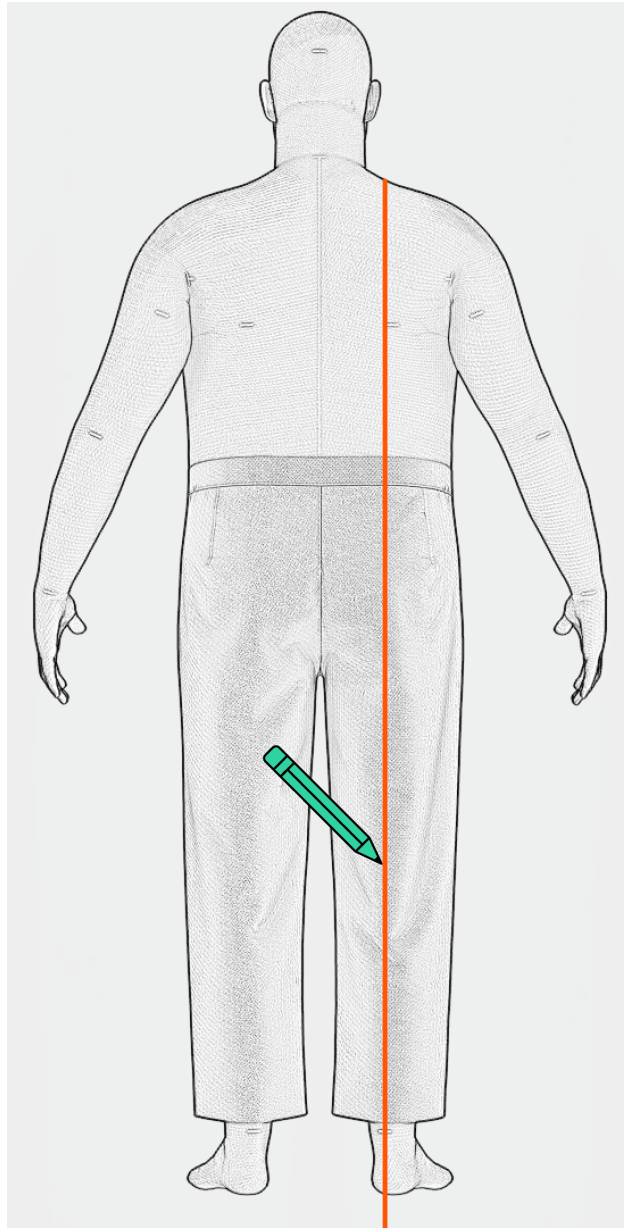


Figure 13.13: Practice Marking
Laser Level at Back Knee

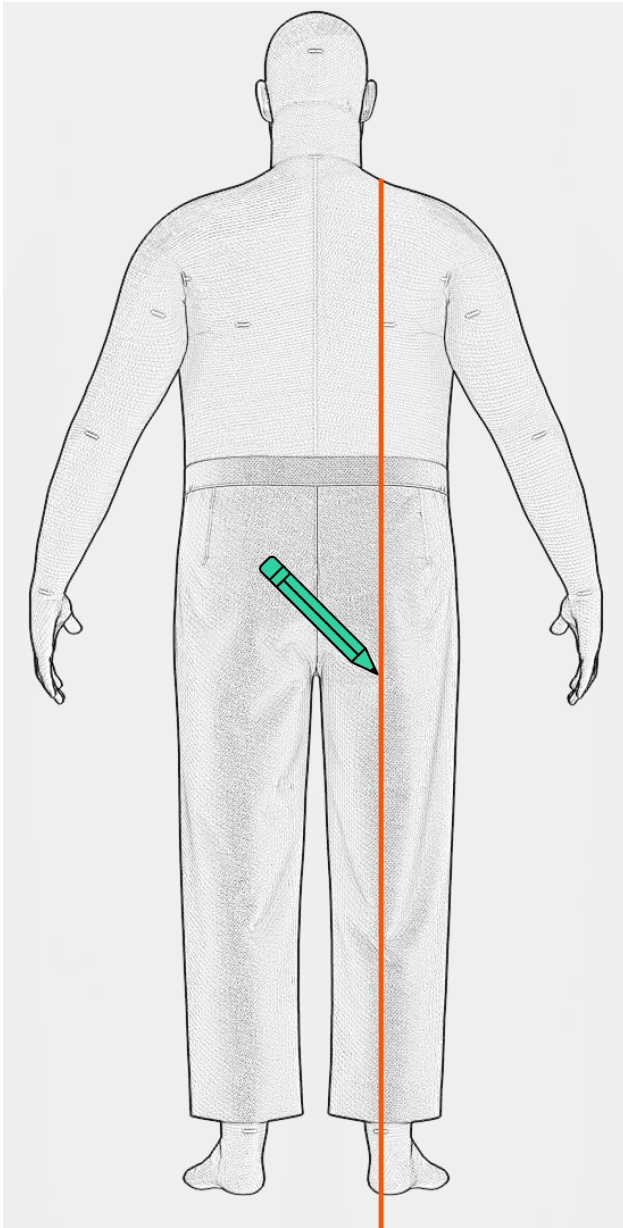


Figure 13.14: Practice Marking
Laser Level at Back Crotch

13.5 Practice Standing in Front of the Laser

For this purpose, you should be barefoot and wearing pants whose hem does not break on the top of your foot. Set up your laser and camera as described above. Confirm that the laser line is perpendicular to the wall and that your camera is at a distance that will allow you to photograph the full length of the pants.

Helpful Aside

Your stance should allow the pants to hang straight from your waistband. Go ahead and try some extreme postures to see how that impacts the drape before returning to a natural stance.

Now, it is time for the tricky part. Your goal is to stand in as natural a position as possible with the laser passing through the middle of your ankle (front) and Achilles tendon (back). It will take some experimentation on your part to find a stance that works. It is easy to get caught up in this and assume an artificial position. Remember that this is about fitting pants that you will wear every day, so don't try anything extreme. We recommend not using a mirror at first, because it is very easy to assume an unnatural position (Figure 13.16).

How to stand in front of the laser level:

- ▶ DO stand with your feet directly under you a few inches apart.
- ▶ DO have your legs parallel with knees facing forward.
- ▶ DO shift your weight slightly forward and back and side to side to balance your weight equally on each leg.
- ▶ DO let your feet turn in or out as is comfortable and normal.

How NOT to stand in front of the laser level:

- ▶ DON'T stand with legs completely touching along the inseam.
- ▶ DON'T stand with your legs spread wide apart.
- ▶ DON'T lean to one side, stagger legs, or otherwise stand unnaturally.
- ▶ DON'T lock your knees.

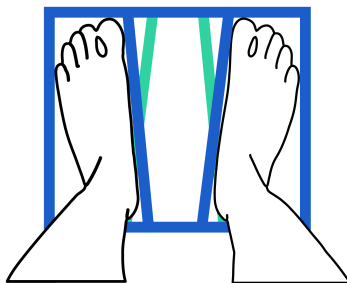


Figure 13.15: Mark Stance with Painter's Tape

When you have identified a position, ask your helper to use painter's tape to mark a box on the floor that defines where you are standing. The front and back of the box can determine your toe and heel position. The sides of the box can help determine the sides of your feet, so you know exactly how far apart your feet should be. If you stand with your feet turned inward or outward, find a way to mark that angle as well. For example, you could place a piece of tape foot length that follows the inside of your foot and a different color tape for when you are turned 180° from the camera (Figure 13.15).

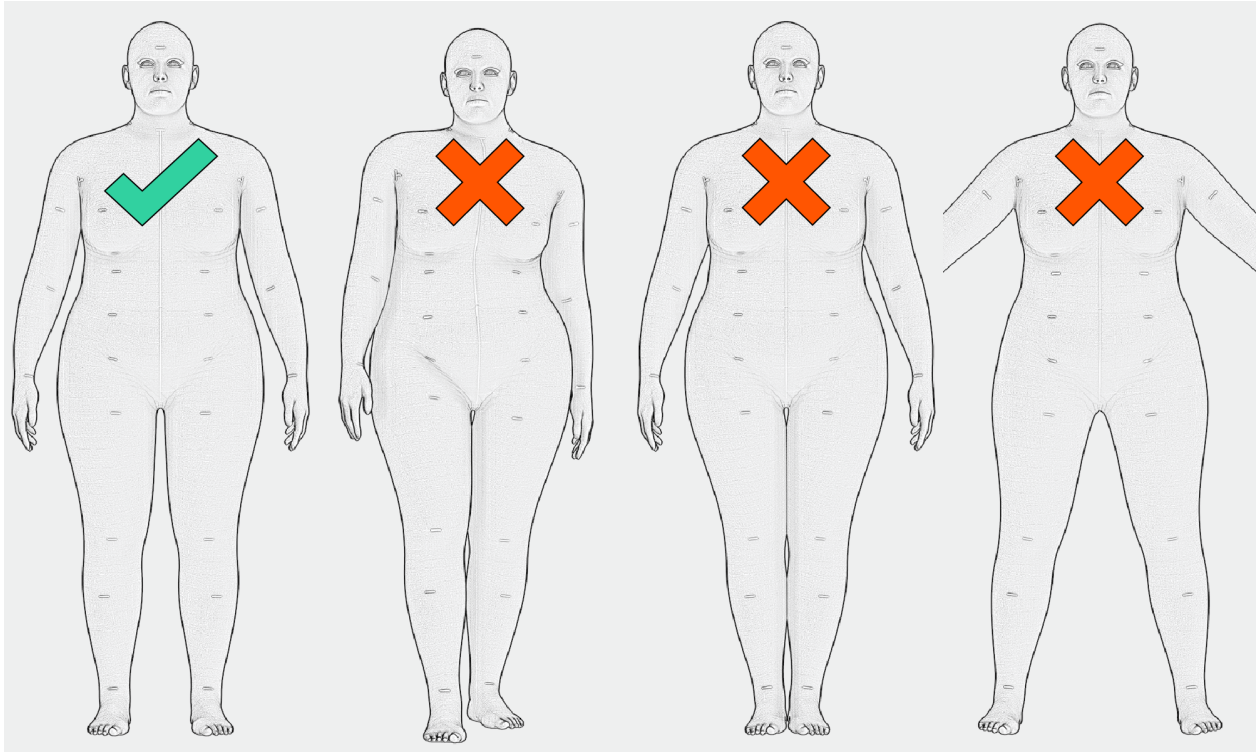


Figure 13.16: Dos and Don'ts of Standing in Front of Laser Level

Take some test photos of the front and back to ensure that you can see everything from waist to feet, and the practice pencil lines you have marked on the cotton should be easy to see.

It is also a good idea to take a photo of the side. Be honest when you look at the side photo and ask yourself if that is your natural stance or whether you changed it for the purposes of the marking and alignment process. If you did change your general posture, try again until you are standing as you usually do. It is okay if you naturally have a rounded back or a tilted pelvis (Figure 13.17).

It is worth practicing this process, from setting up the camera and laser to establishing a comfortable natural stance, several times before you get to your first two-leg muslin because accuracy at this step will affect the final result of your fitting experience.

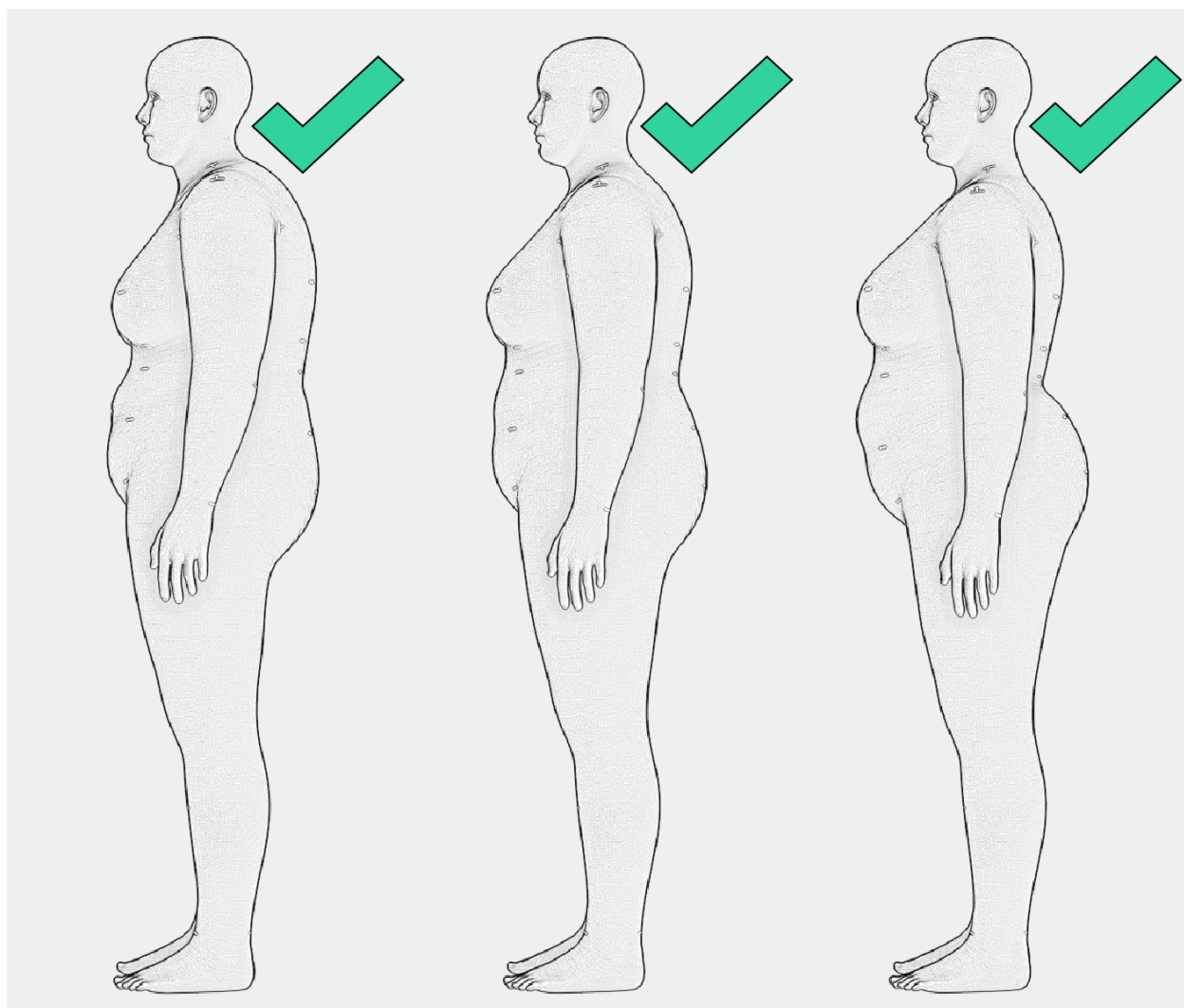


Figure 13.17: Stand With Your Natural Posture in Front of Laser Level

Using Laser Level with Two Leg Muslin

14

For the purposes of this guide, you will only mark the right leg even though your legs might be different and the drape slightly skewed.

Before trying your second muslin, you need to determine whether the laser needs to be aligned with your ankle or knee. Set up your laser and camera as before. Stand in your box, or use whatever other method you have determined will give you reproducible posture and alignment.

14.1 Marking the Knee Line

While wearing shorts, have your helper mark, using a washable pen or marker, a point in the middle of your front ankle and knee. With the dots visible, stand in front of the laser. Start with the laser passing through the middle of your ankle.

Have your helper mark, using a marker in another color, a point where the laser passes the knee line (Figure 14.1).

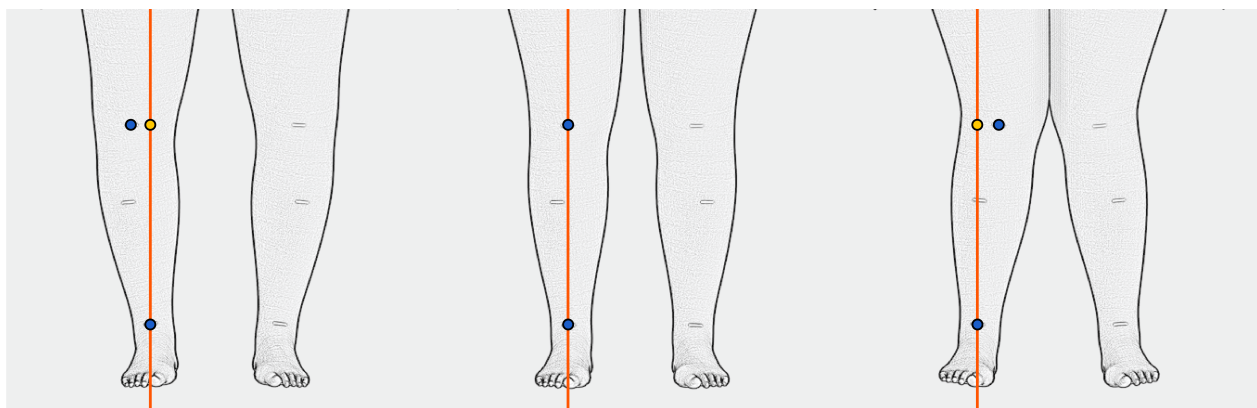


Figure 14.1: The blue dot at the knee represent the center of the knee. The yellow dot at the knee represents the laser location when it is aligned with the center of the ankle.

You and your helper may become concerned that the laser does not pass through the dot on the middle of your knee. Don't worry, that is normal.

14.2 Documenting the Laser Intersection with the Knee Line

Make note of the distance from the middle of your knee (blue dot) to the drape line at the knee line (yellow dot) and whether the mark is towards the center of the body (left; Figure 14.2) or the side of your body (right; Figure 14.2).

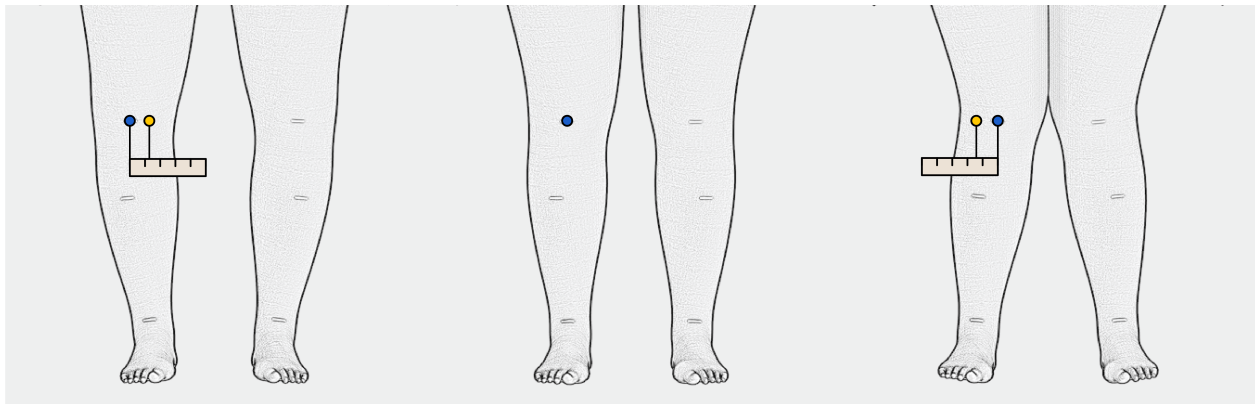


Figure 14.2: Document the Laser Intersection with the Knee Line

If the laser passes through the middle of your knee, then you will want to make sure that in future steps the laser is aligned with the center of your ankle and knee (center; Figure 14.3).

If the laser did not pass through the middle of your knee, then you will want to make sure in future steps that the laser is aligned with the center of your knee, but not with your ankle (left and right; Figure 14.3).

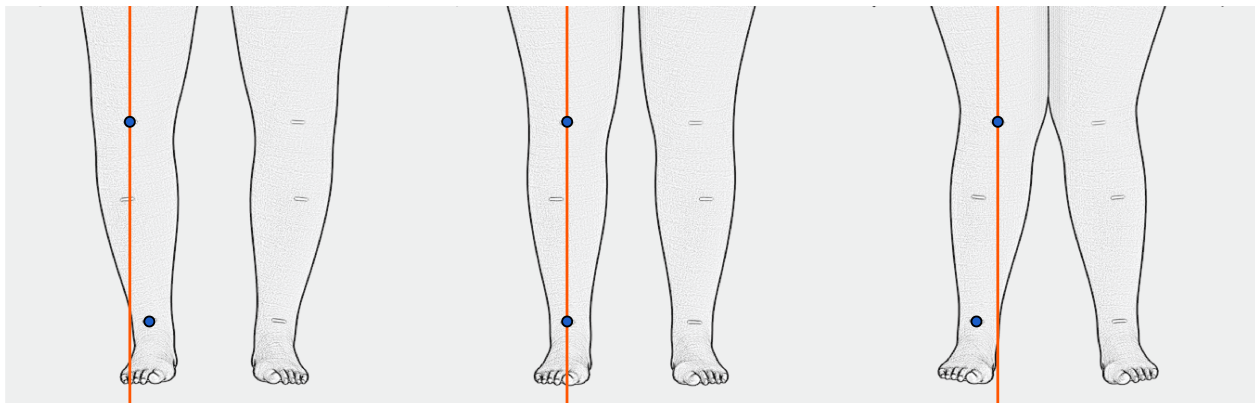


Figure 14.3: Final Laser Line Alignment With Your Body

14.3 Marking the Crotch Line

Put on the second muslin and establish that the waistband is sitting where you will want to wear it. Confirm that the hem is not dragging on the top of your foot. Wear the muslin for several hours – standing, walking, and sitting in it – before moving on to the next step.

Stand in front of the laser. Based on the previous step (see Section 14.2), the laser should pass through the middle of your ankle or the center of your knee. Don't worry if the laser is not congruent with the drape line you marked on the muslin. Again, that is normal.

Have your helper mark on your right leg, using a permanent marker to make a short vertical line, the point where the laser line passes across the crotch line that is marked on the muslin. Have your helper note #1 near the mark. Mark the front (Figure 14.4) and back (Figure 14.5) of the right leg.

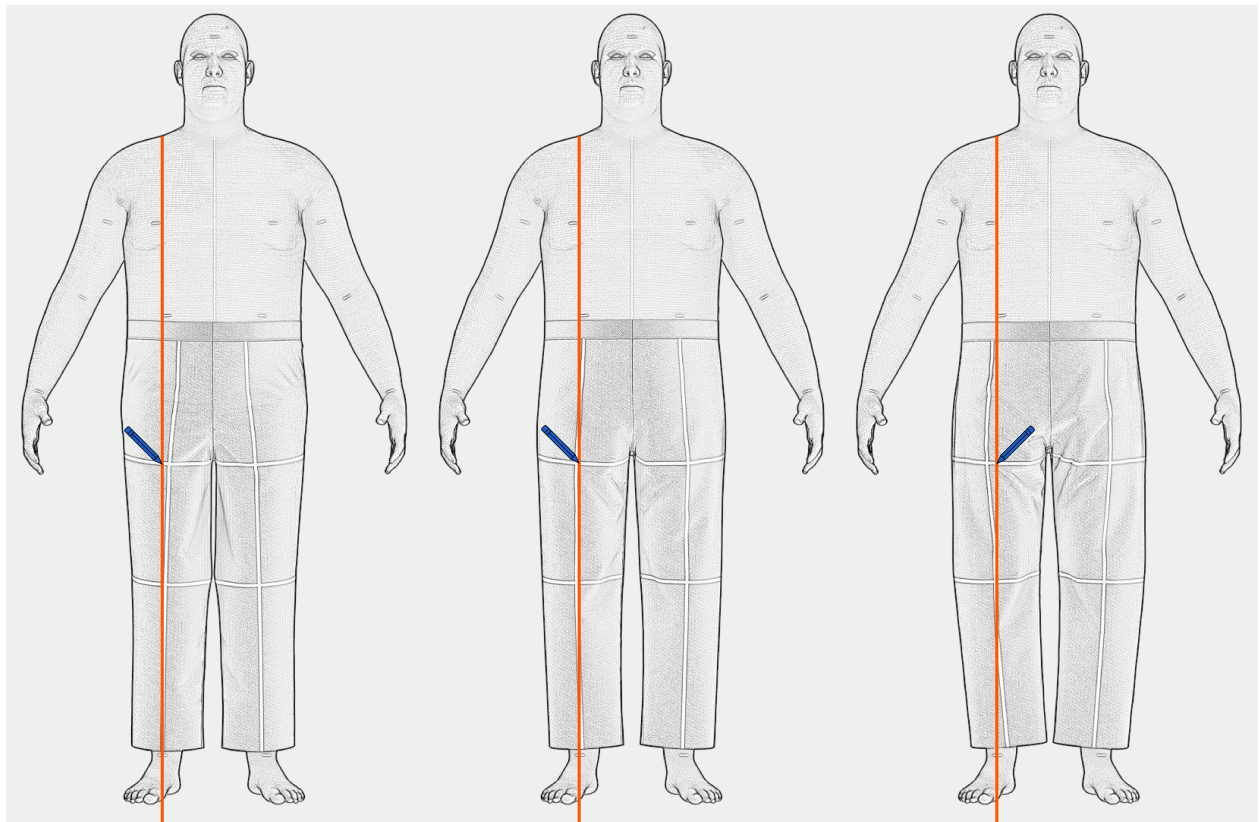


Figure 14.4: Examples of Marking the Front Crotch Line. **Left:** The blue mark is toward the side of your body relative to the drape line. **Center:** The blue mark is on the drape line. **Right:** The blue mark is toward the center of your body relative to the drape line.

Repeat this process a day later. The second mark should be labeled #2.

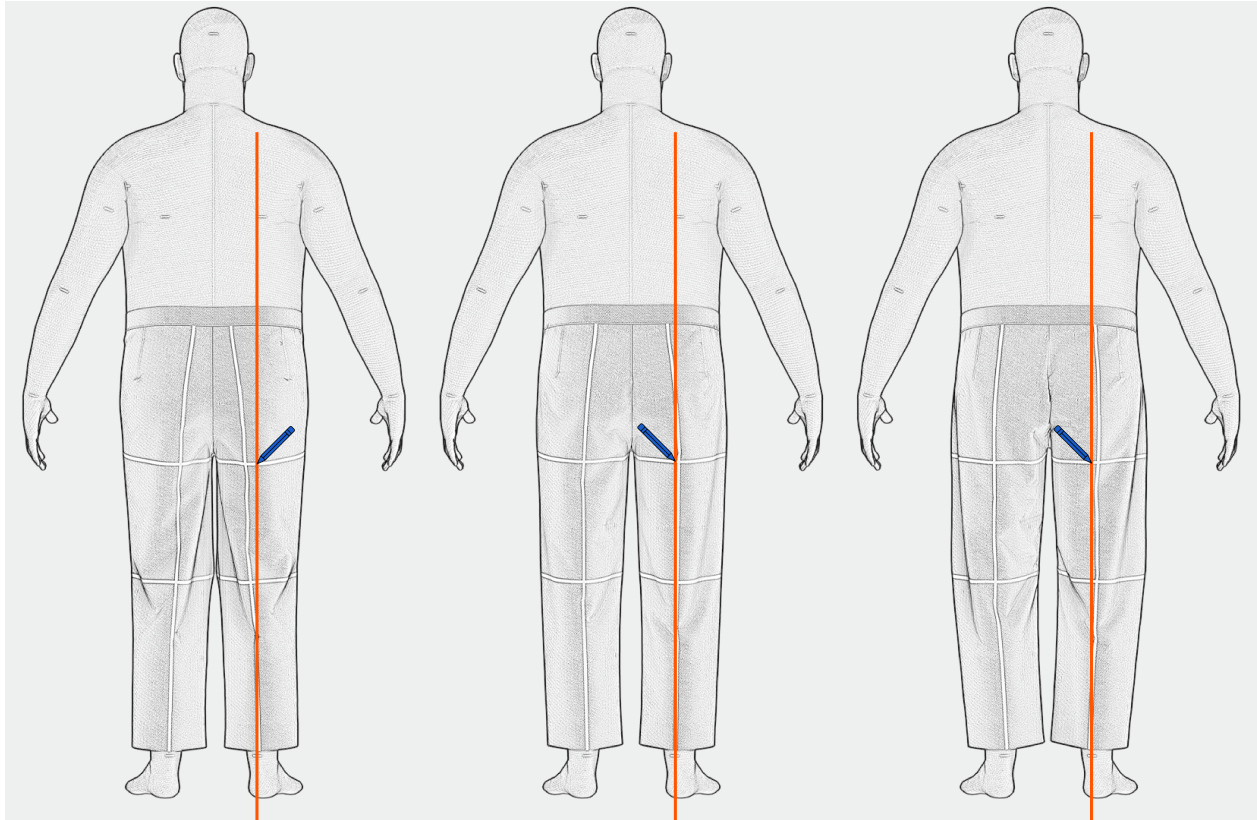


Figure 14.5: Examples of Marking the Back Crotch Line. **Left:** The blue mark is toward the side of your body relative to the drape line. **Center:** The blue mark is on the drape line. **Right:** The blue mark is toward the center of your body relative to the drape line.

14.4 Photos

Take front, back, and side photos to document your use of the laser and the marks that denote where the laser crosses the crotch line.

14.5 Documenting the Laser Intersection with the Crotch Line

Remove the two-leg muslin from your body and use a ruler to measure the distance between the drape line you drew on the muslin and the blue mark your helper made on the crotch line where it intersected the laser. Make note of the distance from the drape line and whether the blue mark is toward the center or the side of your body compared to the drape line. Do this on the front and back. You will use these measurements to alter your pattern in the next step.

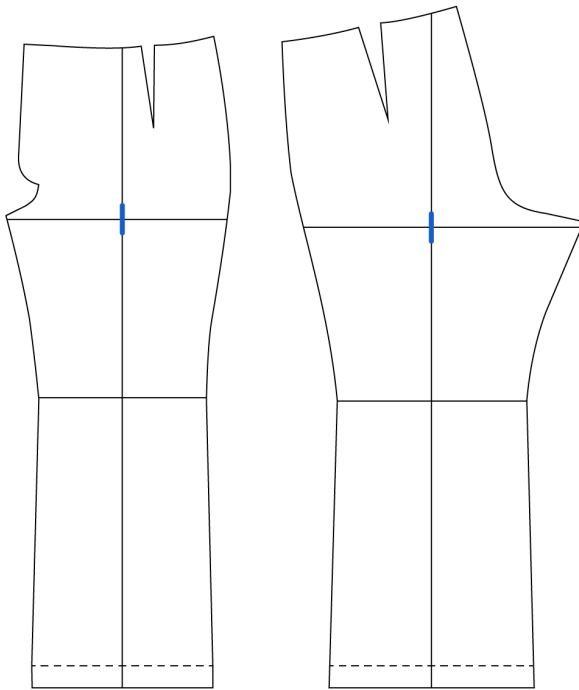


Figure 14.6: Laser Mark at Crotch Line Matches Drape Line

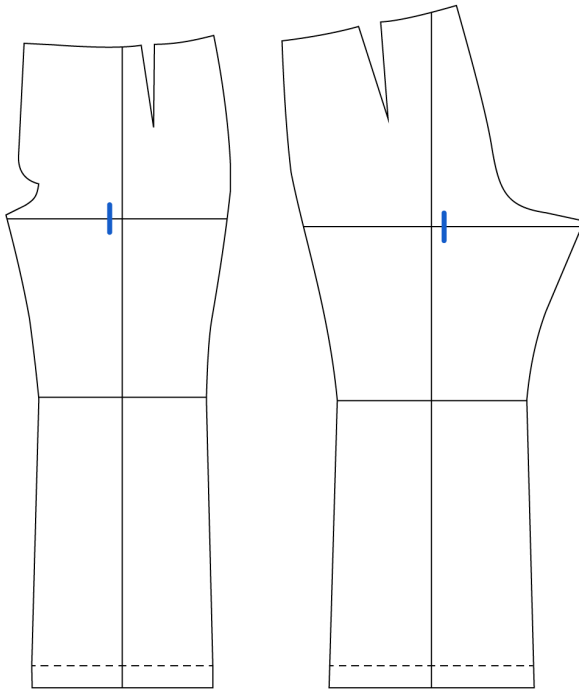


Figure 14.7: Laser Mark at Crotch Line is Toward the Center

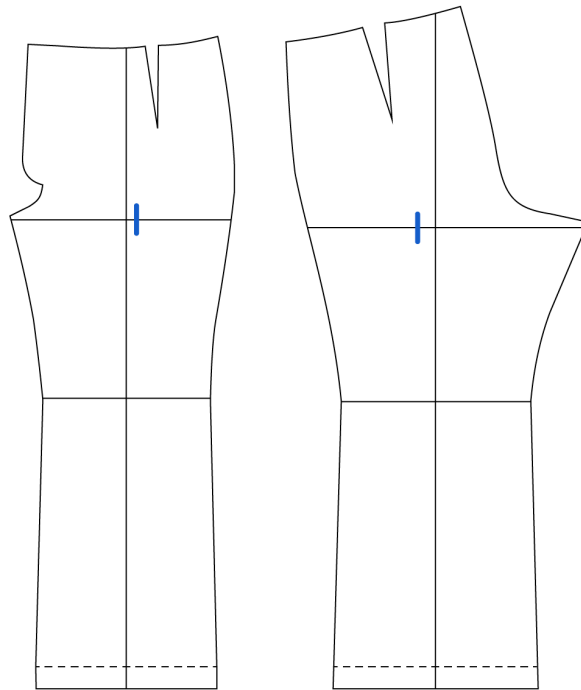


Figure 14.8: Laser Mark at Crotch
Line is Toward the Side Body

Second Two-Leg Muslin

15

Pattern Work

You can do the following on your previously traced pattern (the one you used to cut the first two-leg muslin), or you can trace the last tracing you used.

15.1 Mark the Muslin

If tracing your pattern again, make sure to transfer the necessary construction marks, as well as the following fitting marks:

- ▶ Stitching line for the waistband
- ▶ Drape line
- ▶ Knee line
- ▶ Crotch line

15.2 Transferring Information to Crotch Line

Retrieve the measurements you made of the distance between the drape line and intersection of the laser line. On your pattern, measure over that amount in the same direction from the drape line and make a vertical mark on the crotch line with your colored pencil. Do this on the front and back.

It's easy to get confused during this part. So it is helpful to say something aloud like, "On the front, I need to make a mark which is 7/8-inch away from the drape line toward the side of my body." Or, "On the back, I need to make a mark which is 1/2-inch away from the drape line toward the center."

Double-check your muslin against the pattern. Are your marks in the same places?

Drape Line Adjustment

16

16.1 Align Laser Intersection With Drape Line

Cut your pattern piece along the crotch line (Figure 16.1).

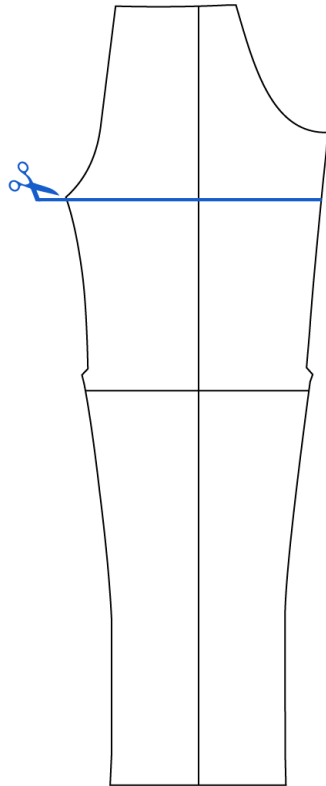


Figure 16.1: Cut Pattern Along the Crotch Line

Slide the upper pattern piece (the one with the waist) so that the colored mark you made aligns with the drape line on the lower piece (the one with the legs; Figure 16.2).

Tape the pattern back together. You will now have unaligned edges at the outseam and crotch.

Redraw Drape Line

Redraw the drape line from the pants leg and extend it into the torso section of the pattern (Figure 16.3).

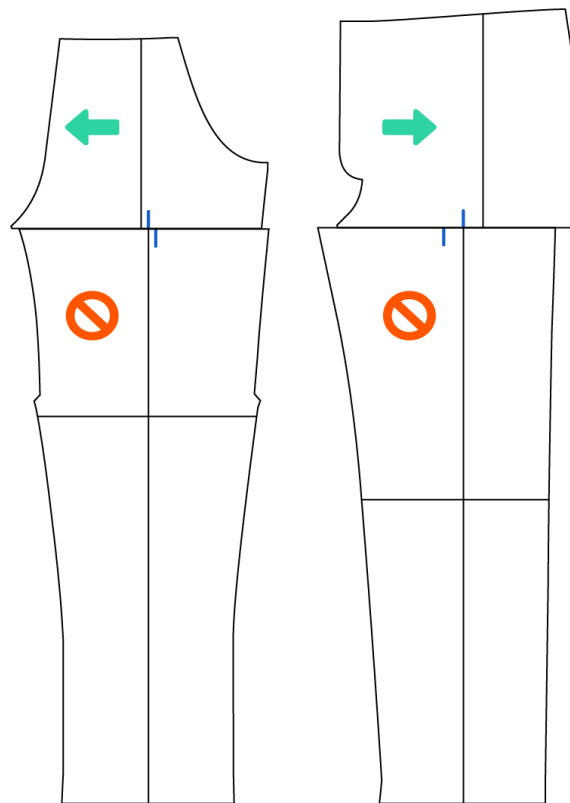


Figure 16.2: Slide Upper Piece so Mark Aligns with Drape Line

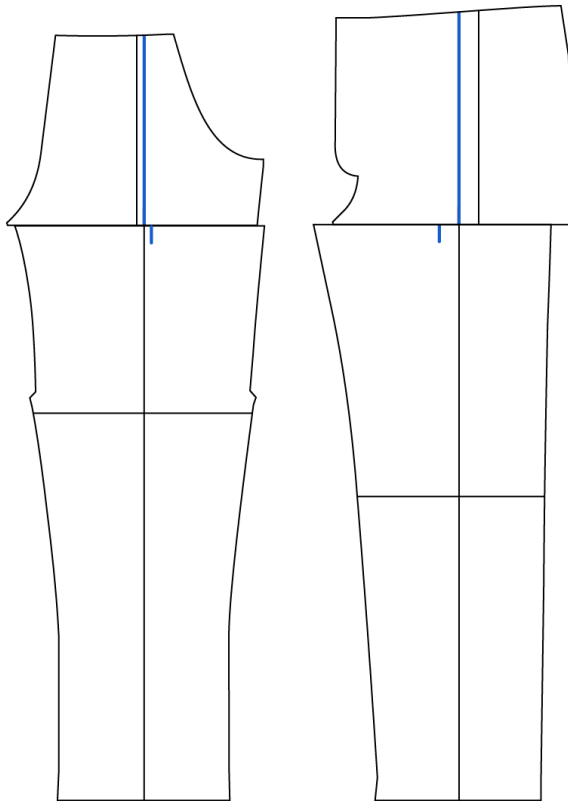


Figure 16.3: Redraw the Drape Line

16.2 Redraw Inseam and Outseam

The next step is to redraw the inseam and outseam from the crotch line to the knee. It is easy to get confused about where to add fabric and where you will need to take it away. You will always modify the bottom pattern piece (the legs) to meet the top pattern piece. The alterations will be made between the crotch level and knee level. The easiest way to redraw these curved lines is to use the original pattern.

Laser Mark at Crotch Line Is Toward Side Body

You will need to add to the inseam and remove from the side outseam. Using the original pattern, anchor your two patterns along the inseam at the crotch line. Next, rotate the original pattern until the two patterns meet at the inseam knee line. Draw a new inseam following the original pattern curve between the crotch line and the knee line (Figure 16.4).

To remove from the outseam, anchor your two patterns along the side seam at the crotch line. Next, rotate the original pattern until the two patterns meet at the outseam knee line. Draw a new outseam following the original pattern curve between the crotch line and the knee line (Figure 16.5). Cut along your new outseam to remove the excess.

Laser Mark at Crotch Line Is Toward The Center

You will need to remove from the inseam and add to the side outseam. To add to the outseam, anchor your two patterns along the side seam at the crotch line. Next, rotate the original pattern until the two patterns meet at the outseam knee line. Draw a new outseam following the original pattern curve between the crotch line and the knee line (Figure 16.6).

To remove from the inseam, anchor your two patterns along the inseam at the crotch line. Next, rotate the original pattern until the two patterns meet at the inseam knee line. Draw a new inseam following the original pattern curve between the crotch line and the knee line (Figure 16.7). Cut along your new inseam to remove the excess.

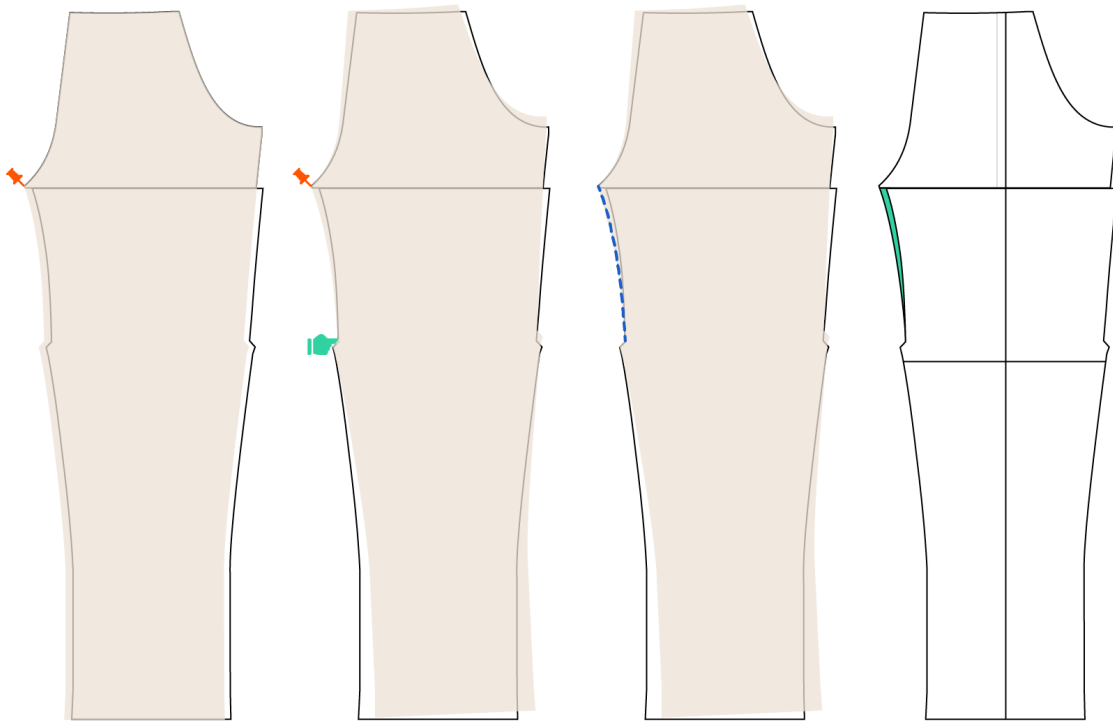


Figure 16.4: Laser Mark at Crotch Line is Toward the Side Body: Add to Inseam

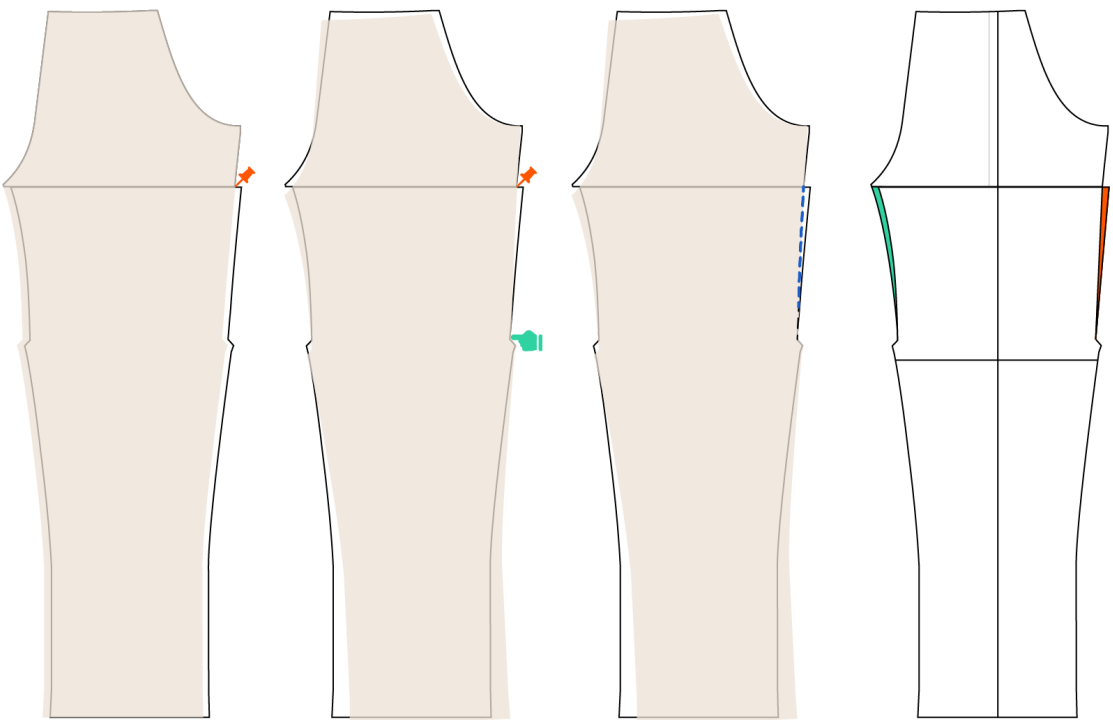


Figure 16.5: Laser Mark at Crotch Line is Toward the Side Body: Remove from Outseam

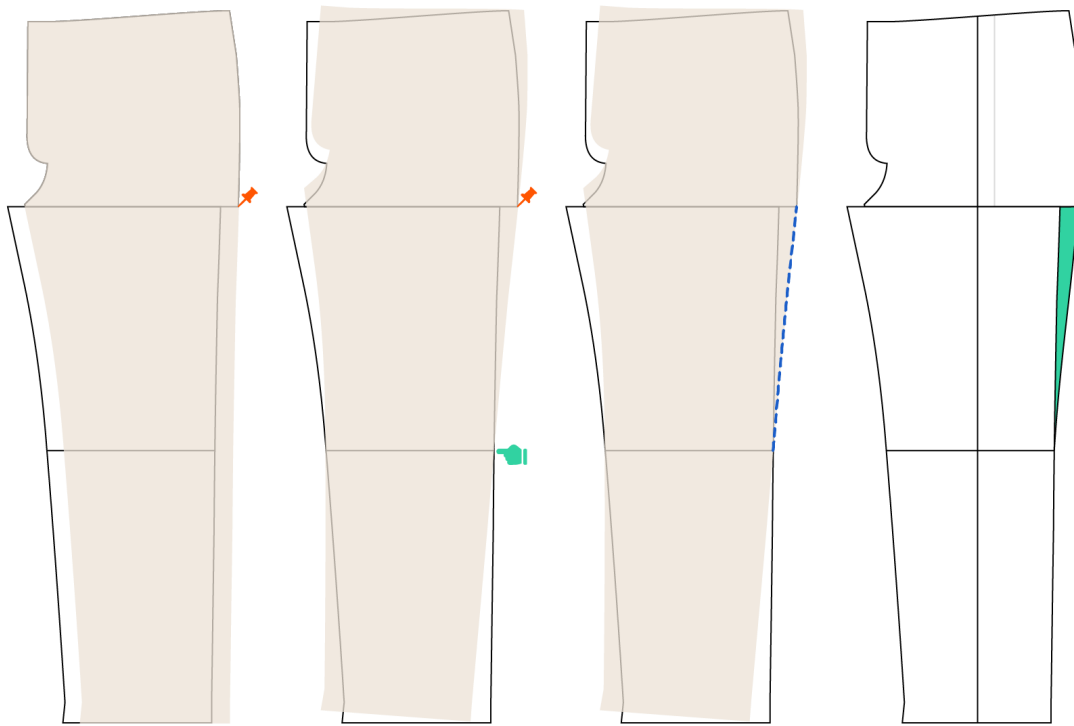


Figure 16.6: Laser Mark at Crotch Line is Toward the Center: Add to Outseam

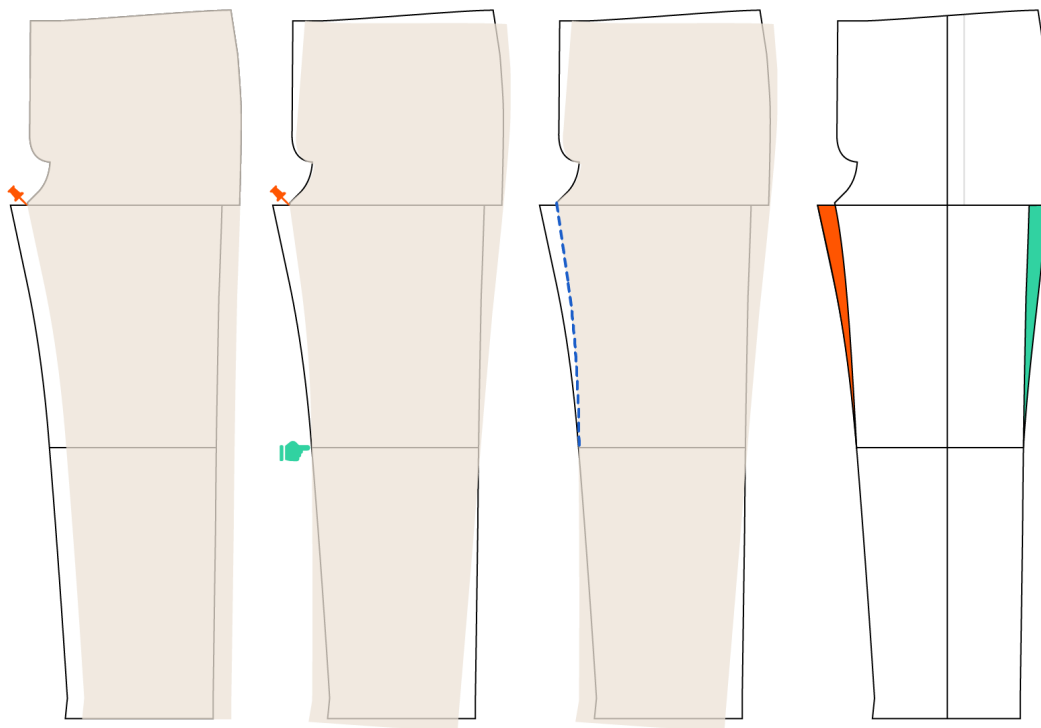


Figure 16.7: Laser Mark at Crotch Line is Toward the Center: Remove from Outseam

16.3 Truing The Pattern

Refer back to Section 6.3 (Checking Your Pattern) on page 23 to balance your pattern and true the seam lines.

17

Cut Two Legs

17.1 Cut a Second Two-Leg Muslin

Use your revised pattern to cut a second two-leg muslin. Use the drape line as the grainline when aligning the pattern on the fabric. The drape line will be the same line you drew on the last muslin from the ankle to the crotch line and then will continue through the crotch line in the new position caused by the movement of the torso block. It is, therefore, in a new place on your torso relative to what you drew on your second muslin.

We recommend that you maintain an addition of two inches of height above the waistline seam. The changes you make in moving with the torso block will affect the way you see the crotch. You may wish to adjust the waistband position, and the extra fabric provides flexibility to do so.

You may opt to cut at the hem line (by folding the hem allowance) or cut to the bottom of the pattern and hem before trying it on.

Cut a waistband identical to the one you used on your first two-leg muslin.

17.2 Mark the Fabric

Mark the following on the muslin, back and front on both legs) using black or blue permanent marker:

- ▶ Seamline for waistband
- ▶ Drape line
- ▶ Crotch line
- ▶ Knee line

17.3 Construct the Pants

Construct the pants according to the instructions in your pattern. We recommend that you again use a simple zipper insertion in the center front seam.

You will now examine the final fit. Wear the second two-leg muslin for some time for a couple of days. Sit, squat, dance, walk, and lift in them. You want the pants to relax a bit before determining the final adjustments.

18.1 Documenting with Laser and Camera

Set up your camera and laser in the space that you previously used for photos. Stand in front of the laser. Based on your previous work (Section 14.2), the laser should pass through the middle of your ankle and/or the center of your knee.

Take photos from front, back, and side.

At this point, you might notice a misalignment between the laser level and your drape line at the crotch level. Don't worry, this is perfectly normal. It may require going through the laser level process a few times, making subtle adjustments with each iteration, gradually bringing you closer to the ultimate fit. Stay persistent and make sure to take meticulous notes throughout your pant-fitting journey!

When the drape line and laser level overlap at the crotch line, you have accomplished the hard part and only have a few more steps to go.

19

Final Adjustments

19.1 Waistband to Crotch Line

Observe what changes you might like to make to the fit.

You may opt for a different position of the waistband on the pants and/or slight shaping in the upper torso above the crotch line to accommodate your shape, particularly asymmetries (Figure 19.1).

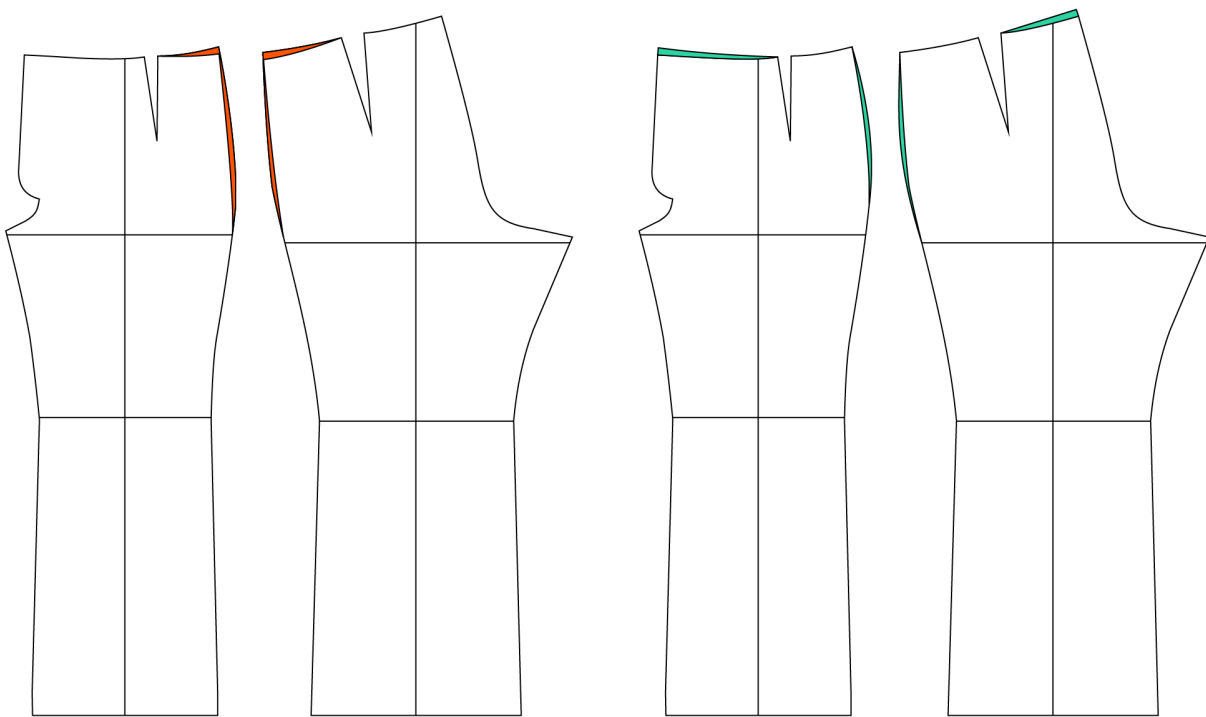


Figure 19.1: Final Adjustments to Waistline and Side Body

A key point about making your final adjustments, do not remove or add fabric to the side seam at or below the crotch line (Figure 19.2). This will alter the placement of the drape line and in effect cause the pant legs to drape differently.

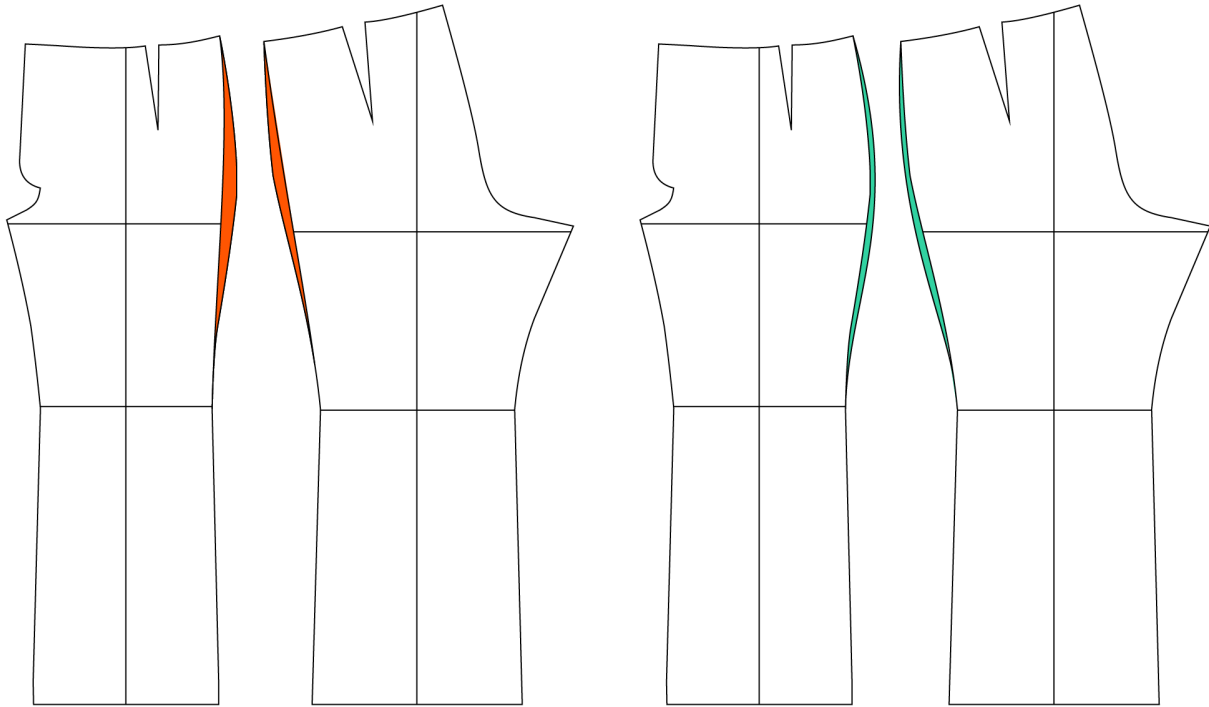


Figure 19.2: Do Not Remove (Red) or Add (Green) from the Crotch Line or Below

19.2 Knee Line to Hem Line

Although the following instructions are for the pattern, it may be helpful to follow these steps on your two-leg muslin and transfer your final edits to your pattern after testing.

If you found that the middle of your knee and ankle do not align with the laser level (Section 14.2), you might need to adjust your pants. But keep in mind that not everyone needs this adjustment and how much you need depends on things such as how you stand, the style of your pants, and the type of fabric. In the following examples, the laser level mark at the knee is toward the side of your body (shown in the right image; Figure 14.2). If the laser level at the knee was toward the center (shown in the left image; Figure 14.2), you would make the opposite adjustment described below.

Begin by cutting your pattern pieces along the knee line. Cut from the outseam toward the drape line, but do not cut through the drape line. Next, cut from the inseam toward the drape line, but again do not cut through the drape line (Figure 19.3).

Carefully, pivot the lower leg (from the knee to the hem) overlapping and spreading the amount needed (Figure 19.4).

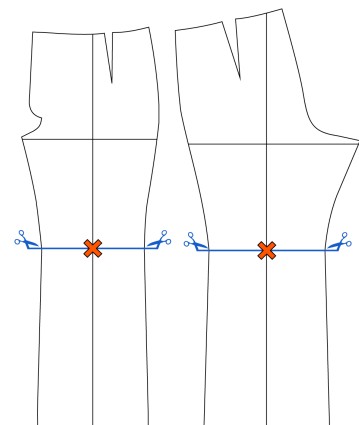


Figure 19.3: Create Pivot Point at the Intersection of the Knee Line and Drape Line

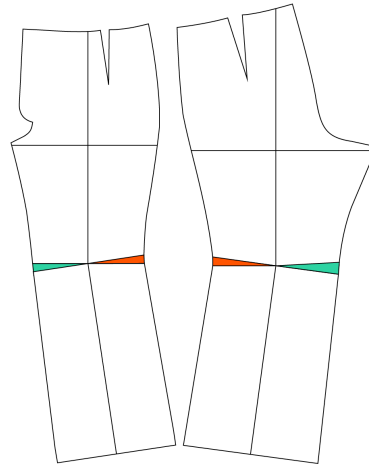


Figure 19.4: Spread (Green) and Overlap (Red) at Knee Line

Redraw Inseam and Outseam

Using your curved ruler, smooth out the new inseam and outseam lines so that there are no harsh angles.

Redraw Drape Line

Redraw the drape line from the upper part of the pants leg and extend it down from the knee line to the hem (Figure 19.5).

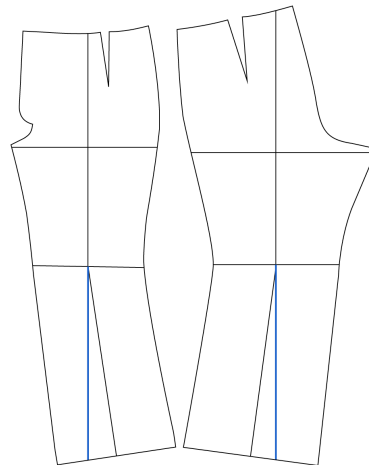


Figure 19.5: Redraw Drape Line from Knee Line to Ankle Line

Truing The Pattern

Finally, level the ankle line and redraw the hem (Figure 19.6).

As discussed in Section 6.3 (Checking Your Pattern) on page 23, check the balance of your pattern pieces and verify the seam lines.

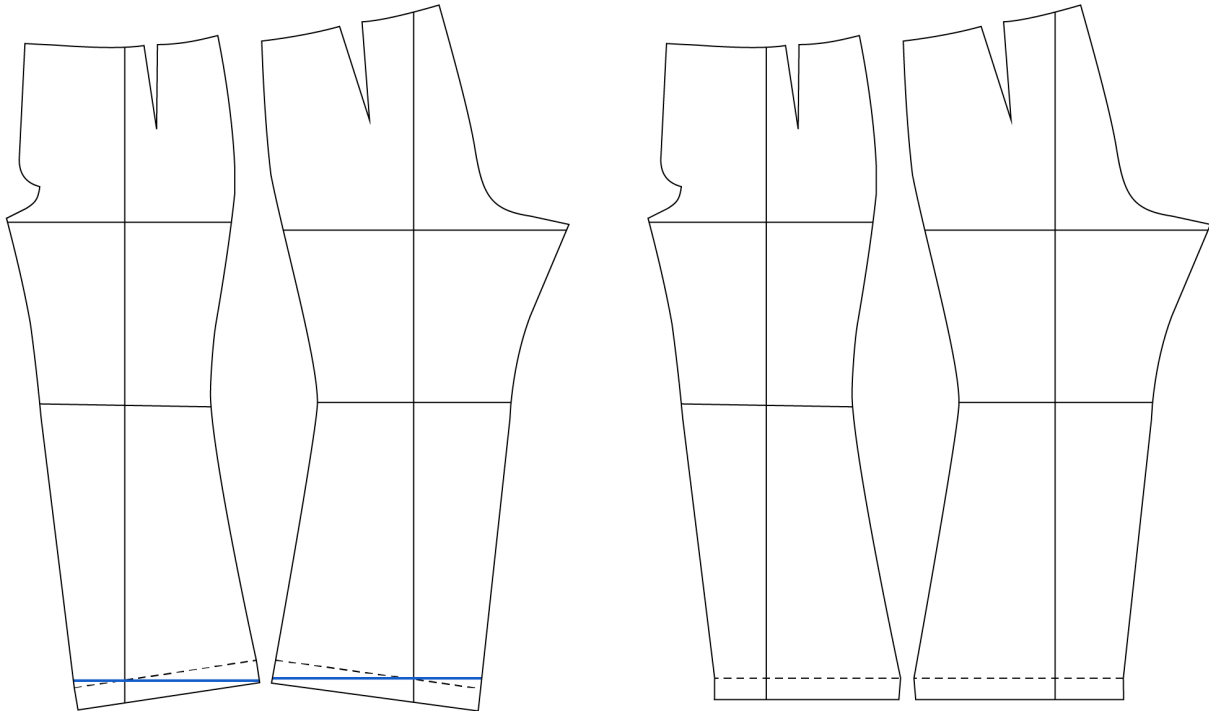


Figure 19.6: Redraw Ankle Line and Hem

19.3 Pockets

If you are making the Style Arc Delta Cargo Pants or the Itch-to-Stitch Upland Trousers, your final step will be to redraw your pocket pieces to match the new shape of your side seam and waistline.

**Congratulations on Completing the
Drape Line Approach for Pants Fit!**

Appendix

Table of Personal Measurements

You may want to use this table to keep track of your measurements for this and future projects. We recommend doing new measurements each time you start a project so you we have left space for both date and pattern. The first entries in the table should be measured per the instructions in Chapter 3 (Measuring) on page 8 of the manual. The second section of the chart lets you record your final decisions once your fitting waistband and pants are completed.

	Style Arc Delta Cargo	Stokx Patterns Square Pants	Itch to Stitch Upland Trousers
	Today's Date	Today's Date	Today's Date
Measured			
Waist (Measured)			
Hip / Lower Torso Circumference (Measured)			
Distance from Knee Point to Hem (Measured)			
From Garment			
Waist (From Fitting Waistband)			