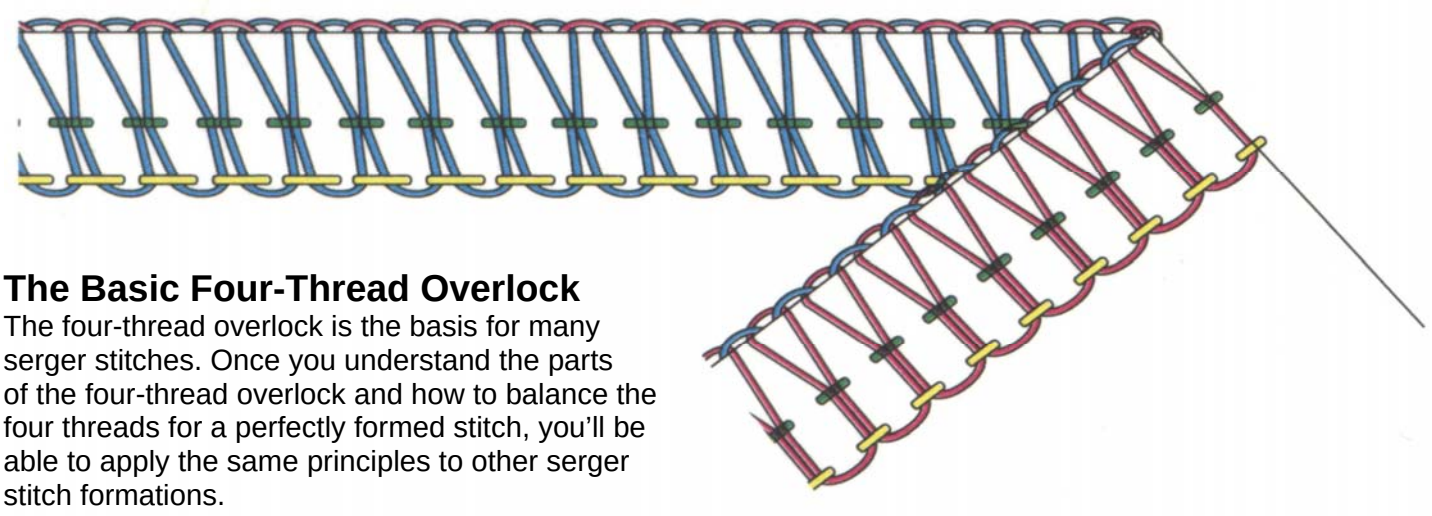
Serger Project

# Stop Tension Headaches!

Created by Jo Leichte

*Don't let serger tension woes give you a headache! Understanding how serger stitches are formed is the first step to "tension-free" serging. Focusing on the basic 4-thread overlock stitch formation, these exercises will teach you to recognize balanced and unbalanced stitch formations, identify which threads are out of balance, and adjust tension dials (or levers) to achieve a perfectly formed stitch.*



## The Basic Four-Thread Overlock

The four-thread overlock is the basis for many serger stitches. Once you understand the parts of the four-thread overlock and how to balance the four threads for a perfectly formed stitch, you'll be able to apply the same principles to other serger stitch formations.

## Upper and Lower Loopers

The looper threads encase the seam allowance, with the upper looper thread (blue) on top of the fabric as it passes under the presser foot, and the lower looper thread (red) underneath the fabric.

The looper threads are anchored at the seam line by the left needle thread (yellow), and entwine aound the outer edge, covering the raw edges. Note that the right needle thread (green) holds the looper threads together near the middle of the seam allonwance, forming the looper threads into a "Y" shape. Notice also that they "Y" shape is vertical on the underside of the serged edge (red lower looper threads) and slanted to the left on the upper side (blue looper threads).

*In a perfectly balanced four-thread overlock stitch, the looper threads should cover the seam allowance smoothly—not too loose, not to tight—and meet at the edge without extending beyond it.*

*Note: While the specific settings in this lesson are for BERNINA/bernette sergers, the same techniques can be used to adjust all sergers and overlock machines.*

## Right and Left Needles

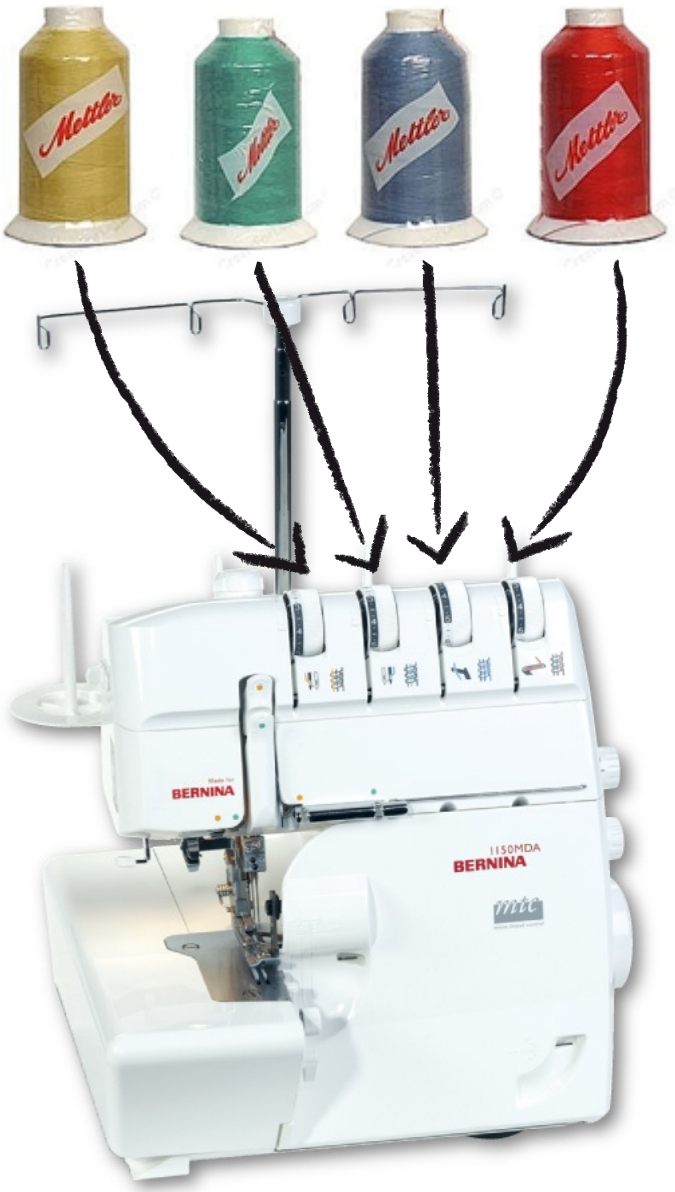
From the top, the needle threads (yellow and green) look like regular straight stitches; however, looking underneath the fabric reveals that instead of locking around a bobbin thread, the overlock needle threads are entwined with the lower looper thread (red).

In a 4-thread overlock stitch, the left needle (yellow) thread forms the seam, while the right needle (green) thread acts as a safely stitch; if the left needle stitching (yellow) were to fail, the right needle stitching (green) would keep the seam together.

*In a perfectly balanced four-thread overlock stitch, the needle threads should wrap snuggly around the lower looper thread without forming loops or bumps.*

## Supplies

- 18 or more 5" x 6" rectangles or heavyweight muslin (about ½ yard of 45"-wide fabric)
- Mettler Seracor polyester serger thread
  - ◊ *1 spool medium or bright blue (NOT dark)*
  - ◊ *1 spool medium or bright red (NOT dark)*
  - ◊ *1 spool medium or bright green (NOT dark)*
  - ◊ *1 spool bright yellow*




## Preparation

- Now that you know what a perfectly balanced four-thread overlock stitch should look like, thread your serger using yellow, green, blue, and red thread, following the directions and diagrams in your Instruction Manual. (The settings below are typical for BERNINA/bernette sergers.)
  - ◊ Upper looper (blue) = 4-5
  - ◊ Lower looper (red) = 4-5
  - ◊ Right needle (green) = 4-5
  - ◊ Left needle (yellow) = 4-5
  - ◊ Stitch Length = 2.5 mm
  - ◊ Differential Feed = N
  - ◊ Cutting Width = 2 mm
- To test, stitch two rectangles of fabric together.
- Adjust tension settings as needed and record them in the chart below. (If needed, have someone assist you with setting up your serger for this lesson.)
- For reference, note your serger's balanced test settings in the chart below. You will reset your serger to these settings after stitching each sample.

*Threading your serger to match the color-coded guide and tension knobs/levers of your serger–yellow, green, blue, red—makes it easy to compare your samples with the color illustrations and identify which threads are "misbehaving" in the unbalanced stitch samples you create.*

## My Balanced Four-Thread Overlock Tension Settings

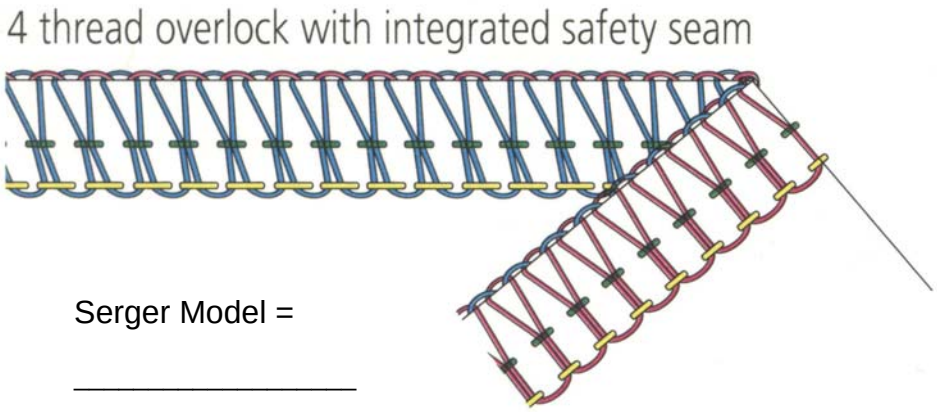
Upper Looper = _____

Lower Looper = _____

Right Needle = _____

Yellow Needle = _____

Stitch Length = 2.5 mm
Differential Feed = N
Cutting Width = 2.0 mm

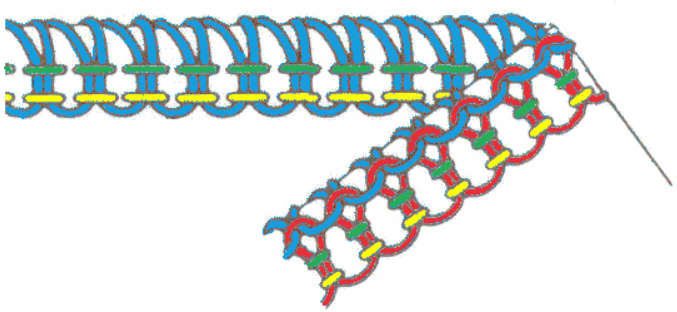



Serger Model =

_____

## Sample 1
# Loose Upper Looper Tension

*To create the unbalanced sample, lower the upper looper (blue) tension to 2; stitch two layers of heavyweight muslin together.*



**What to Notice**

- The upper looper (blue) thread is drawn to the back of the sample.

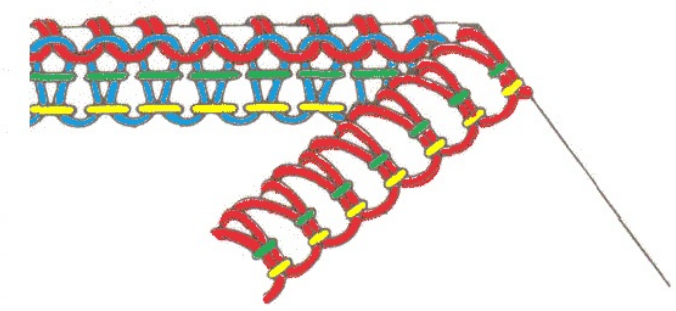
**What to Do**

- Make sure the upper looper (blue) thread is completely seated in the tension guides.
- Increase the upper looper (blue) tension one half step; serge a test sample. Repeat as necessary.
- Occasionally, this stitch formation is the result of a very tight lower looper (red) thread, sometimes caused when the lower looper (red) thread becomes snared in one of the guides. Open the looper cover and check the entire lower looper thread path.

*Before continuing to Sample 2, reset tensions for a balanced four-thread overlock stitch.*

## Sample 2
# Loose Lower Looper Tension

*To create the unbalanced sample, lower the lower looper (red) tension to 2; stitch two layers of heavyweight muslin together.*



**What to Notice**

- The lower looper (red) thread is drawn to the front of the sample.

**What to Do**

- Make sure the lower looper (red) thread is completely seated in the tension guides.
- Increase the lower looper (red) tension one half step; serge a test sample. Repeat as necessary.
- Occasionally, this stitch formation is the result of a very tight upper looper (blue) thread, sometimes caused when the upper looper (blue) thread becomes snared in one of the guides. Open the looper cover and check the entire upper looper thread path.

*Before continuing to Sample 3, reset tensions for a balanced four-thread overlock stitch.*

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### *700D*

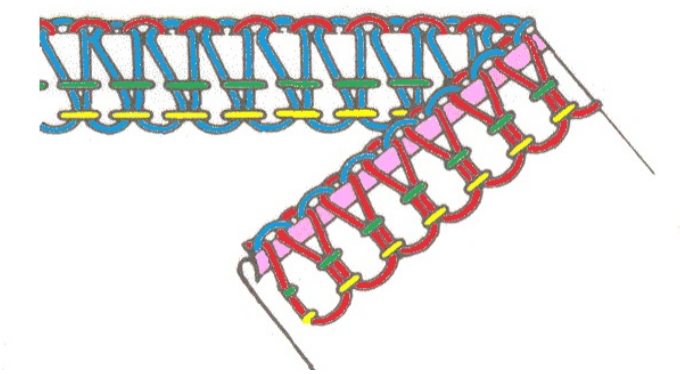
- ◊ *3-4 thread stitch capabilities*
- ◊ *Optional upper looper convertor adds 2-thread stitch capability*
- ◊ *Differential feed knob on lower left side*
- ◊ *Stitch length sliding knob under cloth plate*


### *800DL*

- ◊ *2-3-4 thread stitch capabilities*
- ◊ *Differential and stitch length knob on right side for easy access*

## Sample 3
## Tight Upper & Lower Looper Tensions

*To create the unbalanced sample, increase both the upper (blue) and lower looper (red) tensions to 8; stitch two layers of heavyweight muslin together.*



**What to Notice**

- The fabric is folded or tunneled inside the serged edge and/or the thread “bites” into the fabric edge.

**What to Do**

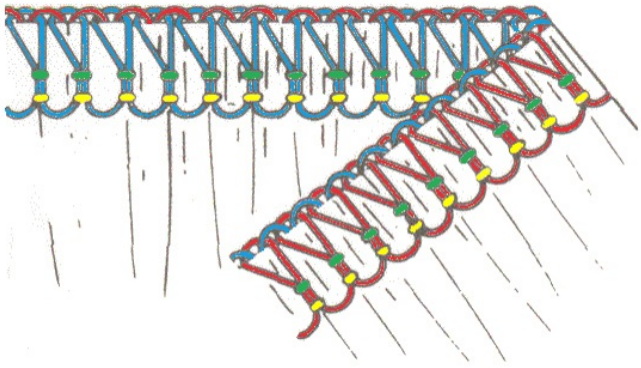
- Decrease the upper looper (blue) and lower looper (red) tensions one half step; serge a test sample. Repeat as necessary.

- Occasionally, this problem can be caused by a cutting width that is too large, particularly when using thick or bulky fabrics. If this is the case, decrease both the upper looper (blue) and lower looper (red) tension settings to allow more room for the fabric inside the seam.

*Before continuing to Sample 4, reset tensions for a balanced four-thread overlock stitch.*

## Sample 4
## Tight Right & Left Needle Tensions

*To create the unbalanced sample, tighten the left (yellow) and right (green) needle tensions to 7; stitch two layers of heavyweight muslin together.*



**What to Notice**

- The stitches formed on the upper side of the seam by the left (yellow) and right (green) needle threads may appear shorter than usual, and the fabric may be puckered at the seam.

**What to Do**

- Make sure the left (yellow) and right (green) threads are not caught in any of the guides (trace the entire thread path from the spool to the needle).

- Decrease the left (yellow) and right (green) needle tensions one half step; serge a test sample. Repeat as necessary.

*Before continuing to Sample 5, reset tensions for a balanced four-thread overlock stitch.*

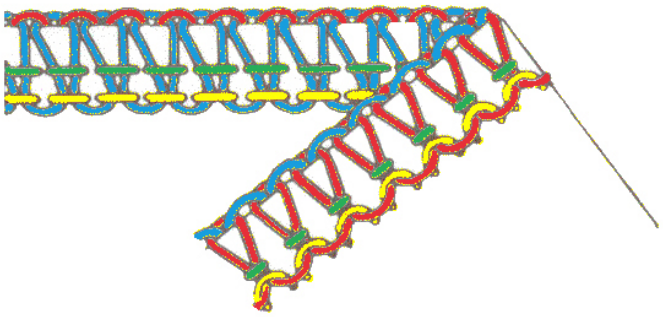
*1100MDA*

- ◊ *2-3-4 thread stitch capabilities*
- ◊ *Differential and stitch length knob on right side for easy access*
- ◊ *Micro Thread Control (MTC)*

*1300MDC*

- ◊ *2-3-4 thread stitch capabilities, including chain-stitch and cover-stitch*
- ◊ *Differential and stitch length knob on right side for easy access*
- ◊ *Micro Thread Control (MTC)*
- ◊ *LED stitch chart screen*

### Sample 5
## Loose Left Needle Tension
*To create the unbalanced sample, lower the left needle (yellow) tension to 1; stitch two layers of heavyweight muslin together.*



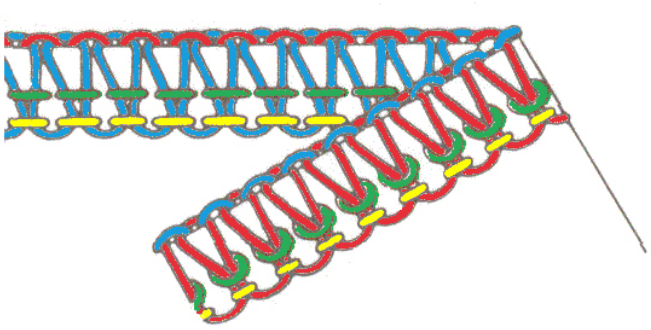
**What to Notice**
- The left needle (yellow) thread forms small loops on the back of the fabric and does not hold the lower looper (red) thread in a straight line at the edge of the seam.

**What to Do**
- Make sure the left needle (yellow) thread is completely seated in the tension guides, especially if the loops on the back of the fabric are very large.
- Increase the left needle (yellow) tension one half step; serge a test sample. Repeat as necessary.

*Before continuing to Sample 6, reset tensions for a balanced four-thread overlock stitch.*



### Sample 6
## Loose Right Needle Tension
*To create the unbalanced sample, lower the lower right needle (green) tension to 1; stitch two layers of heavyweight muslin together.*



**What to Notice**
- The right needle (green) thread forms small loops or bumps on the back of the fabric. These may be more easily felt than seen. Run your finger over the back of the stitching; the right needle (green) stitches may feel like grains of sand.

**What to Do**
- Make sure the right needle (green) thread is completely seated in the tension guides, especially if the loops are very large.
- Increase the right needle (green) thread tension one half step; serge a test sample. Repeat as necessary.

*Before continuing to Sample 7, reset tensions for a balanced four-thread overlock stitch.*

### Sample 7
## Perfectly Balanced Tensions
*Using what you've learned about balancing tension in the previous samples, adjust the tension settings on your serger to achieve a perfectly balanced four-thread overlock stitch.*

**What to Notice**
- All threads are perfectly balanced.

**What to Do**
- Record your settings in the chart on page 2.
- *Keep this lesson and your balanced and unbalanced stitch samples near your serger for easy access.*