



# Differential Feed

TAKE THE MYSTERY OUT OF THIS **SERGER FUNCTION** AND LET IT WORK FOR YOU

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*Front and back sets of feed dogs enable you to handle a wide range of fabrics and seam types.*

**D**ifferential feed (DF) is one of the most useful functions of a serger and probably its least understood. It isn't available on any domestic sewing machine and it's what makes the serger a knit fabric's best friend. It helps control bias or unstable grainlines while stitching woven fabrics, too. Knowing how and when to adjust the differential feed setting can be the difference between professional results and a dud.

Many experienced, highly proficient sewists tell me they've never touched the differential feed setting on their sergers because they don't understand how it works. And if you're new to serging, you may still be getting to know your machine and its potential. There are so many ways to use differential feed in utility sewing and for decorative effects. Understanding how this marvel works will give you the skills to tackle any challenging fabric and build your knowledge bank of decorative serger techniques.

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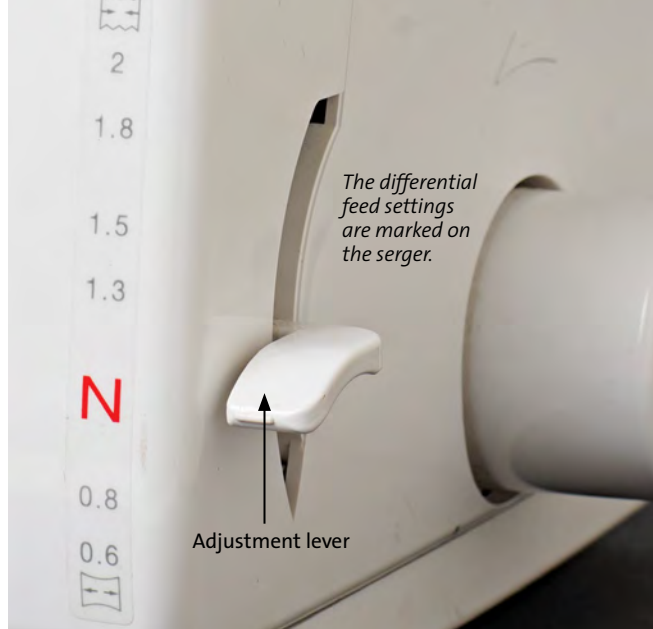
*Gail Patrice Yellen teaches serging in person and online. Find her serger tips videos at [YouTube.com/GailYellen](https://www.youtube.com/GailYellen).*

# DF Defined

Differential feed, or DF, is a feature of all modern sergers. As its name suggests, it's about how the fabric is fed under the needles.

## FIND THE CONTROL

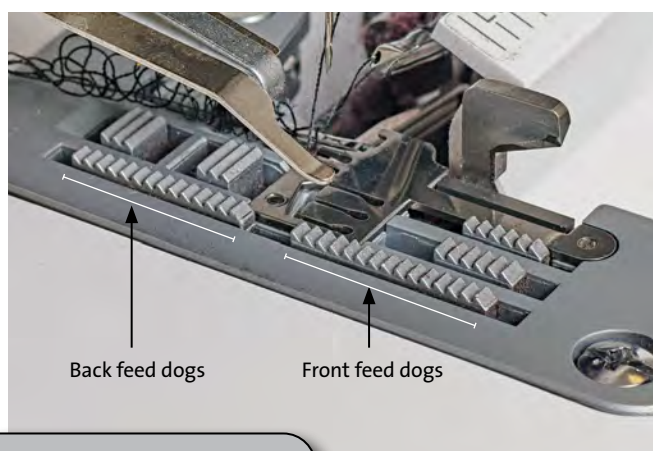
Check your owner's manual for the location of the lever, knob, dial, or computer screen adjustment. The settings range between 0.5 to 2.0 (depending on the machine), with 1.0, or N, as the default or normal setting. The range may seem small, but you'll discover that it's plenty to handle most serging conditions.



## OBSERVE THE FEED DOGS

Peek under your serger's presser foot and you'll see two sets of feed dogs—a front and back set. The front set is closer to the presser foot's toe; the back set is under the back of the foot. The configuration on your serger might look different from what's shown at right. (Sewing machines have one set only and, therefore, are not capable of providing differential feed.)

The sets work independently of each other. No matter what the differential feed setting is, the back feed dogs always move at a constant speed. The "difference" in differential feed is how fast the front feed dogs are working in relation to the back feed dogs. When a setting is adjusted, it alters the speed of the front dogs only.

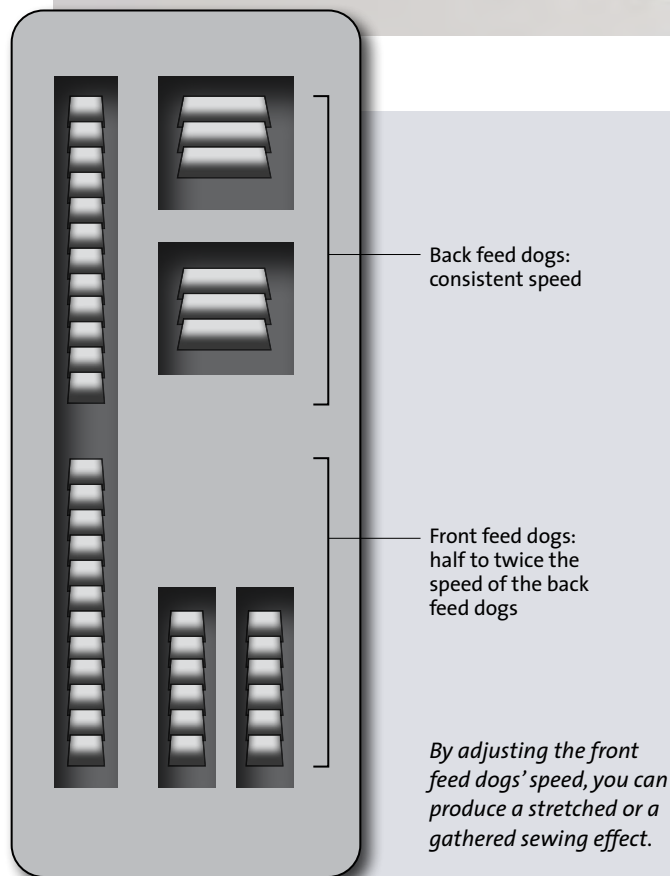


## UNDERSTAND THE PRINCIPLE

**1.0 (N):** With the differential feed set at 1.0, or N, the front and back feed dogs move at the same speed, feeding the fabric evenly under the presser foot. This is similar to how fabric moves in a sewing machine.

**1.0 to 2.0:** When you adjust the feed, think of your car's speedometer: The higher the number, the faster the speed. The higher the differential feed setting, from 1.0 to 2.0, the faster the front feed dogs are advancing fabric under the presser foot. At the 2.0 setting, the front dogs move the fabric twice as fast as the back dogs. Pushing the fabric faster minimizes the chance for stretching in knits or bias seams, and may gather fabric that is already somewhat stable.

**0.5 to 1.0:** A setting below 1.0, or N, slows down the front feed dogs and operates much like "taut sewing" to prevent puckering. The 0.5 setting makes the front dogs travel at half the speed of the back set. Fine and tightly woven fabrics can benefit from these lower settings.





# Set for Success

There isn't a one-size-fits-all formula to determine correct differential feed settings. Each fabric has its own personality, but it won't take long to know when to start your test with a setting of 1.0, or N, or initially jump to a higher or lower setting.

## PREPARE SWATCHES

Cut sample swatches that are at least 10 inches long on one edge; a shorter length doesn't give an accurate read on how the fabric will behave. Make swatches with the 10-inch edge on the straight and cross-grain, as it is essential to test serging in both directions. The samples should match the serging you plan for your project, so if you'll only be finishing edges, a single layer is all you need. If you plan to serge seams, make a two-layered sample.

## TEST AND ADJUST

The variety of knit fabrics continues to expand almost exponentially. Fiber content as well as the presence and/or percentage of spandex dictate the correct differential feed setting. Set the serger for the desired stitch type and make any tension adjustments needed for a balanced stitch. With the differential feed set at 1.0, or N, serge the edge. If the seam stretches or ripples, increase the setting, one click at a time, until the edge maintains its original length. If at the highest setting, 2.0, the edge has puckered to between 9<sup>3</sup>/<sub>4</sub> inches and 10 inches, simply cover the fabric with a press cloth and steam-press the edge.

If the seam or edge puckers, gradually reduce the differential feed setting until you achieve a smooth result. With some experience, you'll learn how different textiles perform, and you'll feel confident in setting the feed up or down for your first test pass.



## CONSTRUCTION SHORTCUTS

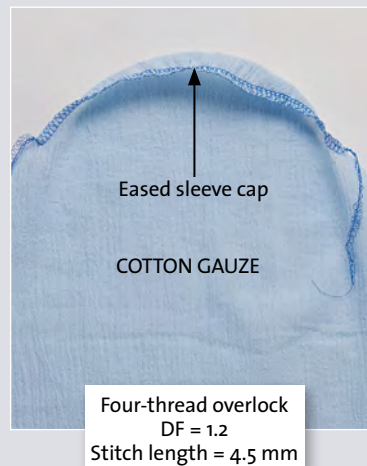
Once you understand how differential feed affects the stitching on a particular fabric, you can put it to use to make routine sewing tasks faster and easier.

### Eliminate bias stretching

Differential feed is great for bias-grain seams on woven fabrics. Stay tapes and staystitching are our first lines of defense against stretching, but slightly increasing the feed setting minimizes stretching and helps maintain the original seam length.

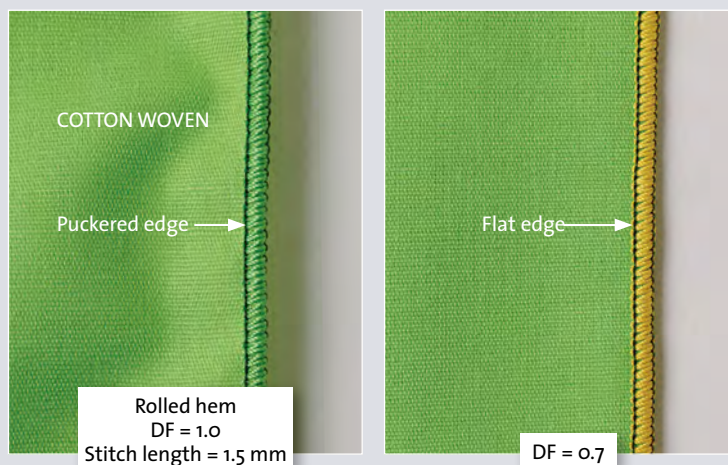
### Ease a sleeve cap

Set the differential feed to 1.2 to 1.5, depending on fabric weight; lower the setting more for heavier textiles. Leave several inches of thread chain at both ends and serge between the notches. Let the knife skim off the threads on the sleeve edge, but don't trim off any seam allowance. This lightly gathers the fabric's edge.



### Relax rolled edges

A rolled hem finish on napkins can sometimes create drawn-in edges, especially on lightweight cotton and linen fabrics. Lower the differential feed setting below 1.0, or N, to 0.5 to 0.7. The slower front feed dogs hold back the fabric slightly, keeping the edge smooth and pucker-free.



# The Decorative Differential

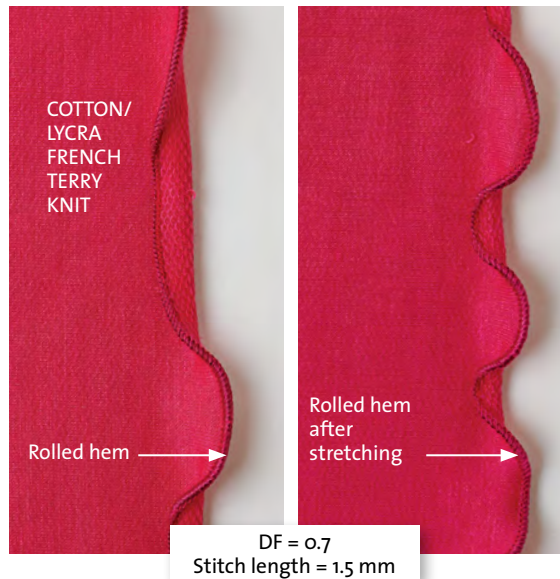
Try harnessing the push/pull effects of differential feed to create appealing textures.

## LETTUCE EDGES

Gracefully rippled edges on lightweight fabrics add a touch that can be elegant or whimsical. The method I use is easy and fast.

Start with a knit fabric that has considerable crosswise stretch; the lettuce edge works best on the cross-grain. Set the serger for a three-thread rolled hem, with the differential feed on the lowest setting. Test the stitch length on scrap fabric. A short stitch length makes a dense, robust edge with body.

Stitch along the edge, trimming off the hem allowance, or at least a sliver of fabric. The resulting edge will be wavy, but not ruffy. Pinch 2-inch segments of the edge and pull. This stretching forms ruffles.

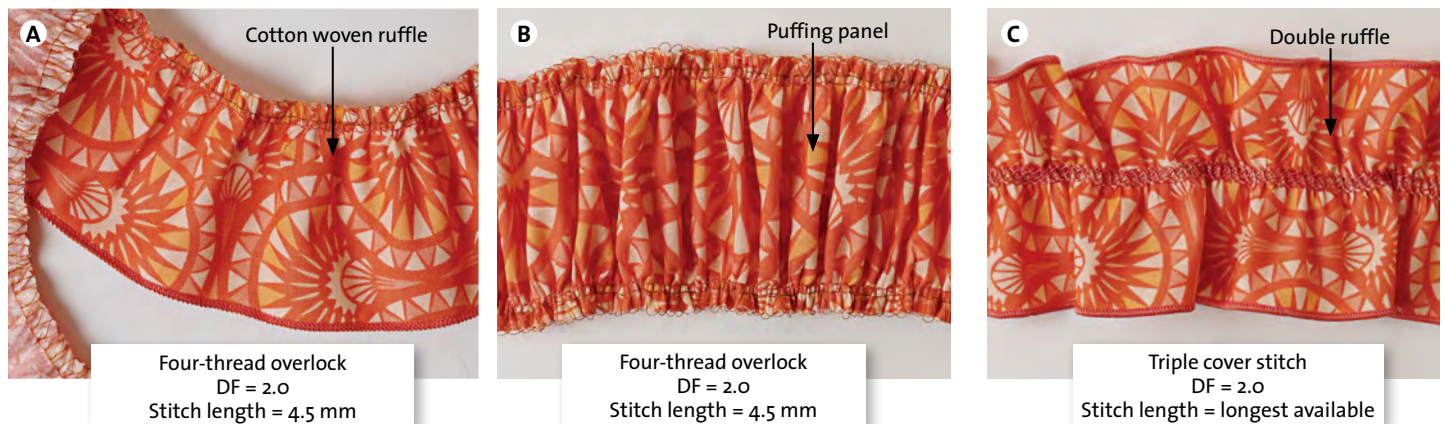


## NO-PULL GATHERING

Differential feed is a time-saver for gathering. There is no need to pull a basting thread (and possibly break it) or keep adjusting gathers to even the distribution.

Select a four-thread overlock stitch for the best results. Lengthen the stitch to 4.0 mm to 4.5 mm and increase the differential feed setting to 2.0. Guide the fabric gently, applying no tension as it feeds. Pulling back or putting finger pressure on the fabric as it advances cancels out the front feed dogs' higher speed, and the fabric remains flat. A light touch is the key to nice gathers (and good technique in general). How we handle fabric as we stitch is as important as having correct settings.

The fullness of the gathers depends on the fabric weight and whether it has a soft or crisp hand. Lightweight to medium-weight fabrics gather best (A). Stitch a 6-inch thread chain before stitching onto the fabric and leave a 6-inch thread chain on the opposite end. If a gathered skirt edge must be loosened to fit a waistband, you'll have enough thread to extend the fabric. If gathers need tightening, pull on the needle threads only. For a puffing panel, gather both edges of the strip (B).



You can also try ruffling with a triple (three-needle) cover stitch (C). Cut a 3½-inch-wide fabric strip approximately three times longer than the desired finished length. Finish the long edges with a three-thread rolled hem. With chalk or wash-away marker, draw a guideline down the center of the fabric's wrong side. Place a decorative thread in the chain looper and serger cone thread in the needles. Lengthen the stitch to the longest setting and crank up the differential feed to 2. The center cover stitch needle should follow the guideline. Stitch with the fabric wrong side up. The finished stitching mimics smocking along the ruffle's center.

## SAVE YOUR SAMPLES

If you have knit fabrics in your stash left over from previous projects, or you don't think you know enough about differential feed to be successful, dig them out and start stitching. Practice and experimenting are the best teachers. Because you're stitching on scrap fabric, there's no need to rip out poor results.

Every sample is a learning experience, so don't toss the bad ones. They'll tell you what NOT to do the next time. Make notes and pin them to each sample. You'll want to note the stitch (e.g., four-thread overlock), stitch length, differential feed setting, tension settings, and needle type and size. Store the samples in page protectors in a binder. You'll build a library that you can refer to when getting ready to start a new serger adventure.