

## Adjusting Sewing Machine Tension

Learning to control and adjust your sewing machine tension will empower you to sew creatively. Before making any adjustments to the tension on your sewing machine, be sure that the machine is properly threaded. The thread in machine must feed through three main points on the sewing machine; the tension disks, the take-up, and the needle. The bobbin must also be threaded properly to enable the machine to form a good stitch. Bobbins have their own mechanism for controlling tension on the thread. Follow your sewing machine instructions book for proper threading.

Upper and lower tensions must be balanced to produce a perfect stitch. The upper tension varies in location on different machines. It may be on the faceplate, on the front of the needle-bar housing, or on the upper arm of the machine head. It is usually adjusted with a dial.

The lower tension, located on the bobbin case, may be adjusted by a screw. If two screws fasten the lower tension spring to the bobbin case, adjust by turning the screw nearest the center of the spring—not the screw on the end.

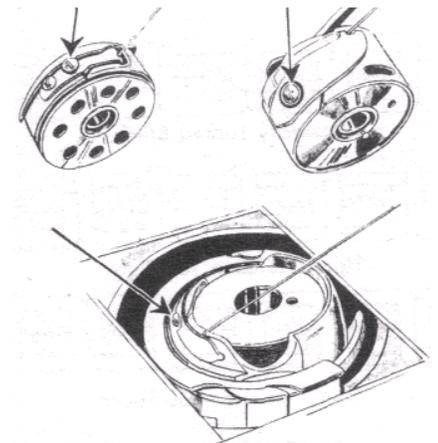
Assume the lower tension to be correct until proved wrong, and make adjustments on the upper tension as much as possible. Lower tension should only be adjusted if the problem cannot be fixed by adjusting the upper tension.

If the lower tension has been disturbed during cleaning or prior adjustment, set both lower and upper tensions so there will be a slight drag on each thread. Use the same size thread on both bobbin and spool.

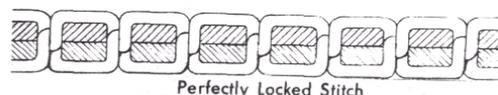
Now, to guide you in the adjusting, take a look at the stitching the machine makes. Set stitch-length control for a medium length of stitch. Fold a 6- or 8-inch square of medium weight cloth and stitch diagonally across it at an angle of about 45 degrees.

Now, inspect the stitching. A perfect stitch will have threads locked midway between the two layers of cloth, with no loops on the top or bottom of the seam and no puckers in the cloth. If the bobbin thread loops show on the top side of the seam and the top thread is straight, the upper tension is tighter than the lower. If spool thread loops show on the underside of the seam and the lower thread is straight, the upper tension is looser than the lower.

**ADJUSTING BOBBIN TENSIONS-**  
 Turn the screw nearest the center of the small spring on the bobbin case. An eighth of a turn will make a noticeable difference. Turn left to decrease tension, to the right to tighten tension.



**Balanced Tension**



**Upper Tension Too Tight**



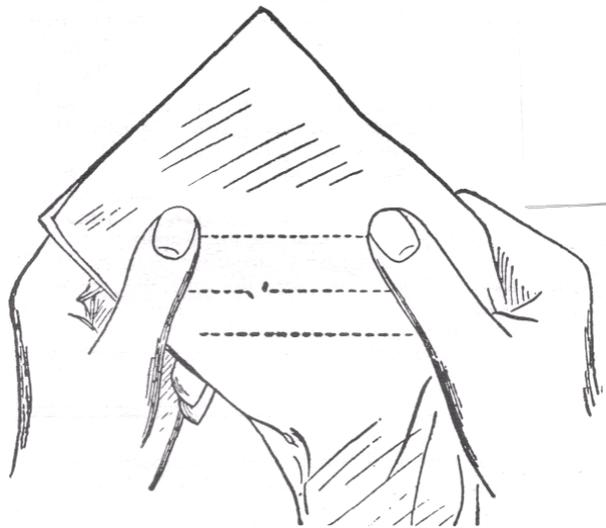
**Upper Tension Too Loose**



## Test for Tension Balance and Adjustment Needed

To further test the tension balance, grip the ends of the bias stitching between the thumb and first finger of each hand. Pull evenly, strongly enough to break threads. One of four things will happen:

1. The upper thread only may break. This shows that the upper tension is tighter than the lower.
2. The lower thread only may-break. This shows that the upper tension is looser than the lower.
3. Both threads may break. This shows that the tensions are balanced. The stitch may be perfect. However, if the cloth puckers at the same time, both tensions may be too tight.
4. Neither thread may break. This shows that tensions are balanced but both may be too loose.



## Adjustment

1. In most cases the tension control dial will have numbers around it. Loosen the upper tension by turning the adjusting dial to the left by half a number. Make another diagonal seam and test the stitch again. Repeat if necessary, changing the upper tension by slight turns until tension is balanced—that is, until both threads break at the same time or until neither thread breaks. They may both need to be loosened or tightened, as described in 3 or 4, below.
2. Tighten the upper tension by turning the adjusting the dial with a turn to the right about half a number. Make another diagonal seam and test the stitch again. Repeat if necessary, changing the upper tension by slight turns until tension is balanced—that is, until both threads break. Again, if cloth puckers, follow directions below.
3. No adjustment is needed unless the cloth puckers. If the cloth puckers, loosen the lower tension first; then adjust the upper tension as in 1 above. Repeat the

adjustments until the result is a perfect stitch—with tensions balanced and no puckering of the cloth along the seam.

4. Tighten the lower tension slightly. Then obtain a balance by tightening the upper tension a little at a time, as in 2 above.

### **Tension for Zigzag Stitching**

The tension for the zigzag stitch can be adjusted just like that of the straight stitch. In a balanced zigzag stitch, the interlocking threads should meet midway between the two layers of cloth at each corner of the stitch, with no loops on the top or bottom of the seam and no puckers in the cloth. Light weight fabrics are particularly prone to puckering when the zigzag stitch is used. Adjusting stitch width and length may be necessary as well as adjusting tension to eliminate the puckering.

### **Adjustments for Decorative Stitching**

There are times when an unbalanced tension is desired. This is the case when doing decorative stitching and buttonholes. The tension on the top thread should be slightly looser than the bobbin. This will give a more rounded look to the satin stitch and ensure that no bobbin thread shows on the top. Some machines will have an “eye” on the bobbin case that can be threaded to add a little more tension on the bobbin thread which eliminates the need for adjusting the top tension.

Often times a lighter weight thread will be used in the bobbin when doing decorative stitching or machine embroidery. Because of the lighter weight thread, adjustment to the bobbin tension may be needed or thread the bobbin thread through the “eye on the bobbin case if possible. Always sew a test sample before making adjustments.

Bobbin work is done using a heavier, decorative thread in the bobbin. In this case, the bobbin tension will require an adjustment to loosen the bobbin tension. It is recommended that an additional bobbin case be purchased and only used for the heavier thread rather than continuously adjusting between this type of sewing and normal sewing. Too much adjusting causes wear and tear on the screw threads. If the bobbin case is not removable, the tension slot may be bypassed completely, while tightening the top tension.

Always consult the sewing machine manual for directions on selecting and using specialty and decorative stitches.

Marjorie M. Baker, M.S.  
Extension Associate for Textiles and Clothing  
September 2006