

## Maintaining Quality

Most importantly, please follow your sewing machine manufacturer's maintenance schedule. Sewing machines are precision equipment that operates at high speeds. Cleaning and lubricating must be regularly scheduled to insure continuous, trouble-free service. Oftentimes, problems with thread breaks and skipped stitches are due directly to misaligned and/or worn machine components. Many times these components wear out prematurely if they are not sufficiently cleaned and lubricated.

You can ensure the best performance from GORE® TENARA® Sewing Thread by periodically checking the following parts and settings of the sewing machine:

Part or Setting	Visual Check	Problem
Spool and thread stand alignment	Spool center should be aligned with first thread guide and spool should be upright	Misalignment causes tension peaks and uneven stitches.
Spool and thread stand distance	Spool top should be within 6"–12" (15–30 cm) below of first thread guide	Spool too close, spool will not unwind properly. Too far, thread "balloon" can catch on thread stand or other thread (double needle machines).
Needle Point	Point is sharp, and needle is straight.	Dull or bent needles can cause skipped stitches and broken thread.
Needle Condition	Needle is free of burrs.	Needle burrs typically occur when a needle is deflected and strikes part of the machine. These burrs can cause thread breakage.
Needle Alignment	Needle eye is aligned properly with the hook.	Misaligned needles may cause skipped stitches or thread breaks.
Thread Tension Settings	The thread tension on bobbin and top are as sufficient to create balanced stitches and tight seams.	Tensions that are set too high can cause thread to break or seams that are too tight. Tensions that are too low can cause loose and uneven stitches.
Thread Guides Condition	Guides should be clean and free of burrs.	Burrs and dirt on the thread guides can catch the thread and cause unbalanced stitches or the thread to break.
Hook Points	Points are sharp and straight.	Hooks wear naturally during use and can cause skipped stitches or thread breaks when dull.
Condition of Machine Components (Needle bar bearings, hook race, etc.)	Machine components are clean and well lubricated.	Worn machine components can cause broken thread, uneven seams, and skipped stitches.
Bobbin Hook Position and Timing	The hook is positioned close to the needle, without touching the needle.	The bobbin hook can cause skipped stitches if too far from the needle.

  
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*Processing Guidelines*

### Recommended Needle Sizes for GORE® TENARA® Sewing Thread

Part Number	Linear Density	Recommended Needle Size
M1000 LTR (clear)	1111 dtex/1000 denier	Nm 90-110 /#14-16
M1000 KTR (clear)/TR-XX (colours)	1556 dtex/1400 denier	Nm 100-120 /#18
M1003 HTR (clear)/HTR-XX (colours)	2775 dtex/2500 denier	Nm 120-140 /#19-22

USA/Canada/Far East/Latin America/South America  
**W. L. Gore & Associates, Inc.** • 100 Airport Road, PO Box 1010 • Elkton, MD 21921 • USA  
Toll-Free in US: 1.800.276.8451 • Tel: +1.410.506.8400  
Fax: +1.410.506.8445 • email: gorefibers@wlgore.com

Europe/Middle East/Africa  
**W. L. Gore & Associates GmbH** • Hermann-Oberth-Straße 26 • 85640 Putzbrunn • Germany  
Tel: +49 (0) 89 4612.2211 • Fax: +49 (0) 89 4612.2306 • email: fibers@wlgore.com

Asia Pacific  
**W. L. Gore & Associates (Australia) Pty, Ltd** • 13a Narabang Way • Belrose NSW 2085 • Australia  
Tel: +61 2.9473.6800 • Fax: +61 2.9450.1246

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GORE® TENARA® Sewing Thread is guaranteed to last for the life of the fabric in which it is sewn, making it the ideal sewing thread for outdoor and marine applications.

GORE® TENARA® Sewing Thread can be sewn at 2,600 stitches per minute or more. Because GORE® TENARA® Sewing Thread is made from expanded polytetrafluoroethylene (ePTFE), the sewing process is slightly different from that used with typical polyester thread.

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## Selecting and Balancing Your Stitch

You can use GORE® TENARA® Sewing Thread with either a lockstitch or chainstitch type of sewing stitch. For either stitch, you should insure the stitch is balanced to maximize seam strength and seam elasticity. Tension settings are crucial for balanced stitching. To set your lockstitch tension for GORE® TENARA® Sewing Thread:

1. The starting bobbin tension setting should allow the bobbin to mimic a child’s yo-yo. The bobbin should slowly fall to the floor when suspended by the sewing thread.
2. The bobbin thread tension should be adjusted as low as possible for a flat or running stitch on the bobbin thread. (See Figure 3).
3. Gradually increase the tension on your top thread to obtain a balanced stitch and a tight seam. *Note: To determine the stitch balance between the top and bottom threads of a lockstitch, cut out a 10-cm length of your seam and pull out the top and bottom threads. Measure the length of both threads. If they are the same length, the stitch balance is adjusted properly.*

In a balanced lockstitch (stitch type 301), the top and bottom threads should meet in the middle of the fabric, forming distinct stitches on the top side and underside of the fabric as shown in Figures 1 and 2.



Figure 1

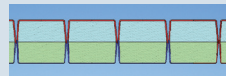


Figure 2

If the top thread tension is too high or the bobbin thread tension too low, flat or running stitches appear on the top of the fabric as shown in Figure 3.



Figure 3

If the top thread tension is too low or the bobbin thread tension too high, flat or running stitches appear on the underside of the fabric as shown in figure 4. The loose thread loops in Figure 4 are common when first using our heavier threads.



Figure 4

A balanced chainstitch (stitch type 401) top thread appears similar to a balanced lockstitch as shown in Figure 5:



Figure 5

The chainstitch top thread should be pulled completely to the underside of the fabric, with the bottom thread appearing as shown in Figures 6 and 7.

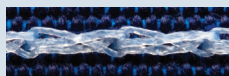


Figure 6

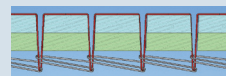


Figure 7

A poorly tensioned loose chainstitch bottom thread appears as in Figure 8:



Figure 8

## Troubleshooting

When first using GORE® TENARA® Sewing Thread, you might find it helpful to use the following table as a guide to ensure the best performance of the thread. Once you are familiar with the characteristics of GORE® TENARA® Sewing Thread, your seams will last for the lifetime of the fabric.

### Skipped Stitches

Possible Cause	Action
Improper thread path	Verify the thread path with your machine manufacturer; use all recommended thread guides.
Misaligned needle <i>(Needle eye or cove should face the bobbin hook.)</i>	Rotate the needle clockwise until its eye faces the bobbin hook or is slightly rotated towards the hook as the hook approaches needle.
Bent or deflected needle <i>(Heavy fabrics can bend needle.)</i>	Replace the needle; if needles bend frequently, use a larger needle, or request stronger needles from your manufacturer.
Incorrect needle size and/or needle construction <i>(The needle may be too large, preventing the thread from consistently forming a loop. Special needles are available to reduce skipped stitches.)</i>	Use recommended needle size in the table, or try one size smaller. Contact needle supplier for skipped stitch reducing needles.
Excess thread through the needle	When pausing the machine, maintain pressure on the material with the presser foot.
Thread kinks	Place spool socks over each spool of thread, or use thread brake on each spool.
Worn bobbin hook <i>(The hook should be pointed and sharp.)</i>	Replace the bobbin hook.
Incorrect machine timing <i>(The bobbin hook and needle must meet as per manufacturer specifications.)</i>	Use a timing gauge (available from your machine supplier) to adjust the machine timing per the manufacturer’s instructions.
Incorrect bobbin hook placement: incorrect distance from needle	Reposition the hook per the manufacturer’s instructions.
Worn machine components <i>(Needle bar, bearings, hook races, thread take-up spring, etc.)</i>	Replace components as needed. Reduce future wear by cleaning and lubricating per manufacturer’s recommendations.
Chainstitching: incorrect looper position	Reposition the looper closer to the needle per manufacturer’s instructions. If problem continues, consider replacing the looper.
Chainstitching: Dull looper	Replace looper, and ensure proper clearance from needle.

### Broken Thread

Possible Cause	Action
Excess speed	Reduce speed
Excess thread tension	Balance seam tension as described in “Selecting and Balancing Your Stitch.”
Improper thread path	Verify the thread path with your machine manufacturer; use all recommended thread guides.
Needle burr – bent or deflected needle strikes feed dog or throat plate	Check the needle for burrs, and replace the needle if necessary.
Burr on thread guide	Use a magnifying glass to check all thread guides, and repair or replace any guides as needed.
Thread kinks	Place spool socks over each spool of thread, extend spool sock up to first thread guide, or use thread brake on each spool.
Broken thread take-up spring	Replace.
Bobbin and mechanical opener/bobbin case lifter not correctly adjusted	Consult machine manufacturer or service technician.

### Uneven Stitches

Type of Uneven Stitch	Action
Flat or running top-stitch	Decrease the tension of the top thread.
Flat or running bottom-stitch	Increase the tension of the top thread.
Loops on the underside of the fabric <i>(more common with heavy threads)</i>	Increase the tension of the top thread to approximately twice the tension used for TR/KTR thread, and balance the stitch as described in “Selecting and Balancing Your Stitch.”

### Snarled Bobbin Thread

Possible Cause	Action
Bobbin continues to rotate after the machine stops	Use lightweight (aluminum) bobbins, anti-overrun washers, or “star washers” available from your sewing machine manufacturer.

### Double Needle Lockstitch Sewing

When sewing double needle lockstitch applications, use an R needle point shape on both left and right sides. If you experience skipped stitches or thread separation on the left needle, try using a CR type needle.