Welcome to the Handi Quilter Education Webinar
February 16, 2012

TNT: Threads, Needles & Tension

While you’re waiting for the Webinar to begin, make sure your computer speakers are on, so you will be able to hear us.
Your presenter today is

Cheryl Duncan

Handi Quilter Studio Educator
Q: What is a shank?

A: It’s the top part of the needle. The portion that fits into the machine’s needle bar.
Parts of the Needle: The Shank

Domestic sewing machines use a needle with a flat side on the shank.
Parts of the Needle: The Shank

Industrial machines, including Handi Quilter longarm quilting machines, use a round shank needle.
The Groove is the indentation in the front side of the needle.
Parts of the Needle: The Groove

The purpose of the groove is to protect the thread as it passes with the needle through the fabric.
Parts of the Needle: The Groove

It is important to choose the right size needle for your thread weight, so the thread will ride safely in the groove.

Thicker thread = larger needle.
Parts of the Needle: The Eye

The eye of the needle is a pierced opening through which the thread is threaded. Larger needles typically have larger eyes.
Parts of the Needle: Scarf

The scarf is a cut out portion of the back side of the needle, positioned in the machine so that the hook passes by it and catches the thread loop.
Positioning the Needle

The placement of the needle in the machine is important. In Handi Quilter quilting machines, the groove goes to the front of the machine, with the scarf to the back.
The Basics of Stitch Formation

As the needle enters the fabric, the thread is carried along in the groove.
The Basics of Stitch Formation

When the needle comes back up, friction holds the thread below the quilt sandwich, causing a loop to form.

The rotary hook then rotates around, grabs the loop, bringing it around the bobbin case, making the lock stitch.
Positioning the Needle.

It is very important that the needle be inserted all the way up into the needle bar.

Handi Quilter machines provide a "sight hole" in the needle bar. Look into the hole to confirm that the butt of the needle inserted all the way.
Positioning the Needle.

Because the round-shanked needle will fit in the needle bar in any orientation (unlike a flat-shanked needle which fits in only one way), it is important to position the needle correctly with the eye of the needle in the “6 o’clock” position.

Using a pin in the eye of the needle helps with positioning.
Positioning the Needle.

Sometimes, if you experience skipped stitches, slightly rotating the needle to the “6:30” position will solve the problem, because it allows the hook to catch the loop sooner.
Positioning the Needle.

If you experience shredding, slightly rotating the needle toward the “5:30” position might solve the problem, because it would delay the time when the hook grabs the loop.
Needle Sizes

Sewing/Quilting Machine needle packages may show one or both types of sizes: American and European.

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Needle Sizes

The numbering system for hand needles runs in the opposite direction of machine needles.

The smaller the number, the larger the needle.

Confusing, isn’t it?
Needle Sizes

Handi Quilter sells needles for their longarm quilting machines in sizes 12, 14, 16, 18 and 20 (125).
Needle Sizes

It is important to purchase needles that are the right needle system. Handi Quilter uses the 134 (135 X 7) system.

Using the wrong needle system is a recipe for big problems.
Needle Sizes

Contrary to what some believe, the length of the needle is not important. Size 20 needles are always longer than size 12 needles, but they both stitch correctly.

What IS important, is the distance between the butt (top) of the shank and the top of the eye. This distance is consistent in all needle sizes when needles are chosen from the same needle system.

Think about it, the hook always rotates in the same place, which needs to align with the top of the needle eye.
So, Why all the Different Sizes?

Remember the groove and the size of the eye get bigger as the needle size gets bigger.

Larger threads need larger needles.

12 weight thread = Size 20 needle recommended
So, Why all the Different Sizes?

19 weight threads come in polyester or cotton and are chosen to show off quilting details.
So, Why all the Different Sizes?

Some examples of 40 weight threads are Superior’s King Tut (cotton), YLI’s machine quilting threads and some embroidery threads.
So, Why all the Different Sizes?

50 weight cotton and poly threads work well for micro-quilting as well as for basic quilting.
So, Why all the Different Sizes?

60 weight Bottom Line thread from Superior not only works in the bobbin, but is also great for micro-quilting.
So, Why all the Different Sizes?

Silk is available as #100, a very fine thread that works well for micro-quilting and for quilting that “melts” into the background.
So, Why all the Different Sizes?

Monopoly and nylon monofilament threads are great for adding texture without color.
So, Why all the Different Sizes?

Metallic and Glitter threads are great for adding “bling”.

![Image of metallic and glitter threads](image-url)
Some threads aren’t meant for the needle

These threads are too big to go through the eye of even the largest needle.

So, how can you use them on the longarm machine?
Some threads aren’t meant for the needle

Use them in the bobbin!

Some can be wound by hand, but some can be wound using the bobbin winder.
Some threads aren’t meant for the needle

To do bobbin work on the Handi Quilter machine, load the quilt sandwich upside down in the frame.
Some threads aren’t meant for the needle

When using these thick threads in the bobbin, you will need to loosen the bobbin case tension. (More on that in a bit.)
Some threads aren’t meant for the needle

The reason we set the bobbin case tension on the loose side with these thick threads, is so that the thread will lay on top of the fabric, giving the appearance of couching.
Threading the machine: Strong threads

Place cones at the back of the machine on the thread post. Bring the thread up through the thread mast and the first thread guide. Use all three holes of the pre-tensioner.
Threading the machine: Strong threads

Be sure to “floss” the thread into the tension discs.

Failing to seat the thread between the discs causes stitch and tension failures.
Threading the machine: Strong threads

Follow the thread path, making sure not to miss the check spring, the stirrup, the takeup lever and the final thread guide on the way to the needle.
Finally, notice that there is a collar on the needle bar, just above the needle. Make sure you thread the thread through the hole in the collar, before threading the needle from front to back.
Threading the machine: Delicate threads

Examples of delicate threads include rayon, two-ply threads, mono-filament, metallic, holographic.

Notice that many of these come on spools, rather than cones.
Threading the machine: Delicate threads

For threads on spools, especially delicate threads, we recommend using the horizontal spool holder.

This allows the threads to bypass two thread guides, which means there’s less tension on the thread to start with.
Threading the machine: Delicate threads

It also allows flat threads like the Glitter-style threads, to roll off flat.

We like to use toilet paper to show what happens to the thread.

Imagine rolling thread off a spool held horizontally, like this roll of paper. See how the “thread” remains flat?
Threading the machine: Delicate threads

If the thread were to feed off a spool vertically, the way cone threads do, the thread twists.

See what’s happening to the toilet paper when we feed it from the roll in this way?

Stronger threads can handle the twist. Delicate threads on spools benefit from feeding horizontally.
Adjusting Tension: Start with the bobbin

It’s important that bobbins are wound properly.

A “soft” bobbin, one that’s wound too loosely, will be spongy.

When a soft bobbin unwinds, the individual thread is pulled down into the bobbin and it snarls and jams, causing feeding problems and skipped or broken stitches.
Adjusting Tension: Start with the bobbin

Here’s an example of a bobbin that is wound too tight.

The side walls of this bobbin have expanded. It will never fit again in the bobbin case and must be discarded.
Adjusting Tension: Start with the bobbin

This photo shows how the gold thread-filled bobbin is now larger than the brown one.

This bobbin would not turn freely in the bobbin case.

Throw it away!

CAUTION: This can happen easily with a stretchy thread, such as monofilament. The solution? Wind slowly and do not overfill.
Bobbin case tension is the foundation

When adjusting tensions on a longarm quilting machine, it’s important to remember this point:

START WITH THE BOBBIN FIRST!
Bobbin case tension is the foundation

Once the bobbin case tension is set, only then do you adjust the top tension.

Lighter-weight threads will need a lighter tension both in the bobbin and on top.
Start by making sure the bobbin case is clean

Gently clean the inside of the bobbin case.

There is a tension spring inside the bobbin case. Check for threads behind this spring.
Start by making sure the bobbin case is clean

Use a pin to gently sweep under the tension finger, checking for lint.
Start by making sure the bobbin case is clean

As an alternative, use a business card.

Do you see that lint? These lint balls hold the tension finger up, keeping it from putting proper tension on the thread. This little bit of fluff can wreak havoc with your stitching.
Checking bobbin tension

Place the bobbin in the case and bring the thread out through the slit.

Check to see that the bobbin turns clockwise when pulling on the thread (and viewing it from this side).

Starting with a FULL bobbin gives you the correct weight when checking bobbin case tension.
Checking bobbin tension

Use the Drop Test

Lift up the thread. When tension is set correctly, the bobbin case will lift from your hand, then will gently fall back to your hand, like a spider crawling down its web.

PERFECT TENSION:
Bobbin case falls slowly back down to hand without jiggling or bouncing.
Checking bobbin tension

If the bobbin case does NOT fall down to your hand, the tension is too tight.

**TENSION TOO TIGHT**

Bobbin case does not come down
Checking bobbin tension

If the bobbin case won’t lift from your hand, the tension is too loose.

TENSION TOO LOOSE
Bobbin case won’t lift from hand
Adjusting bobbin tension

There are two screws on the side of the bobbin case. The adjustment screw is the larger of the two and has a “circle” around it.

Turn the screw right to tighten; left to loosen. The adjustments are minute. Think of them as “ticks of a clock”.

RIGHTY TIGHTY
LEFTY LOOSEY
One more time!

Adjusting bobbin tension

Turn the screw right to tighten; left to loosen. The adjustments are minute. Think of them as “ticks of a clock”.

RIGHTY TIGHTY
LEFTY LOOSEY
Adjusting bobbin tension

After adjusting, check tension again, using the drop test.

Continue adjusting and testing until you achieve the “spider crawling down his web” perfect tension!
Checking stitches

It’s important to have a sample quilt sandwich available for testing before stitching on your quilt.

After adjusting the bobbin case to perfect tension, stitch a little to check your stitch balance.
Checking stitches

You are looking for perfectly balanced stitches that meet in the middle of the quilt sandwich.

Each stitch should go into the quilt and should appear as a separate stitch, on both the top and bottom.
Checking stitches

Diagram A
Tight Top Thread

TENSION IMBALANCE

Diagram B
Loose Top Thread
Checking stitches

These top stitches are laying on top of the quilt. This means the top tension is too tight.

You need to loosen your top tension.
Checking stitches

We have painted the dot on the tension knob white, so you can see it in this photo.

Turn the knob to the left to loosen the tension.
Checking stitches

Adjusting the tension knob is different from the bobbin case adjustments.

Often you will need to make half and full turns of the knob to adjust.
Checking stitches

These top stitches are too loose.
Checking stitches

Here’s a view of those loose top stitches from the back side.

You will need to tighten the top tension by turning the tension knob to the right.
Checking stitches

A thread nest like this could be the sign of not having the thread flossed into the tension dial.
Now you’ve got it! Perfect tension, perfect stitches.

BUT, what if you have perfect tension and balanced stitches and your thread still breaks?
Here’s the SECRET!

If you have perfect tension and balanced stitches and your thread still breaks, it is because

YOUR TENSION IS SET TOO TIGHT IN BOTH THE BOBBIN AND THE TOP FOR THE THREAD YOU’RE USING.

The answer:
Start again with the bobbin and loosen the tension. Then readjust the top tension.
Thanks for joining us today. Can you remember all of this!

You don’t have to. We’ve placed a TNT video on our website.

http://www.handiquilter.com/tntvideo

Go here to watch, anytime day or night.

Also, a copy of this webinar will be on the website under the Education tab.