

Q'nique 21X ELITE

Instruction Manual



Important Safety Instructions

Please read all these safety instructions before using this machine.

DANGER - To reduce the risk of electric shock, do not leave the machine unattended when plugged in. Always unplug this machine from the electric outlet immediately after using and before cleaning.

WARNING - To reduce the risk of burns, fire, electric shock, or injury to persons:

- Do not allow this machine to be used as a toy. Pay close attention when this machine is used by or near children.
- Use this machine only for its intended use as described in this manual. Use only attachments recommended by the manufacturer as contained within this manual.
- Never operate this machine if it has a damaged cord or plug, it is not working properly, or it has been dropped, damaged, or dropped into water. Return the machine to the nearest authorized dealer or service center for examination, repair, or electrical or mechanical adjustment.
- Never operate the machine with any air openings blocked. Keep ventilation openings of the quilting machine free from the accumulation of lint, dust, and loose cloth.
- Never drop or insert any object into any opening.
- Do not use outdoors.
- Do not operate where aerosol (spray) products are being used or where oxygen is being administered.
- To disconnect, turn all controls to the off position, then remove the plug from the outlet by grasping the plug. Do not pull on cord.
- Keep fingers away from all moving parts. Special care is required around the quilting machine needle.
- Always use the proper needle plate. The wrong plate can cause the needle to break.
- Do not use bent needles.
- Do not pull or push fabric while stitching. It may deflect the needle causing it to break.
- Switch the quilting machine off when making any adjustments in the needle area, such as threading the needle, changing the needle, or changing the presser foot, etc.
- Always unplug the quilting machine from the electrical outlet when removing covers, lubricating, or when making any other user servicing adjustments mentioned in the instruction manual.

If using this machine in an area with inconsistent input power, it is recommended the surge protector is connected to a backup battery supply.

Connect this machine to a properly grounded outlet only. See "Grounding Instructions" (next page).

SAVE THESE INSTRUCTIONS

Do not discard box or packaging

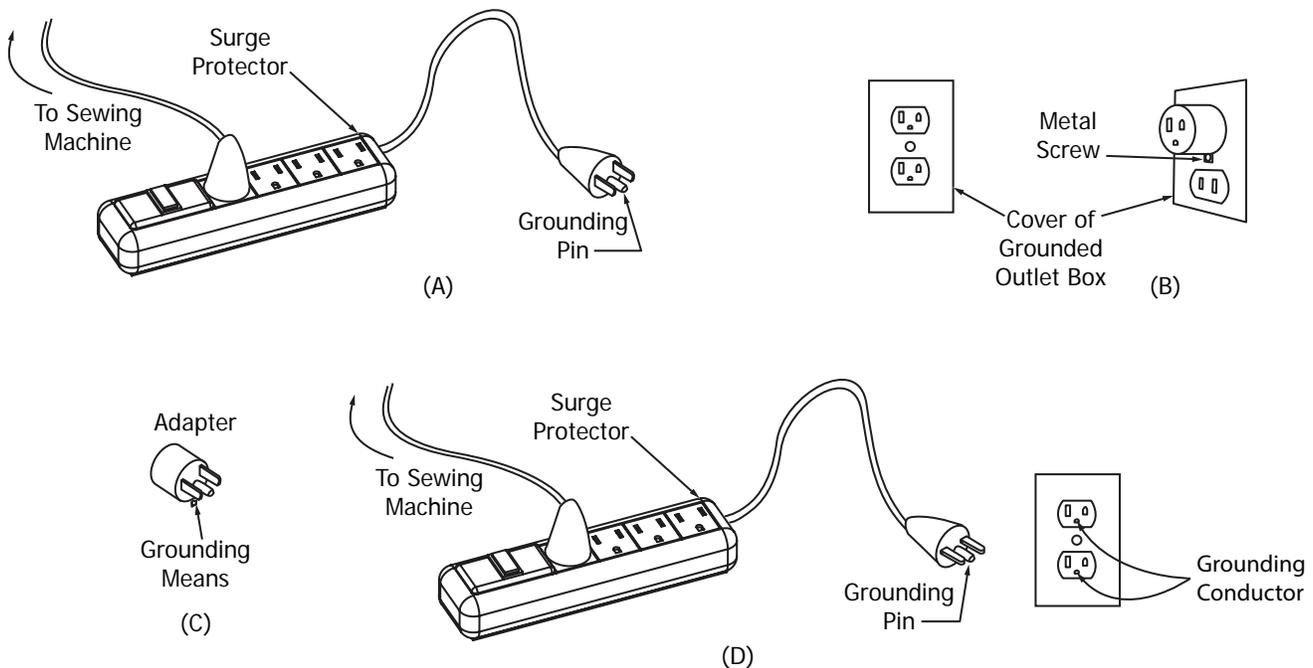
GROUNDING INSTRUCTIONS

This product must be grounded. In the event of malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with a cord that has an equipment-grounding conductor and a grounding plug. Plug the cord from the quilting machine into a surge protector. The surge protector must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

DANGER - Improper connection of the equipment-grounding conductor can result in a risk of electric shock. The conductor with insulation having an outer surface that is green, with or without yellow stripes, is the equipment-grounding conductor. If repair or replacement of the cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal. Check with a qualified electrician or serviceman if the grounding instructions are not completely understood, or if in doubt as to whether the product is properly grounded.

Do not modify the plug provided with the product — if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

Grounding Methods



This product is for use on a nominal 120 V circuit, and has a grounding pin as illustrated above (A). A temporary adapter, shown in (B) and (C), may be used to connect this plug to a 2-pole receptacle (B) if a properly grounded outlet is not available. The temporary adapter should be used only until a properly grounded outlet can be installed by a qualified electrician. The green colored rigid ear, lug, and the like, extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box cover. Whenever the adapter is used, it must be held in place by the metal screw.

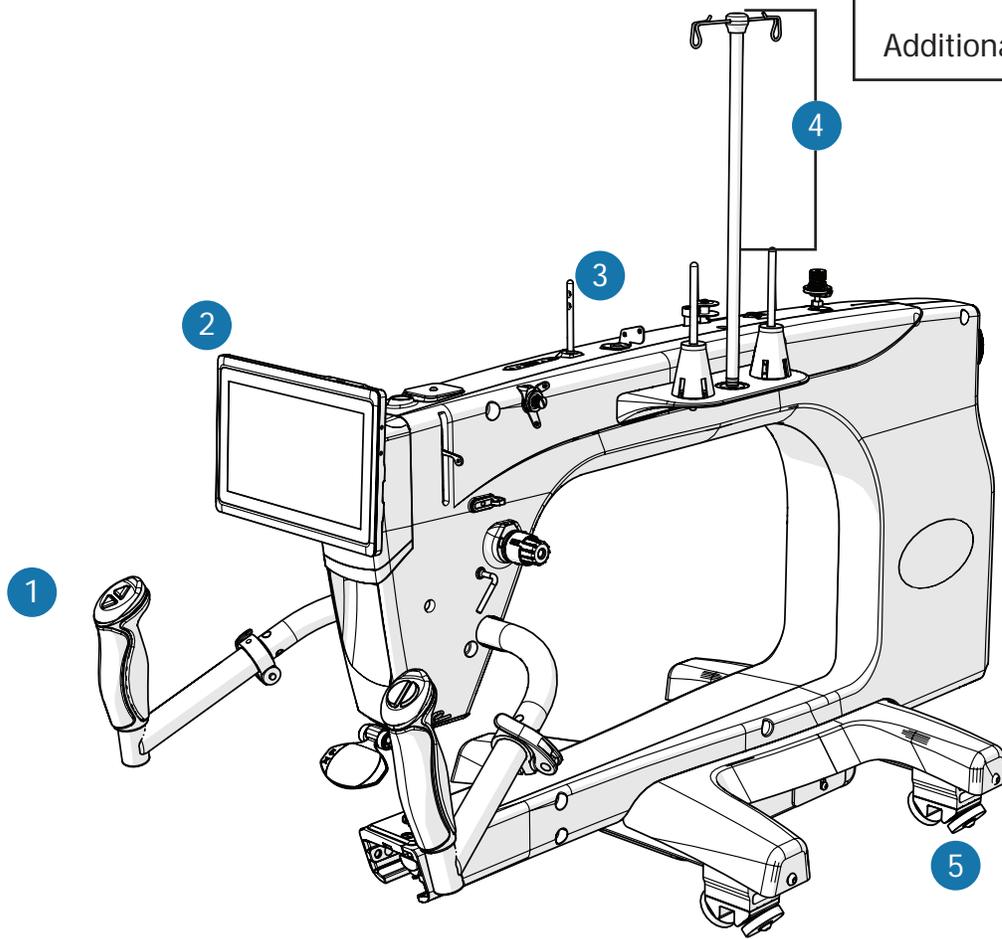
A qualified electrician should be consulted if there is any doubt as to whether an outlet box is properly grounded.

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Machine Specifications

Patent: WO 2013/070633 AI
Additional Patents Pending



Product Dimensions

Body:

- Height: 515 mm, or 20.25 inches
- Width: 395 mm, or 15.5 inches
- Length: 824 mm, or 32.4 inches
- Weight: 24.5 kg, or 54 lbs

Quilting Arm:

- Height: 266.7 mm, or 10.5 inches
- Length: 533.4 mm, or 21 inches

Electrical

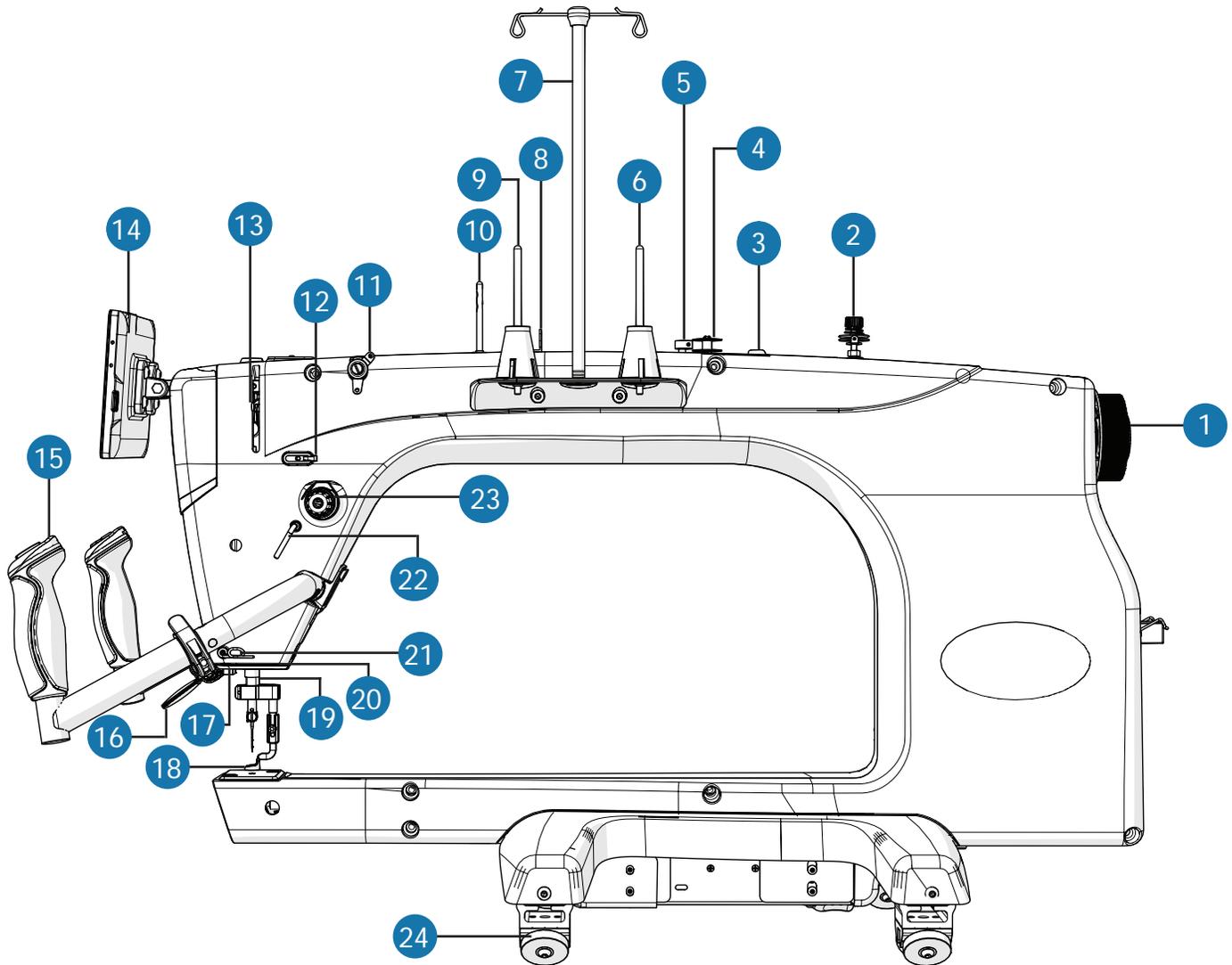
- Input Voltage: 110-220 VAC
- Peak Power Consumption: 450 W

Features

- 1 Ergonomic handles and handlebars for efficient, extended use (page 15)
 - 2 7" Touch display (page 18)
 - 3 Built in bobbin winder (page 29)
 - 4 Dual thread mast and stands for quilting and winding bobbin at the same time
 - 5 Dual wheels for added stability (page 5)
- Edge Warning System (page 54)
 - Range of 130 to 2600 stitches per minute
 - Regulated stitching

Machine Layout

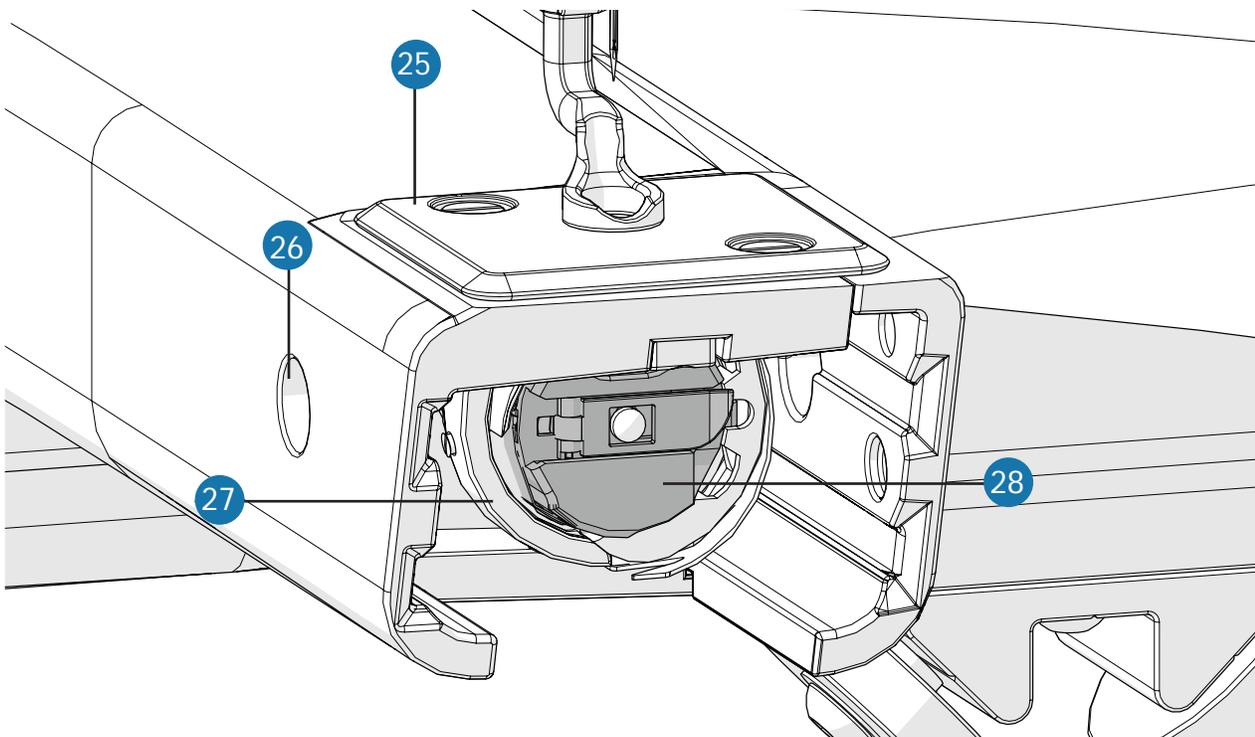
Quilting Machine (Side View)



- 1 Hand Wheel**
Raises and lowers the needle bar.
- 2 Bobbin Thread Tensioner** (page 29)
Tensions thread for winding a bobbin.
- 3 Bobbin Thread Cutter** (page 29)
Cuts wound bobbin thread.
- 4 Bobbin Stand** (page 29)
Positions bobbin for winding.
- 5 Bobbin Cam** (page 29)
Starts and stops bobbin winding.
- 6 Bobbin Wind Thread Stand** (page 29)
Holds a cone of thread.
- 7 Thread Mast** (page 29, page 33)
Guides the thread for quilting.
- 8 Bobbin Thread Guide** (page 29)
Guides thread for winding a bobbin.
- 9 Top-Thread Thread Stand** (page 33)
Guides thread for winding a bobbin.
- 10 Thread Guide Rod** (page 33)
Positions thread when quilting.
- 11 Small Thread Tensioner** (page 33)
Tensions thread when quilting.
- 12 Thread Guide** (page 33)
Positions thread when quilting.

- 13 **Take-Up Lever** (page 33)
Tensions thread when quilting.
- 14 **Display** (page 18)
Provides access to quilting options.
- 15 **Handlebar Controls** (page 43)
Controls machine functions.
- 16 **Magnifying Glass** (page 24)
Enlarges view of needle area.
- 17 **Lamp**
Lights up needle area.
- 18 **Hopping Foot** (page 76)
Presses fabric down when quilting.
- 19 **Needle Bar** (page 73)
Holds the needle when quilting.
- 20 **Thread Cutter** (page 33)
Cuts excess thread after threading machine.
- 21 **Bottom Thread Guide** (page 33)
Positions thread when quilting.
- 22 **Thread Guide** (page 33)
Positions thread when quilting.
- 23 **Large Thread Tensioner** (page 33)
Tensions thread as adjusted.
- 24 **Machine Wheels** (page 5)
Rides the bottom carriage rails to move the machine up or down on the quilting frame.

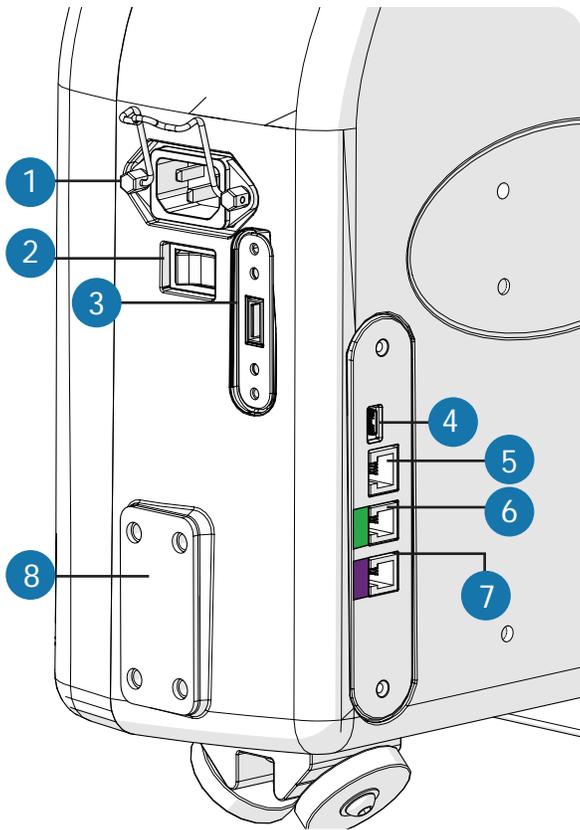
Hook Assembly (Front View)



- 25 **Needle Plate** (page 81)
Covers top hook assembly access.
- 26 **Timing Cut-Out** (page 92)
Accesses hook assembly set screws.
- 27 **Hook Assembly** (page 31)
Holds the bobbin case and hooks the top thread to create stitches.
- 28 **Bobbin Case** (page 31)
Holds M class bobbin and controls bottom thread tension.

Ports and Plugins

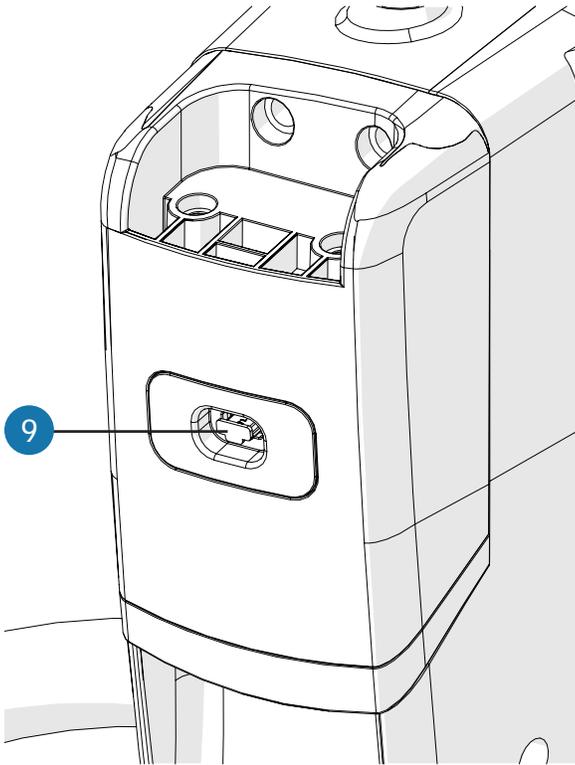
Machine Rear



- 1 **Power Port with Retainer** (page 26)
Connects and holds power cable to the machine.
- 2 **Power On/Off Switch** (page 26)
Turns machine on and off.
- 3 **QuiltMotion Tablet Port**
For optional automation accessory.
- 4 **USB Connector Port**
For updating only.

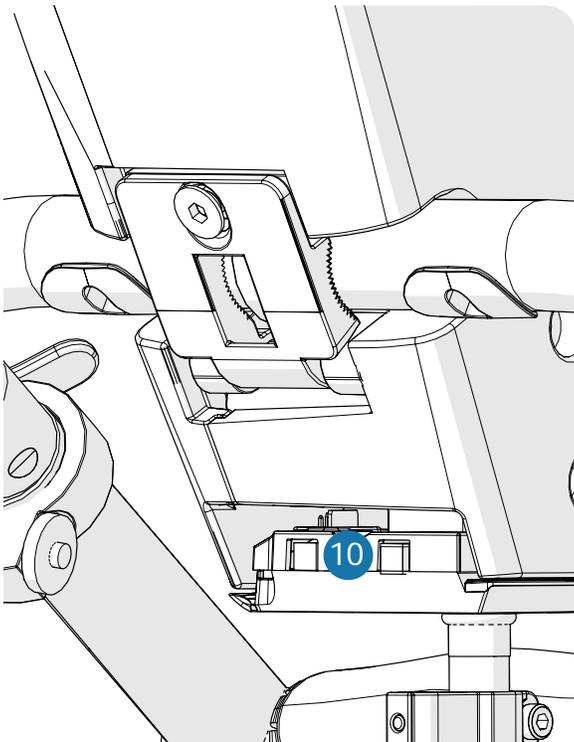
- 5 **QuiltMotion Port**
For optional automation accessory.
- 6 **Lower Encoder Port** (page 21)
Connects lower encoder to machine.
- 7 **Upper Encoder Port** (page 21)
Connects upper encoder to machine.
- 8 **Back Handle Port Cover**
For optional back handle accessory.

Machine Front View



- 9 **Display Cable Port** (page 19)
Connects display cable to machine.

Machine Throat



- 10 **Handlebar Ports** (page 15)
Connects handlebar controls to machine.

My Machine Details

Use this page to write down some information about your machine. This will be helpful if you ever need to call a Grace Company support technician.

Machine Type: Q'nique 21X Elite

Machine Serial Number: _____

Date of Purchase: _____

What Frame are You Using? _____

Select Which Machine Accessories You Have Purchased:

QuiltMotion

Back Handles

Q'nique Laser Stylus

Ruler Base

Quilt Perfect Ruler Feet Kit

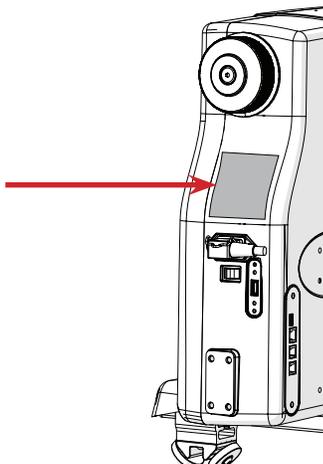
360 Wonder Foot

4 Piece Accessory Hopping Foot

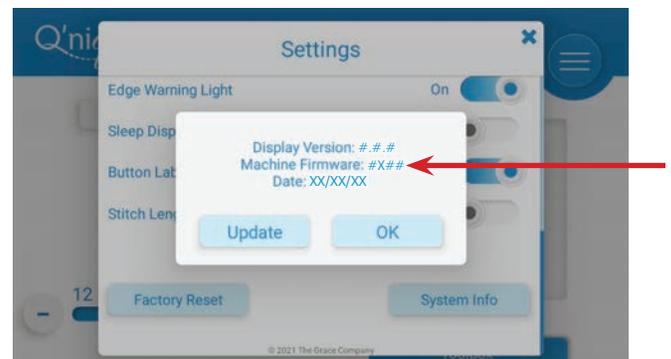
9 Piece Accessory Hopping Foot

Thread Spool Accessory

Find your serial number on the silver sticker on the back of the machine.



You may also be asked about your machine's firmware version. You can find this on the display after the machine is assembled and turned on. See page 85 for details.

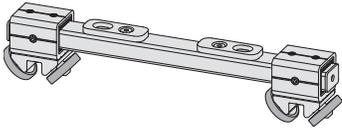


Included Parts and Tools

Level One (Workstation)

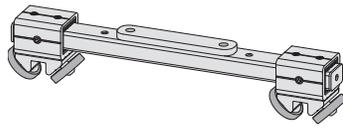
Tip: Parts are grouped together in the packaging for your convenience. For the best experience, do not remove parts from the packaging until instructed to do so.

Back Wheel Assembly



SMP-09-13185
See page 5

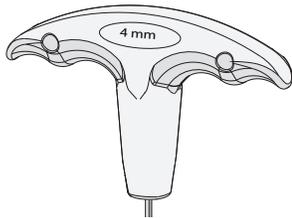
Front Wheel Assembly



SMP-09-13184
See page 5

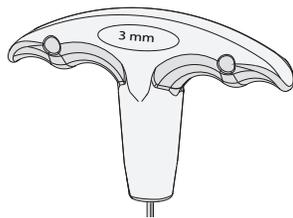
Tools Box

T-handle Allen Wrench 4 mm



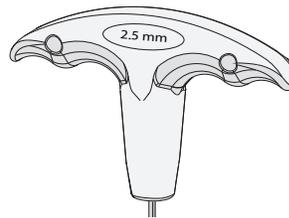
HDW-03-13114

T-handle Allen Wrench 3 mm



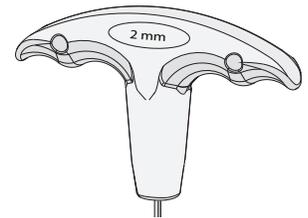
HDW-03-13115

T-handle Allen Wrench 2.5 mm



HDW-03-13116

T-handle Allen Wrench 2 mm



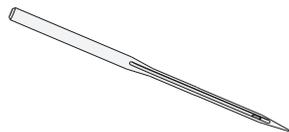
HDW-03-13117

Lint Brush



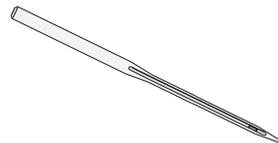
SMP-03-10170
See page 62

Needle Size 18
(one 10 pack)
(one pre-installed)



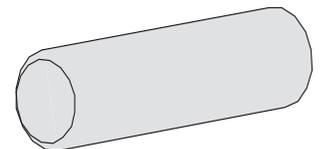
ACC-01-11025
See page 73

Needle Size 16
(one ten pack)



ACC-01-11024
See page 73

Needle Magnet

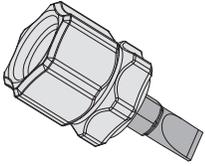


SMP-09-13837
See page 73

Included Parts and Tools (Continued)

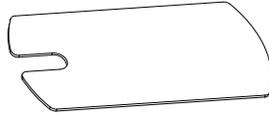
Tools Box Continued

**Flat-head
Screwdriver**



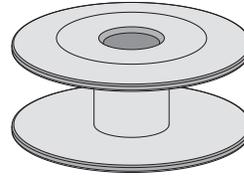
SMP-03-10169
See page 81

**Hopping Foot
Height tool**



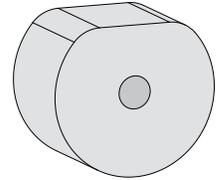
SMP-03-12171
See page 76

M Class Bobbin (x3)
(Two pre-installed)



SMP-08-10070
See page 29

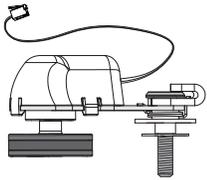
**Timing
Spacer Tool**



SMP-03-11320
See page 92

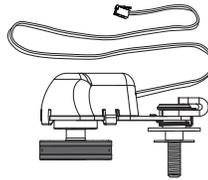
Encoder Box

**Upper Encoder
(silver spring)**



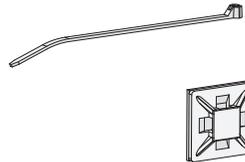
SMP-09-15024
See page 21

**Lower Encoder
(black spring)**



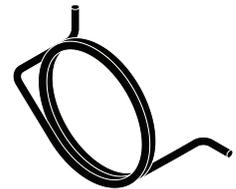
SMP-09-15033
See page 5

**Zip Tie (x2)
Zip Tie Mount (x2)**



MIS-08-10805

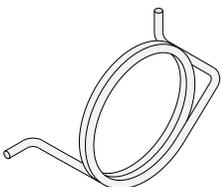
**Lower Encoder
Spring (black)**



HDW-03-10671
See page 72

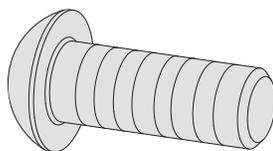
Wheel Base Hardware Box

**Upper Encoder
Spring (silver)**



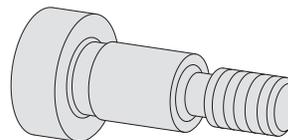
HDW-03-10216
See page 72

**SBHCS Screw
M6 x 20 mm (x2)**



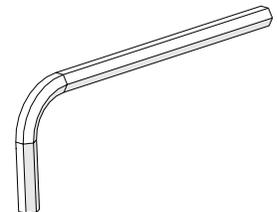
HDW-03-10088
See page 5

**Shoulder Bolt
M6 (x2)**



HDW-03-12206
See page 5

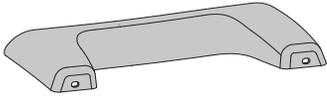
Allen Wrench 4 mm



HDW-03-10167
See page 5

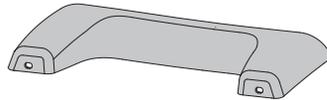
Wheel Base Cover Box

Right Wheel Cover



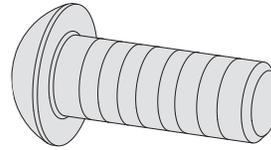
SMP-05-11705
See page 13

Left Wheel Cover



SMP-05-11704
See page 13

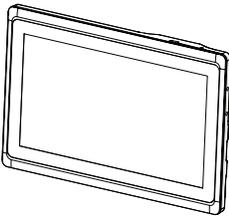
**SBHCS Screw
M6 x 14 mm (x4)**



HDW-03-10974
See page 13

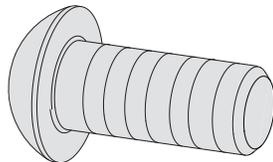
Display Box

**7 Inch Touch
Display**



SMP-09-15576
See page 18

**SBHCS Screw
M5 x 16 mm (x2)**



HDW-03-10857
See page 18

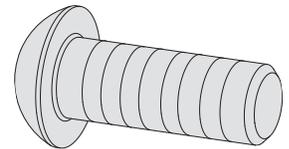
Display Cable



SMP-02-16412
See page 18

Thread Stand Hardware Box

**SBHCS Screw
M6 x 14 mm (x2)**



HDW-03-10974
See page 20

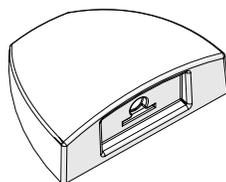
Magnifique Box

Magnifier Handle



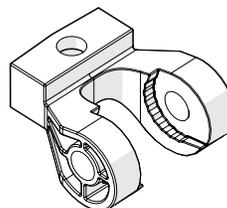
ACC-09-15460
See page 24

**Adhesive Mount
Assembly**



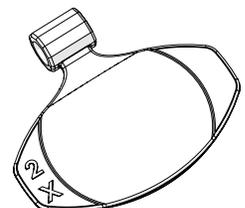
ACC-09-16158
See page 24

**Right Angle
Magnifier Mount**



ACC-05-14234
See page 24

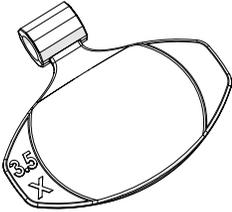
**2X Magnifying
Glass**



ACC-09-15455
See page 24

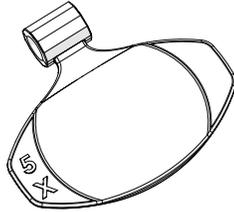
Included Parts and Tools (Continued)

3.5X Magnifying Glass



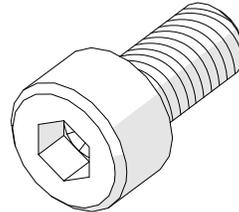
ACC-09-15456
See page 24

5X Magnifying Glass



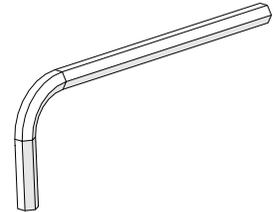
ACC-09-15457
See page 24

SHCS M4 x 8 mm



HDW-03-12208
See page 24

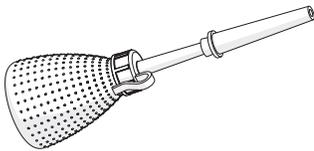
Allen Wrench 3 mm



HDW-03-10166
See page 24

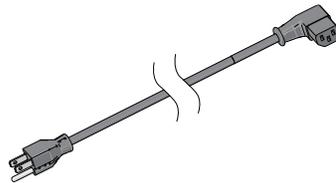
Power Cord/Oil Bottle Box

Oil Bottle



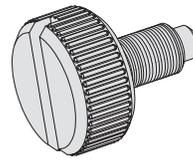
SMP-09-13888
See page 62

Power Cord



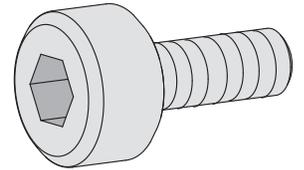
SMP-02-14466
See page 26

**M3 Thumb Screw
(needle bar spare)**



HDW-03-11736
See page 73

Hopping Foot Screw



HDW-03-10966
See page 76

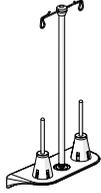
Level Two

Handlebar Assembly



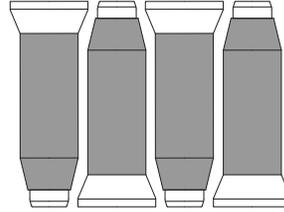
SMP-09-14066
See page 15

Thread Stand Assembly



SMP-09-13183
See page 20

Sample Thread Kit



MIS-11-16122

Welcome to Your Q'nique 21X Elite

We are pleased to introduce you to the newest part of your quilting setup. This machine has been especially designed to help quilters like you have the tools available to create quality projects.

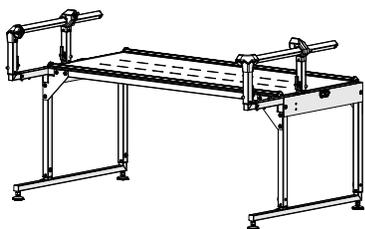
This manual is broken into four sections (or parts). Notifications at the end of each section will direct you to switch to your frame manual or QuiltMotion manual for instructions on assembling those products. This creates a streamlined process of building a complete quilting setup in the most efficient way. Use the following flowchart to guide you in navigating multiple manuals. If you are not using one of the products in the flowchart, just move to the next item in the chart.

Thank you again for choosing us to help with your quilting projects. We look forward to working with you.

- The Grace Company

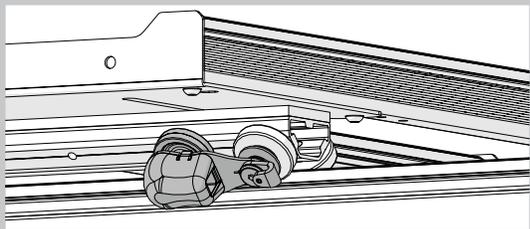
Start Here: Frame Manual: Part One

- Assemble the frame's legs, table, and sides.
- Install the channel lock onto the bottom carriage.
- Align your tracks.



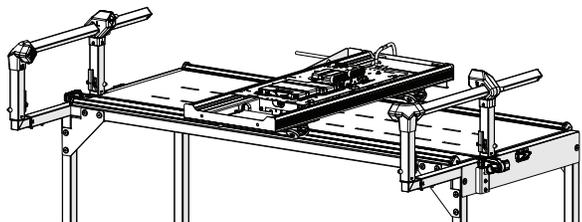
Quilting Machine Manual: Part One

- Install the lower encoder onto the bottom carriage.



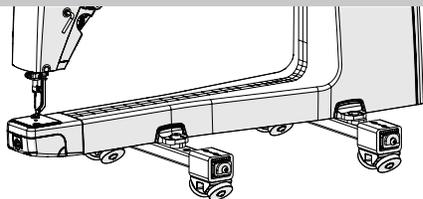
QuiltMotion Manual: Part One

- Prepare the bottom carriage.
- Install the long belt across the frame.



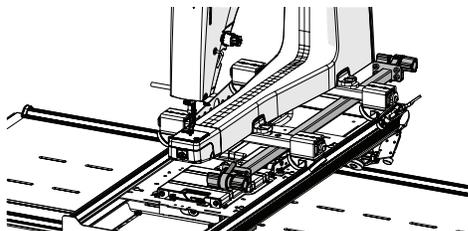
Quilting Machine Manual: Part Two

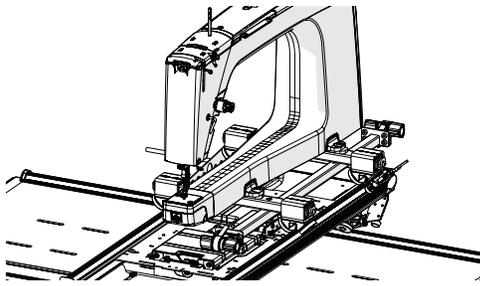
- Install your machine's wheels.
- Align your wheels.



QuiltMotion Manual: Part Two

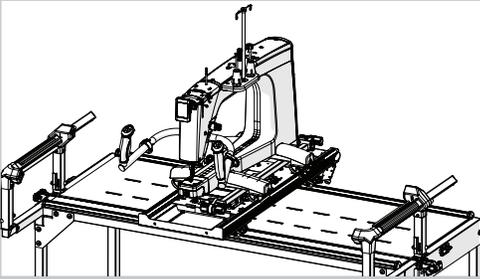
- Install the short belt.
- Tension the short belt.





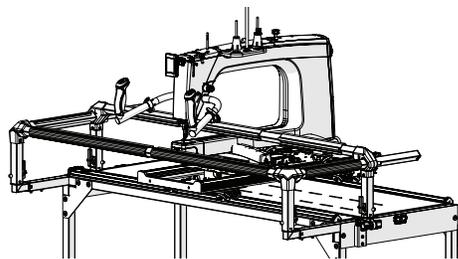
Frame Manual: Part Two

- Install the channel lock on the machine or top plate.
- Prepare the top plate and home sewing machine.
- Place the machine or top plate on the frame.



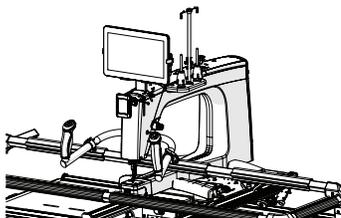
Quilting Machine Manual: Part Three

- Install the wheel covers, display, handles, thread mast.
- Install the upper encoder.



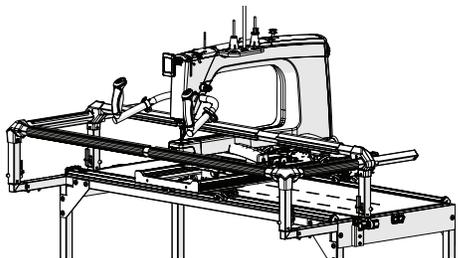
Frame Manual: Part Three

- Install the rails and fabric bungees.
- Position and adjust the rails.
- Adjust the carriage stop.
- Level the frame.



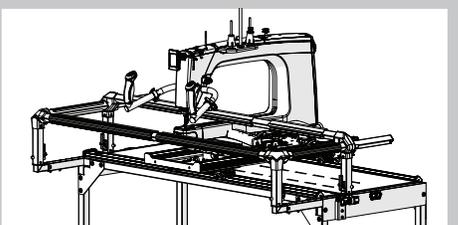
QuiltMotion Manual: Part Three

- Install the tablet bracket.
- Plug in QuiltMotion.



Frame Manual: Part Four

- Install the velcro tape
- Install the cloth leaders
- Attach the fabric



Quilting Machine Manual: Part Four

- Use the quilting modes and settings in the display.
- Maintain the machine and perform repairs.

Animated Instructions

To provide the best possible customer experience, we also offer animated video instructions for setting up this product. To view the animated instructions, visit our website at:

www.graceframe.com/en/support/animated-instructions.

You can also use your smartphone to scan this QR code:



Out-of-the Box Assembly

This section of the manual covers all the steps to assemble the machine after you bring it home for the first time.

Task 1- Installing the Lower Encoder	page 5
Task 2 - Installing the Wheels	page 8
Task 3 - Installing the Wheel Covers	page 13
Task 4 - Installing the Handlebars	page 15
Task 5 - Connecting the Display	page 18
Task 6 - Attaching the Thread Stand	page 20
Task 7 - Installing the Upper Encoder	page 21
Task 8 - Installing the Magnifique Magnifying Glass	page 24
Task 9 - Turning the Machine On/Off	page 26

Part One

Before completing the tasks in Part One of your machine instructions, please complete Part One of your frame instructions.

Progress Checkpoint:

Have you:

- Assembled your frame's legs and table?
- Installed and align the frame tracks?
- Installed the channel lock on the bottom carriage?
- Installed the rail supports?

Note: Do not install the rails at this time.

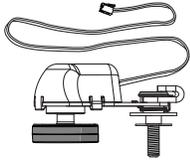
If you've already fully assembled your frame, uninstall your frame's take-up rail.

Task 1- Installing the Lower Encoder

Tip: For the best experience, do not remove parts from the packaging until instructed to do so.

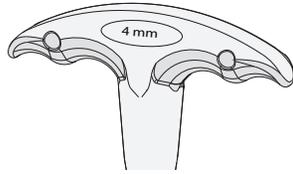
Parts & Tools Needed:

Lower Encoder
(black spring)



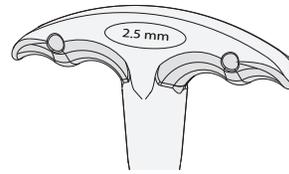
Encoder Box

T-handle Allen
Wrench 4 mm



Tools Box

T-handle Allen
Wrench 2.5 mm

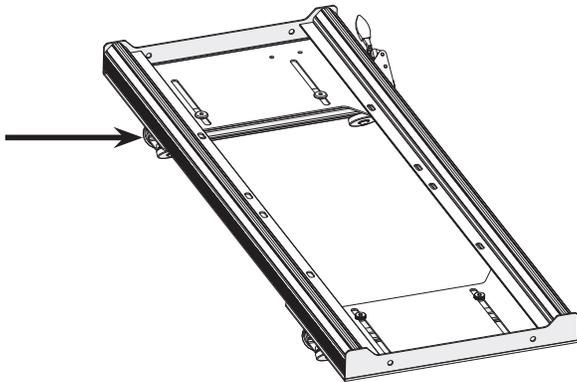


Tools Box

Instructions

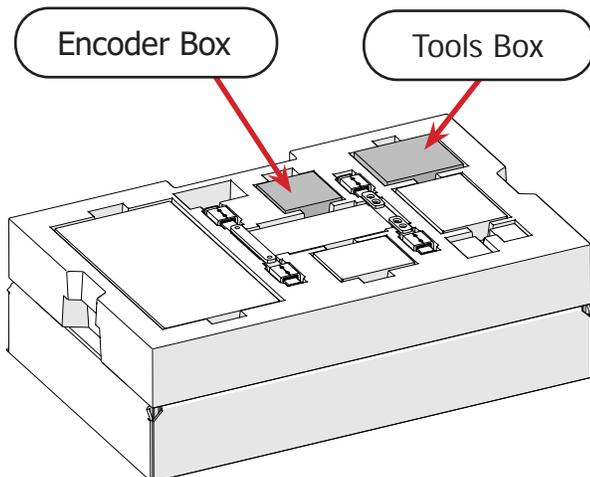
The encoders monitor the movement of the machine on the frame, allowing for regulated stitching. The lower encoder is installed on the left-rear wheel of the bottom carriage. Please take the following steps to install the encoder onto the bottom carriage:

- 1 Locate the left rear wheel of your bottom carriage.

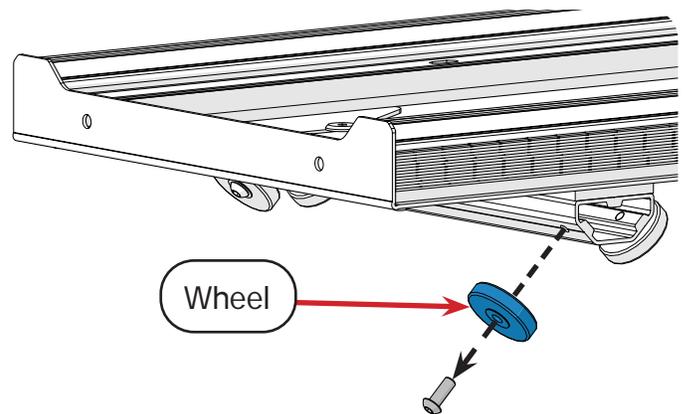


Note: If needed, review your frame assembly manual to determine the front of the bottom carriage.

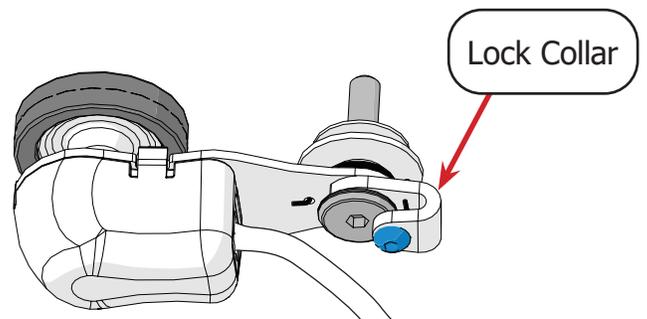
- 2 Remove the **tools box** and the **encoder box** from the packaging.



- 3 Use the 4 mm Allen wrench to remove the outward-facing, left rear **wheel** from the bottom carriage.

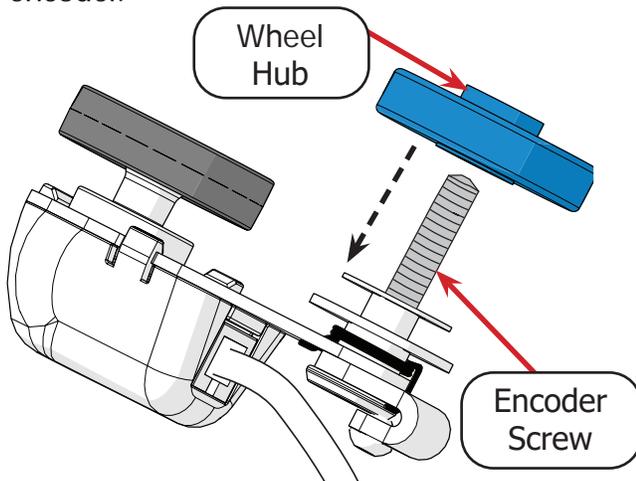


- 4 Loosen the **lock collar screw** (shown in blue) on the lower encoder with the 2.5 mm Allen wrench until the **lock collar** turns freely. The lower encoder has a black spring and a green sticker.

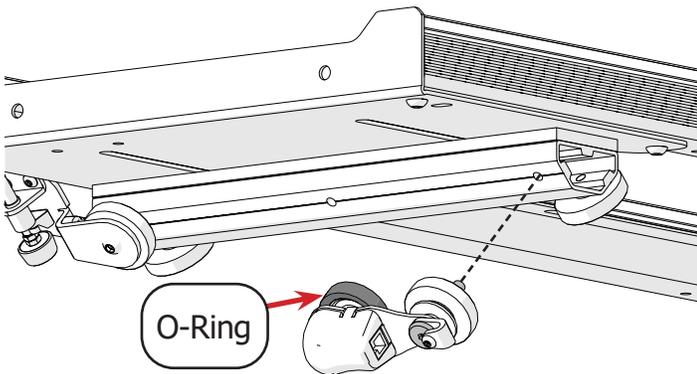


Task 1- Installing the Lower Encoder (Continued)

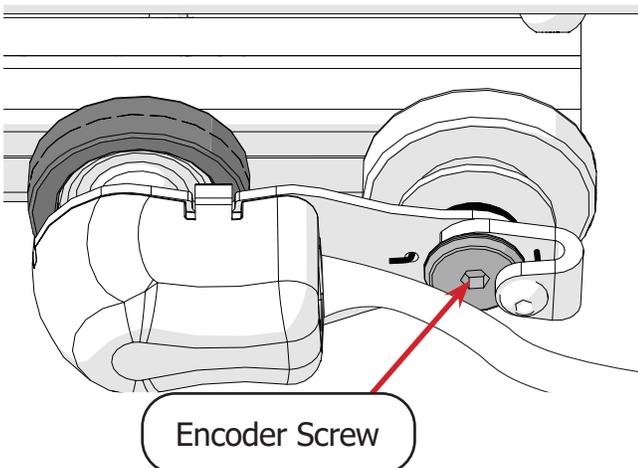
- 5 Slide the wheel onto the **encoder screw** with the **wheel hub** facing away from the encoder.



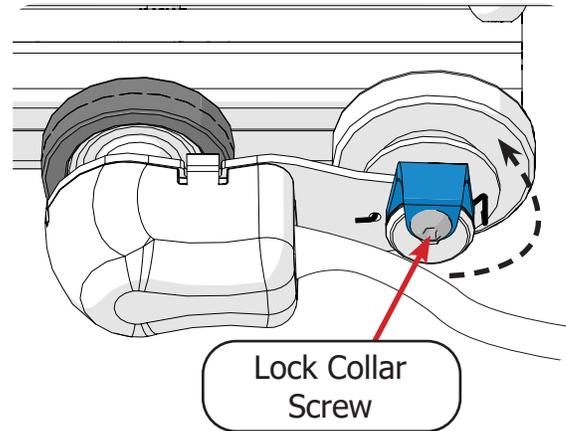
- 6 Place the encoder screw into the left rear wheel hole on the carriage so the **O-ring** is between the rear wheels.



- 7 Tighten the **encoder screw** with the 4 mm Allen wrench.



- 8 Turn the encoder **lock collar** (shown in blue) to point up. Then tighten the **lock collar screw** with the 2.5 mm Allen wrench.



Note: Instructions for plugging the cable into the machine are covered in "Task 7" after the machine has been installed.

Congratulations! You have completed Part One of this manual.

If you are also installing QuiltMotion, complete Part One of your QuiltMotion manual.

If you are not installing QuiltMotion at this time, continue to Part Two of this manual on page 7.

Part Two

Before completing the tasks in Part Two of your machine instructions, please complete Part One of your QuiltMotion instructions if you will be installing automation today.

Progress Checkpoint:

QuiltMotion Manual Part One (optional)

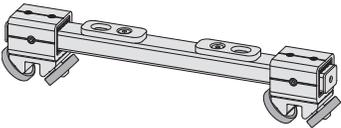
Have you:

- Installed the motor plate into your bottom carriage?
- Installed the long belt onto your frame?

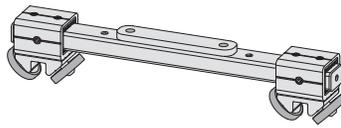
Task 2 - Installing the Wheels

Parts & Tools Needed:

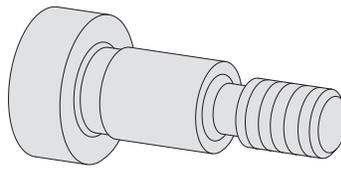
Back Wheel Assembly



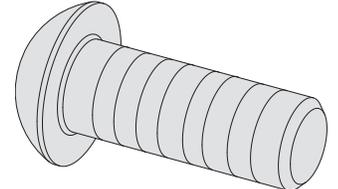
Front Wheel Assembly



Shoulder Bolt
M6 (x2)



SBHCS Screw
M6 x 20 mm (x2)



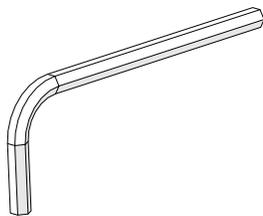
Packaging Level 1
(leave in packaging)

Packaging Level 1
(leave in packaging)

Wheel Base
Hardware Box

Wheel Base
Hardware Box

Allen Wrench 4 mm



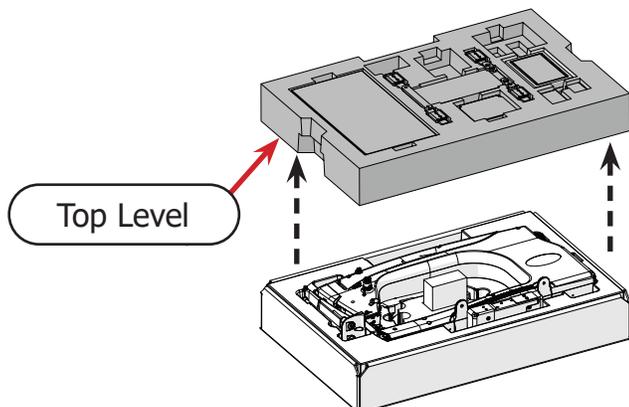
Wheel Base
Hardware Box

Instructions

The top level of packaging will serve as a workstation to install the wheels onto your machine. Do not remove the wheels from the packaging.

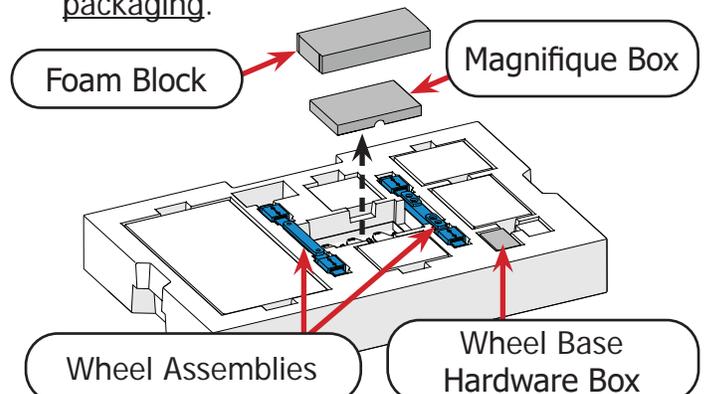
Take the following steps to install and adjust the machine wheels:

- 1 If you have not done so already, remove the **top level** of packaging and place it near the second level. The top level will serve as a workstation to install the machine wheels.



- 2 Remove the **foam block**, **Magnifique magnifying glass box**, and the **wheel base hardware box**.

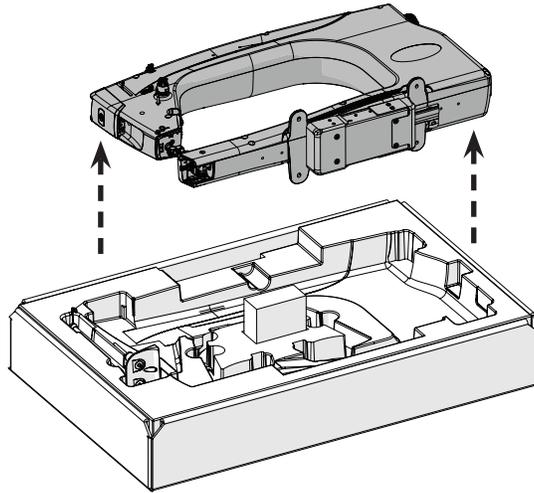
Leave the **wheel assemblies** in the packaging.



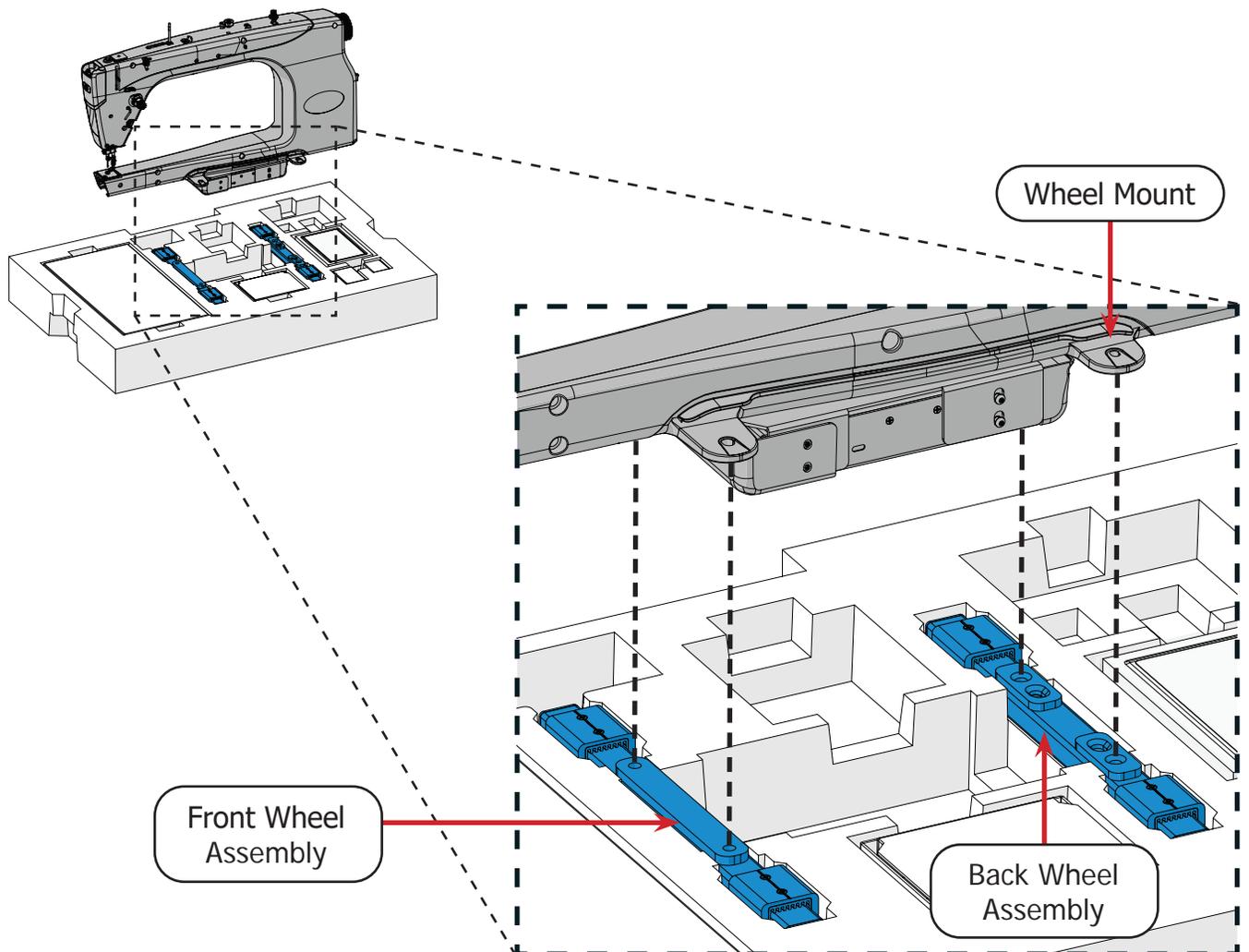
Part Two | Out of Box Assembly

Installing the Wheels (Continued)

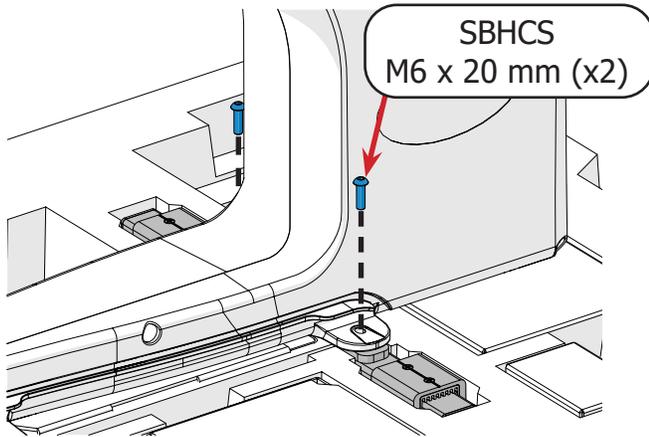
- 3 Remove the machine from the second level of packaging.



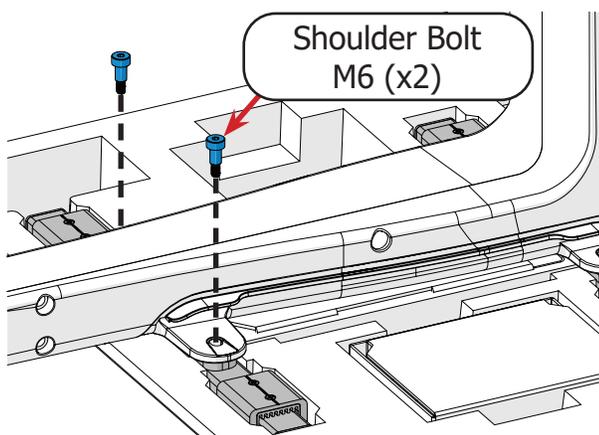
- 4 Place the machine on the wheels in level one of the packaging so that the holes in the **wheel mounts** align with the holes in the **front and back wheel assemblies**.



- 5 Use the L-shaped 4 mm Allen wrench and the two **M6 x 20 mm SBHCS** to attach the back wheel assembly to the machine.

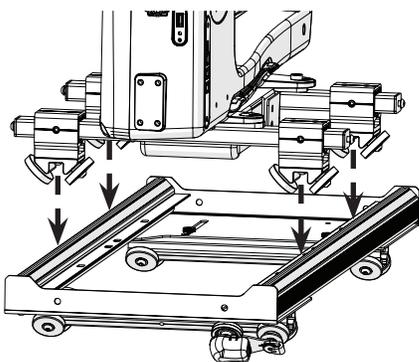


- 6 Use the L-shaped 4 mm Allen wrench and the two **M6 shoulder bolts** to attach the front wheel assembly to the machine.

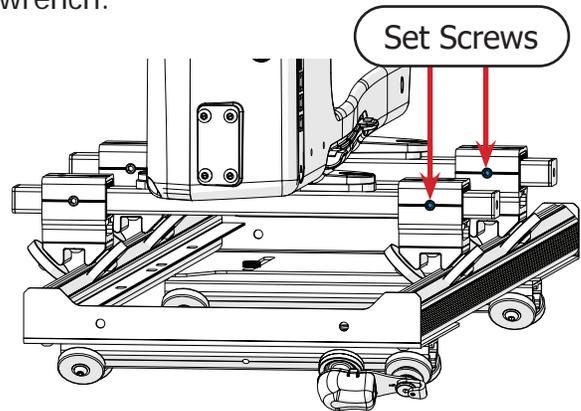


- 7 Place the machine onto the bottom carriage so that the wheels align with the carriage tracks.

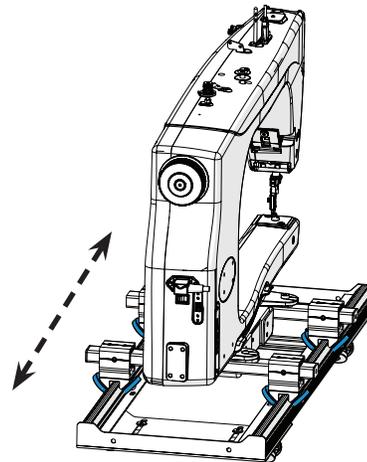
Tip: See your frame manual for bottom carriage orientation.



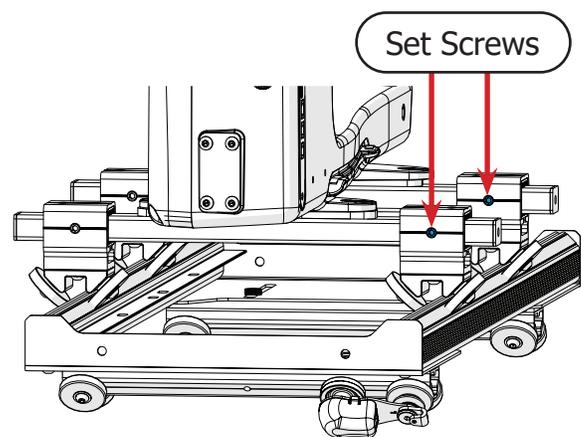
- 8 Place the **front wheel support assembly** under the front of the machine, with the **set screws** facing the rear. Loosen the set screws on one side with the 4 mm Allen wrench.



- 9 Slide the machine up and down the bottom carriage tracks several times so that the machine can settle and ride smoothly.



- 10 Use the 4 mm Allen wrench to re-tighten the wheel assembly **set screws** you loosened earlier.



Congratulations! You have completed Part Two of this manual.

If you are also installing QuiltMotion, complete Part Two of your QuiltMotion manual.

If you are not installing QuiltMotion at this time but are assembling a new frame, continue to Part Two of your frame manual. If the frame manual is not broken in to parts, follow the manual's directions to:

- Install the channel lock onto your machine.

If you are installing your machine onto a frame that is already fully assembled, continue to Part Three of this manual on page 12.

Part Three

Before completing the tasks in Part Three of your machine instructions, please complete Part Two in your QuiltMotion manual (if setting up QuiltMotion at this time), and then part Two of your frame manual.

Progress Checkpoint:

Have you:

- Completed QuiltMotion Part Two? (optional)

Have you:

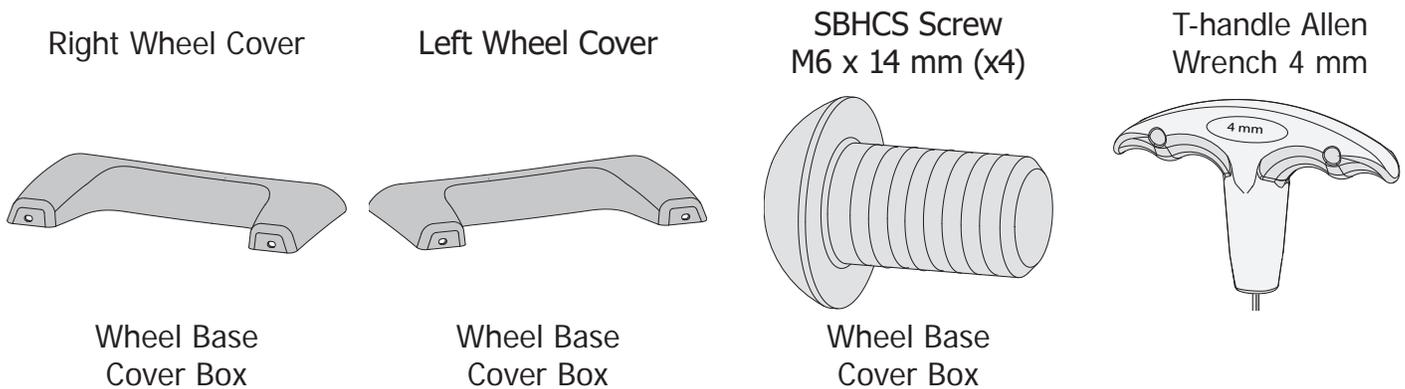
- Installed the channel lock onto the quilting machine?

If you've already fully assembled your frame:

- Install the channel lock onto the quilting machine.

Task 3 - Installing the Wheel Covers

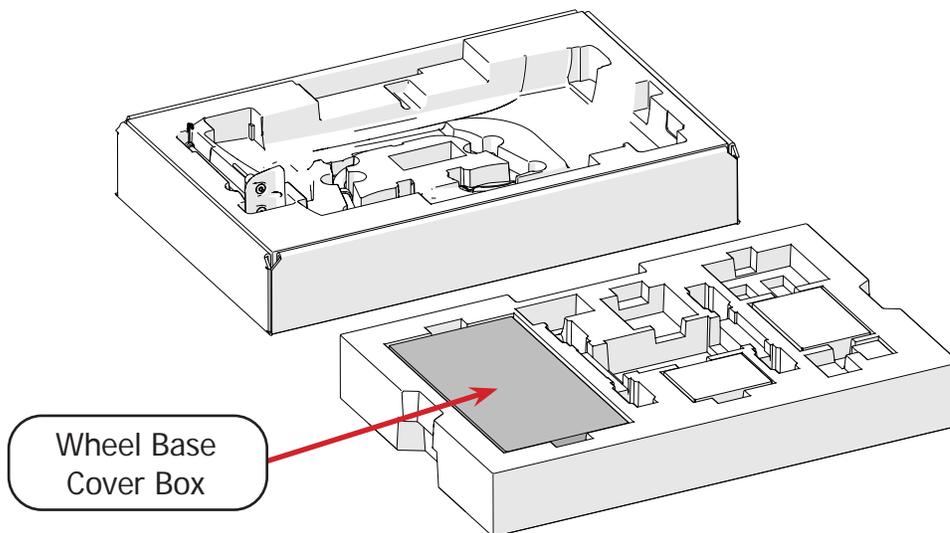
Parts & Tools Needed:



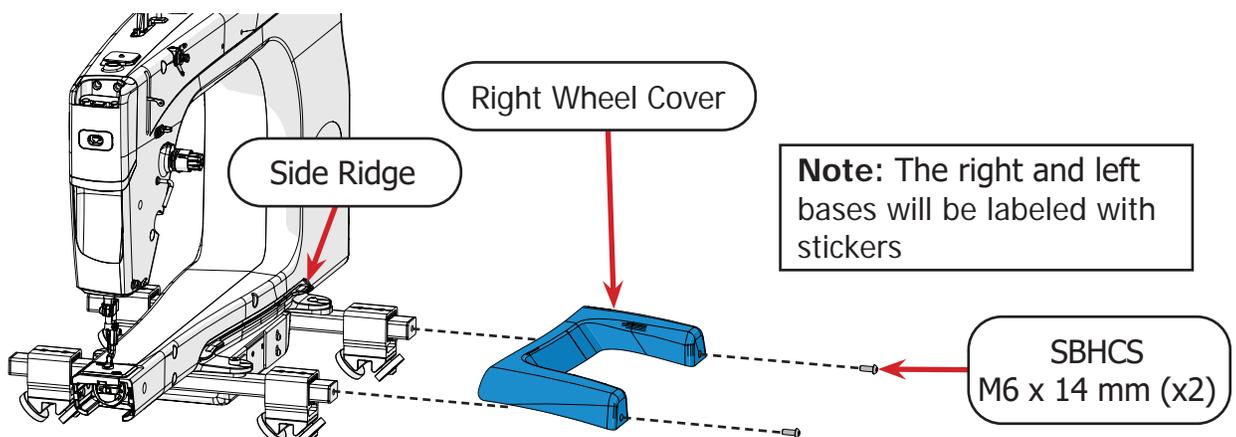
Instructions

Take the following steps to install the wheel covers onto the machine:

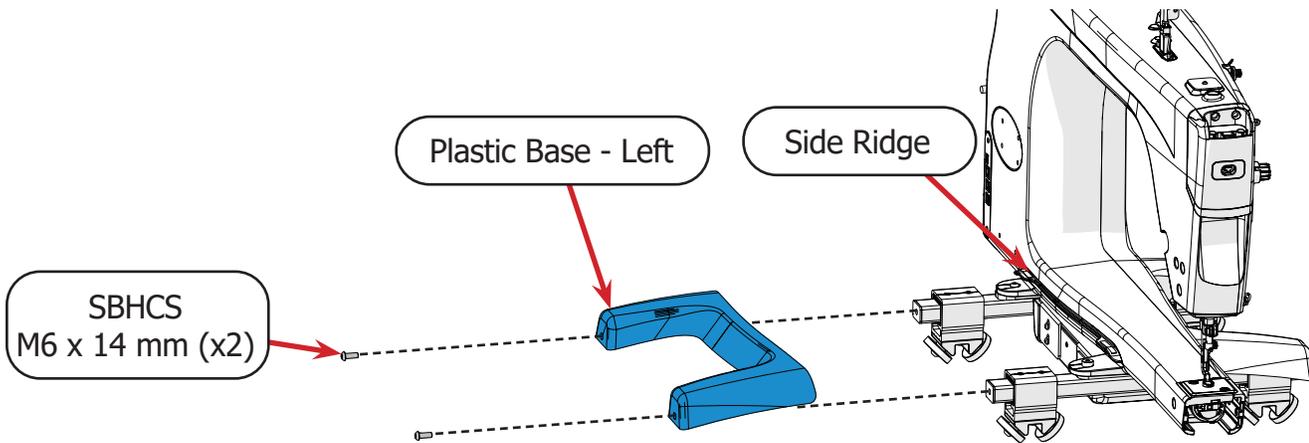
- 1 The parts needed for this task are found in the **wheel base cover box**.



- 2 Slide the **right wheel cover** onto the right side of the machine, over the **side ridge**. Screw in place with two **M6 x 14 mm SBHCS screws** and the 4 mm Allen wrench. Tighten until snug.



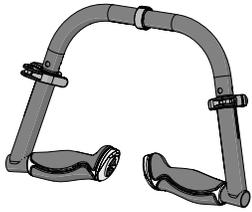
- 3 Slide the **left wheel cover** onto the left side of the machine, over the **side ridge**. Screw in place with two **M6 x 14 mm SBHCS screws** and the 4 mm Allen wrench. Tighten until snug.



Task 4 - Installing the Handlebars

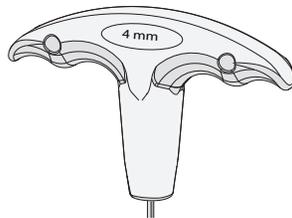
Parts & Tools Needed:

Handlebar Assembly



Packaging Level 2

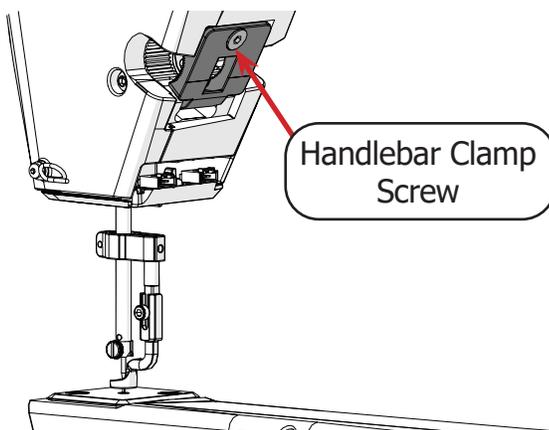
T-handle Allen Wrench 4 mm



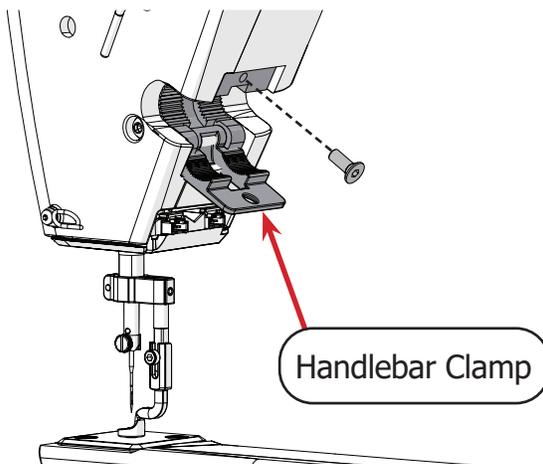
Instructions

Take the following steps to install the machine handlebars:

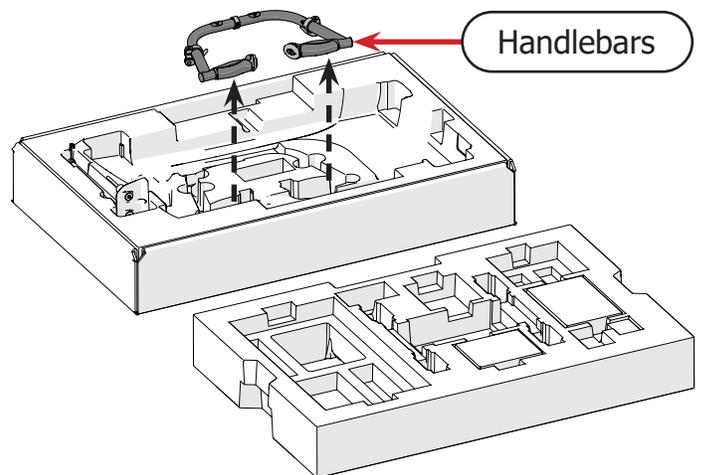
- 1 With the 4 mm Allen wrench, remove **handlebar clamp screw**.



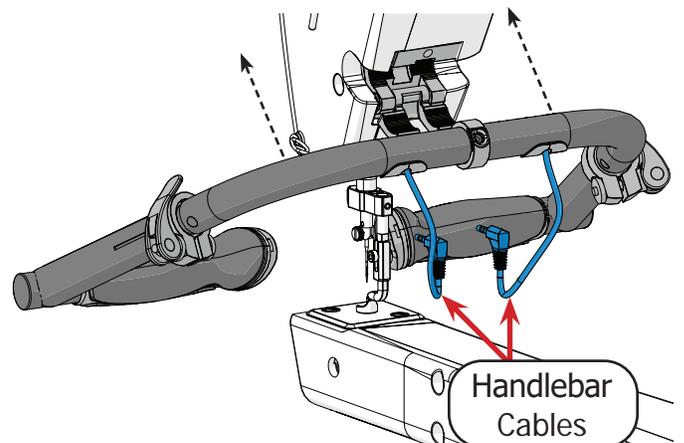
The **handlebar clamp** opens.



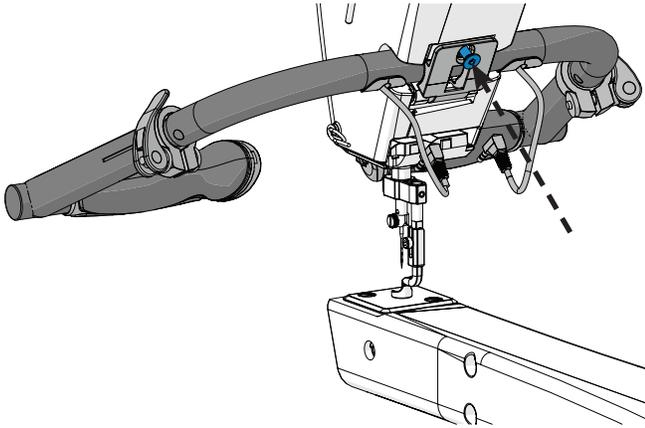
- 2 Remove the **handlebars** from the bottom level of the packaging



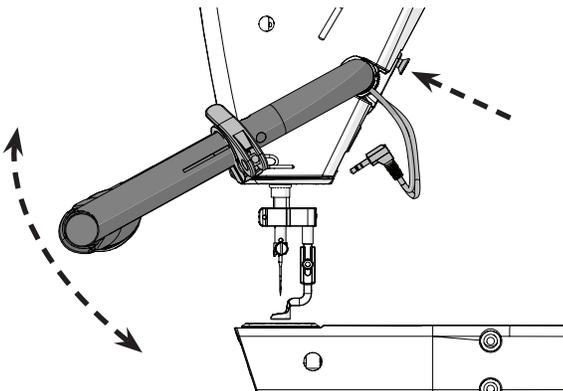
- 3 Slide the handlebars into the slot so the **handlebar cables** are on the bottom.



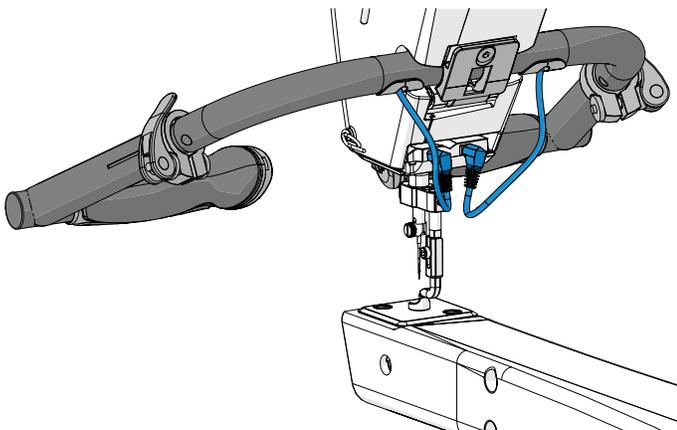
- 4 Close the cover and loosely screw in the cover screw.



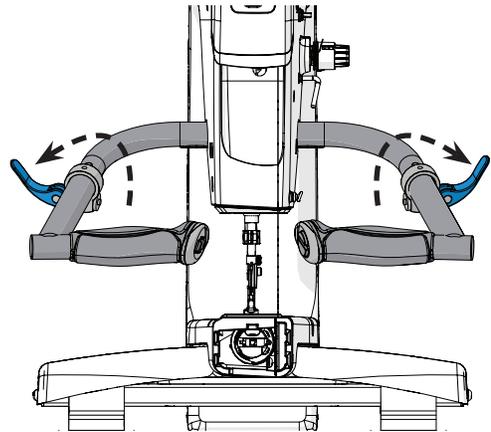
- 5 Hold the handlebars at the desired angle and tighten the clamp screw.



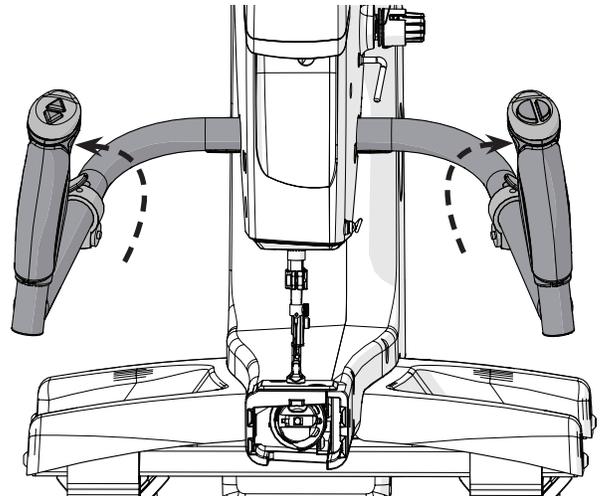
- 6 Plug the cables from the handlebars into the machine.



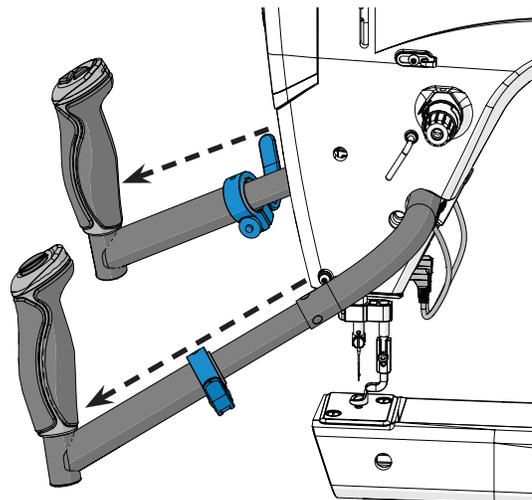
- 7 Open the **handlebar levers** (shown in blue).



- 8 Twist the controls until they are comfortable to hold and operate.



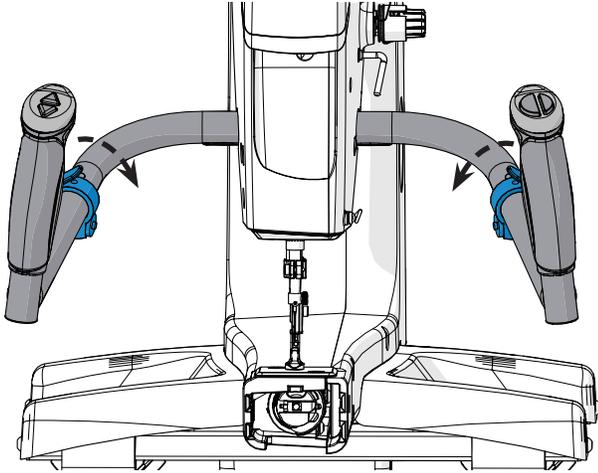
- 9 If desired, extend the handles outward to improve the reach of the machine.



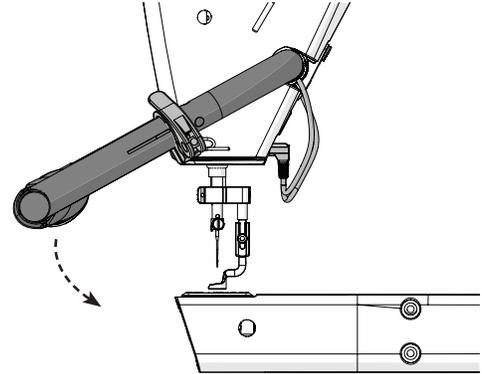
Part Three | Out of Box Assembly

Task 4 - Installing the Handlebars (Continued)

- 10 Close the handlebar levers (shown in blue). If needed, loosen the clamp screw and repeat step 4.



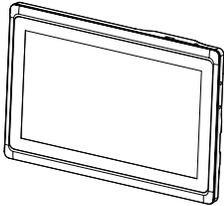
Tip: For micro-stippling, angle the handlebars down toward the needle plate in step 4, and leave the controls horizontal in step 7.



Task 5 - Connecting the Display

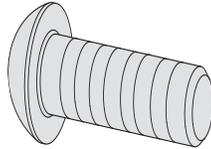
Parts & Tools Needed:

7-Inch Touch Display



Display Box

SBHCS Screw
M5 x 16 mm (x2)



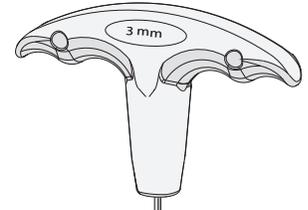
Display Box

Display Cable



Display Box

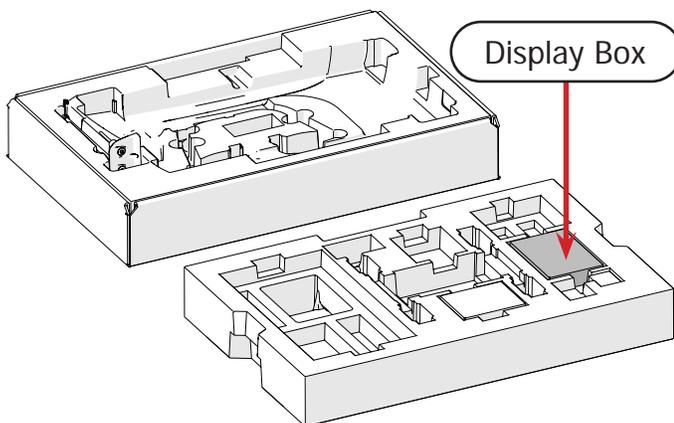
T-handle Allen
Wrench 3 mm



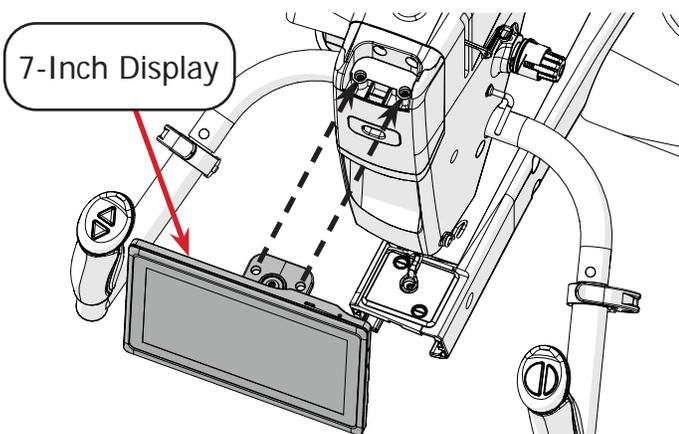
Instructions

Take the following steps to install the display.

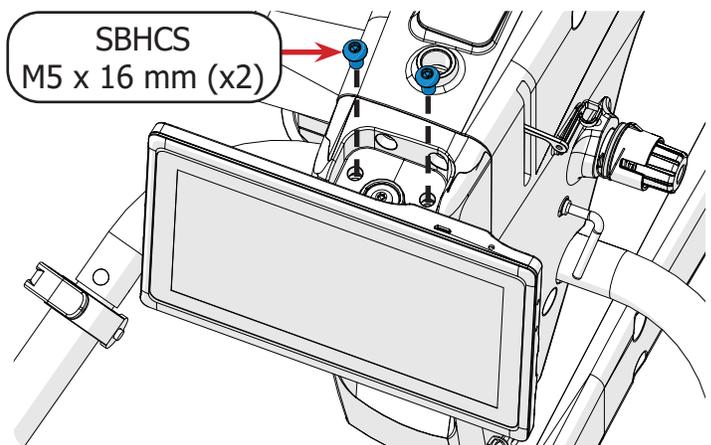
- 1 The parts needed for this task are in the **display box**.



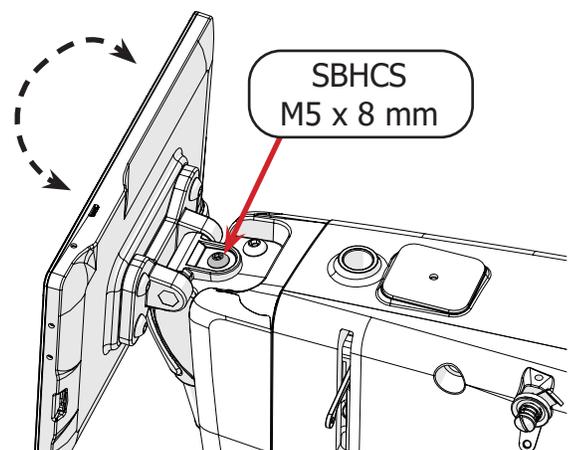
- 2 Place the **7-inch display** into the slot at the stop of the machine, lining up the holes for the screws.



- 3 Attach in place with the 3 mm Allen wrench and the two **M5 x 16 mm SBHCS**.



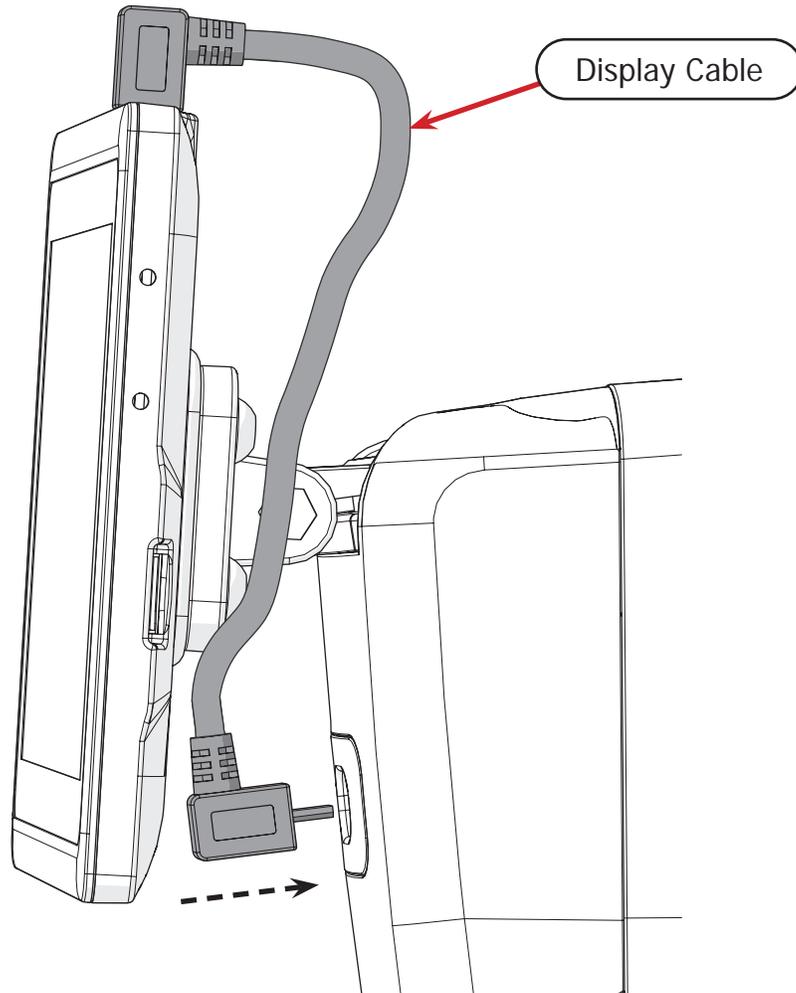
- 4 Tilt the display to the desired angle and use the 3 mm Allen wrench to tighten down the **M5 x 8 mm SBHCS** to secure it in place.



Part Three | Out of Box Assembly

Task 5 - Connecting the Display (Continued)

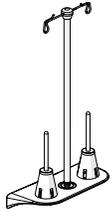
- 5 Connect the **display cable** into the port on the front of the machine behind the display.



Task 6 - Attaching the Thread Stand

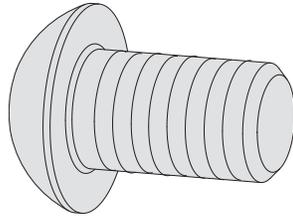
Parts & Tools Needed:

Thread Stand Assembly



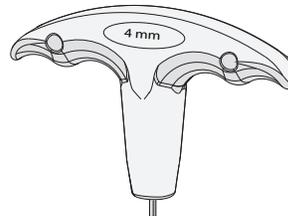
Bottom Level

SBHCS Screw
M6 x 14 mm (x2)



Thread Stand Hardware Box

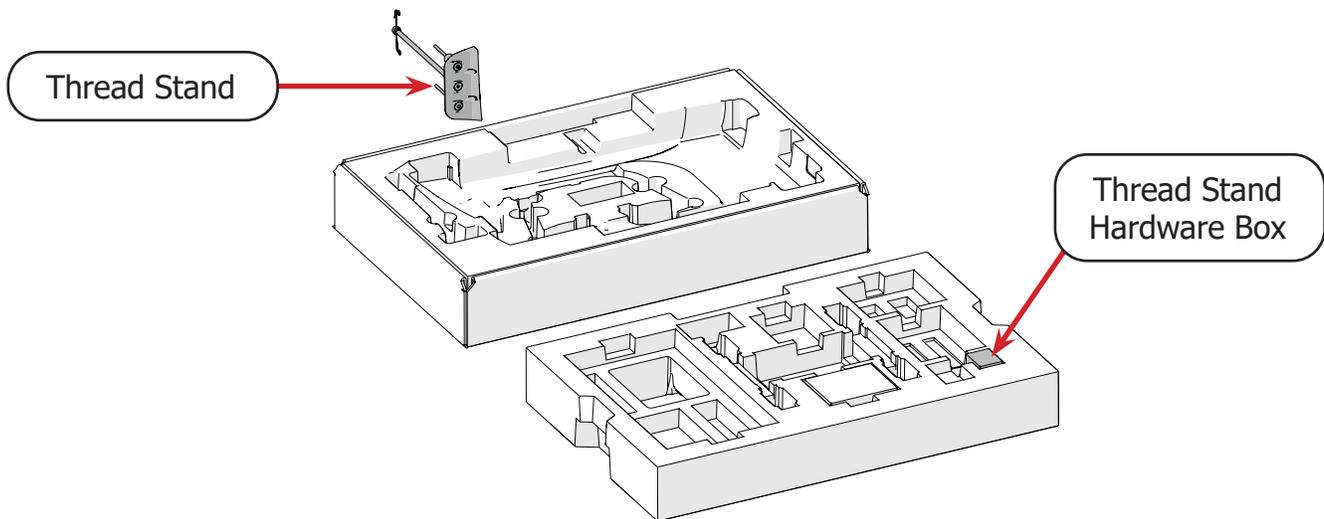
T-handle Allen Wrench
4 mm



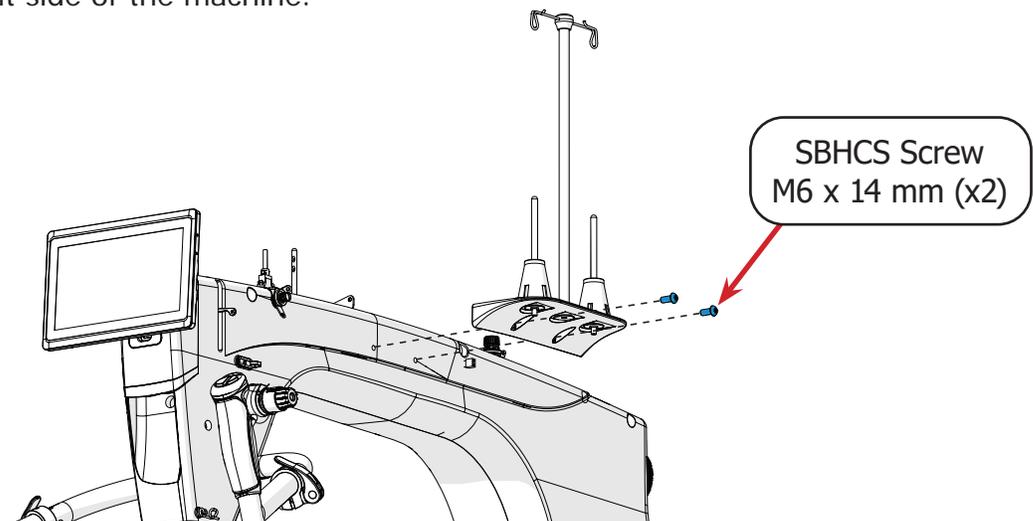
Instructions

To install the thread stand assembly:

- 1 Remove the **thread stand** and the **thread stand hardware box** from the packaging.



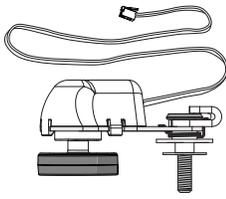
- 2 Use two **M6 x 14 mm SBHCS screws** and the 4 mm Allen wrench to install the thread stand assembly on the right side of the machine.



Task 7 - Installing the Upper Encoder

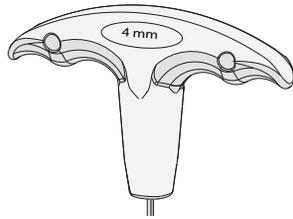
Parts & Tools Needed:

Upper Encoder
(silver spring)

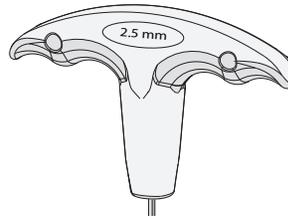


Encoder Box

T-handle Allen
Wrench 4 mm



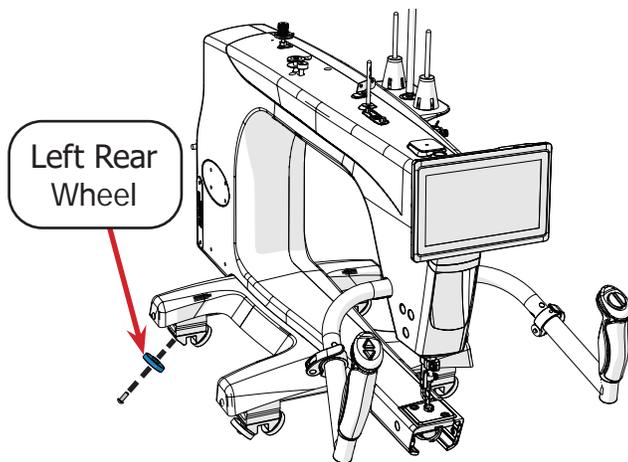
T-handle Allen
Wrench 2.5 mm



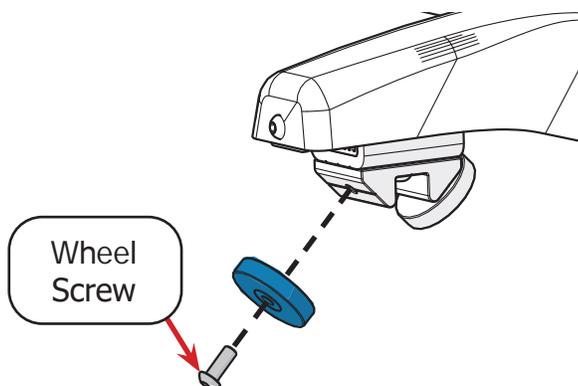
Instructions

The encoders monitor the position of the machine on the frame, allowing for regulated stitching. The upper encoder is installed on the outward-facing, left-rear wheel of the machine. Please take the following steps:

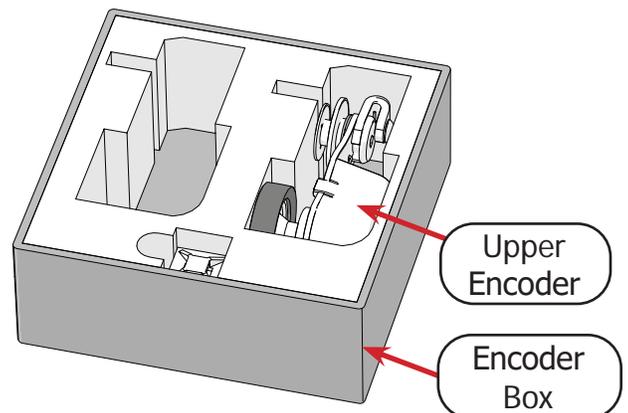
- 1 Use the 4 mm Allen wrench to remove the **left rear wheel** from the machine.



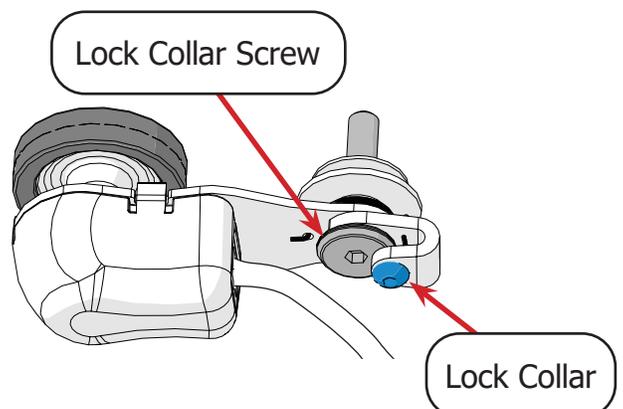
The **wheel screw** will not be needed again and can be stored with the packaging materials.



- 2 Find the **upper encoder** in the **encoder box**. The upper encoder has a silver spring and a purple sticker on the cable.

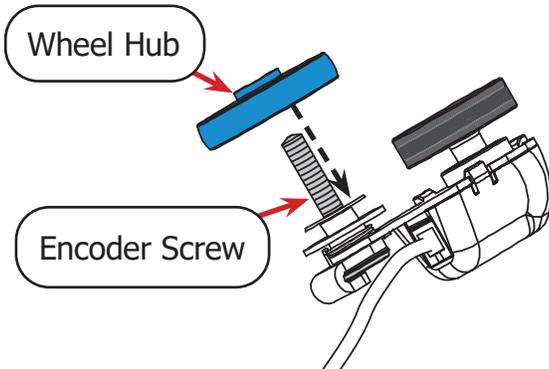


- 3 Loosen the **lock collar screw** on the upper encoder with the 2.5 mm Allen wrench until the **lock collar** turns freely.

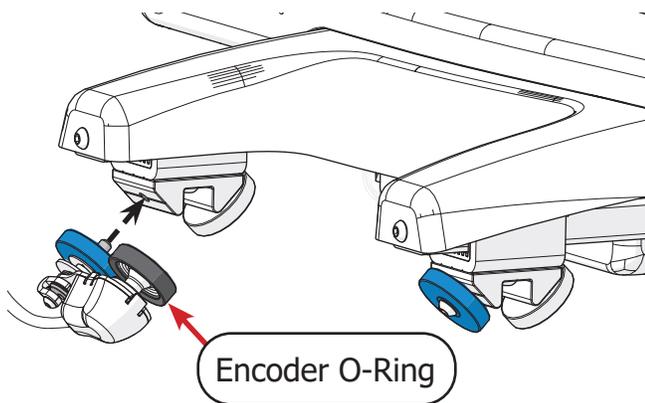


Task 7 - Installing the Upper Encoder (Continued)

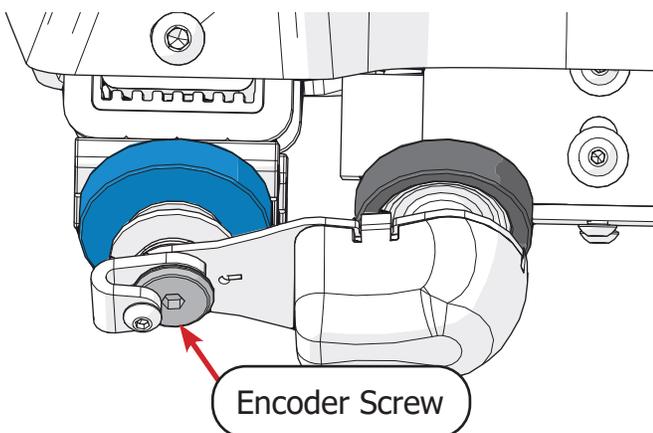
- 4 Slide the wheel onto the upper **encoder screw** so that the **wheel hub** faces away from the encoder.



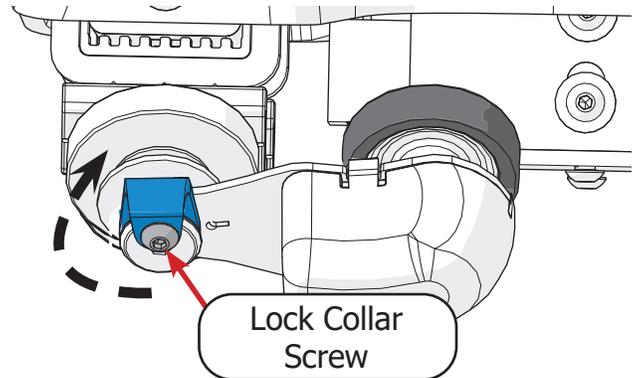
- 5 Place the encoder screw into the left rear wheel hole so the **encoder O-ring** is between the two left machine wheels.



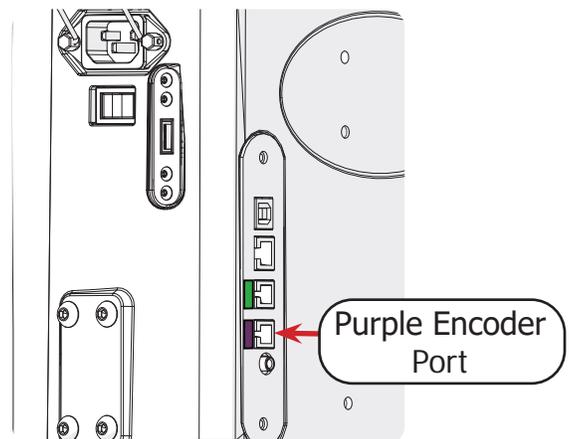
- 6 Tighten the **encoder screw** with the 4 mm Allen wrench.



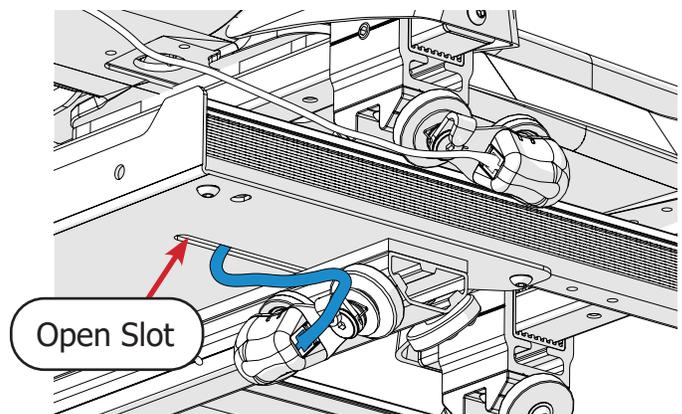
- 7 Turn the **encoder lock collar** (shown in blue) to point up and tighten the **lock collar screw** with the 2.5 mm Allen wrench.



- 8 Plug the upper encoder cable into the **purple encoder port** on the back left of the machine.



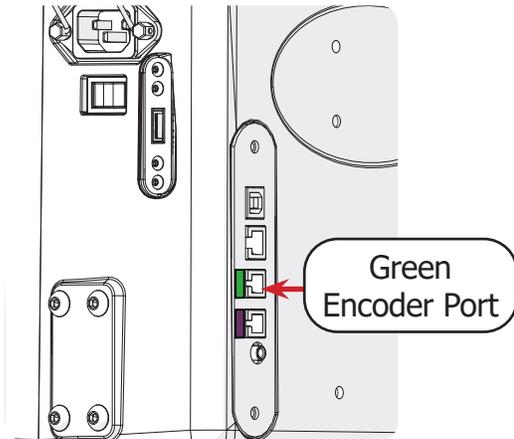
- 9 To plug in the lower encoder, take the free end of encoder cable (shown in blue) and pull it through the **open slot** in the bottom carriage behind the wheels.



Part Three | Out of Box Assembly

Task 7 - Installing the Upper Encoder (Continued)

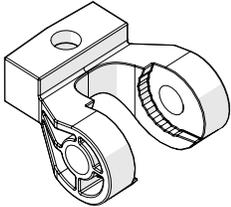
- 10 Plug the lower encoder cable into the **green encoder port** on the left rear of the machine.



Task 8 - Installing the Magnifique Magnifying Glass

Parts & Tools Needed:

Right Angle
Magnifier Mount



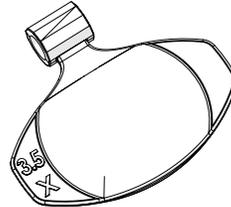
Magnifique Box

5X Magnifying Glass



Magnifique Box

3.5X Magnifying Glass



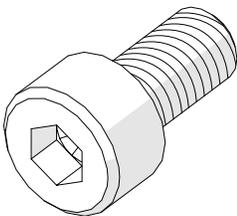
Magnifique Box

2X Magnifying Glass



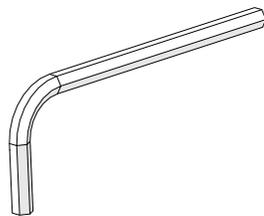
Magnifique Box

SHCS M4 x 8 mm



Magnifique Box

Allen Wrench 3 mm

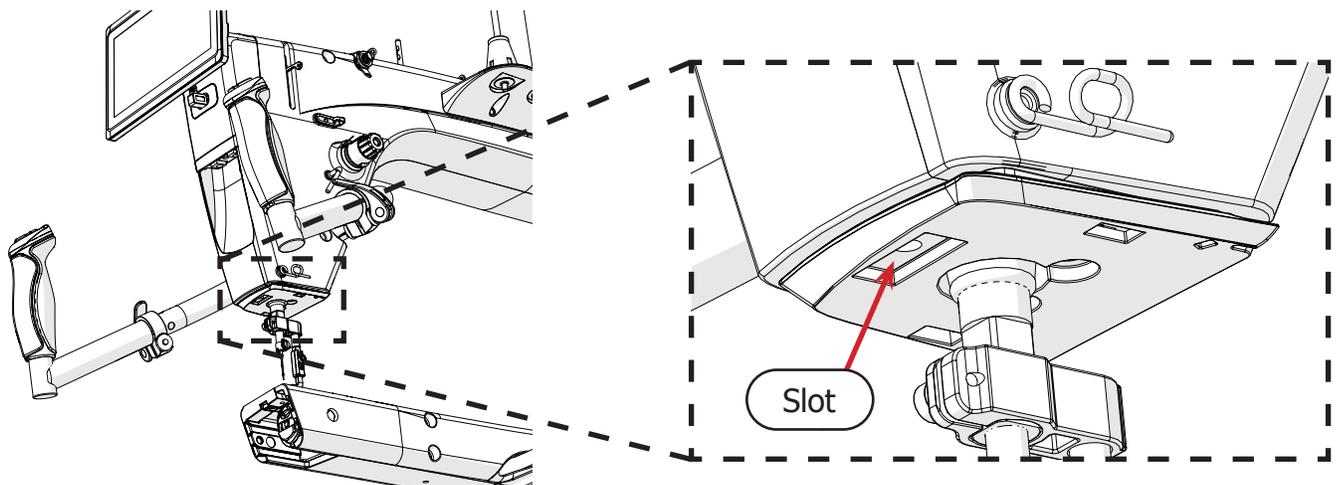


Magnifique Box

Instructions

Take the following steps to install the magnifying glass to your machine:

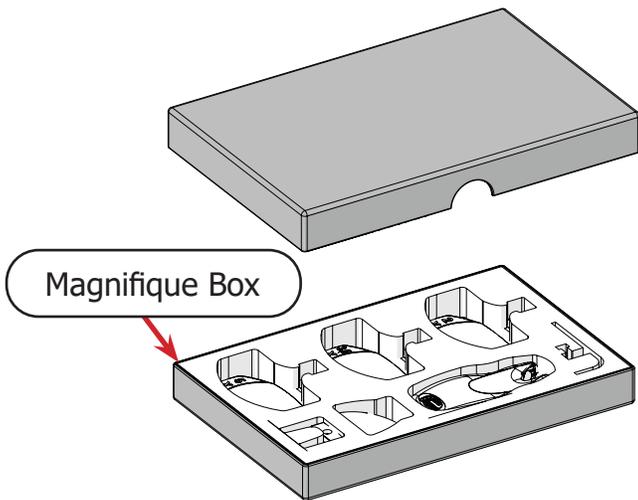
- 1 Locate the rectangular **slot** at the front of the machine just above the needle.



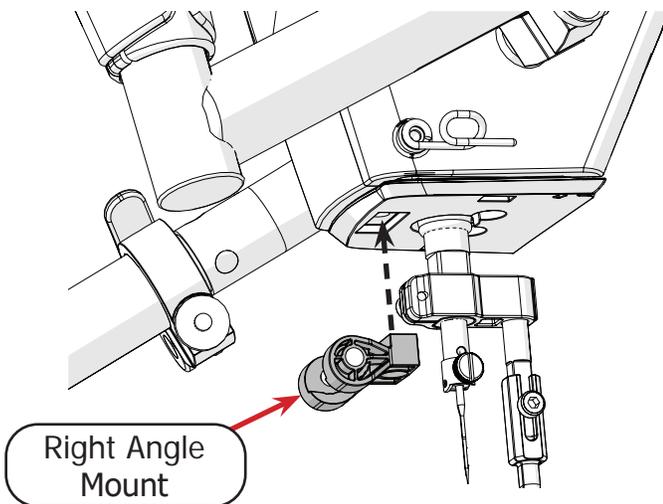
Part Three | Out of Box Assembly

Installing the Magnifique Magnifying Glass (Continued)

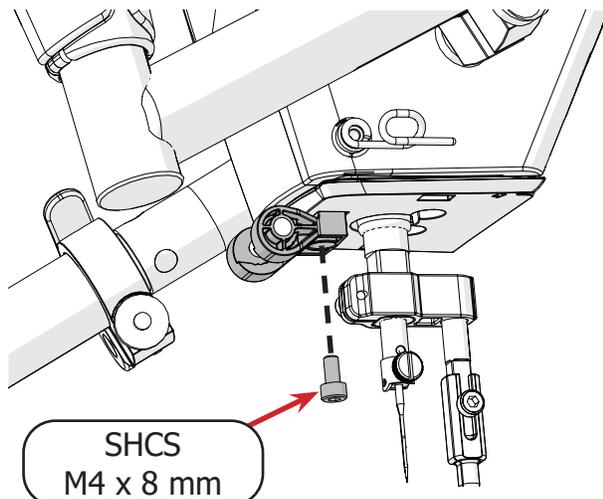
- 2 Open the **Magnifique box** that was set aside in task 2.



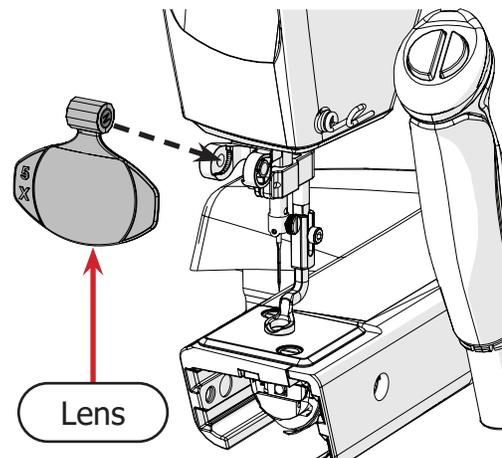
- 3 Slide the **right angle mount** into the slot.



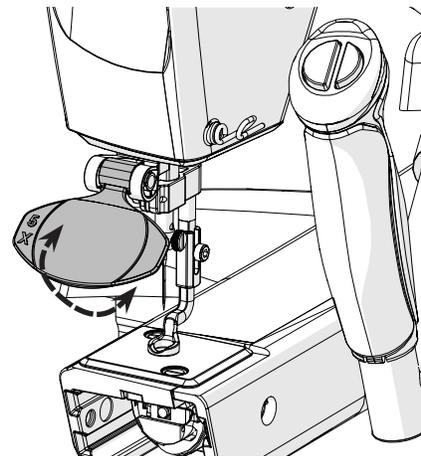
- 4 Secure in place with the **M4 x 8 mm SHCS** and the 3 mm Allen wrench.



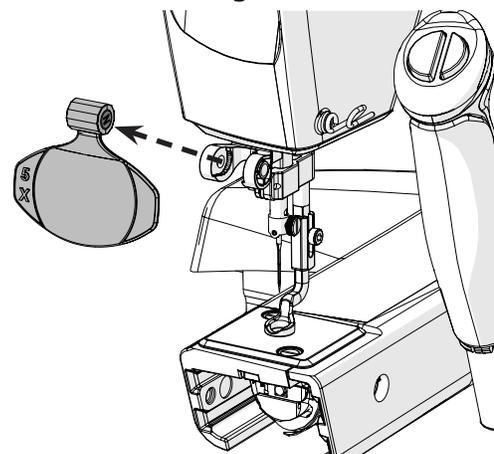
- 5 Select the **magnifying lens** you want to use and slide it into place in the right angle mount. The magnets will hold it in place.



- 6 Adjust the magnifying lens by rotating it until it gives you a clear view of the needle area.



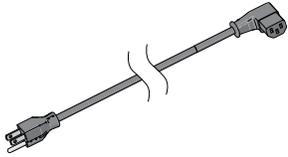
- 7 You can change the lens by lifting the lens out of the right angle mount and replacing it with a different magnification.



Task 9 - Turning the Machine On/Off

Parts & Tools Needed:

Power Cord

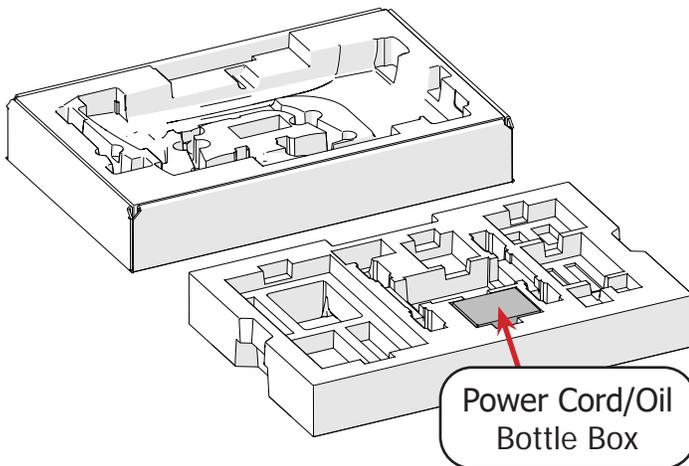


Power Cord/Oil Bottle
Box

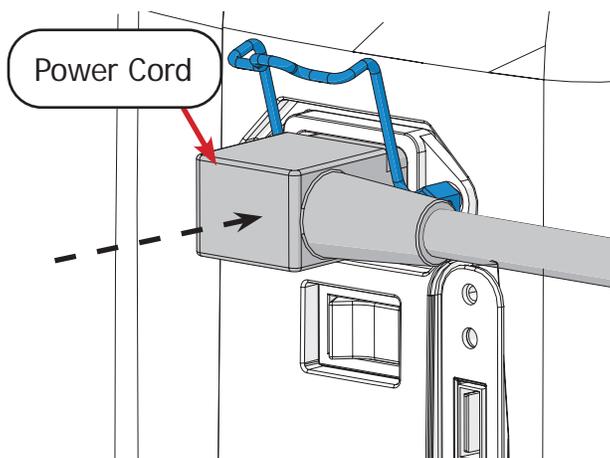
Instructions

The power cable port and power switch are located on the back of the machine. To power on the machine, take the following steps:

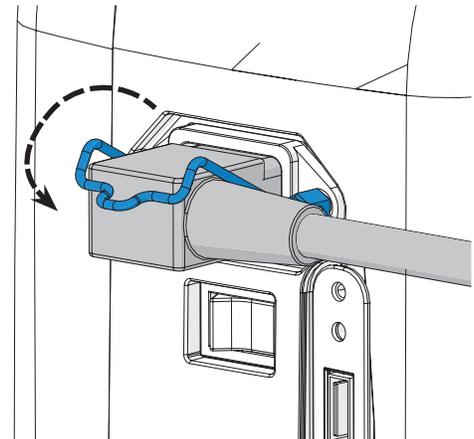
- 1 Remove the **power cord/oil bottle box** from the packaging.



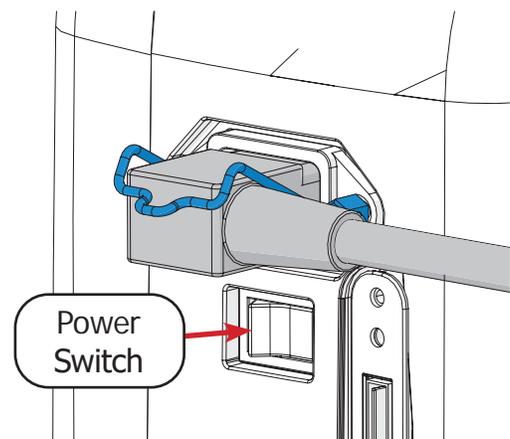
- 2 Lift the power cable retainer (blue) and plug the **power cord** into the machine.



- 3 Press the power cable retainer down firmly until it grasps the power cable.



- 4 Press the right side of the **power switch** to turn the machine on.



Preparing to Quilt

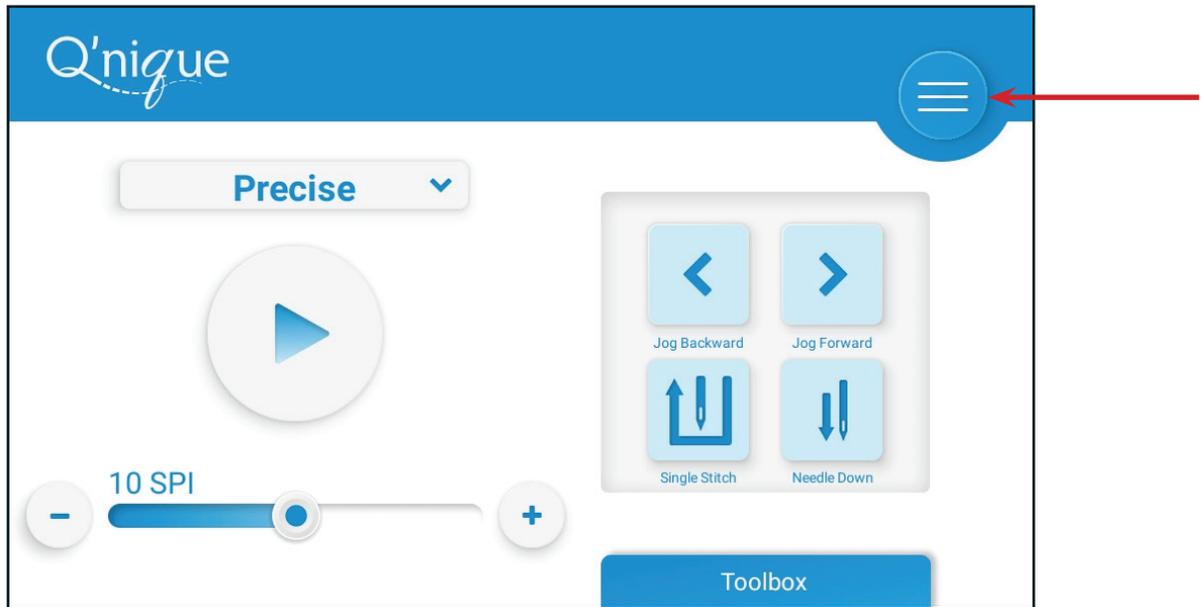
This section of the manual covers accessing help guides on your display, winding the bobbin, loading the bobbin case, and threading the machine.

Help Guides	page 28
Task 10 - Winding a Bobbin	page 29
Task 11 - Loading the Bobbin Case	page 31
Task 12 - Threading the Machine	page 33

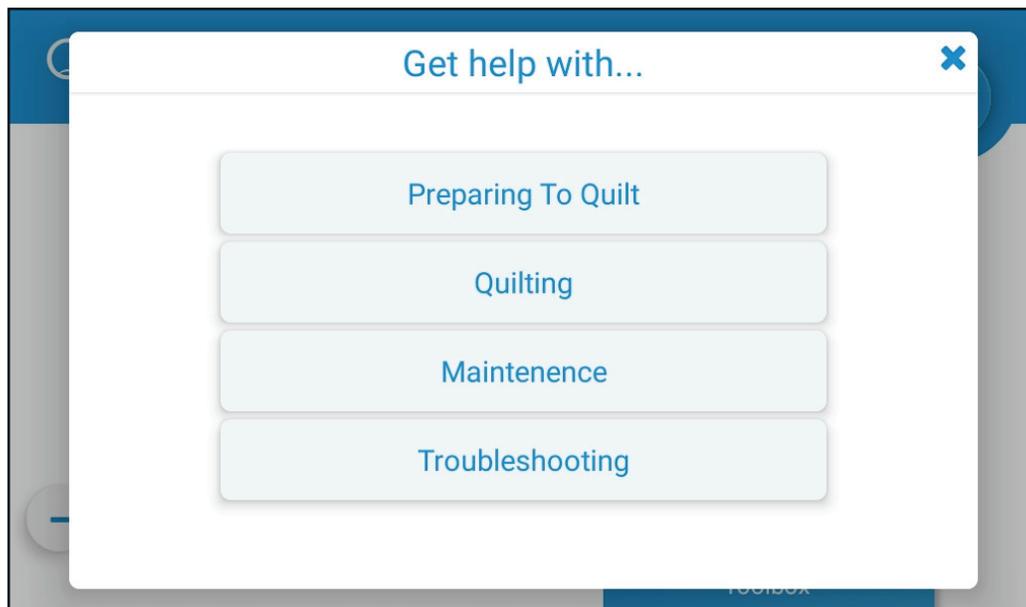
Help Guides

Instructions for many of the remaining tasks can also be found in the **Help Guide** on your machine. To reach the help guides, take the following steps:

- 1 Press the **menu** icon in the top right corner of the screen and select **Help**.



The Help Guide menu opens.

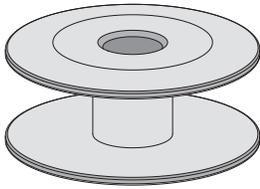


- 2 Select the item that you need help with from the menu.

Task 10 - Winding a Bobbin

Parts & Tools Needed:

Bobbin (Class M)



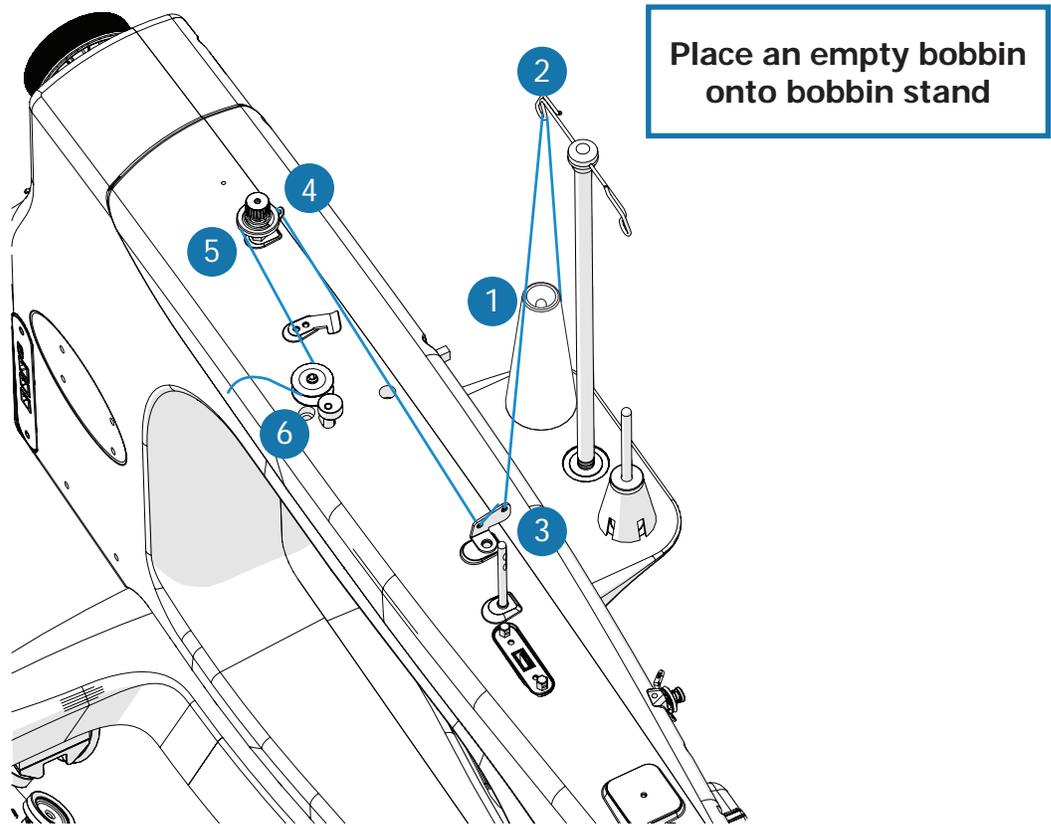
Box 1

Instructions

Your machine comes with two bobbins pre-wound with 50 weight polyester Finesse thread. An empty M-class bobbin has also been provided. It's important to choose bobbin thread that is similar in type and quality as the top thread. For more information on choosing thread, see "Choosing Your Thread" on page 99.

Note: This machine uses cone-style thread. Unless you have the spool accessory, please use only thread cones for this machine.

The following diagram outlines the path the thread (shown in blue) must take to wind the bobbin.



1 Thread Stand

2 Guide Loops

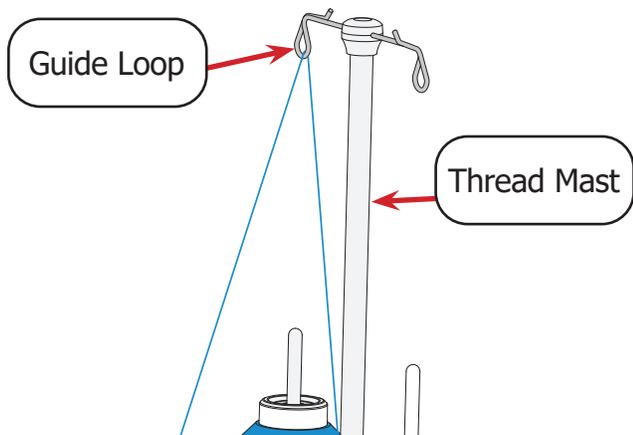
3 Bobbin Thread Guide

4 Tensioner Thread Guide

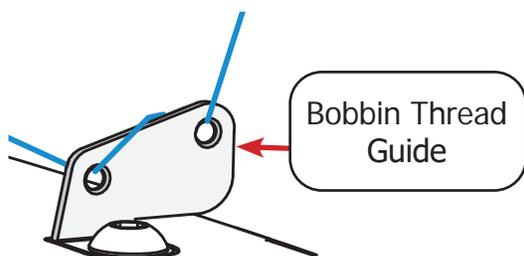
5 Bobbin Thread Tensioner

6 Bobbin Stand with Bobbin

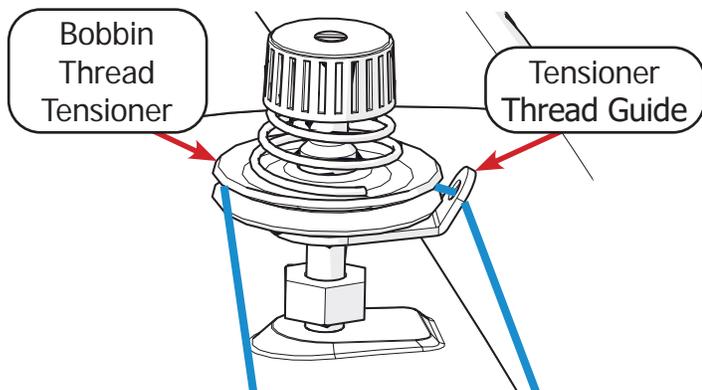
- 1 Run the thread through the **thread mast guide loop** directly above the thread cone.



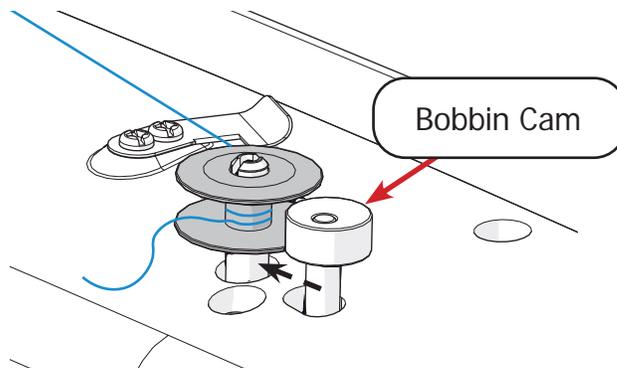
- 2 Feed the thread through the front of the first hole (closest to the thread cone) on the **bobbin thread guide**. Then wrap it back over and pass through the front of the second hole.



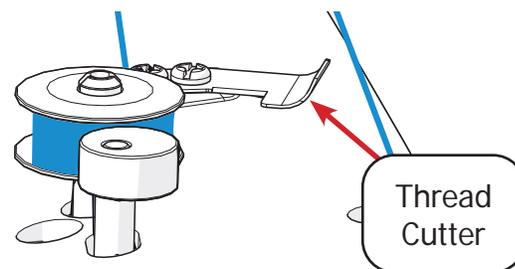
- 3 Pull the thread through the hole in the **tensioner thread guide** and then around the back of the **bobbin thread tensioner**, between the two discs.



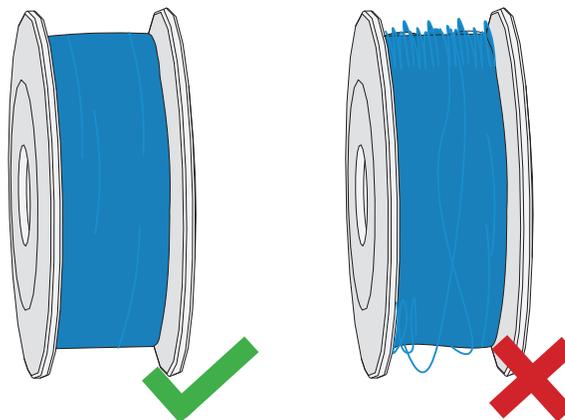
- 4 Tightly wrap the thread clockwise around the bobbin a few times to hold the thread in place. Push the **bobbin cam** toward the bobbin to start winding.



- 5 Winding stops automatically when the bobbin is full. Cut the thread with the **thread cutter** near the bobbin cam.



The bobbin thread should appear neat and smooth.

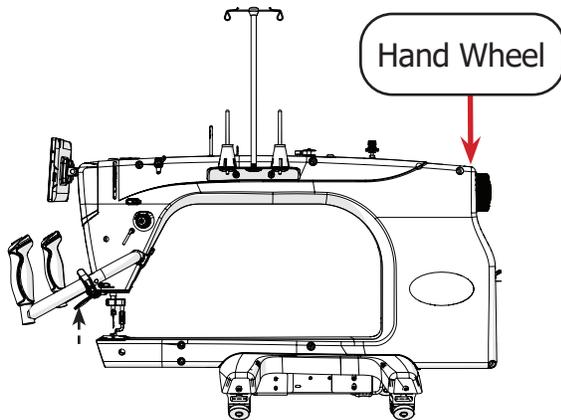


Note: Bobbin fill levels can be adjusted (see page 52).

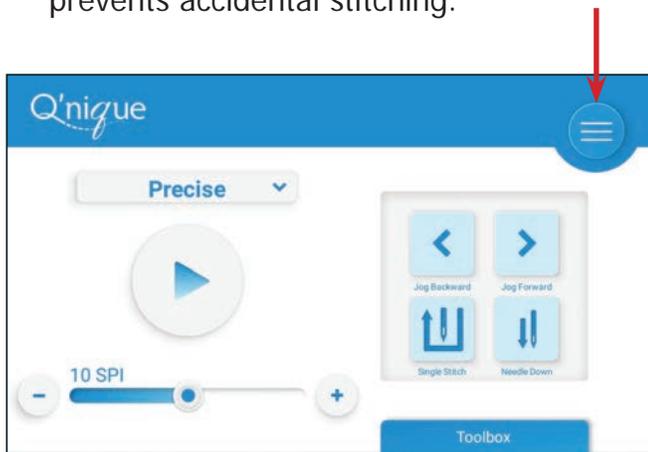
Task 11 - Loading the Bobbin Case

Take the following steps to insert the wound bobbin into the bobbin case and place it in the machine:

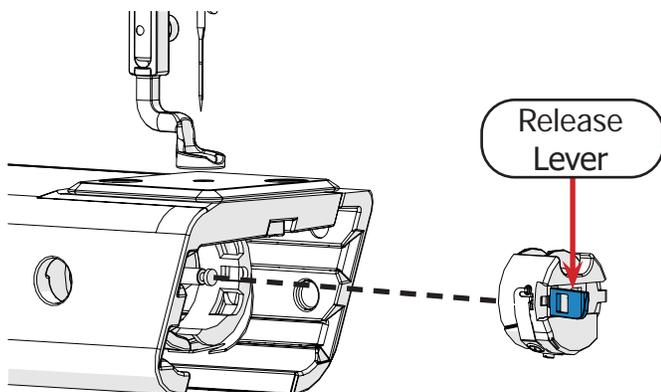
- 1 Check that the needle is up. If needed, rotate the **hand wheel** to raise the needle.



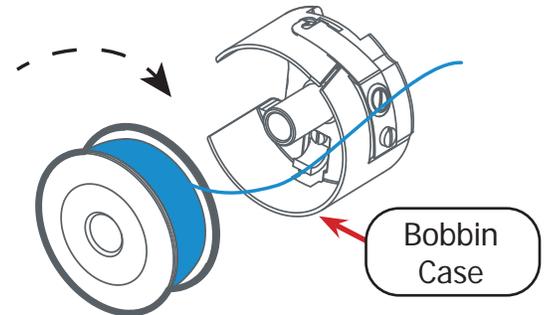
- 2 Open the Settings menu by clicking the **menu icon** and selecting **Settings**. This prevents accidental stitching.



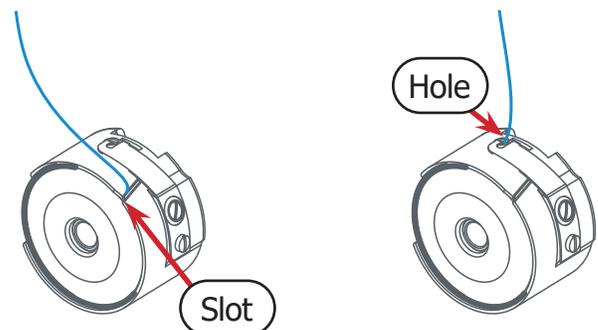
- 3 Pull on the bobbin case **release lever** to remove the bobbin case from the hook assembly.



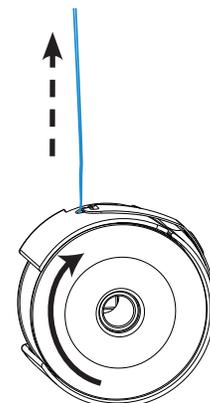
- 4 Place the wound bobbin into the **bobbin case**. Note the direction that the thread is coming off the bobbin in relation to the case.



- 5 Slip a few inches of thread through the **slot** and out of the **hole**.

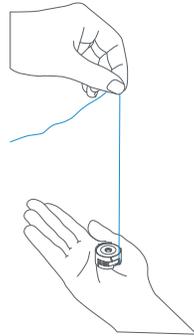


Note: If the bobbin is wound correctly it will turn clockwise when the thread is pulled.

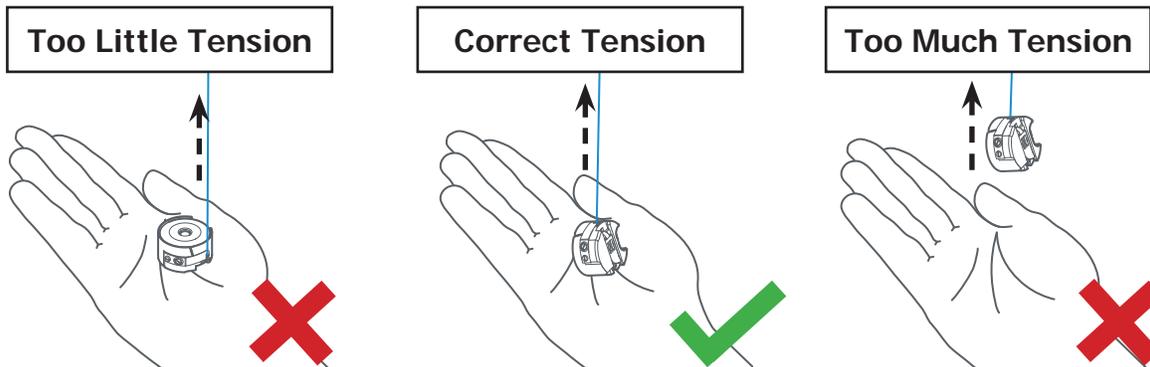


- 6 Test the tension of the bobbin case every time bobbin thread is changed; bobbin tension is the foundation for correct thread tension.

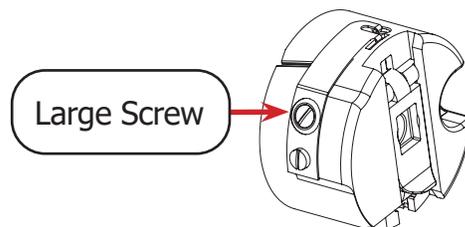
a. Place the bobbin case flat on its side, on your palm.



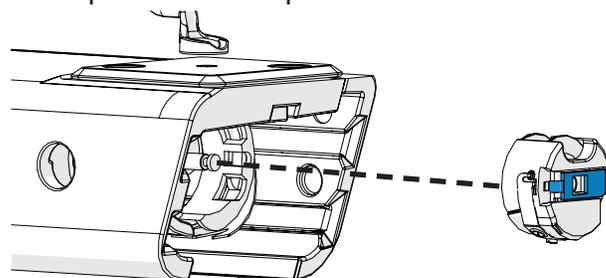
- b. Pull up on the thread. The thread should run freely and the bobbin case should rise into a vertical position without lifting off your hand.



- If the case remains on its side, there is too little tension. Turn the **large screw** clockwise.
- If the case lifts into the air, there is too much tension. Turn the **large screw** counter-clockwise.



- 7 Place the bobbin case inside the machine with the **lever** (shown in blue) at the 3 o'clock position. It should click into place. Do not pull on the lever while inserting the bobbin case.



Task 12 - Threading the Machine

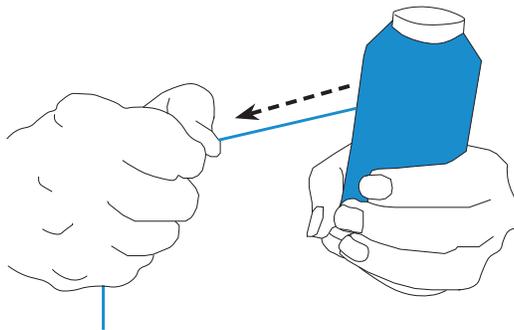
Before threading the machine, make sure you've selected quality thread for your project. Choosing the right thread for the machine can prevent the thread from breaking or tangling up under the needle plate. For more information on choosing thread, see page 99. Note the following:

- This machine uses cone-style thread, not thread from a spool. Do not use spool thread unless the spool accessory (not included in this kit) has been installed.

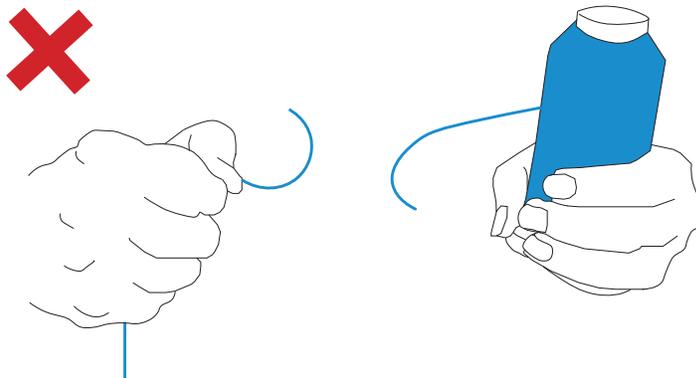


- Choose thread that is strong enough to pass the yank test (shown below), and re-test thread as it ages. Thread strength can diminish over time.

- a. Hold the cone in one hand and the end of thread in the other.



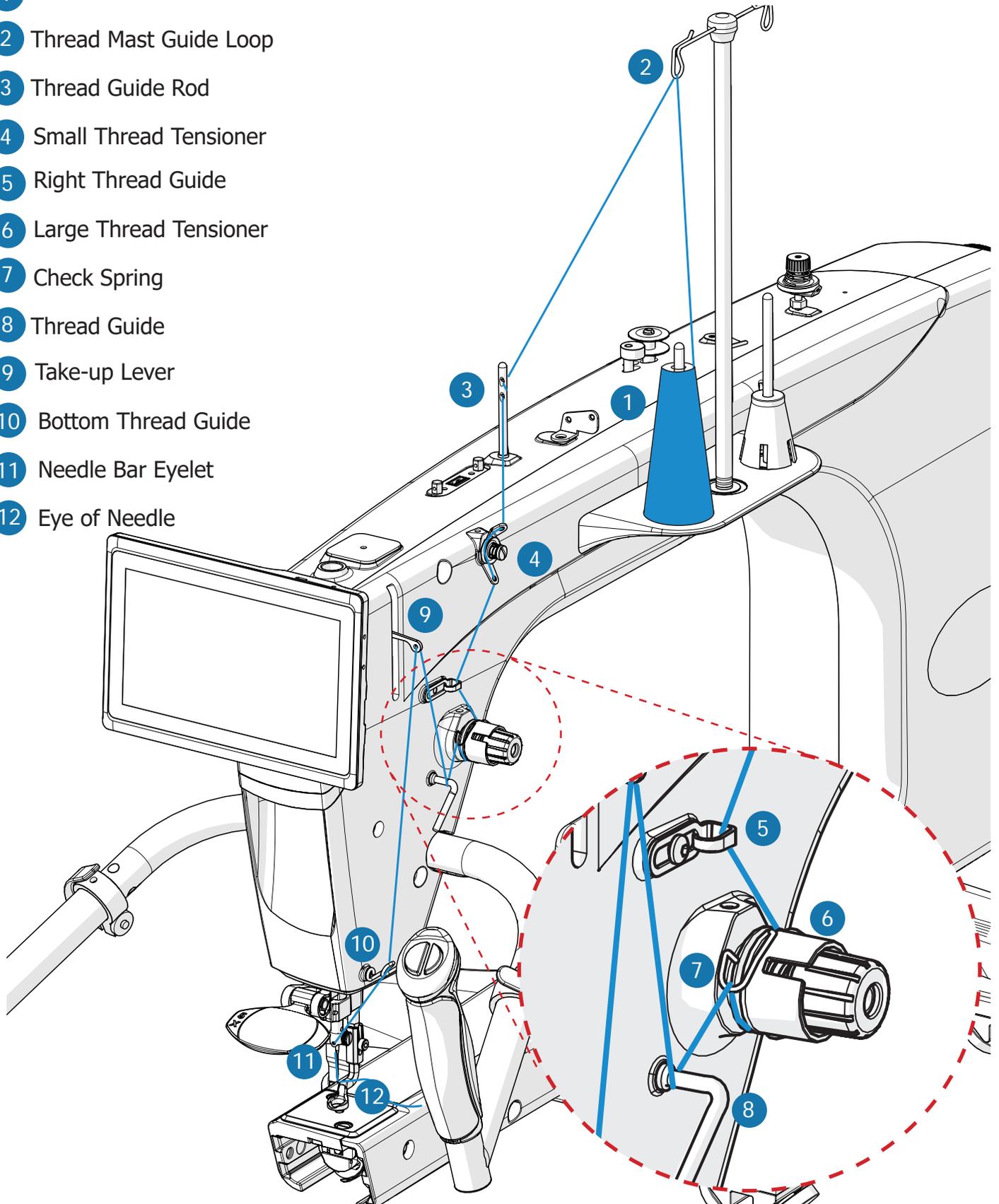
- b. Tug on the thread. If the thread snaps easily, it may be too brittle to use for quilting.



Task 12 - Threading the Machine (Continued)

The following diagram outlines the path the thread (shown in blue) must take through the machine.

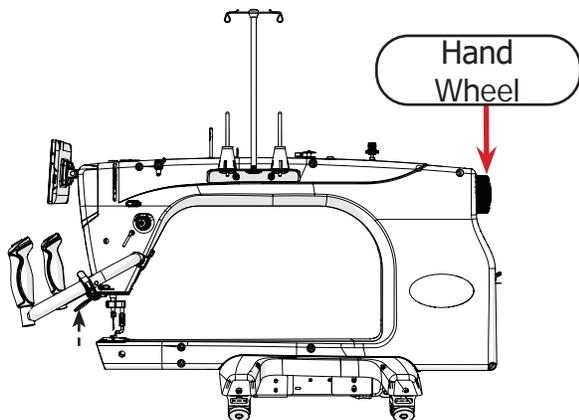
- 1 Thread Cone
- 2 Thread Mast Guide Loop
- 3 Thread Guide Rod
- 4 Small Thread Tensioner
- 5 Right Thread Guide
- 6 Large Thread Tensioner
- 7 Check Spring
- 8 Thread Guide
- 9 Take-up Lever
- 10 Bottom Thread Guide
- 11 Needle Bar Eyelet
- 12 Eye of Needle



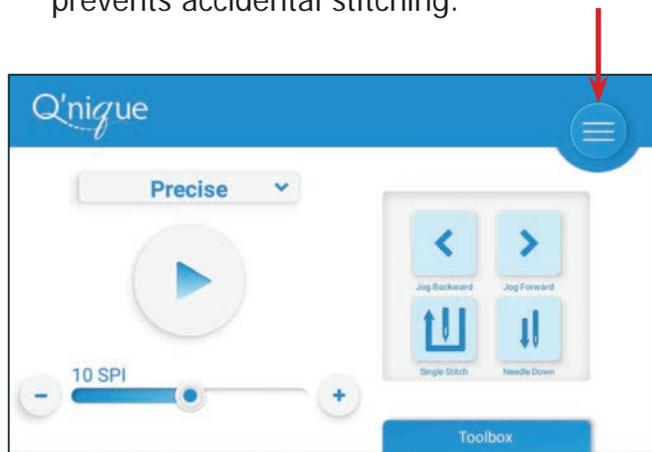
Part Three | Preparing to Quilt

Task 12 - Threading the Machine (Continued)

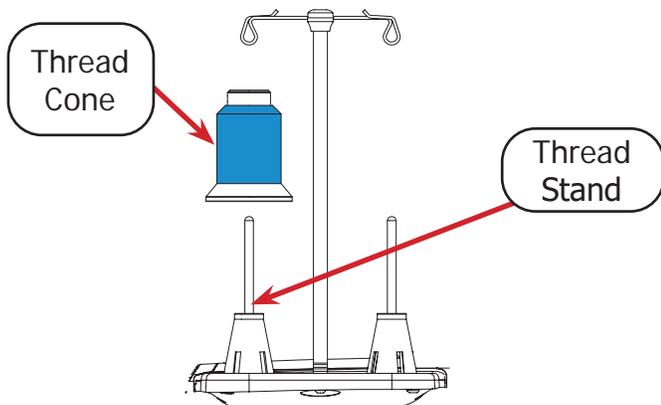
- 1 Rotate the **hand wheel** at the rear of the machine to raise the needle to the top position



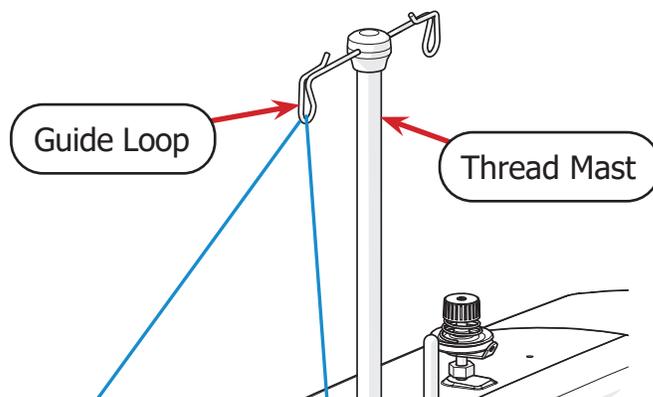
- 2 Open the Settings menu by clicking the menu icon and selecting **Settings**. This prevents accidental stitching.



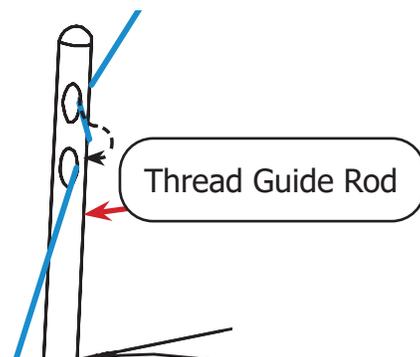
- 3 Place the **thread cone** on the cone-style **thread stand** toward the front of the machine.



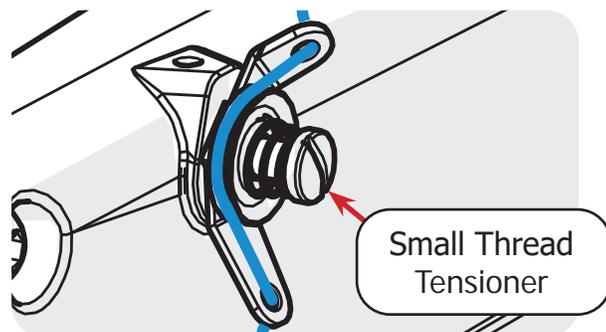
- 4 Pull the thread straight up, through the **thread mast guide loop** above the thread stand.



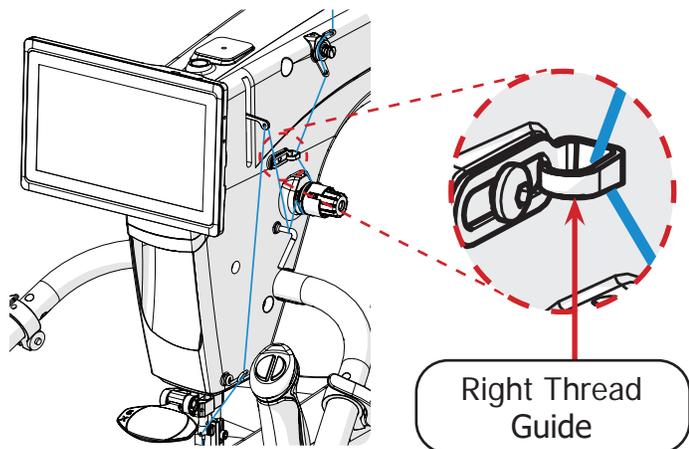
- 5 Feed the thread through the top hole of the **thread guide rod**. Wrap the thread around to the back of the guide and insert through the bottom hole.



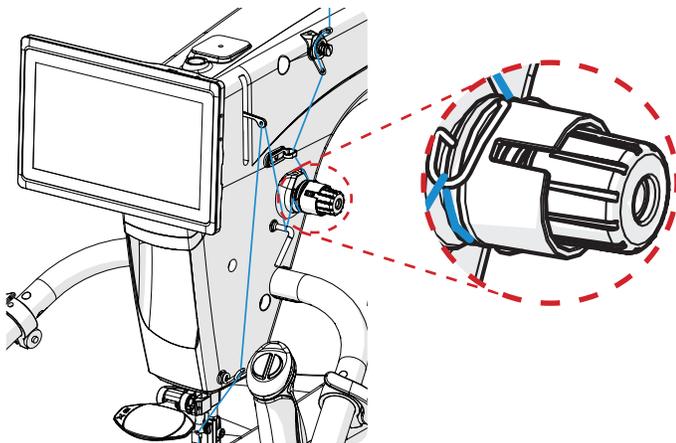
- 6 Run the thread through the top hole on the **small thread tensioner**. Then slip the thread between the two discs, and through the bottom hole of the small thread tensioner.



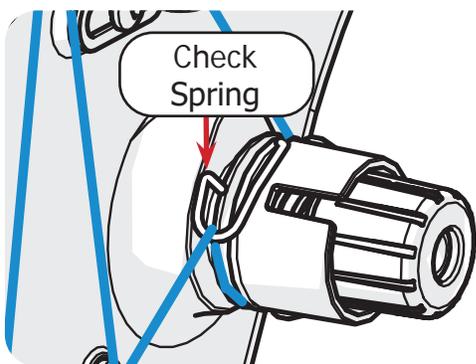
- 7 Feed the thread through the **right thread guide** above the large thread tensioner.



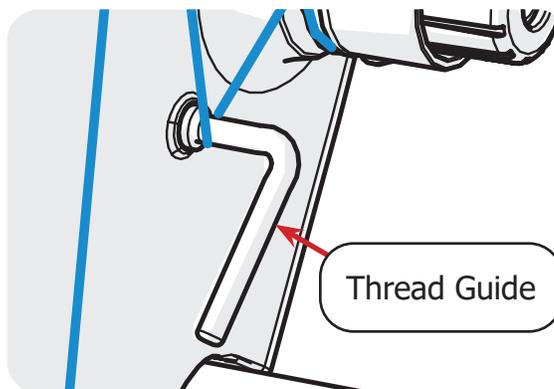
- 8 Pull the thread around the **large thread tensioner**, between the tension discs.



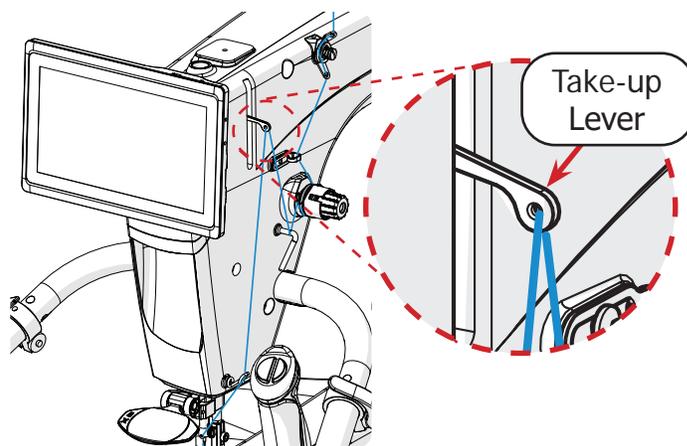
- 9 Wrap the thread over the **check spring**.



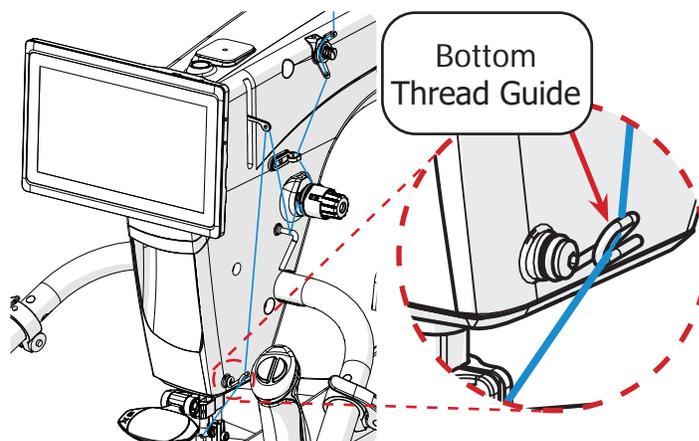
- 10 Next, pass the thread down and around the **thread guide** next to the large thread tensioner.



- 11 Pull the thread through the hole in the **take-up lever**.



- 12 Then pass the thread down through the **bottom thread guide** on the way to the needle.

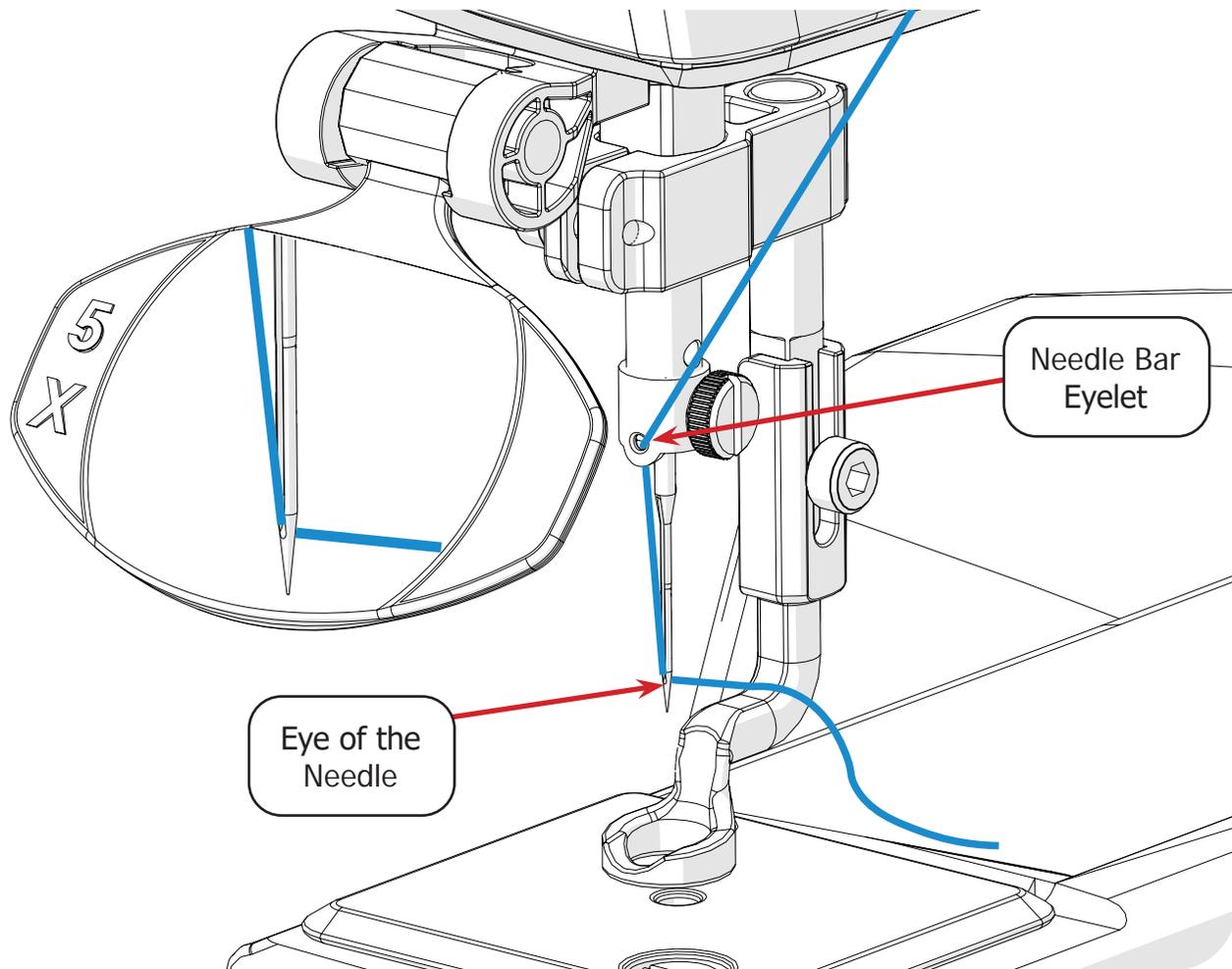


Part Three | Preparing to Quilt

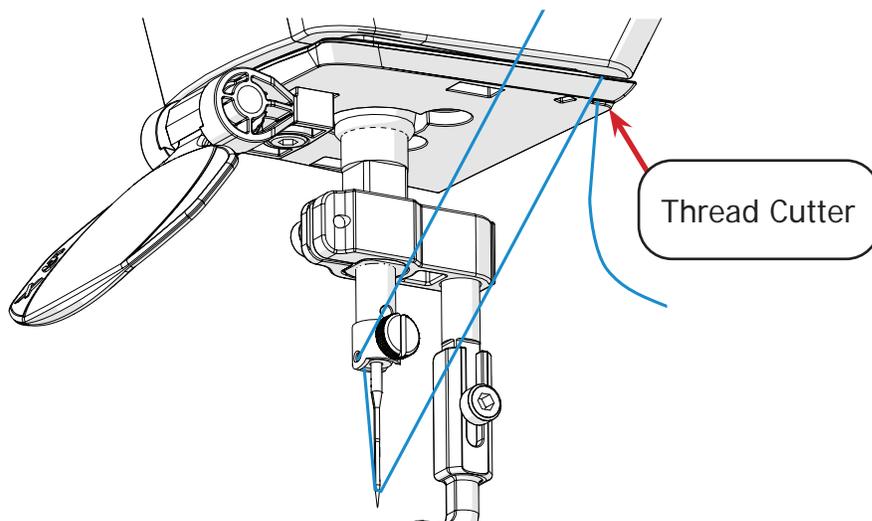
Task 12 - Threading the Machine (Continued)

- 13 Now pass the thread through the front of the **needle bar eyelet**, located above the needle. Thread the **eye of the needle** from front to back.

Tip: Use the magnifying glass to enlarge your view of the needle area.



- 14 Cut the excess thread with the built-in **thread cutter**.



Congratulations! You have completed Part Three of this manual.

If you are assembling a new frame, turn to Part Three of your frame manual. If your frame manual is not broken into parts, follow the manual's directions to:

- Install and adjust the rails
- Install frame handwheel (if applicable)
- Install the bungee clamps (if applicable)
- Level the frame

If you are not assembling a new frame but are installing QuiltMotion onto your frame, turn to Part Three of your QuiltMotion manual.

If you are installing your machine onto a frame that is already fully assembled and are not installing QuiltMotion at this time, continue to Part Four of this manual on page 39.

Part Four

If your frame isn't fully assembled at this time, it is recommended to complete Part Three in your frame manual, Part Three in your QuiltMotion manual (optional), and Part Four of your frame manual before you continue.

Progress Checkpoint:

Have you:

- Installed your frame's rails.
- Adjusted the rails to work with your machine.
- Installed frame handwheel (applicable frames only)
- Installed bungee clamps (applicable frames only)
- Leveled the frame (applicable frames only)

Have you:

- Completed QuiltMotion Part Three (optional)

Have you:

- Prepared your frame for fabric installation
- Installed your quilt onto your frame

Quilting

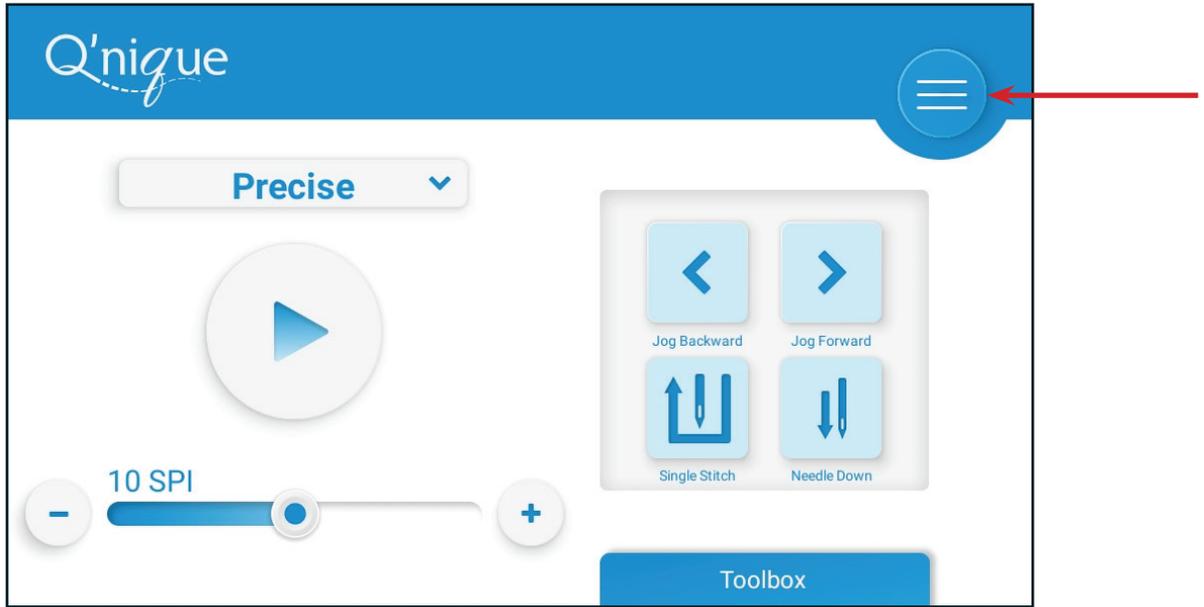
This section of the manual covers how to use the handlebar controls, the different quilting modes, and tools on the display.

Choosing Machine Settings	page 41
Using Machine Handlebar Controls	page 43
Using Precise Quilting Mode	page 44
Using Cruise Quilting Mode	page 46
Using Manual Quilting Mode	page 48
Using Baste Quilting Mode	page 50
Estimating Bobbin Fill Levels	page 52
Adjusting Thread Tension	page 57
Taking Measurements	page 60
Making Calculations	page 62
Tracking Stitch Count and Run Time	page 63
Getting Started	page 64

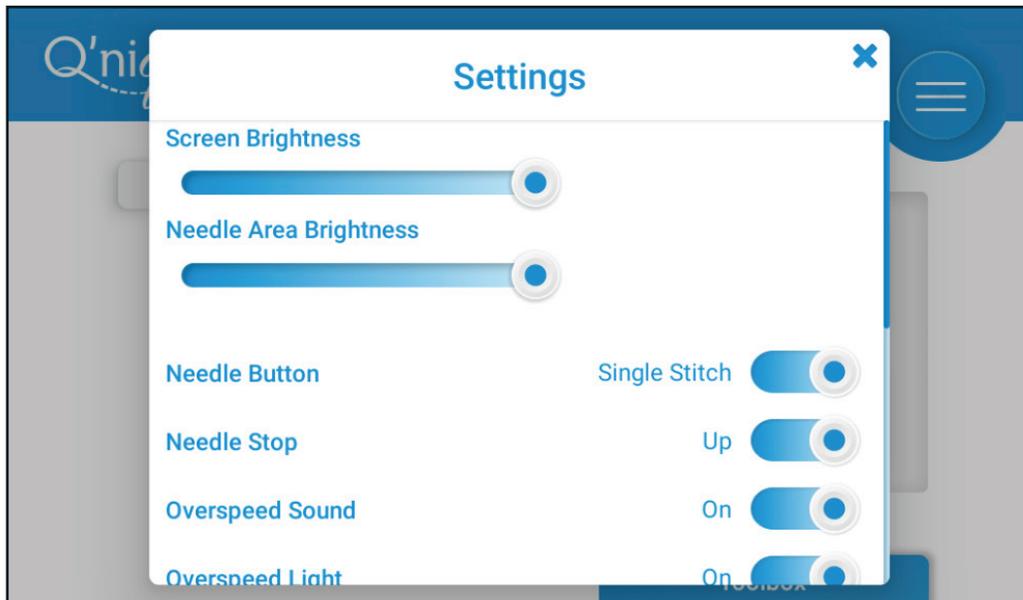
Choosing Machine Settings

To customize the settings for the handlebar controls, screen buttons, or warning icons, take the following steps:

- 1 Press the menu icon in the top right corner of the screen and select **Settings**.



The Settings menu opens.



Note: The machine is unable to stitch while the Settings menu is pulled up.

2 Choose desired settings:

- **Screen Brightness:** Use the sliding button to adjust the brightness of the display.
- **Needle Area Brightness:** Use the sliding button to adjust the brightness of the lamp over the needle area.
- **Needle Button:** Choose whether the stitch button on the handlebars will create a single stitch or drop or raise the needle.

Single Stitch: Complete motion of needle up and down.

Needle Up/Down: Move the needle either down into the fabric or up out of the fabric.

- **Needle Stop:** Choose whether the needle will default to the “up” or “down” position when stitching is inactive.
- **Overspeed Sound:** The overspeed alarm can be muted so that there is no beeping when the machine is moved more quickly than the regulated stitching can manage.
- **Overspeed Light:** The red overspeed warning light can be deactivated so that it won't turn on when the machine is moved more quickly than the regulated stitching can manage.
- **Edge Warning Sound:** The edge guard alarm can be muted so that there is no beeping when the machine reaches edge of your set quilting area.
- **Edge Warning Light:** The red edge guard warning light can be deactivated so that it won't turn on when the machine is moved more quickly than the regulated stitching can manage.
- **Click Sound:** Choose whether pressing on-screen buttons should make a sound or not.
- **Stitch Length Units:** Choose to display machine stitch length in stitches per centimeter or stitches per inch.

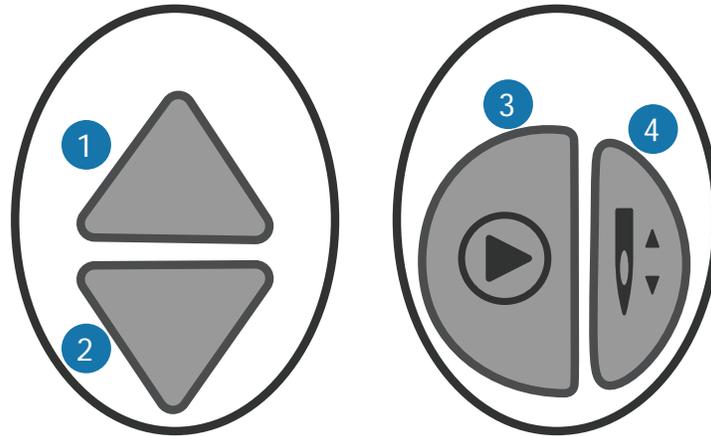
3 Press the **System Info** button to access the System Information screen. This screen shows the display and firmware versions for your machine (see page 85), along with the date of the last firmware update.

4 If needed, press the **Factory Reset** button to return all settings to their original default status.

5 To return to the main screen, press the X in the top right corner of the settings screen or anywhere outside of the settings screen window.

Using the Handlebar Controls

When first powered up, the machine is in regulated precise quilting mode (see page 44) and can start quilting right away. Please take a moment to review the handlebar controls. These controls are used when quilting. While in the Settings menu, some buttons have a different purpose or do not function (see “Choosing Machine Settings” on page 41 for details).

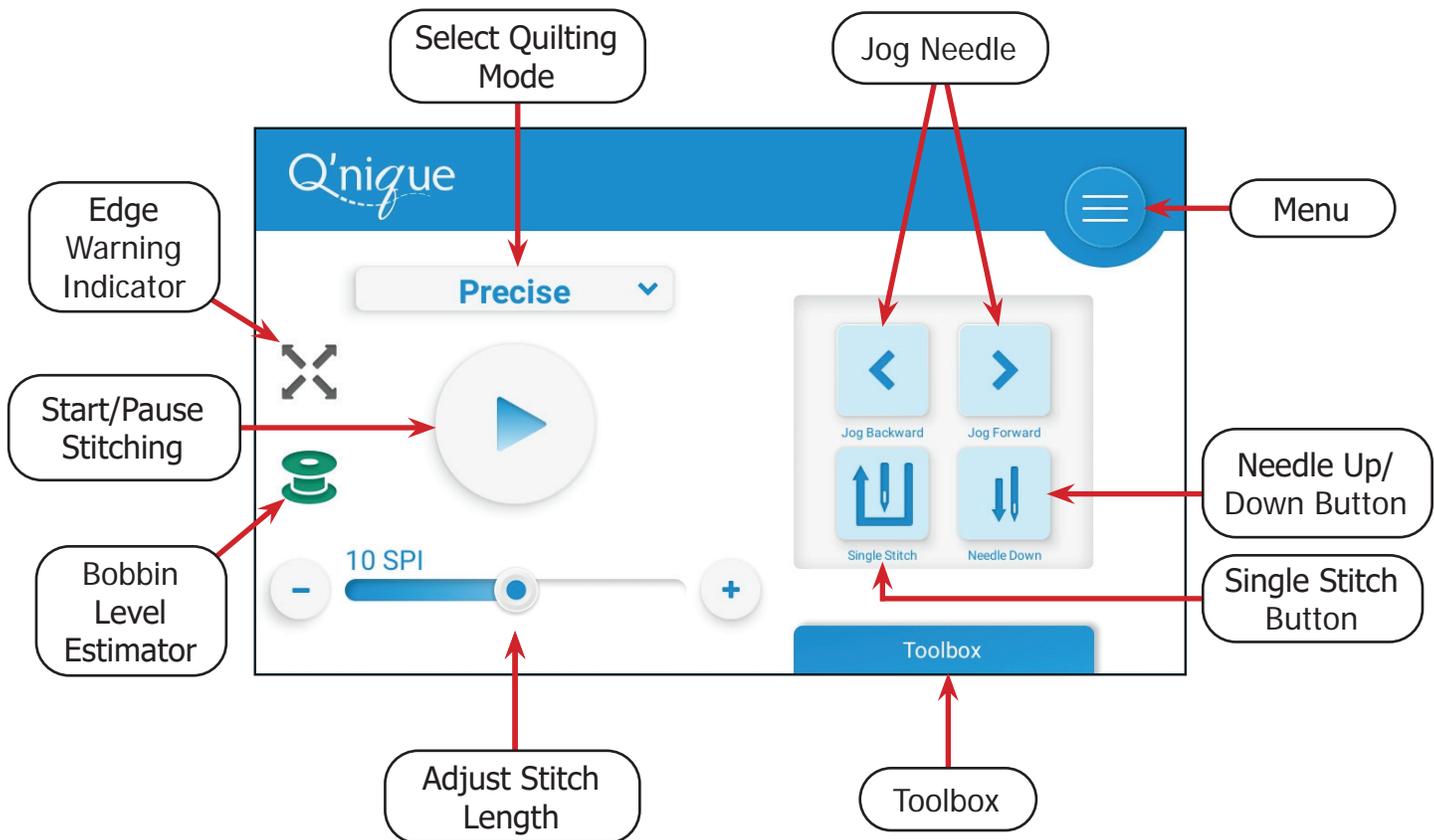


- 1 Increase:** This button increases the number, size, or speed of the stitching, depending upon the quilting mode. For example, in precise quilting mode, this button will increase the number of stitches the machine makes in an inch (SPI) or in a centimeter (SPC).
- 2 Decrease:** This button will decrease the number, size, or speed of the stitching depending upon the quilting mode.
- 3 Start/Stop Quilting:** Press to start or stop stitching.
- 4 Stitch Button:** Press to create a single stitch or to toggle the needle between the up and down positions, based upon settings (see “Choosing Machine Settings” on page 41 for details).

Using Precise Quilting Mode

The machine defaults to precise quilting mode when turned on. In this regulated quilting mode, you select the stitch length you want and the machine will adjust to help make more consistent stitches as you move the machine faster or slower or change direction. It will only stitch when you move the machine, which helps with patterns that have corners or crisp points.

To reach this quilting mode, press the **select quilting mode** button and select **Precise**.



To quilt in regulated precise quilting mode, take the following steps:

- 1 Confirm that the **stitch length**, measured in stitches per inch or stitches per centimeter, is the desired length. Note: To change units, go to the **Settings** menu (see page 41).

Use the symbols or the sliding bar to adjust the stitches per inch. Higher SPI means shorter stitch length.

- 2 When stitching is inactive, press the single stitch button or the needle up/down button on the display to make single stitches. This can also be done with the stitch button on the right handle, depending on settings. To switch the type of stitch created with the handle button, go to the Settings menu (see page 41).

Note: While stitching is active, the **single stitch** and **needle up/down buttons** on the display and the **stitch button** on the handlebar controls are disabled.

Part Four | Quilting

Using Precise Quilting Mode (Continued)

- 3 Position the quilting machine over the quilt. If needed, use the **needle jog** buttons to move the needle closer or farther from the fabric in small increments to help place your first stitch.



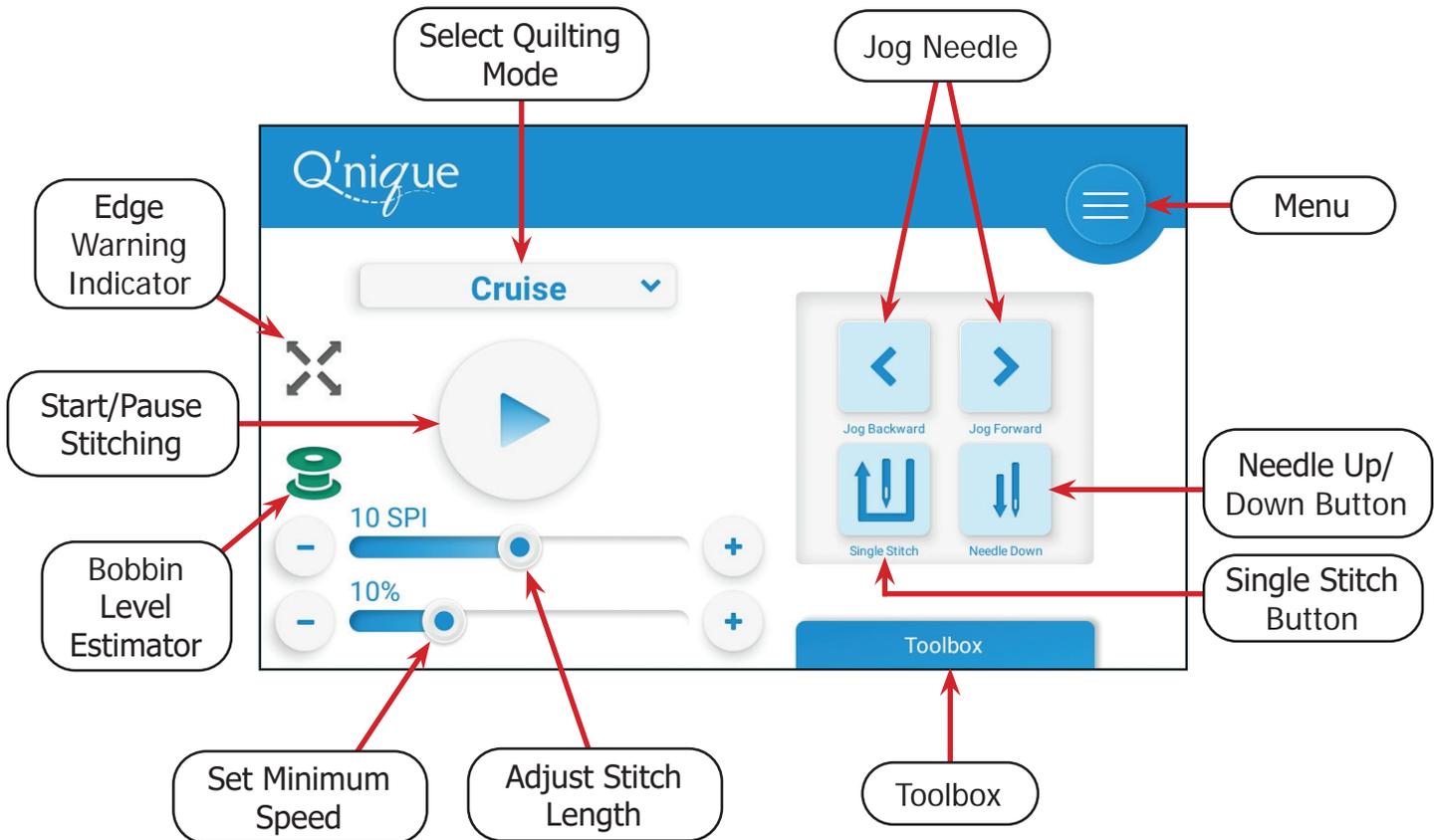
Press to move the needle up or down in small increments.

- 4 Moving the machine too quickly while quilting can reduce the quality of the stitch regulation. If the machine is moved too quickly, an alarm will sound, a red LED light will shine on the needle area, and the **start stitching button** on the display will turn red. Slow the machine's movement to turn off the alarm, light, and display alert. Both the alarm and the display alert can be deactivated in the **Settings** menu.
- 5 When activated, the **bobbin estimator** will show on the left side of the display. For instructions on how to use the bobbin level estimator, see page 52.
 - When the icon is green, the bobbin is estimated to be between 21% and 100% full.
 - When the icon is yellow, the bobbin is estimated to be between 11% and 20% full.
 - When the icon is red, the bobbin is estimated to be under 10% full.
- 6 When activated, the **edge warning indicator** will display on the left side of the screen. This indicator will turn red when you reach the edge of the set quilting area. For instructions on how to use the edge warning alert, see page 54.
- 7 You may find that you need to take measurements or do quick calculations while you quilt. Press **Toolbox** to access the calculator and measure tools.
- 8 To stop stitching, press the **start/pause stitching** button on the display or the handlebars. The needle will move into the needle stop position indicated in the Settings menu (see page 41).

Using Cruise Quilting Mode

Cruise mode is another regulated mode. You select the stitch length you want and the machine will adjust to help make more consistent stitches as you move the machine faster or slower or change direction. However, the machine will continue to stitch in place (at the minimum speed) if you stop moving the machine. This mode is helpful for continuous, smooth, or curvy designs.

To switch to cruise quilting mode, press the **select quilting mode** button and select **Cruise**.



To quilt in cruise quilting mode, take the following steps:

- 1 Confirm that the **stitch length**, measured in stitches per inch or stitches per centimeter, is the desired length. Note: To change units, go to the **Settings** menu (see page 41).

Use the symbols or the sliding bar to adjust the stitches per inch. Higher SPI means shorter stitch length.

- 2 Determine the **minimum speed** the machine will stitch at when stitching is active but the machine is not being moved. This can be set from 5% to 25% of the machine's top speed of 2600 stitches per minute.

Use the symbols or the sliding bar to adjust the minimum speed

Using Cruise Quilting Mode (Continued)

- 3 When stitching is inactive, press the single stitch button or the needle up/down button on the display to make single stitches. This can also be done with the stitch button on the right handle, depending on settings. To switch the type of stitch created with the handle button, go to the Settings menu (see page 41).

Note: While stitching is active, the **single stitch** and **needle up/down buttons** on the display and the **stitch button** on the handlebar controls are disabled.

- 4 Position the quilting machine over the quilt. If needed, use the **needle jog** buttons to move the needle closer or farther from the fabric in small increments to help place your first stitch.



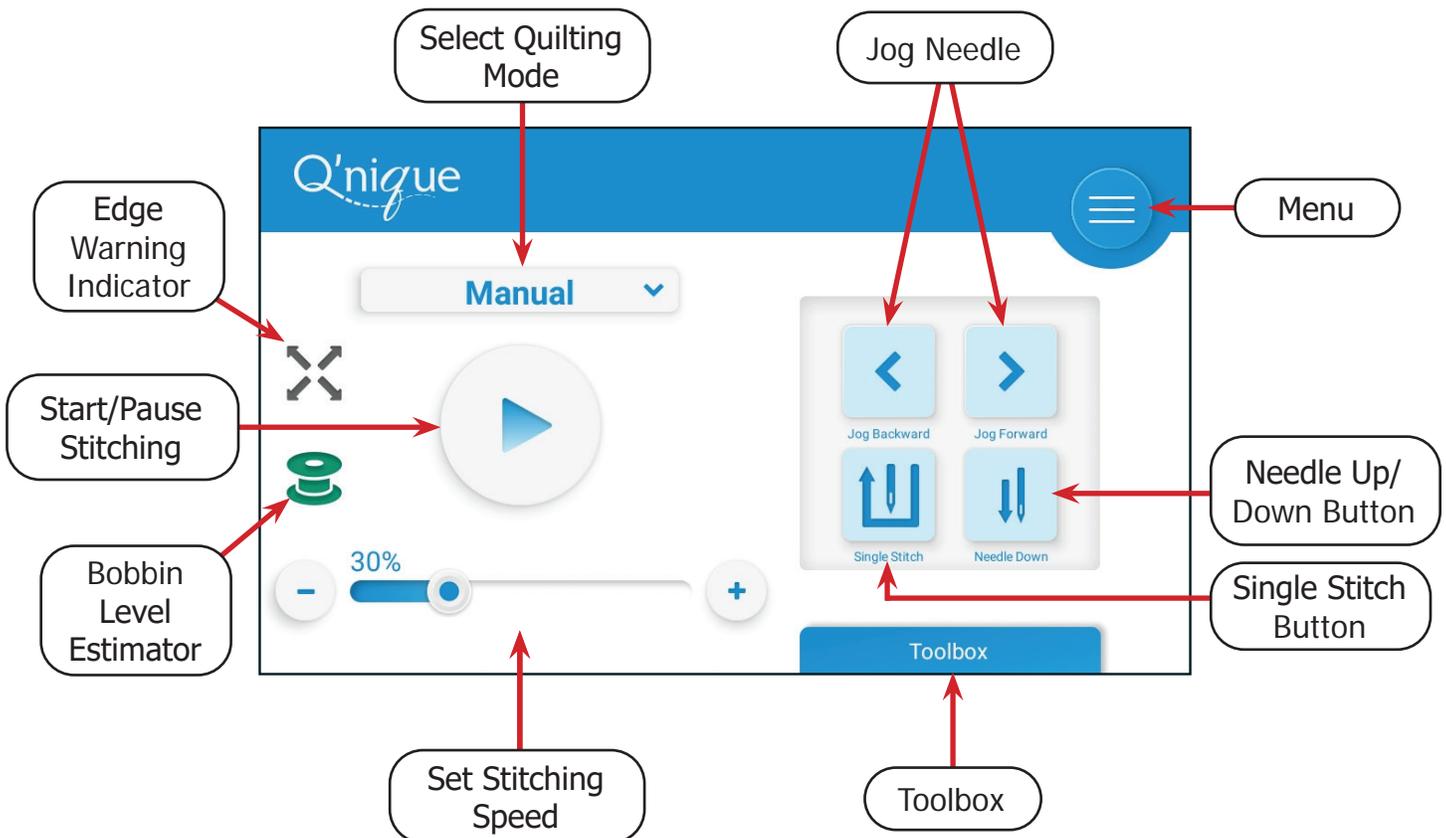
Press to move the needle up or down in small increments.

- 5 Moving the machine too quickly while quilting can reduce the quality of the stitch regulation. If the machine is moved too quickly, an alarm will sound and the **start stitching button** on the display will turn red. Slow the machine's movement to turn off the alarm and display alert. Both the alarm and the display alert can be deactivated in the **Settings** menu.
- 6 When activated, the **bobbin estimator** will show on the left side of the display. For instructions on how to use the bobbin level estimator, see page 52.
 - When the icon is green, the bobbin is estimated to be between 21% and 100% full.
 - When the icon is yellow, the bobbin is estimated to be between 11% and 20% full.
 - When the icon is red, the bobbin is estimated to be under 10% full.
- 7 When activated, the **edge warning indicator** will display on the left side of the screen. This indicator will turn red when you reach the edge of the set quilting area. For instructions on how to use the edge warning alert, see page 54.
- 8 You may find that you need to take measurements or do quick calculations while you quilt. Press **Toolbox** to access the calculator and measure tools.
- 9 To stop stitching, press the **start/pause stitching** button on the display or the handlebars. The needle will move into the needle stop position indicated in the Settings menu (see page 41).

Using Manual Quilting Mode

In this quilting mode, the machine produces stitches at a certain speed. It's up to the quilter to move the machine the distance needed to get the desired stitch length. This mode is useful for small, continuous patterns.

To switch to manual quilting mode, press the **select quilting mode** button and select **Manual**.



To quilt in manual quilting mode, take the following steps:

- 1 Confirm that the **stitch speed** is set to the desired speed. The speed is measured as a percentage of the machine's maximum speed of 2600 stitches per minute.

Use the   symbols or the sliding bar to adjust the machine speed

- 2 When stitching is inactive, press the single stitch button or the needle up/down button on the display to make single stitches. This can also be done with the stitch button on the right handle, depending on settings. To switch the type of stitch created with the handle button, go to the Settings menu (see page 41).

Note: While stitching is active, the **single stitch** and **needle up/down buttons** on the display and the **stitch button** on the handlebar controls are disabled.

Part Four | Quilting

Using Manual Quilting Mode (Continued)

- 3 Position the quilting machine over the quilt. If needed, use the **needle jog** buttons to move the needle closer or farther from the fabric in small increments to help place your first stitch.



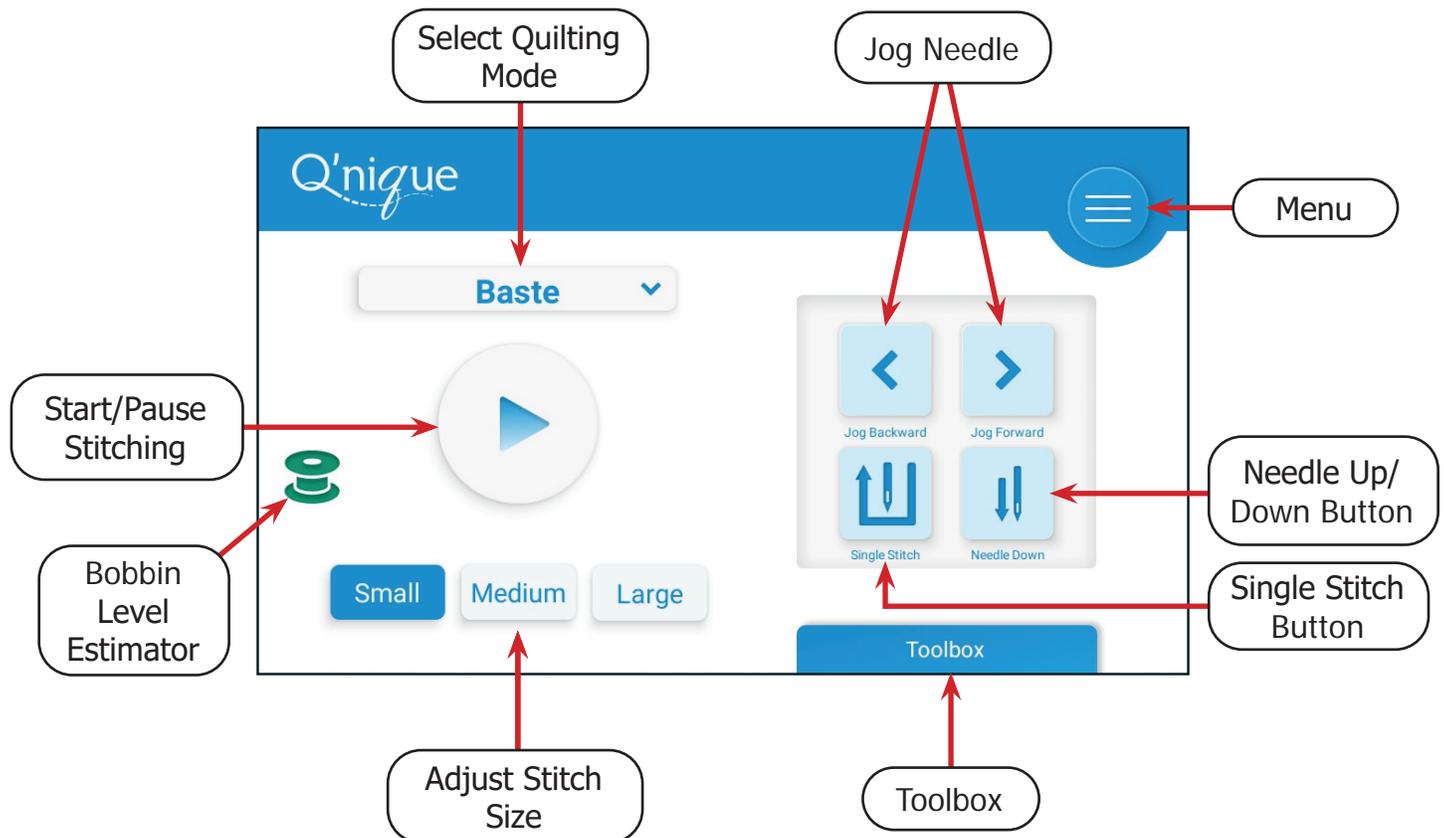
Press to move the needle up or down in small increments.

- 4 When activated, the **bobbin estimator** will show on the left side of the display. For instructions on how to use the bobbin level estimator, see page 52.
 - When the icon is green, the bobbin is estimated to be between 21% and 100% full.
 - When the icon is yellow, the bobbin is estimated to be between 11% and 20% full.
 - When the icon is red, the bobbin is estimated to be under 10% full.
- 5 When activated, the **edge warning indicator** will display on the left side of the screen. This indicator will turn red when you reach the edge of the set quilting area. For instructions on how to use the edge warning alert, see page 54.
- 6 You may find that you need to take measurements or do quick calculations while you quilt. Press **Toolbox** to access the calculator and measure tools.
- 7 To stop stitching, press the start/pause stitching button on the display or the handlebars. The needle will move into the needle stop position indicated in the Settings menu (see page 41).

Using Baste Quilting Mode

Use baste mode to create loose, temporary stitches around the edge of your quilt top to hold layers of fabric together while quilting.

To switch to baste quilting mode, press the **select quilting mode** button and select **Baste**.



To quilt in baste quilting mode, take the following steps:

- 1 Confirm that the **stitch size**, (small, medium, or large) is the desired length.
- 2 When stitching is inactive, press the single stitch button or the needle up/down button on the display to make single stitches. This can also be done with the stitch button on the right handle, depending on settings. To switch the type of stitch created with the handle button, go to the Settings menu (see page 41).

Note: While stitching is active, the **single stitch** and **needle up/down buttons** on the display and the **stitch button** on the handlebar controls are disabled.

Using Baste Quilting Mode

- 3 Position the quilting machine over the quilt. If needed, use the **needle jog** buttons to move the needle closer or farther from the fabric in small increments to help place your first stitch.



Press to move the needle up or down in small increments.

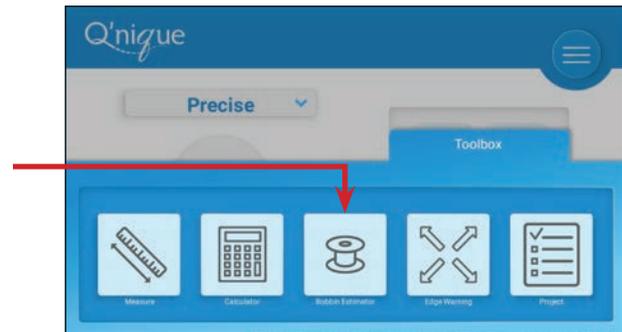
- 4 Moving the machine too quickly while quilting can reduce the quality of the stitch regulation. If the machine is moved too quickly, an alarm will sound and the **start stitching button** on the display will turn red. Slow the machine's movement to turn off the alarm and display alert. Both the alarm and the display alert can be deactivated in the **Settings** menu.
- 5 When activated, the **bobbin estimator symbol** will show on the left side of the display. For instructions on how to use the bobbin level estimator, see page 52.
 - When the icon is green, the bobbin is estimated to be between 21% and 100% full.
 - When the icon is yellow, the bobbin is estimated to be between 11% and 20% full.
 - When the icon is red, the bobbin is estimated to be under 10% full.
- 6 Edge Warning is automatically deactivated in Baste Mode
- 7 You may find that you need to take measurements or do quick calculations while you quilt. Press **Toolbox** to access the calculator and measure tools.
- 8 To stop stitching, press the start/pause stitching button on the display or the handlebars. The needle will move into the needle stop position indicated in the Settings menu (see page 41).

Note: Edge warning is inactive while in the baste quilting mode.

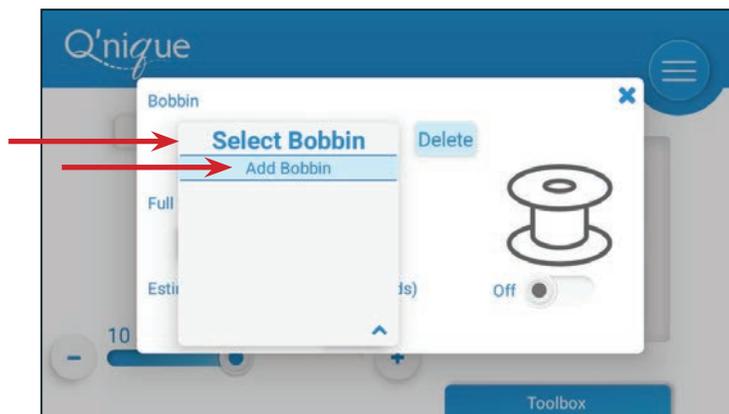
Using the Bobbin Estimator Tool

The bobbin estimator calculates the likely amount of thread remaining on the bobbin. To achieve the closest estimate, information must be accurately entered into the Bobbin Estimator screen. Take the following steps to use the bobbin estimator tool:

- 1 To access the bobbin estimator tool, tap on the **Toolbox** at the bottom of any quilting mode screen and select the **bobbin estimator**.



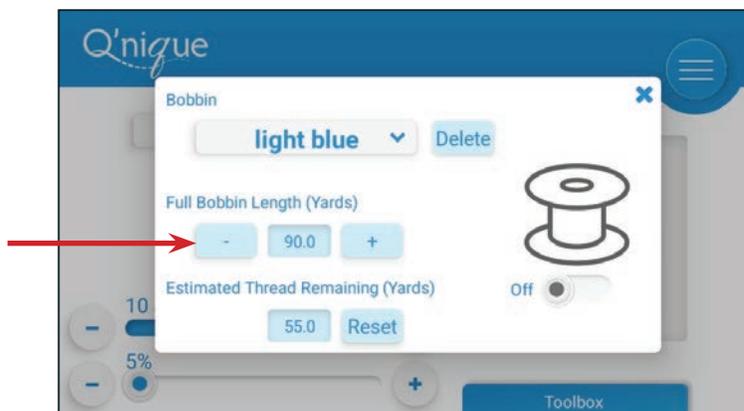
- 2 Press **Select Bobbin**. The drop-down menu will show a list of any bobbins you've added in the past. To add a bobbin, press **Add Bobbin**. An on-screen keyboard will appear so you can name the new bobbin.



Tip: Choose a bobbin name that will make it easy to identify which bobbin you're using so that if you have to swap between partially used bobbins you can be sure to select the correct one from the list.

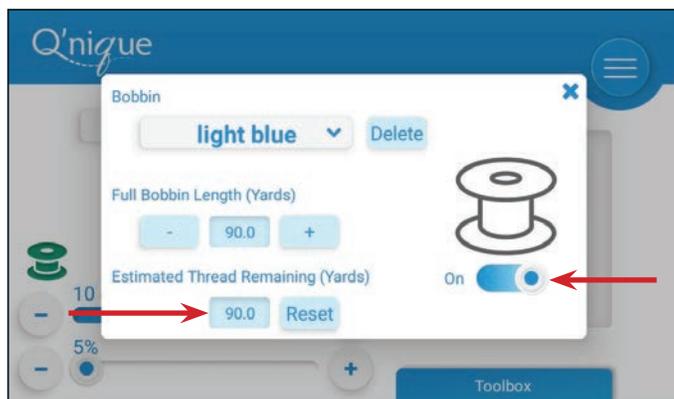
Name examples: "Ct Light Blue" for light blue cotton, or "Poly Wht 40 Wt" for 40-weight white polyester.

- 3 Enter the estimated number of yards on the bobbin. As a starting reference, an M-class bobbin fully wound with 40 wt cotton thread is approximately 90 yards. Yardage will vary depending on the fiber and weight of the thread used.



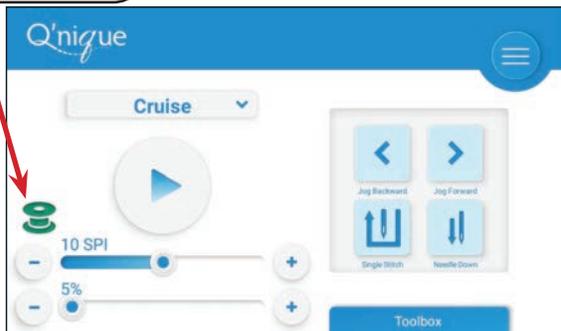
Tip: It may take some practice to estimate the length of a fully wound bobbin. Keep a record of your starting estimate. When you run out of bobbin thread, open the estimator tool and see how much thread remains. Use this information to adjust your starting estimate next time you use the same type of thread.

- Turn on the bobbin estimator with the switch on underneath the bobbin image. When **on**, any stitches the machine makes will subtract from the **estimated thread remaining**.



The **bobbin estimator symbol** will also show on the left side of the quilting mode screen when the estimator is on. Color changes notify when the bobbin is estimated to be nearing the end of the thread.

Bobbin Estimator Symbol



21% - 100% remaining



11% - 20% remaining

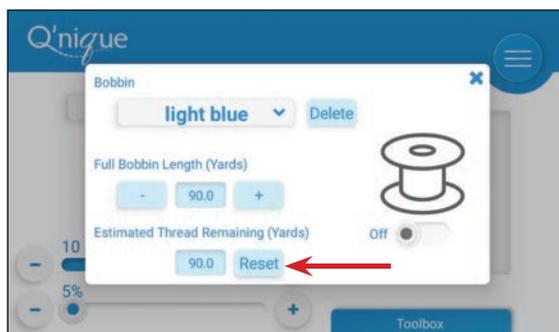


0% - 10% remaining

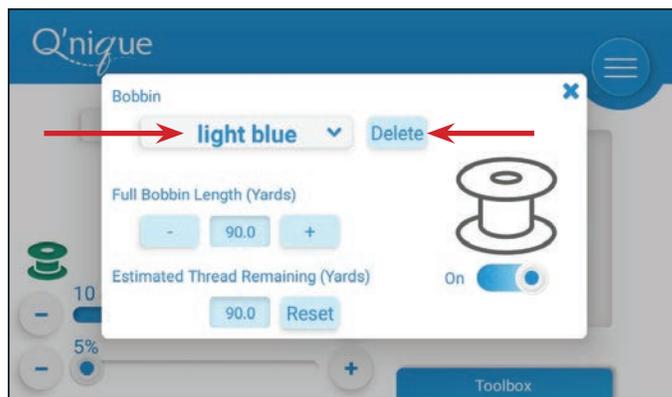
Note: Pressing this symbol on a quilting screen will bring up the bobbin estimator tool.

- When the bobbin thread is used up, you can either delete the record of the bobbin or reset it to be used again. **Reset** is recommended if you're planning on winding the bobbin back up with the same thread.

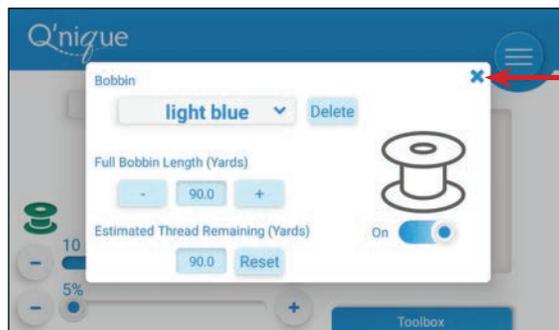
Press **Reset** to restore the estimated thread remaining to the full estimate.



To delete a bobbin, select it from the drop-down and press **delete**.



- To return to the main quilting screen, press the **X** in the top right corner or press anywhere outside of the bobbin estimator screen.



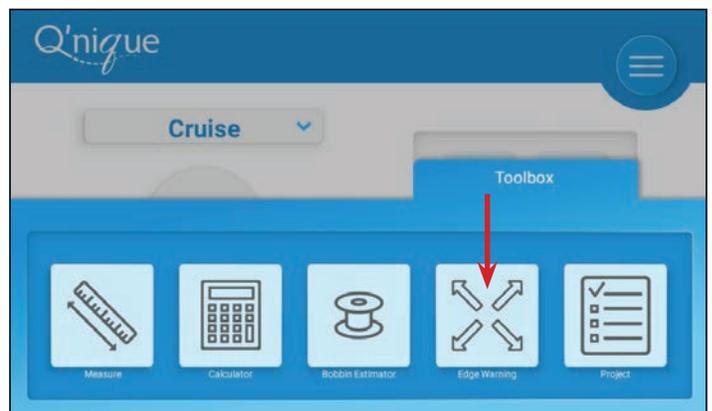
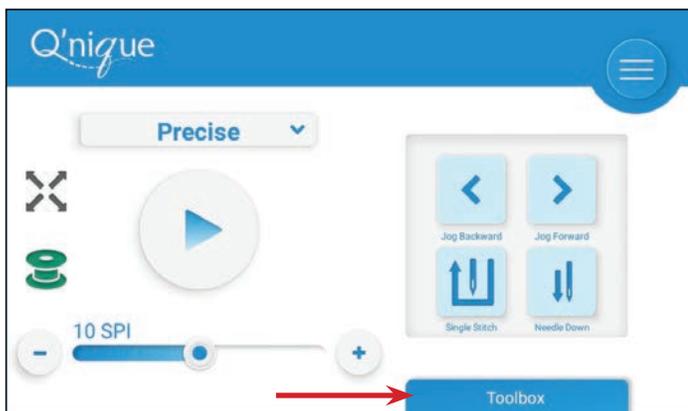
Using the Edge Warning

The edge warning alert system helps you stay within a “safe area” of your quilt by notifying you when you approach the edge of a set boundary. This will help prevent the machine from hitting the rails of the frame, but you can also set boundaries around a particular block or section of the quilt.

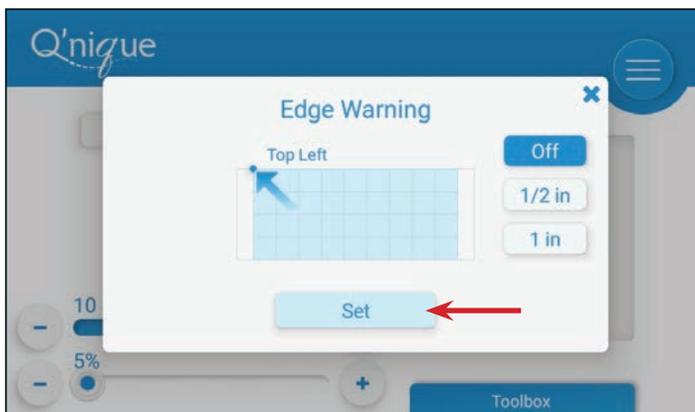
Note: Edge Warning is automatically deactivated in Baste Mode, so the alarm will not bother you while tacking down your quilt.

Take the following steps to use the edge warning tool:

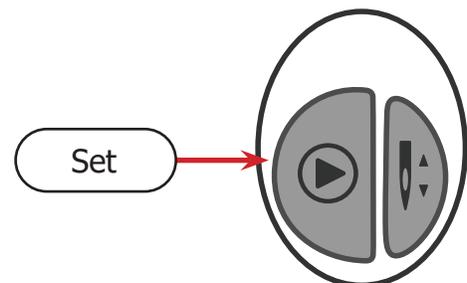
- 1 To access the edge warning tool, tap on the **Toolbox** at the bottom of any quilting mode screen and select **Edge Warning**.



- 2 Move your machine so that your needle is at the top left corner of the area you want to mark as your safe area. Press the **set** button.



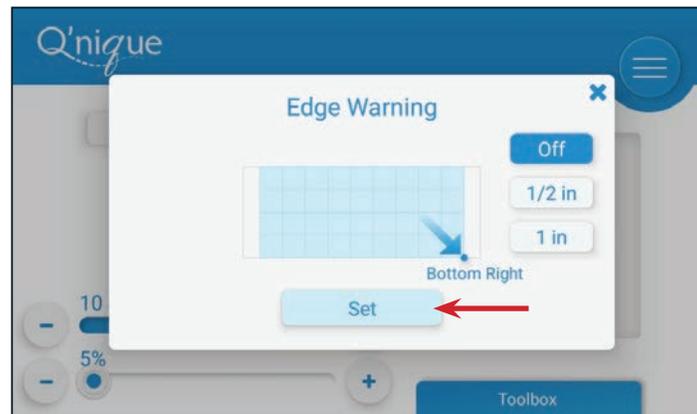
Tip: You can also use the start/stop quilting button on the right handlebar to set the corners of the “safe area.”



Part Four | Quilting

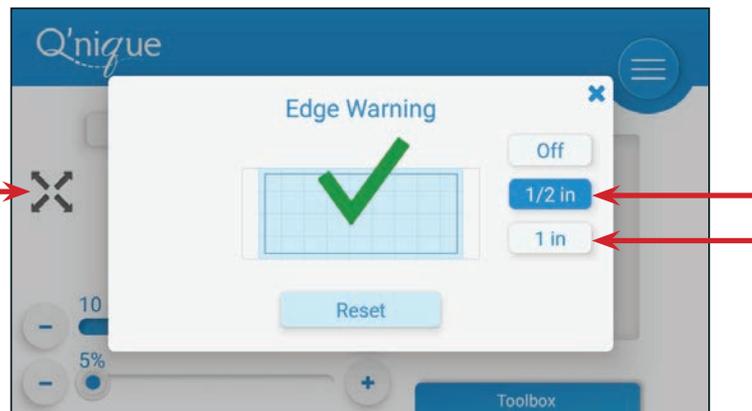
Using the Edge Warning (Continued)

- 3 Move your machine so that your needle is at the bottom right corner of the area you want to mark as your safe area. Press the **set** button.

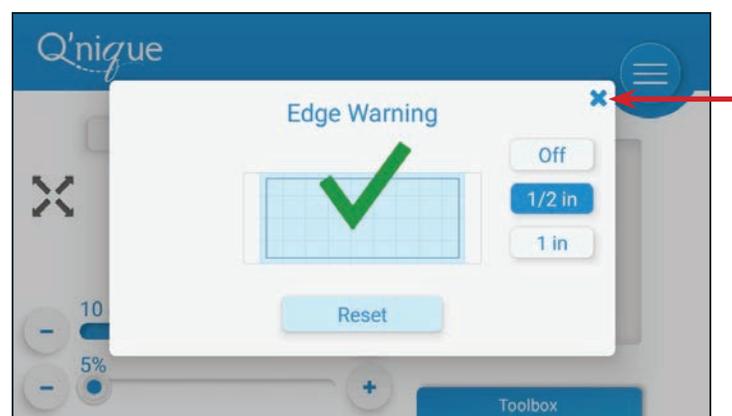


- 4 After marking your boundaries, set the machine to notify you when your needle is within 1/2 inch or 1 inch of any of those boundaries. Once this is set, a green check mark will appear to confirm everything saved successfully.

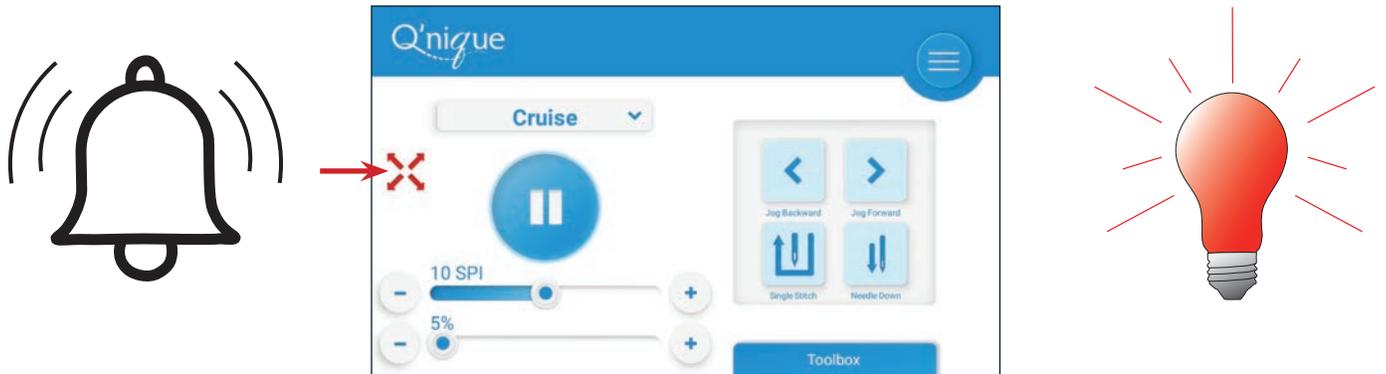
Note: The edge warning symbol will also appear on the main quilting screen. Pressing this symbol on the main quilting screen will bring up the edge warning tool.



- 5 To return to the main quilting screen, press the X in the top right corner or press anywhere outside of the edge warning screen.

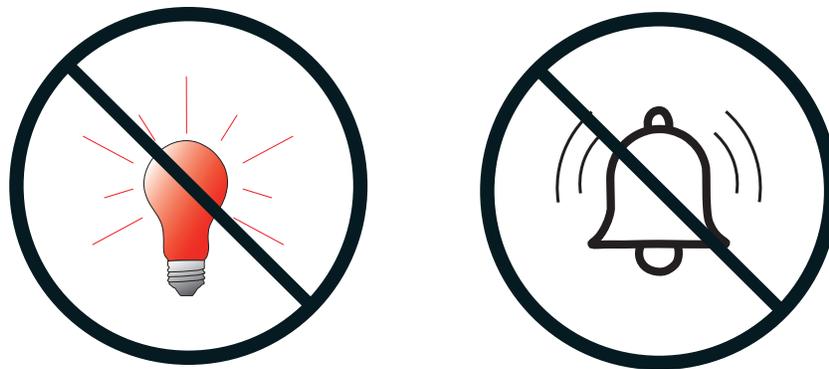


- 6 Whenever you approach or cross the boundaries while quilting, an alarm will sound, a red LED light will shine on the needle area, and the **edge warning symbol** on the left side of the main quilting screen will turn red. These alerts persist until you return to the established "safe area."

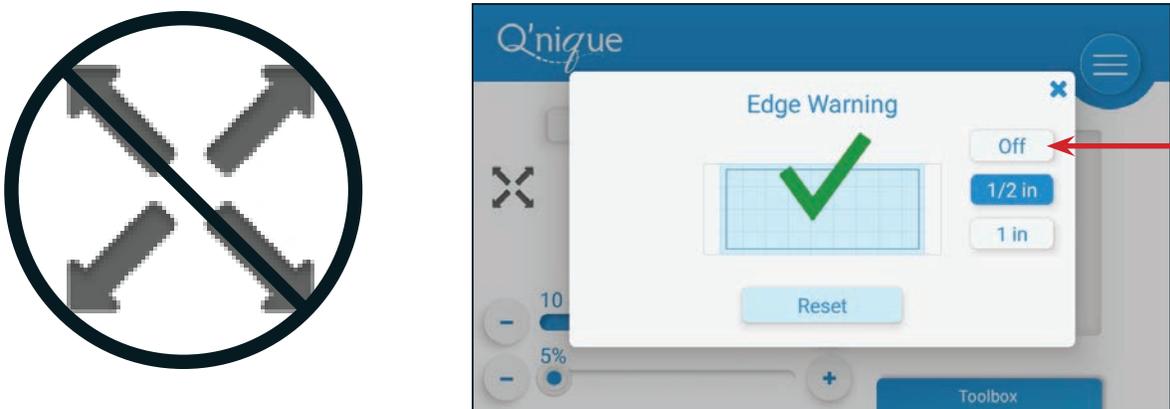


Note: Edge Warning is automatically deactivated in Baste Mode.

- 7 The light and the alarm can each be deactivated in the settings screen (see page 41).



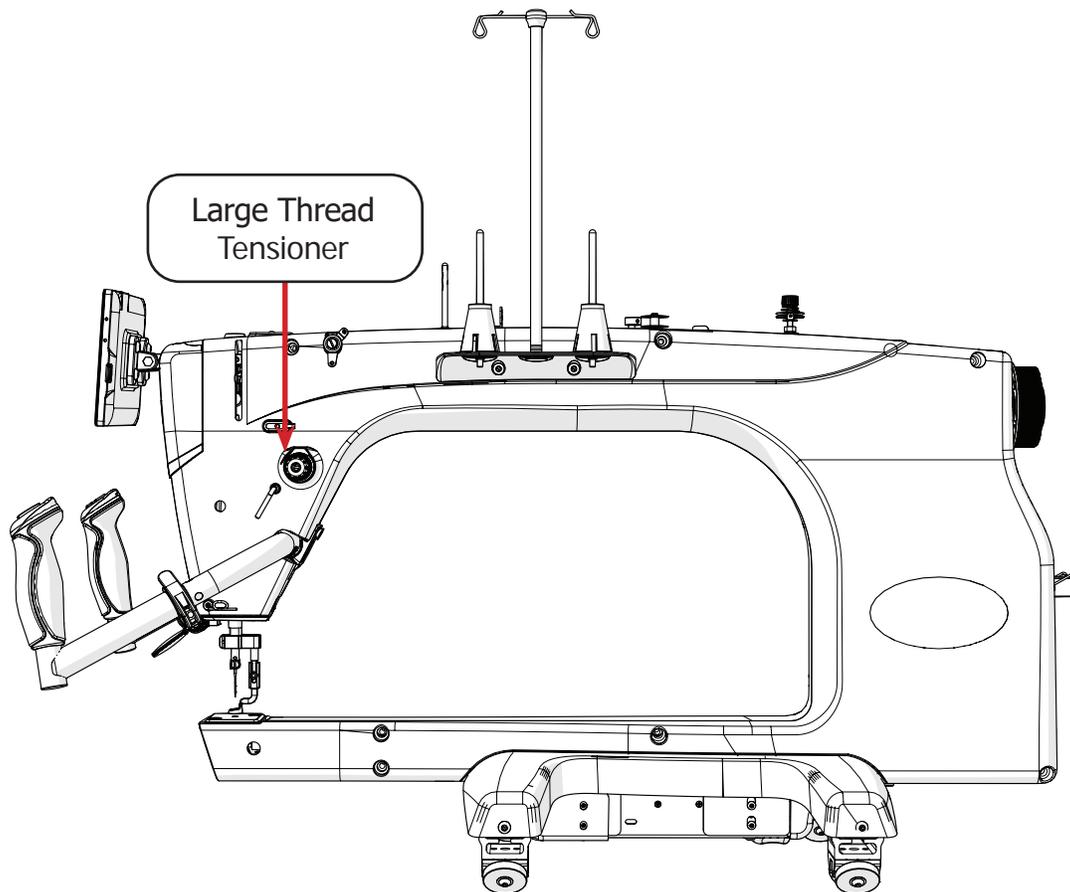
To hide the edge warning symbol on the quilting screen, turn off the edge warning tool from the edge warning screen. This will also deactivate the warning light and alarm.



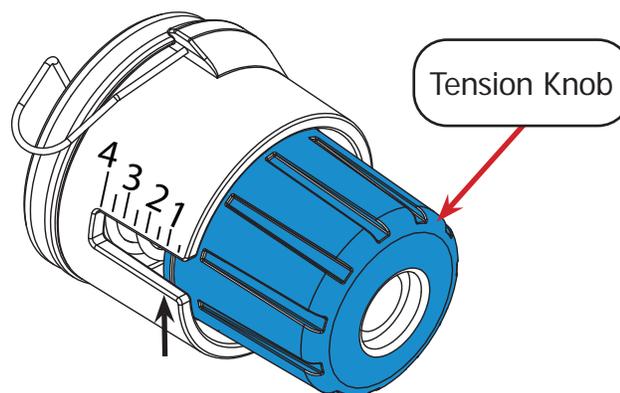
Adjusting Thread Tension

Proper thread tension prevents unwanted puckering, poorly-formed stitches, and malfunctions that can damage the fabric. Test your thread tension on extra materials before sewing on a project.

Tip: Bottom thread tension is the foundation for proper thread tension, and should be set first before setting top tension. Bottom tension is addressed in “Task 11 - Loading the Bobbin Case” (see page 31).



- 1 Loosen the **tension knob** on the **large thread tensioner** to set the tension to “1.” The bottom of the tension knob will line up with the number that the tension is set to.



Note: Setting “1” is the lowest tension for your machine, and is an ideal starting place to find the correct top tension. Do not over loosen: the tension knob may unscrew and fall off.

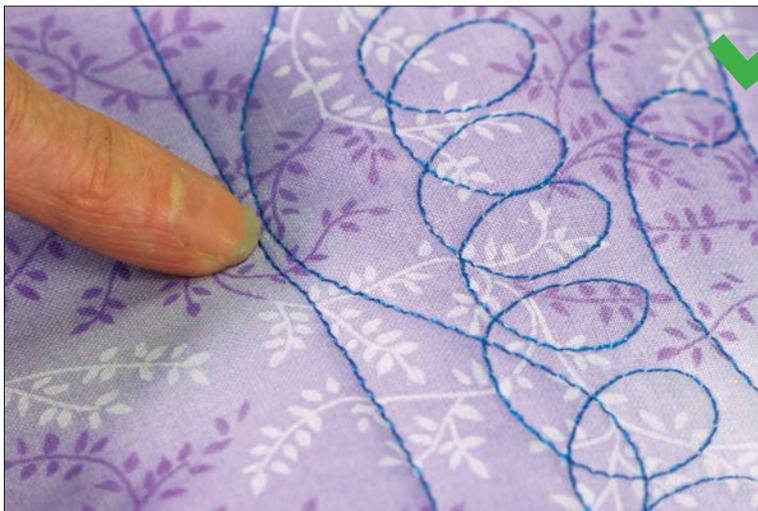
- 2 Slowly increase the tension while stitching into scrap material. When the thread tension is balanced, the top and bottom thread will knot in the middle of the fabric layers.

**Too Much Top
Tension**



Bottom thread is
pulled to the top
of the fabric.

**Balanced
Tension**

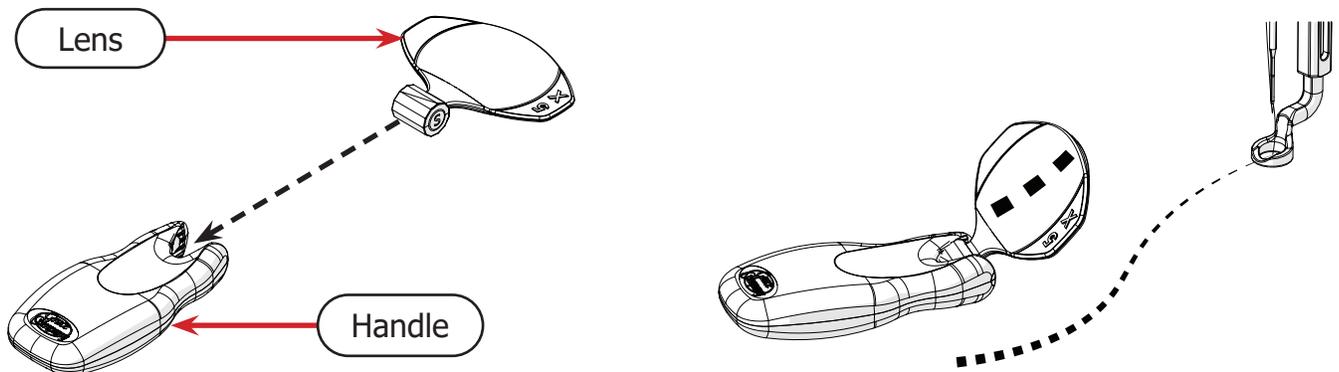


**Too Little Top
Tension**

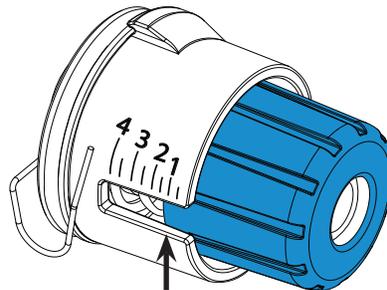


Top thread is
pulled to the
bottom of the
fabric.

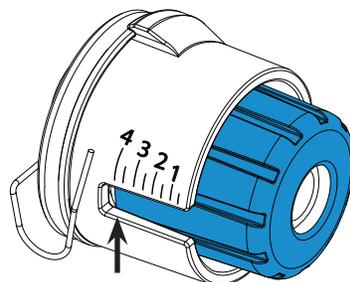
Tip: Use the magnifying glass with the handle to enlarge your view of your stitches.



- If the bobbin (bottom) thread is pulled through the top layer of fabric, there is too much top tension. Loosen the tension by turning the large thread tensioner knob toward the setting "1." Stop turning the knob when desired tension is achieved.



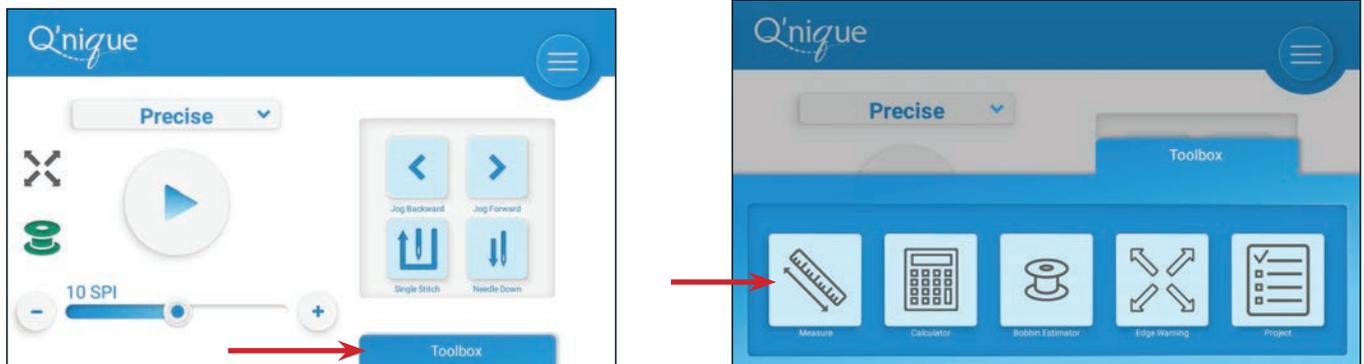
- If the top thread is pulled down through the bottom layer of fabric, there is too little top tension. Increase the tension on the top by slowly turning the large thread tensioner knob toward setting "4." Stop turning the knob when desired tension is achieved.



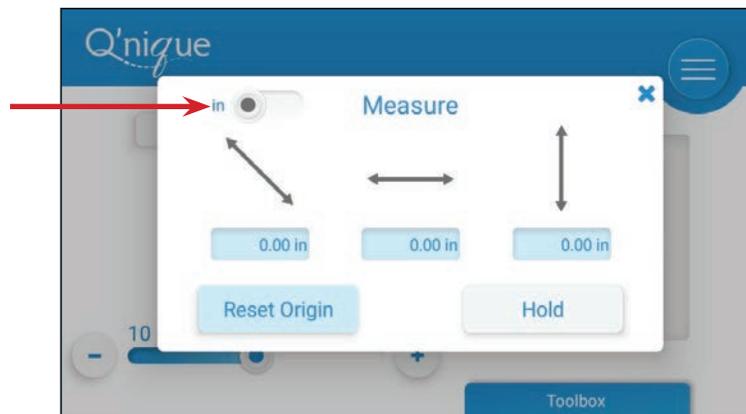
Taking Measurements

Your machine can be used to take measurements across the surface of your quilt.

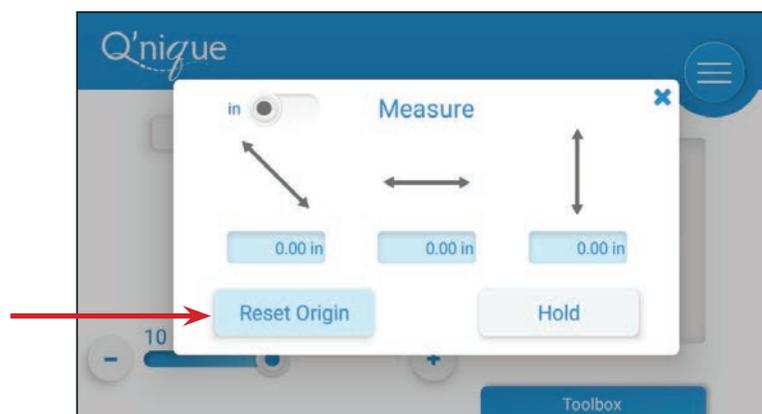
- 1 To access the measure tool, tap on the **Toolbox** at the bottom of any quilting mode screen and select **Measure**.



- 2 Select whether you want to measure using inches or centimeters.



- 3 Move the machine so that the needle is at the position where you want to start your measurement and click the **Reset Origin** button. This origin will be saved until you reset it again.



Part Four | Quilting

Taking Measurements (Continued)

- 4 Move the machine so that the needle is at the end point of your measurement. You can click the Hold button to keep the measurements on screen even if you move your machine.



Measures the actual distance from the origin to the end point.

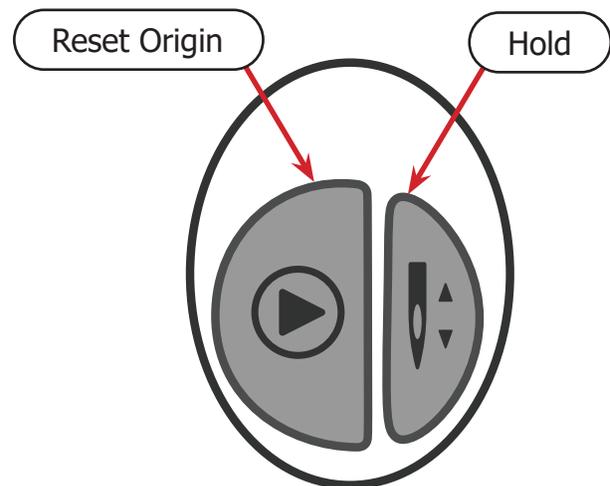


Measures the horizontal distance from the origin.

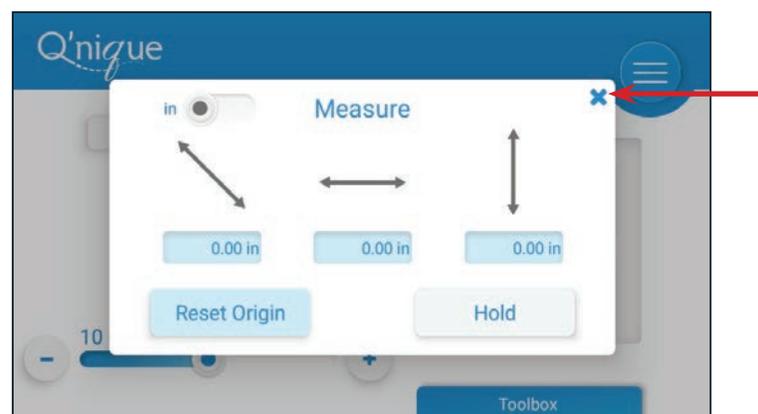


Measures the vertical distance from the origin.

Tip: You can also use the buttons on the right handlebar to reset the origin and hold the measurements.



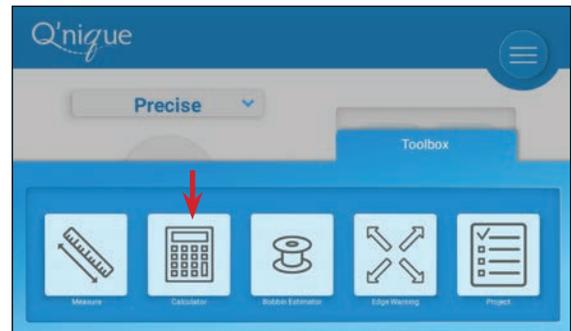
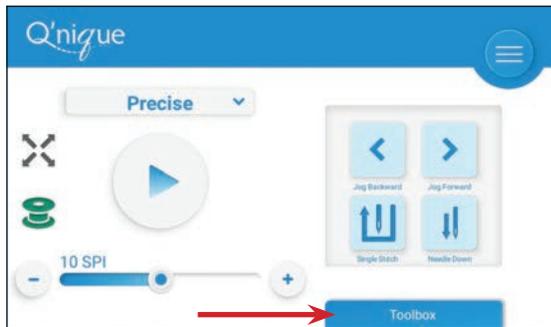
- 5 To resume measuring, press **Hold** a second time.
- 6 To return to the main quilting screen, press the X in the top right corner or press anywhere outside of the measure screen.



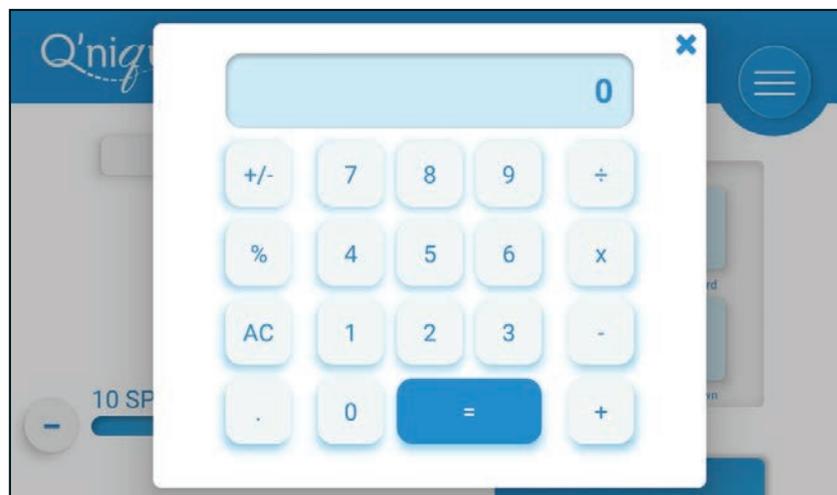
Making Calculations

Your machine can be used to make quick calculations.

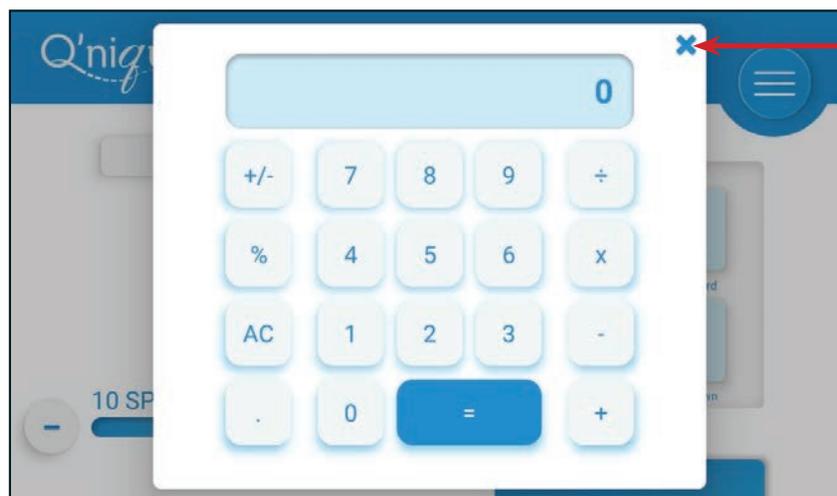
- 1 To access the calculator, tap on the **Toolbox** at the bottom of any quilting mode screen and select **Calculator**.



- 2 Use the calculator to add, subtract, multiply, divide, and find percentages.



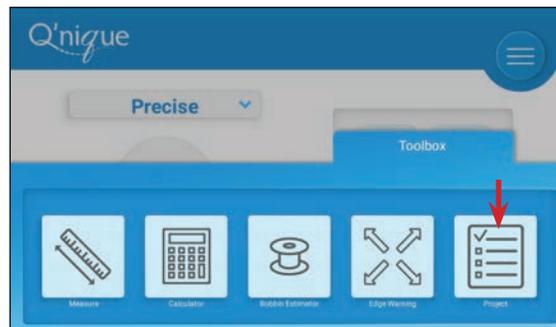
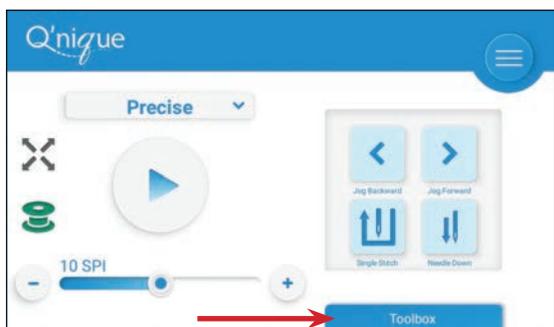
- 3 To return to the main quilting screen, press the X in the top right corner or press anywhere outside of the calculator screen.



Tracking Stitch Count & Run Time

You can track the stitch count and run time of both your current project and the lifetime of the machine in the project tool.

- 1 To access the project tool, tap on the **Toolbox** at the bottom of any quilting mode screen and select **Project**.

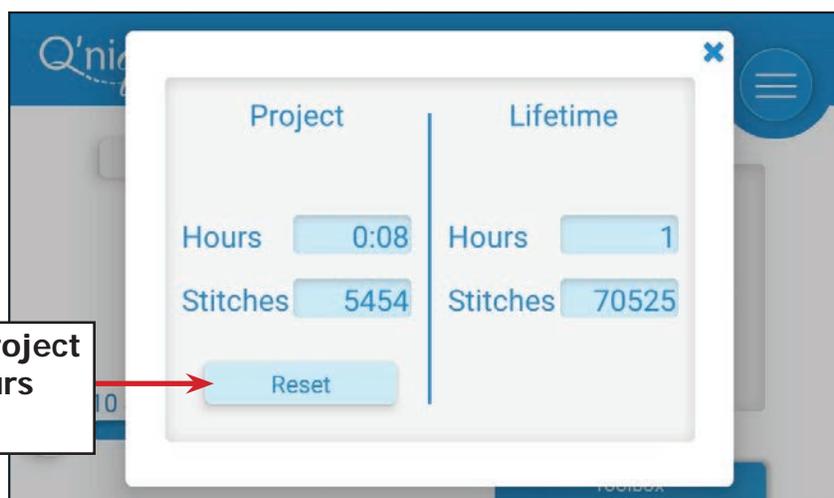


- 2 This screen will show the run time and stitch data for both the current project and lifetime of the machine.

Project shows the total run time in hours and minutes along with the total stitches since the last reset.

Lifetime shows the total run time in hours along with the total stitches since the machine was purchased.

Press to reset project counter to 0 hours and 0 stitches.



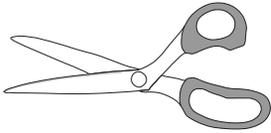
Tip: It's recommended to oil your machine after 20 hours of use. The "Hours Run" counter can help keep track of when your machine is due to be oiled. After cleaning and oiling your machine, press **Reset** to start the counters under **project** back at zero.

The counters under **lifetime** cannot be reset.

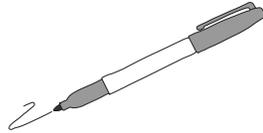
Getting Started

Parts & Tools Needed:

Scissors
(not included)



Washable Fabric
Marker/chalk (not
included)



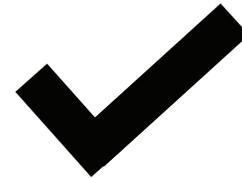
Instructions

With the machine fully assembled, you are ready to begin quilting. Practice on spare fabric to become familiar with the machine's settings and movements so you can start your projects with confidence. It is normal to make mistakes, so don't get discouraged if your stitches don't look perfect right away. Follow the steps in this section to get started and you'll be quilting in no time!

- 1 **Relax!** Take a deep breath and don't be afraid to take it slow.

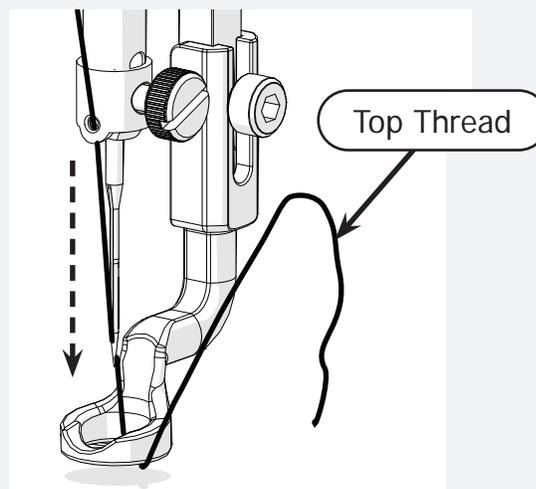
Make sure that the following items have been completed:

- Your machine is threaded and tensioned.
- Your practice fabric is attached.
- You have established any machine settings you want to use.



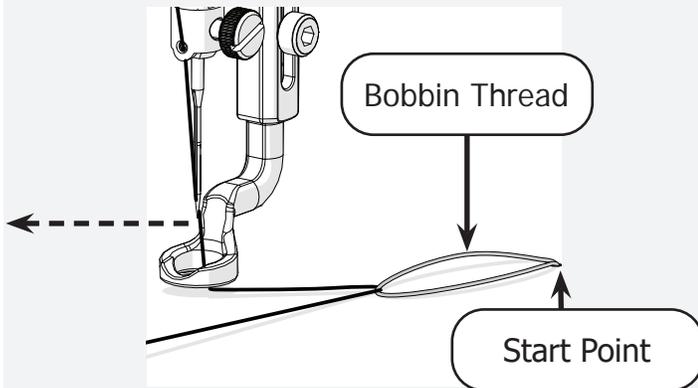
- 2 Before you begin stitching, pull up your bobbin thread to prevent the thread tail from dangling underneath the fabric as you quilt and getting sewn in place.

- a First, position the needle directly above where you want to begin your pattern.
- b Pull on the **top thread** so that it is tight and jog the needle up and down using the single stitch button on the display.

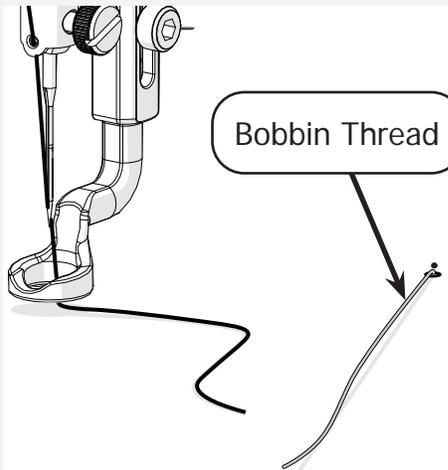


Getting Started (Continued)

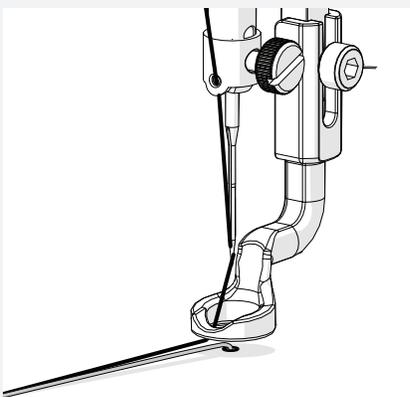
- c While still tightly holding the top thread, move the machine several inches to the side. Your top thread should pull a loop of **bobbin thread** through the **start point** to the top of the fabric.



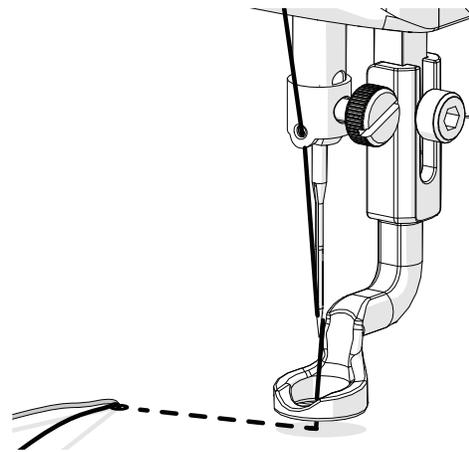
- d Pull on the loop of **bobbin thread** until the loose end of the thread comes up from underneath the fabric.



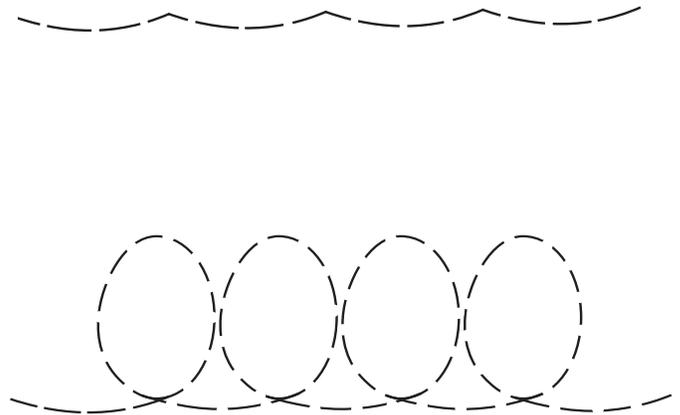
- e Pull on the bobbin thread while moving the machine back to the start point. This makes sure that there is no loose thread underneath the fabric.



- 3 Begin stitching. Be sure to start your pattern as close as possible to the start point where you pulled out the bobbin thread.

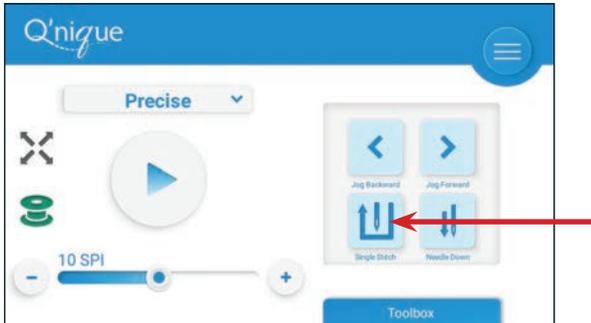


- 4 With fabric chalk or a marker, draw a simple pattern or write your name on the fabric and then stitch over it to practice.



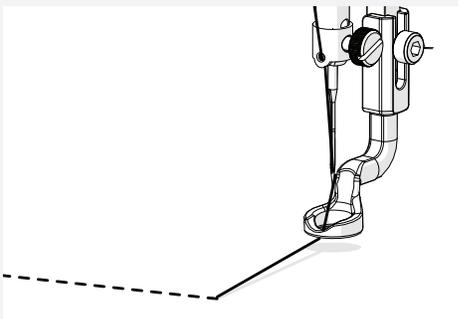
Grace

- 5 Complete the pattern by making a tie-off stitch. Use the single stitch button to make a few small stitches very close together.

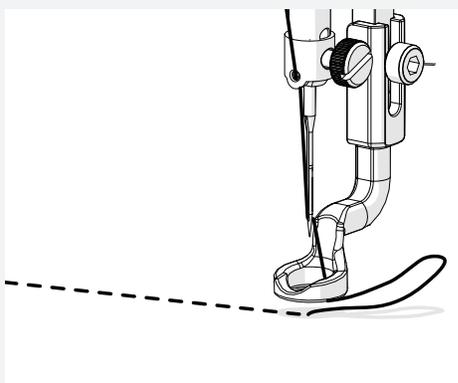


- 6 To pull up the bobbin thread after making a tie-off, take the following steps:

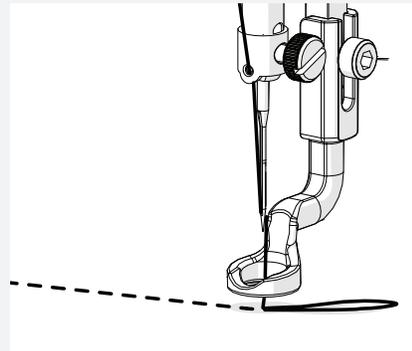
- a Move the machine away from the tie-off stitch.



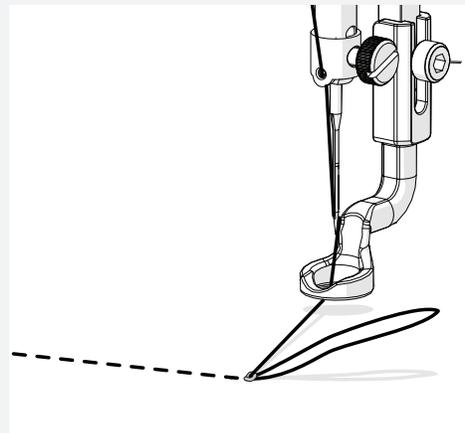
- b Hold the thread to make a loop and return the machine to the tie-off stitch.



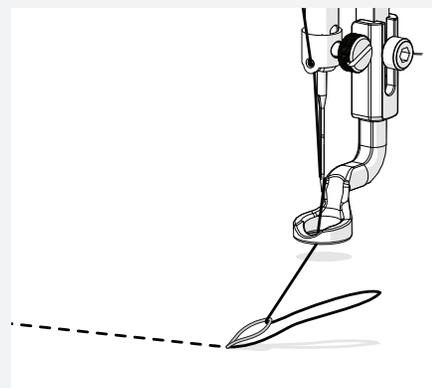
- c Make a single stitch over the tie-off.



- d Hold the loop and move the machine away from the tie-off again.



- e Keep moving away from the tie-off until a loop of bobbin thread is pulled up above the fabric. Cut all threads close to the tie-off.



- 7 You may now cut the thread tails from the beginning of the pattern.

Practice! Keep trying different stitches until you feel comfortable with how your machine feels and moves. You can always attach a new piece of practice fabric if you need to.

Congratulations! Now that you have practiced and gotten used to the basic settings and movements of your machine, you are ready to begin your quilting journey.

Good luck, and thank you again for choosing The Grace Company to help with your quilting needs.

Maintaining the Machine

Keep your machine performing at its peak by practicing good machine maintenance habits.

This section of the manual covers oiling the machine, changing the needle, adjusting the bobbin cam and hopping foot, and reinstalling the needle plate.

Preparing the Oil Bottle	page 69
Oiling and Cleaning	page 70
Changing the Needle	page 73
Adjusting the Bobbin Fill	page 75
Adjusting the Hopping Foot	page 76
Reinstalling the Needle Plate	page 81
Re-assembling the Thread Tensioner	page 83

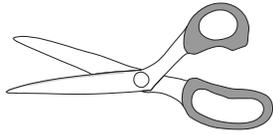
Preparing the Oil Bottle

Parts & Tools Needed:

Oil Bottle



Scissors



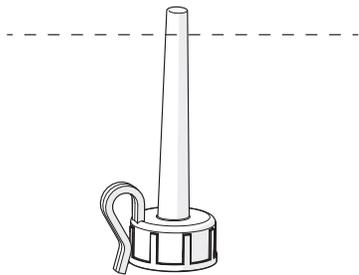
Power Cord/Oil Bottle
Box

(Not included)

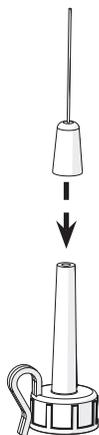
Instructions

Take the following steps to prepare the oil bottle for use in oiling the machine.

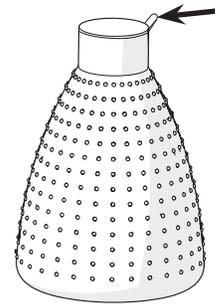
- 1 Snip off about 1/4th of an inch from the tip of the plastic lid with a pair of scissors.



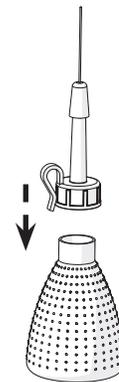
- 2 Place the applicator needle onto the top of the cap.



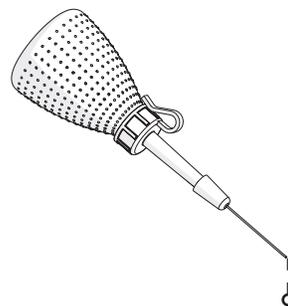
- 3 Peel the safety foil off the opening of the oil bottle.



- 4 Carefully screw the lid onto the oil bottle.



- 5 Hold bottle upside down and squeeze gently to apply oil. When not in use, cover the applicator needle with the safety cap.



Oiling and Cleaning

Parts & Tools Needed:

Lint Brush



Oil Bottle



- Compressed Air Can (optional; not included)

Tools Box

Power Cord/Oil Bottle
Box

Instructions

Oil and Clean:

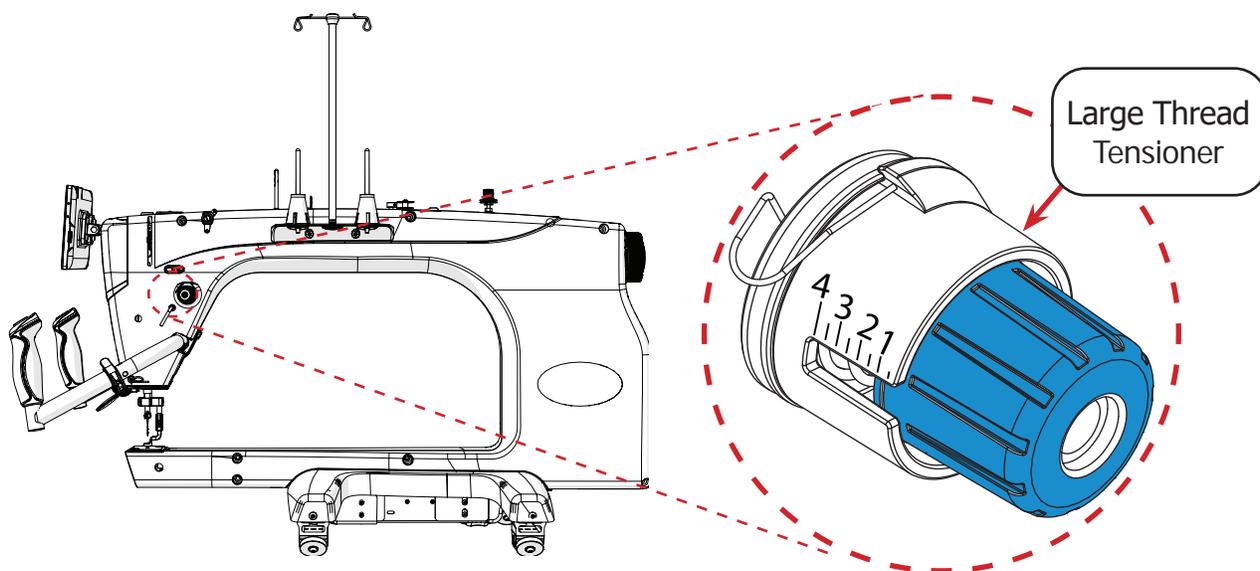
Machine	<ul style="list-style-type: none"> • At the start of a new project • After 20 hours of use • After sitting without use for more than 30 days
Hook Assembly	<ul style="list-style-type: none"> • Every other bobbin change

Tip: The Hours Run counter on the System Information page can be used to track hours of quilting time (see page 63).

Take the following steps to clean and oil the machine:

- 1 Power off the machine.
- 2 Set the **large thread tensioner** to "1" to expose the tensioner discs. Use the lint brush or a can of compressed air to clear away lint and thread remnants from between the discs.

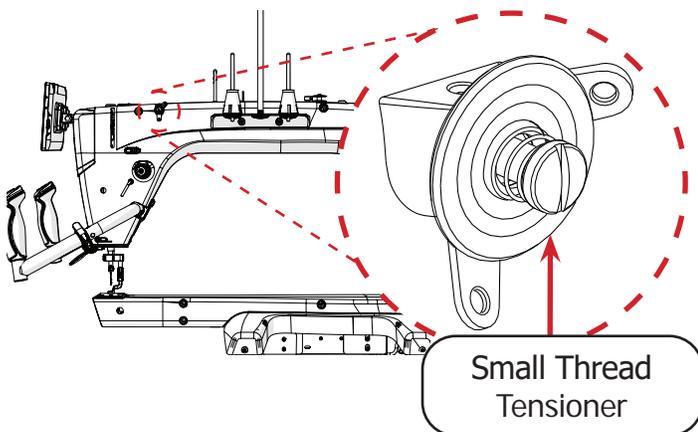
Note: Lint build-up between the tensioner discs can prevent proper thread tensioning.



Part Four | Maintaining the Machine

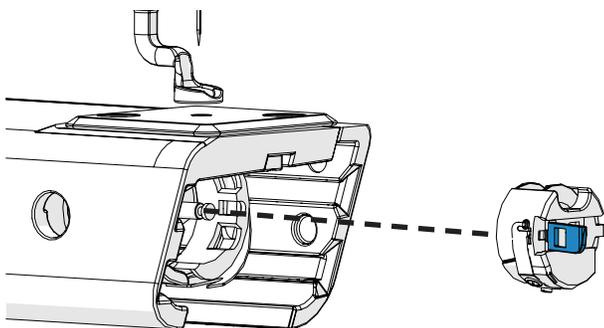
Making Calculations (Continued)

- 3 Clear debris from the spring and discs of the **small thread tensioner**.

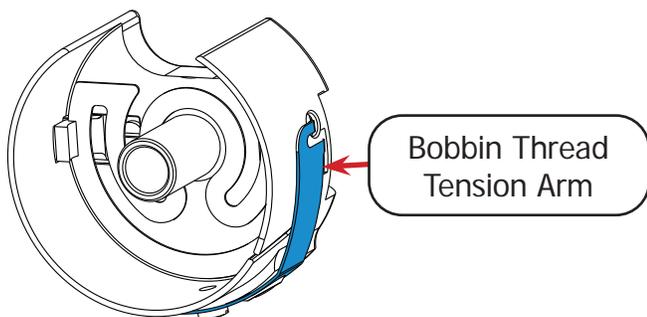


- 4 Pull the **lever** (shown in blue) on the bobbin case to remove it from the hook assembly.

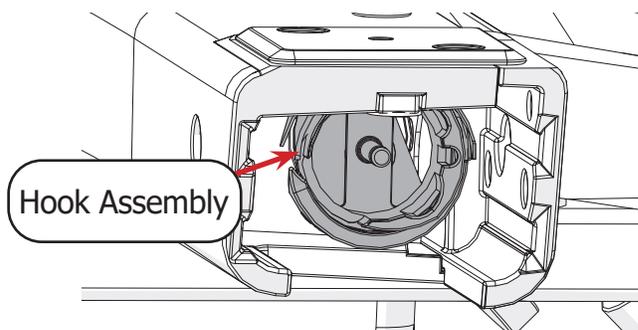
Note: If the case won't release, try raising the needle.



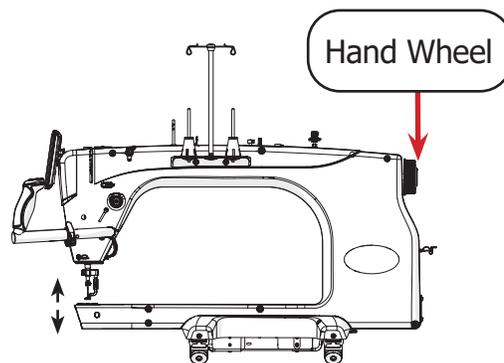
- 5 Take the bobbin from the case and set it aside. Clean the bobbin case with the lint brush or compressed air. Be sure to clean the area under the **bobbin thread arm**.



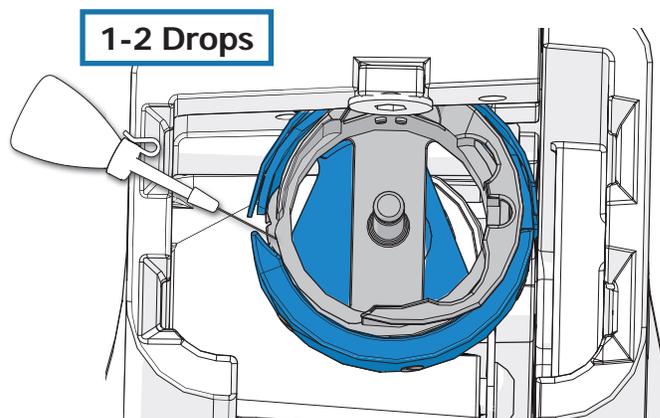
- 6 In and around the **hook assembly**, clear away any lint, cloth, and thread remnants using the lint brush or compressed air.



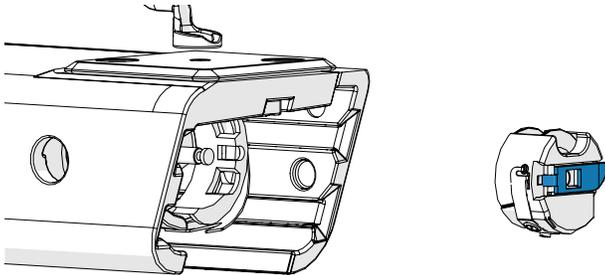
- 7 Rotate the **hand wheel** until the needle is halfway down. This will put the hook in the best position for oiling.



- 8 Place one to two drops of oil into the hook assembly between the **inner part** (shown in gray) and **outer part** (shown in blue).

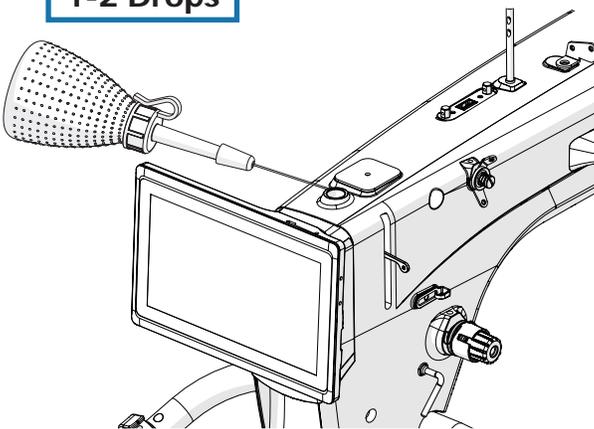


- 9 Reload the bobbin case and return it to the machine. For detailed instructions, see “Task 11 - Loading the Bobbin Case” on page 31.



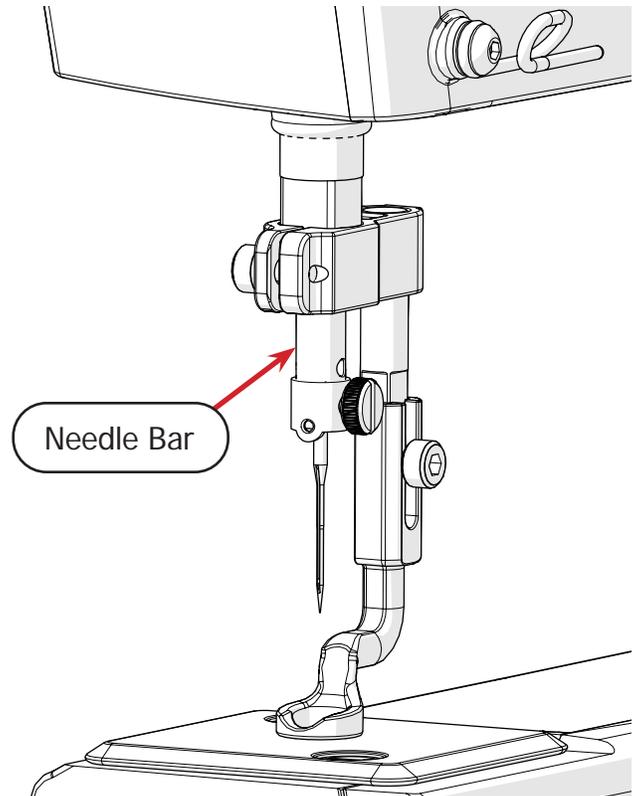
- 10 Place one to two drops of oil down the hole at the top of the machine, near the display.

1-2 Drops



- 11 Power up the machine and test a few stitches to ensure the machine is running smoothly.

- 12 Regularly wipe down the **needle bar** to prevent the accumulation of oil that can stain your fabric.



Changing the Needle

For information on selecting a needle, see "Choosing Your Needle" on page 97

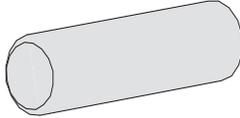
Parts & Tools Needed:

Needle



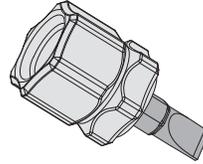
Box 1

Needle Magnet



Box 1

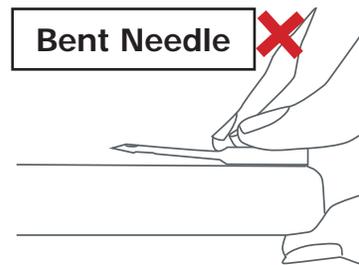
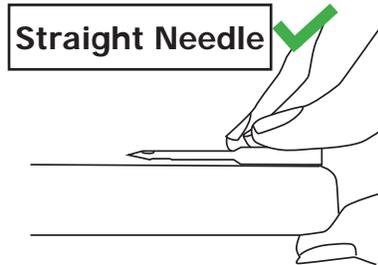
Flat-head Screwdriver



Box 1

Instructions

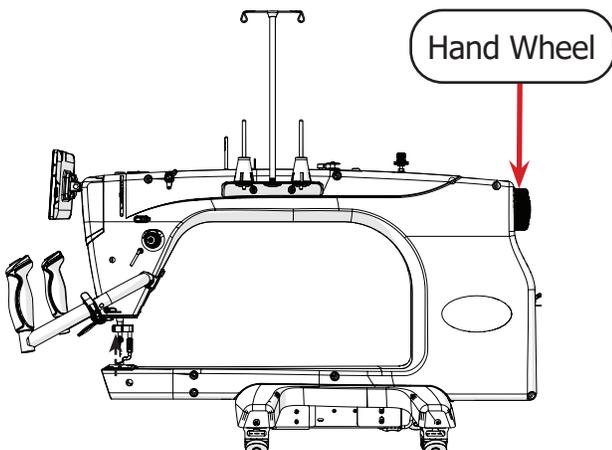
A broken, bent, or burred needle may break thread, damage fabric, or even damage the machine. Always check that the needle is in good condition before starting a new project, and replace the needle after eight hours of use.



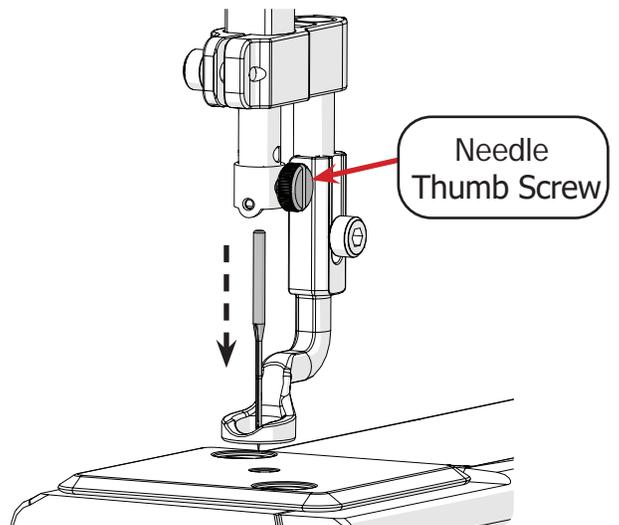
To avoid damage to the machine, please choose an approved needle style from the list below:

- DPX5 MR
- 134 MR
- 1955 MR

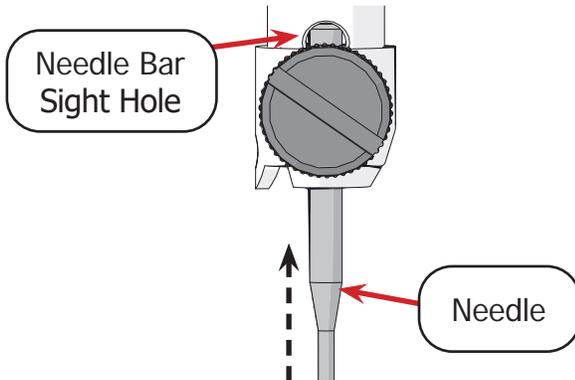
- 1 Power off the machine.
- 2 With the **hand wheel**, raise the needle so it clears the hoop part of the hopping foot.



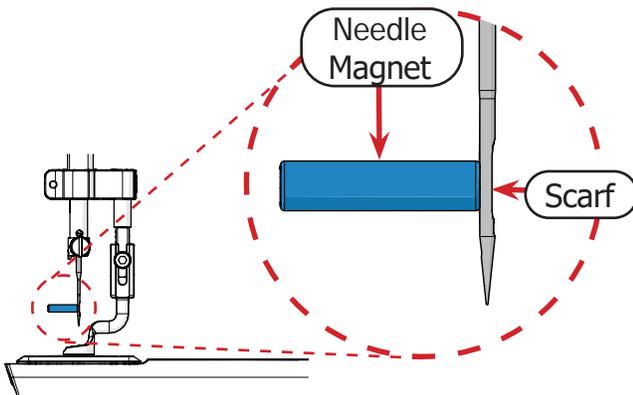
- 3 Loosen the **needle thumb screw** and pull out the needle. If needed, use a flat-head screwdriver to loosen the screw.



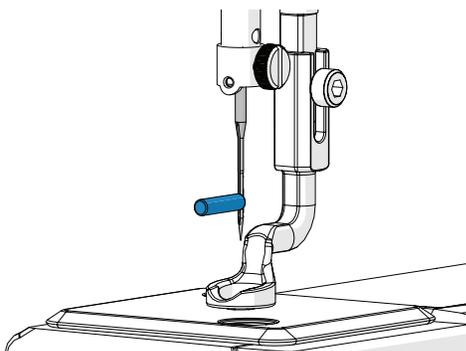
- 4 Insert the new needle all the way into the needle bar. Check the **needle bar sight hole** above the thumb screw to make sure the **needle** is inserted all the way.



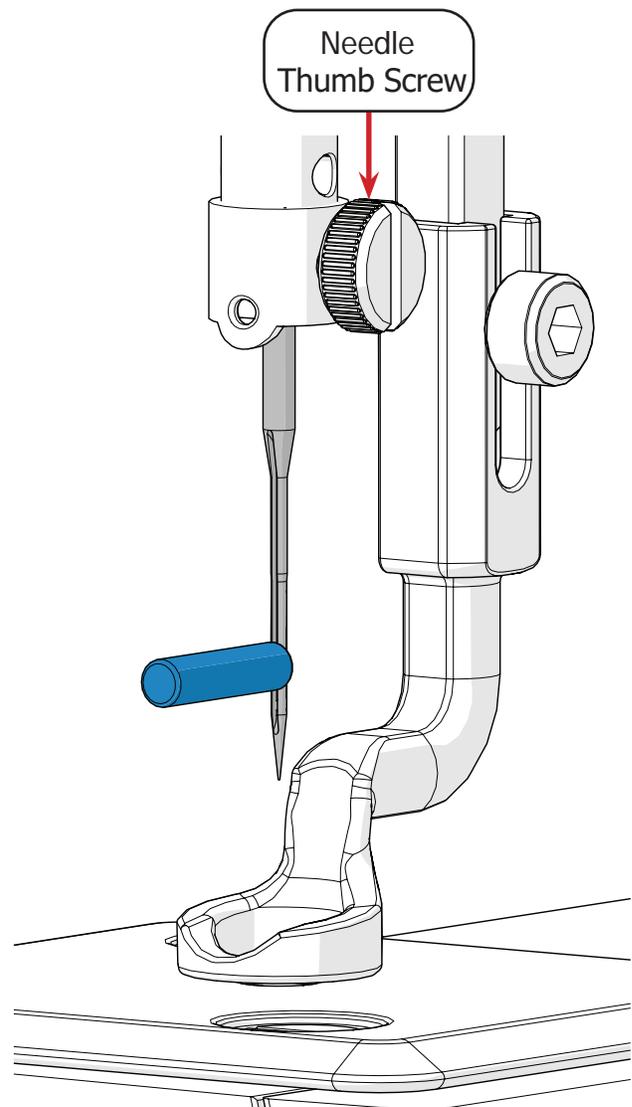
- 5 The **scarf**, a cut-out on the back of the needle, should face the throat of the machine. Place the **needle magnet** on the opposite side of the scarf.



- 6 Use the needle magnet as a visual guide. Twist the needle until the **magnet** (shown in blue) points as straight out from the machine as possible. **Note:** Do not attempt to adjust the needle by moving the magnet directly.



- 7 Hand-tighten the **needle thumb screw**. Do not over-tighten if using the flat-head screwdriver.



Adjusting the Bobbin Fill

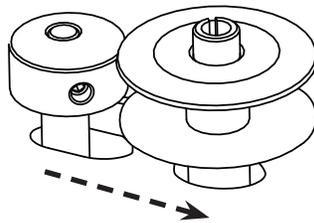
Parts & Tools Needed:

- 1.5 mm Allen Wrench (not included)

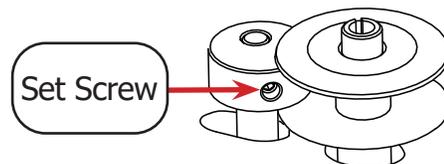
Instructions

The machine's bobbin cam is set so the bobbin will wind completely before the winder shuts off. To change how much the bobbin fills before the winding stops, take the following steps:

- 1 Power off the machine.
- 2 Place an empty bobbin onto the bobbin stand and flip the bobbin cam toward the bobbin. This will help estimate how far to adjust the bobbin cam.

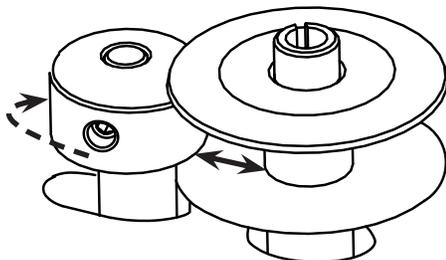


- 3 Loosen the **set screw** on the bobbin cam with a 1.5 mm Allen wrench until the top of the bobbin cam twists freely.

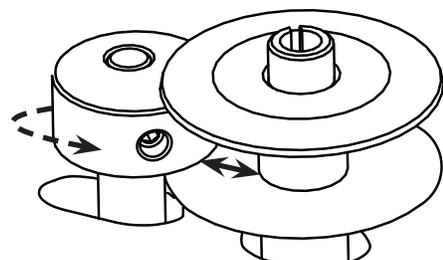


- 4 Point the set screw toward the bobbin to decrease the amount the bobbin will fill before the winder shuts off. Point the set screw away from the bobbin to increase the fill amount.

Point away from bobbin to increase fill.



Point toward bobbin to decrease fill.



- 5 After choosing the desired distance, tighten the set screw with a 1.5 mm Allen wrench.

Adjusting the Hopping Foot

Parts & Tools Needed:

T-handle Allen
Wrench 3 mm

Hopping Foot
Height Tool



Box 1



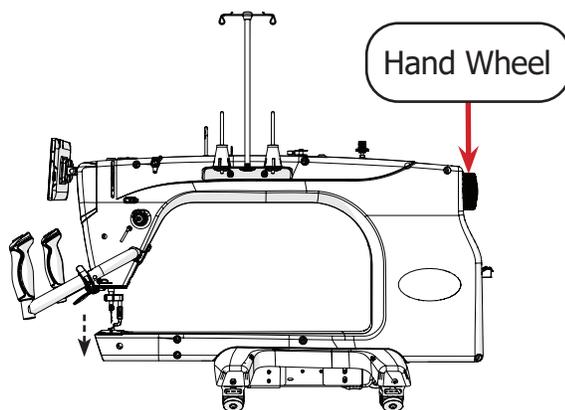
Box 1

Height Adjustment

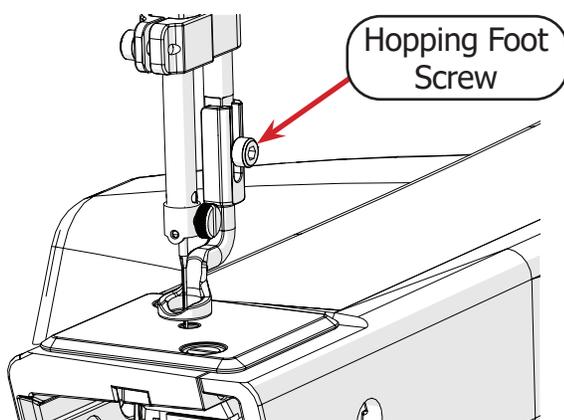
When quilting with thick fabric or batting layers, the hopping foot may press down on the quilt too tightly and begin to drag. Alternatively, having the hopping foot too high can result in skipped stitches. The hopping foot can be raised or lowered to correct these problems.

To adjust the hopping foot height, take the following steps:

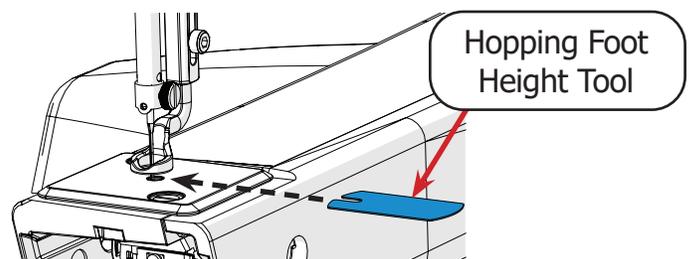
- 1 Move the machine so it is not over fabric. Then use the **hand wheel** to drop the needle bar to the lowest position.



- 2 Use the 3 mm Allen wrench to loosen, but not remove, the **hopping foot screw**.

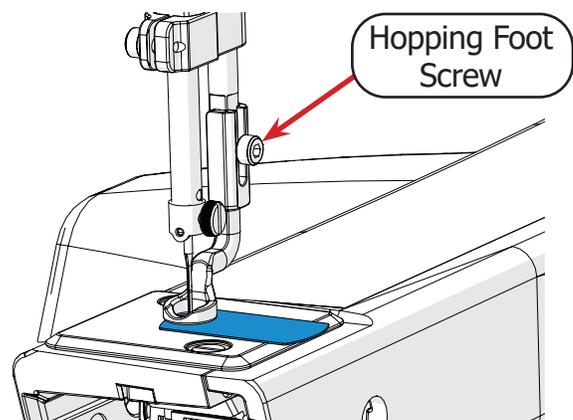


- 3 Slide the **hopping foot height tool** (shown in blue) underneath the hopping foot with the needle inside the slot.



Note: The height tool prepares the machine for standard sized quilt batting and two layers of fabric. For thicker quilts, stack sheets of printing paper over the gauge to increase room underneath the hopping foot.

- 4 Lower the hopping foot until it rests on the height tool. Re-tighten the hopping foot screw with the 3 mm Allen wrench.



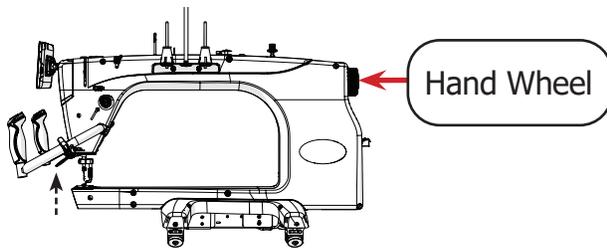
Part Four | Maintaining the Machine

Adjusting the Hopping Foot (Continued)

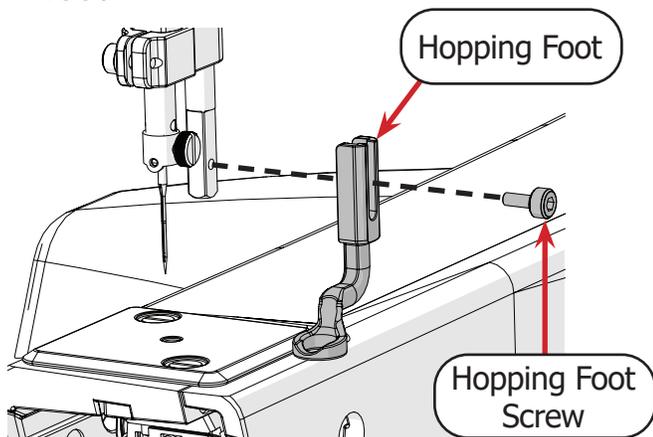
Rotation Instructions

The hopping foot can be rotated to improve line of sight. To rotate the hopping foot, please take the following steps.

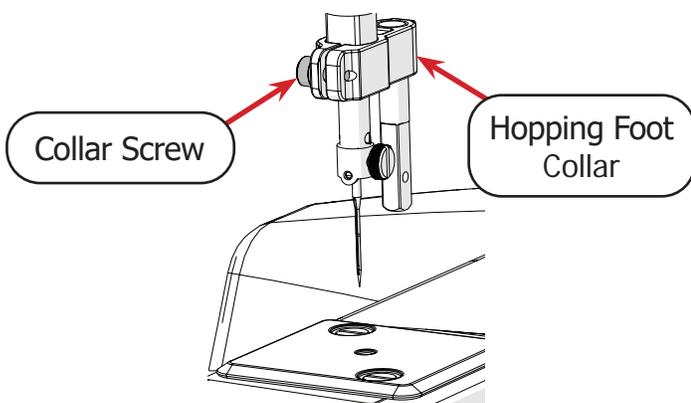
- 1 Power off the machine.
- 2 With the **hand wheel**, raise the needle so it clears the hoop part of the hopping foot.



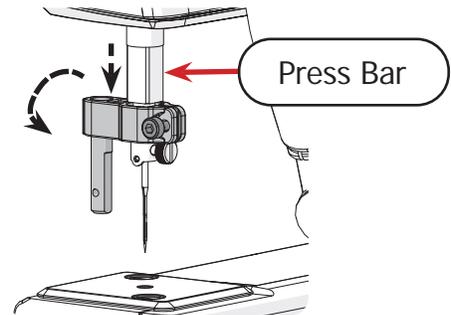
- 3 Use the 3 mm Allen wrench to remove the **hopping foot screw** and the **hopping foot**.



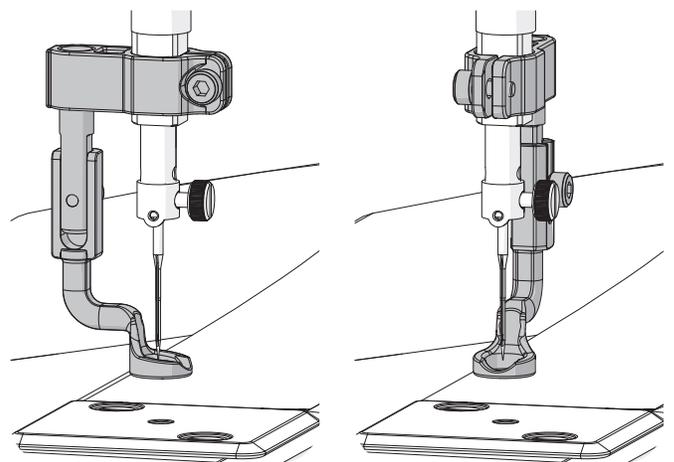
- 4 With the 3 mm Allen wrench, loosen the **collar screw** that holds the **hopping foot collar** to the press bar.



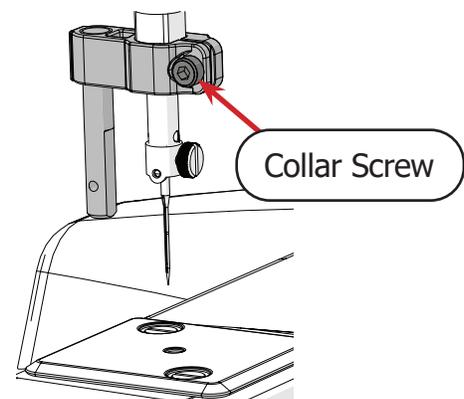
- 5 Drop the hopping foot collar below the **press bar** and turn it to the desired position.



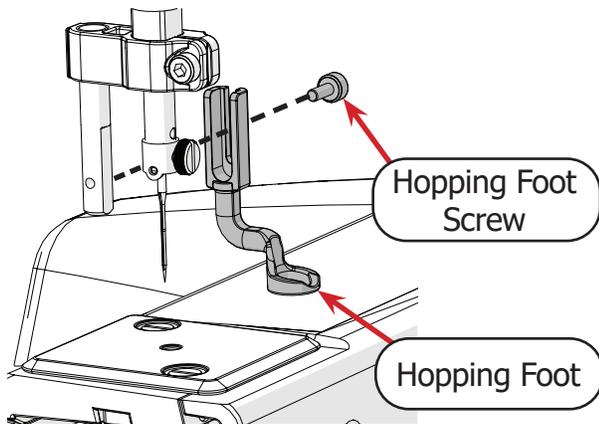
The hopping foot can be set to two positions:



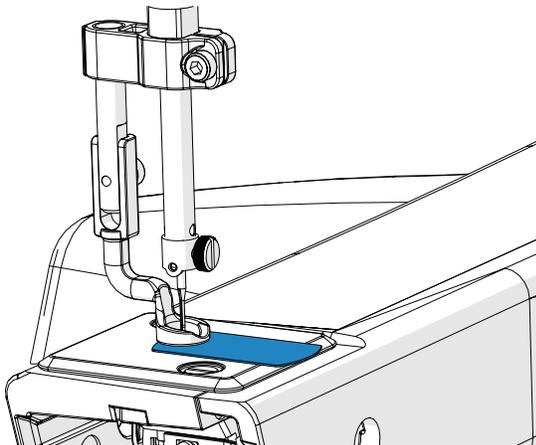
- 6 Lift the hopping foot collar back up to the press bar so that the bottom of the collar is even with the bottom of the press bar, and re-tighten the **collar screw**.



- 7 Slide the **hopping foot** into the collar and screw in place with the **hopping foot screw**.



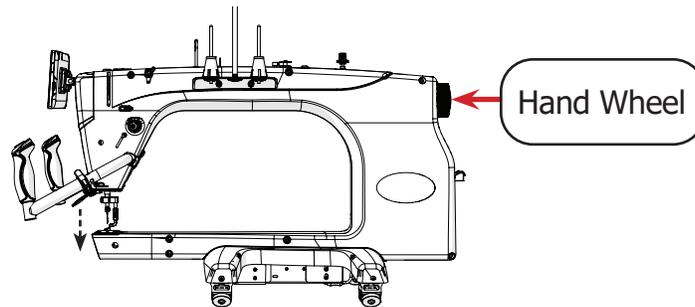
- 8 Double-check your hopping foot height (see page 76).



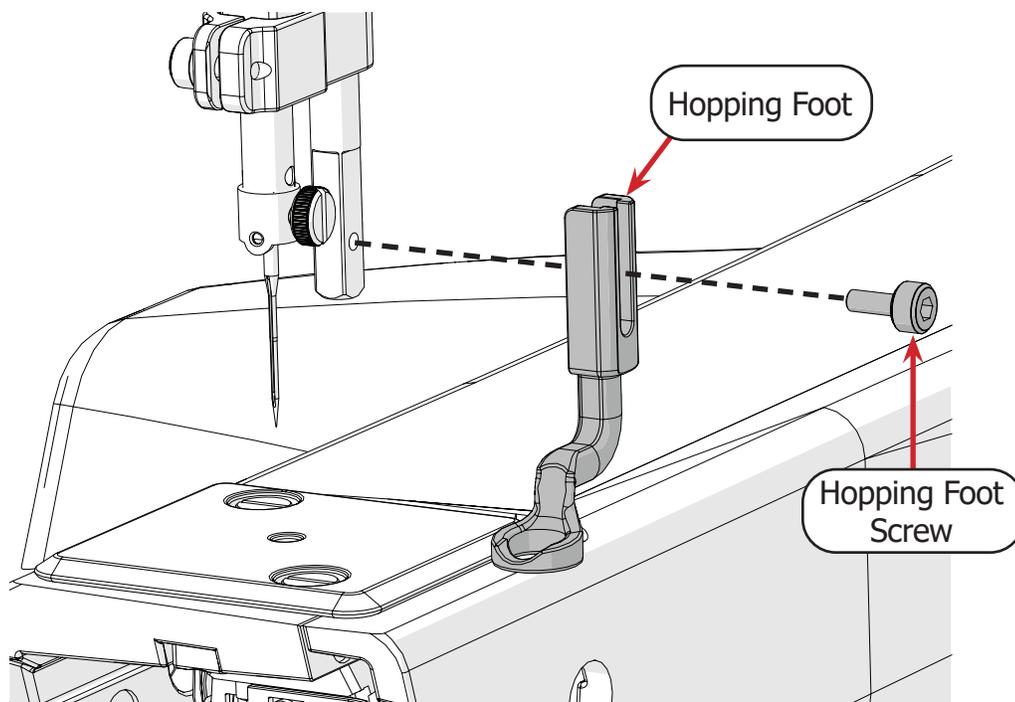
Removal Instructions

To remove the hopping foot for maintenance or to adjust the hopping foot angle, take the following steps:

- 1 Power off the machine.
- 2 With the **hand wheel**, raise the needle so it clears the hoop part of the hopping foot.



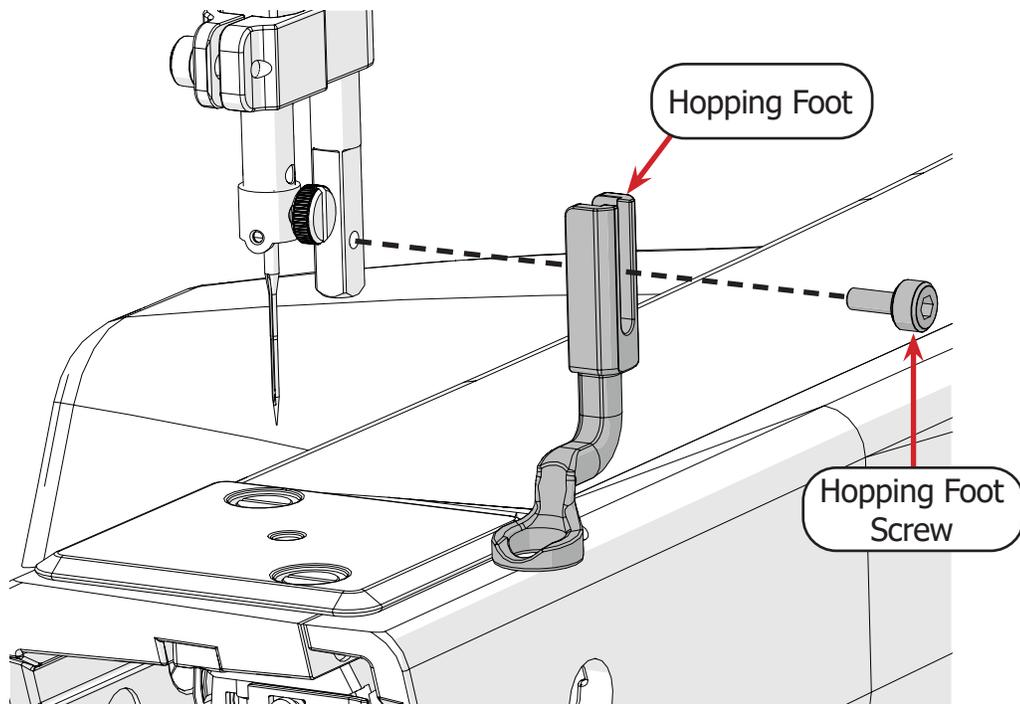
- 3 Use the 3 mm Allen wrench to remove the **hopping foot screw** and the **hopping foot**.



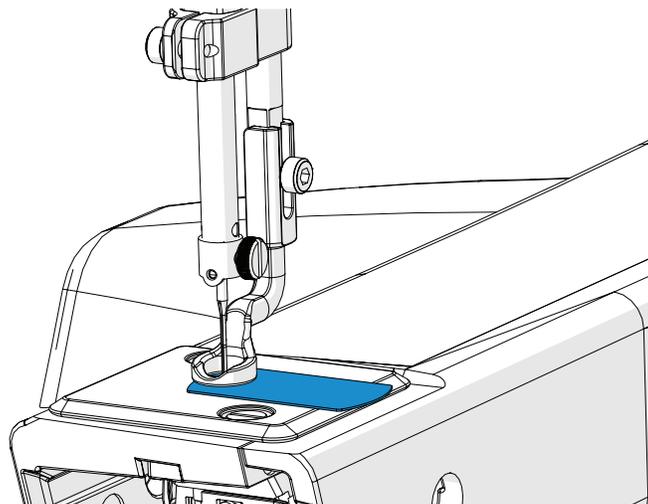
Installation Instructions

To install the hopping foot on your quilting machine, please take the following steps:

- 1 Power off the machine.
- 2 Slide the slot in the **hopping foot** onto the **hopping foot collar**. Use the 3 mm Allen wrench and **hopping foot screw** to tighten in place.



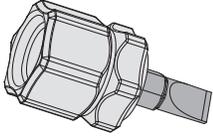
- 3 Adjust height as needed (see page 76).



Reinstalling the Needle Plate

Parts & Tools Needed:

Flat-head Screwdriver

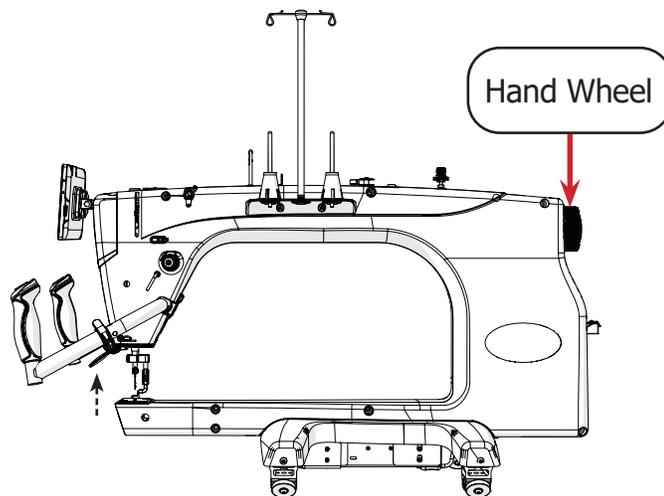


Box 1

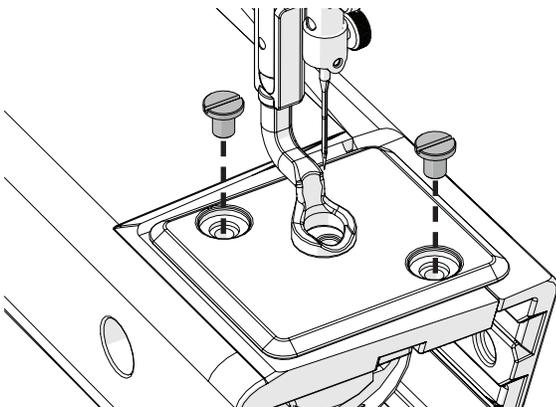
Removal Instructions

To remove the needle plate from the quilting machine, take the following steps:

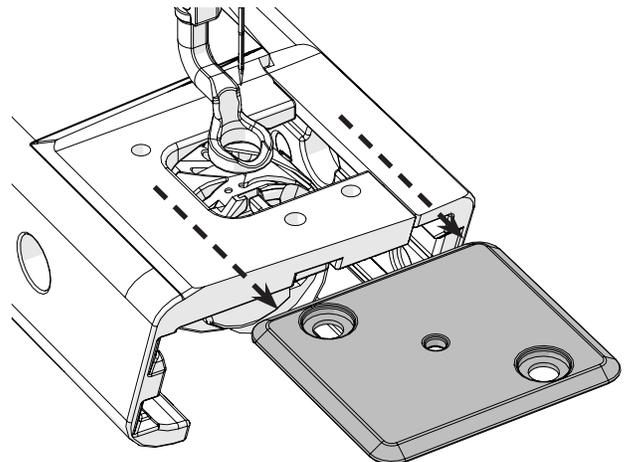
- 1 Power off the machine and raise the needle to the highest position using the **hand wheel**.



- 2 Use the flat-head screwdriver to remove the two **needle plate screws** (shown in gray).



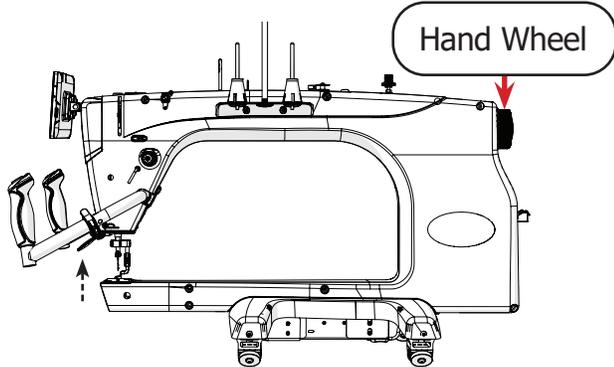
- 3 Slide the **needle plate** (shown in gray) from the machine.



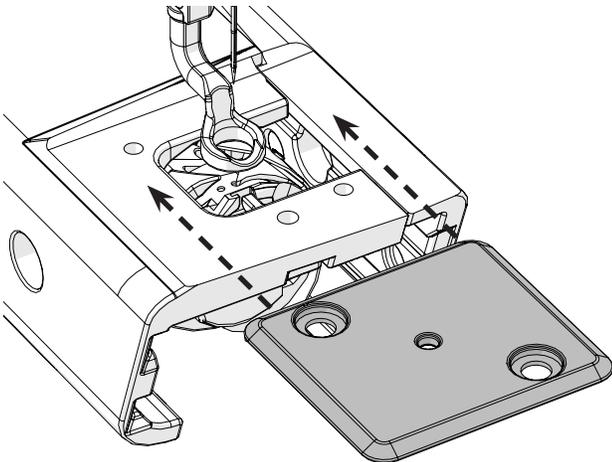
Installation Instructions

To install the needle plate onto the quilting machine, take the following steps:

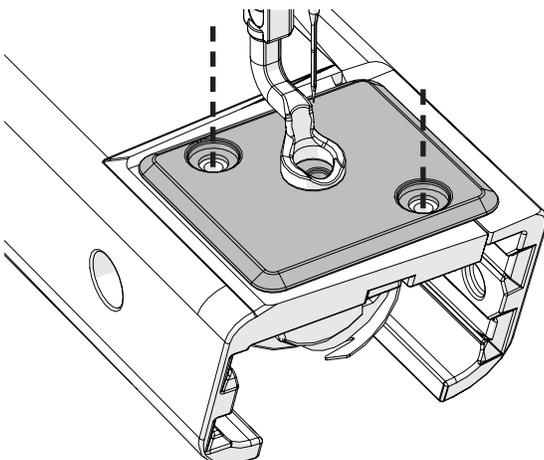
- 1 Power off the machine. Raise the needle to the highest position using the **hand wheel**.



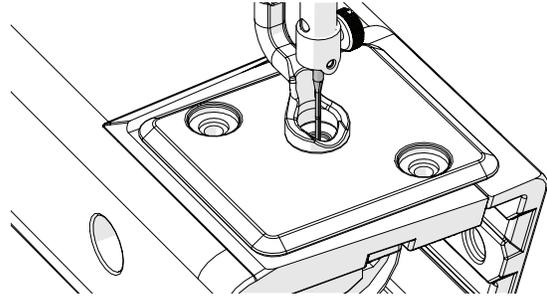
- 2 Slide the **needle plate** (shown in gray) onto the machine.



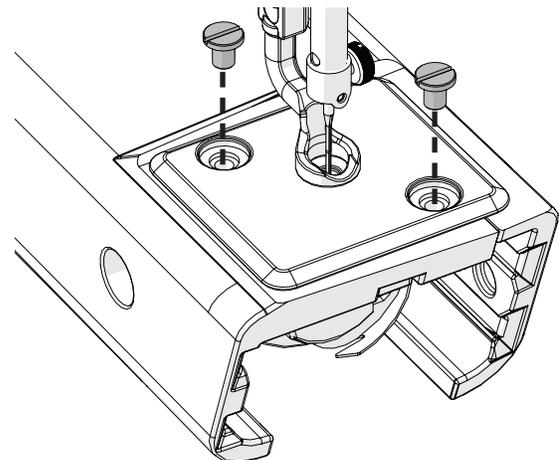
- 3 Align the screw holes on the needle plate with those on the machine.



- 4 Slowly lower the needle with the hand wheel. The needle should slide into the center hole without contacting the needle plate.



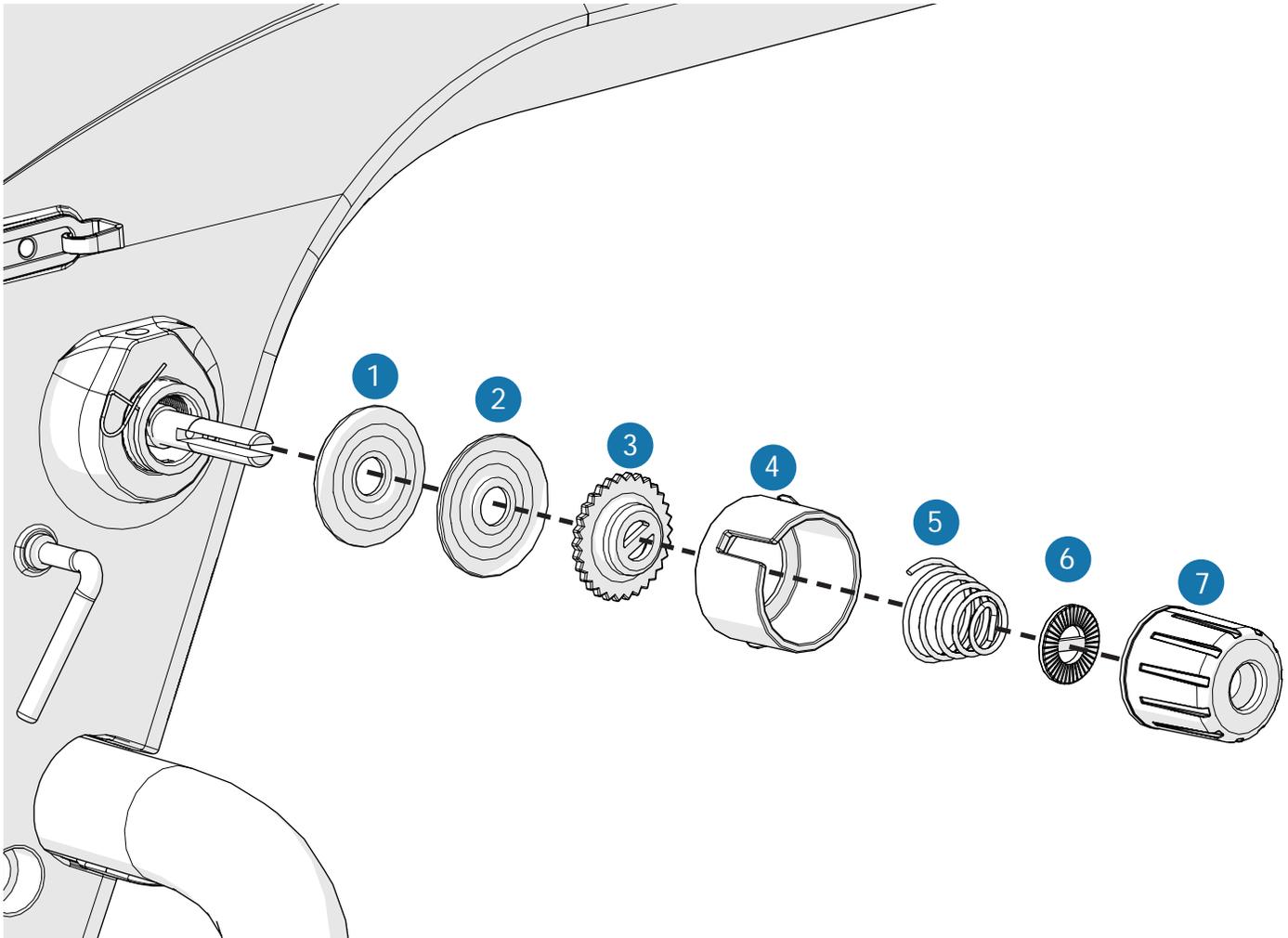
- 5 Place the two **needle plate screws** (shown in gray) into the plate. Make sure the needle plate is centered around the needle, and then tighten the screws with the flat-head screwdriver.



Re-assembling the Thread Tensioner

Instructions

If you over-loosen the large thread tensioner knob, the tensioner may come apart and need to be re-assembled.



1 Tensioner Disc

3 Meter Key

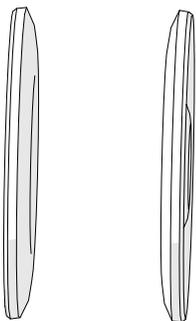
5 Spring

7 Knob

2 Tensioner Disc

4 Meter

6 Keyed Washer



Note: Place the tension discs so the curved sides face each other.



Note: Install the keyed washer so the grooved side faces toward the knob.

Repairs and Diagnostics

The instructions in this section should only be taken at the direction of a Grace Company support technician. If you are experiencing problems with your machine, please contact our technical support team:

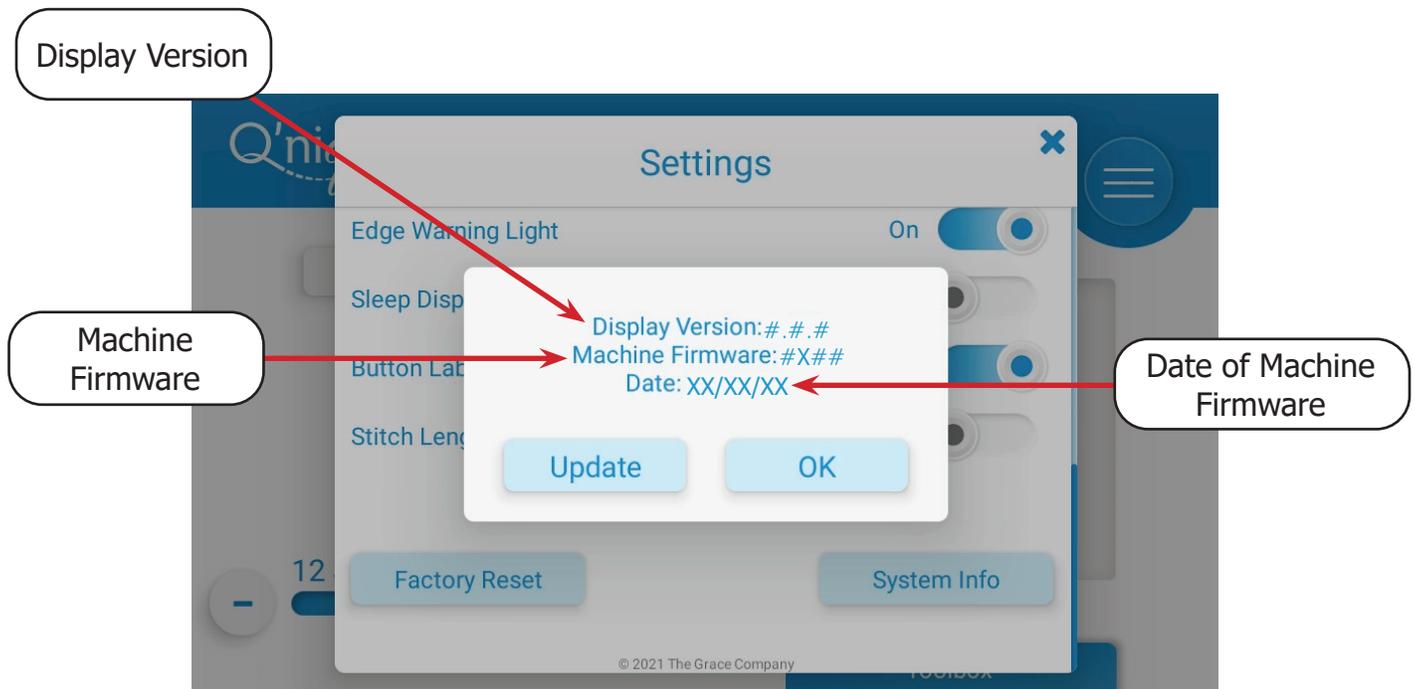
- **Phone:** (800) 264-0644
- **Email:** support@graceframe.com

This section of the manual covers replacing the encoder spring, installing the hook holder, timing the machine, and checking the machine and display software versions.

Updating the Software	page 85
Replacing the Encoder Spring	page 86
Reinstalling the Hook Holder	page 89
Timing the Machine	page 92

Updating the Software

The firmware versions for the machine motor and the touch display are found by pressing "System Info" from the bottom of the Settings menu (see page 41).



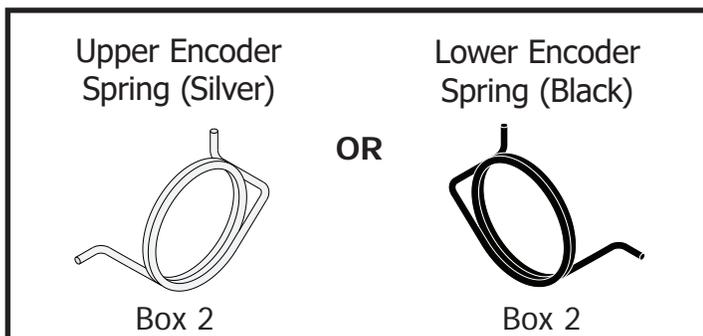
The following information and options display:

- **Display Version:** Shows the latest software version for the touch display.
- **Machine Firmware:** Shows the latest firmware version for the machine.
- **Date:** Shows the date when the machine firmware was last updated.
- **Update Button:** Checks to see if an SD card with an available software update has been inserted into the display. If it detects the update, it will update the display to the newest version.
- **OK Button:** Click to return to the Settings menu.

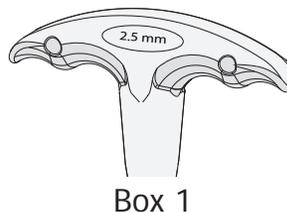
Replacing the Encoder Spring

Please speak to a Grace Company support technician before attempting these instructions.

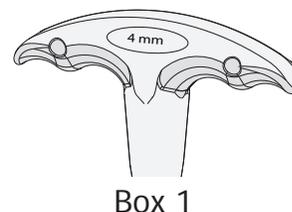
Parts & Tools Needed:



T-handle Allen Wrench 2.5 mm



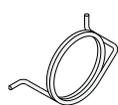
T-handle Allen Wrench 4 mm



Instructions

If the encoder spring is over-tensioned, it may break and need to be replaced. To replace the encoder spring, take the following steps:

- 1 Determine the correct spring to use in the repair:

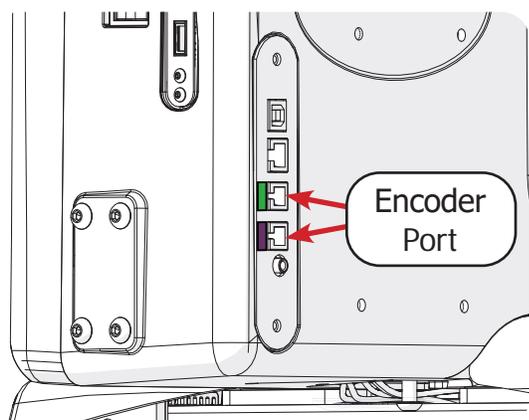


Upper Encoder: Attached to the wheel on the machine. Use the silver spring.

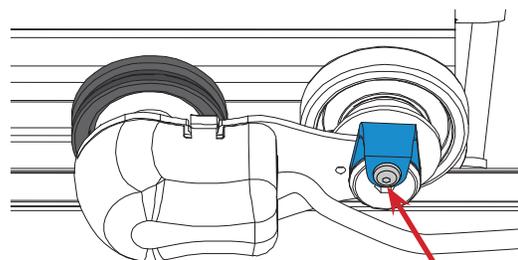


Lower Encoder: Attached to the wheel on the bottom carriage. Use the black spring.

- 2 Unplug the encoder cable from the machine.

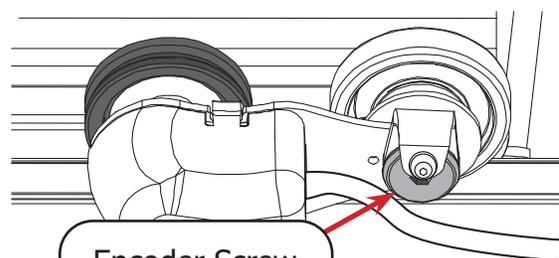


- 3 Loosen the **lock collar screw** with the 2.5 mm Allen Wrench until the **lock collar** (shown in blue) can twist freely.



Lock Collar Screw

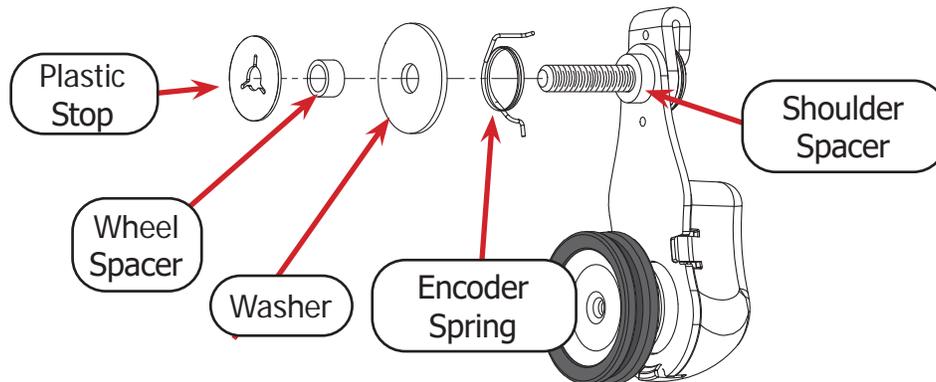
- 4 Use the 4mm Allen wrench to loosen the **encoder screw** and remove the encoder and wheel.



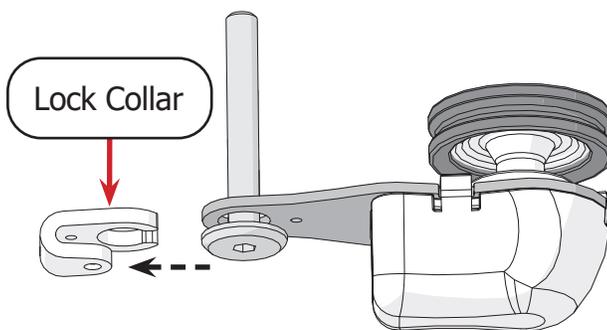
Encoder Screw

Replacing the Encoder Spring (Continued)

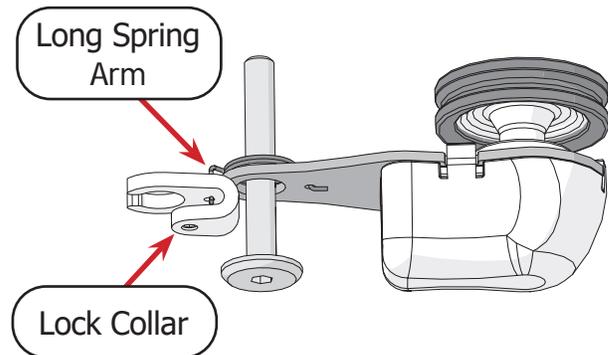
- 5 Remove the **plastic stop**, **wheel spacer**, **washer**, broken **encoder spring**, and **shoulder spacer** from the encoder.



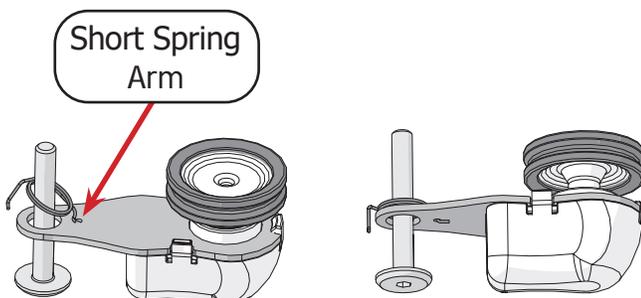
- 6 Pull on the **lock collar** to remove it from the encoder screw.



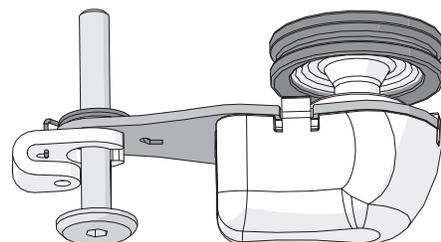
- 8 Place the **long arm** of the encoder spring into the hole on the encoder **lock collar**.



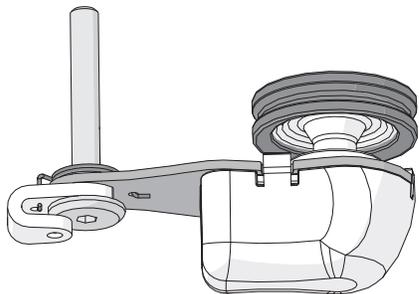
- 7 Place the replacement spring over the encoder screw, and insert the **short arm** of the spring all the way through the hole on the encoder base.



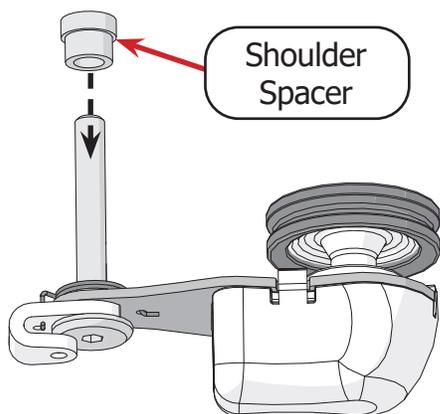
- 9 Without allowing the arm to slip out of the lock collar, rotate the collar until it wraps around the encoder bolt.



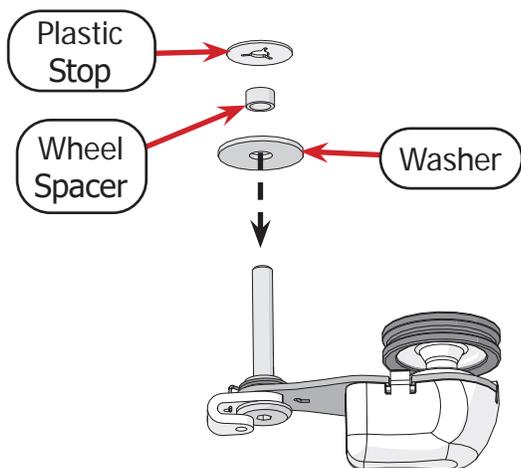
- 10 Adjust the screw and lock collar so the head of the screw slides in between the lock collar.



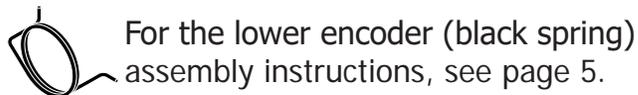
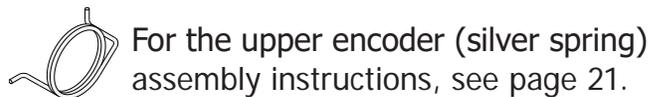
- 11 Slide the **shoulder spacer** onto the screw with the thinner side toward the head of the bolt.



- 12 Next, place the **washer**, **wheel spacer**, and **plastic stop** onto the encoder screw.



- 13 Complete the assembly instructions for the encoder you repaired.



Reinstalling the Hook Holder

Please speak to a Grace Company support technician before attempting these instructions.

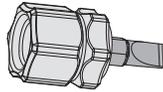
Parts & Tools Needed:

T-handle Allen Wrench 3 mm

Flat-head Screwdriver



Box 1

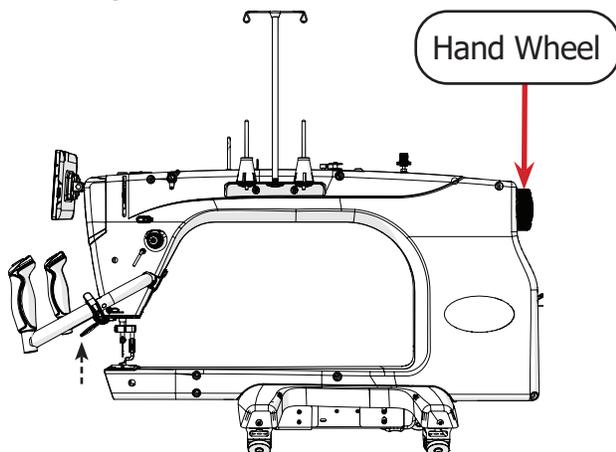


Box 1

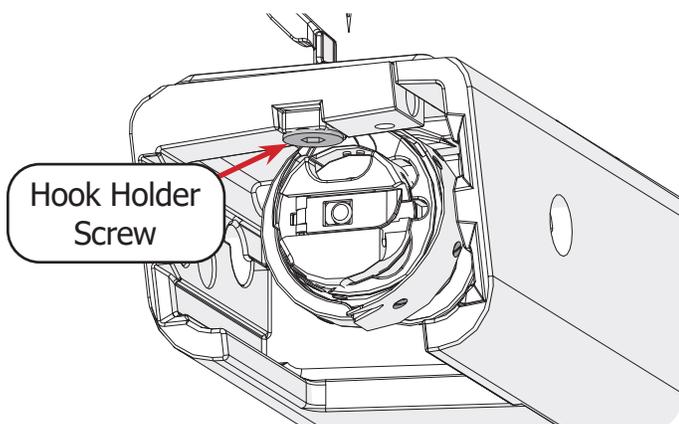
Removal Instructions

The hook holder keeps the hook assembly in place. The following procedure should only be attempted if determined necessary by a Grace Company support technician. If done incorrectly, major machine problems can result.

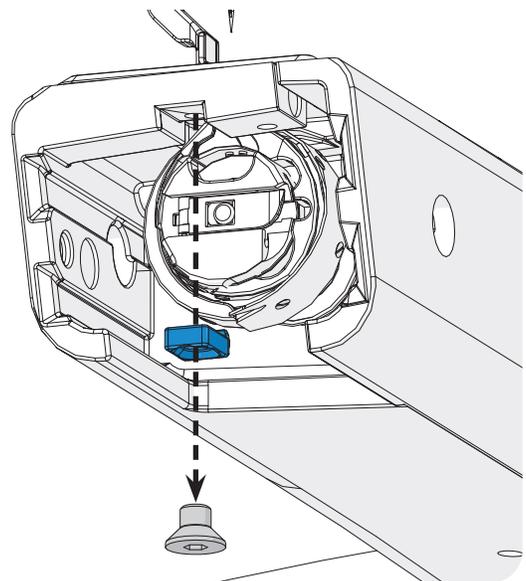
- 1 Turn off the machine.
- 2 Rotate the **hand wheel** to raise the needle to the highest point.



- 3 With the 3mm Allen wrench, remove the **hook holder screw** that attaches the hook holder to the machine.

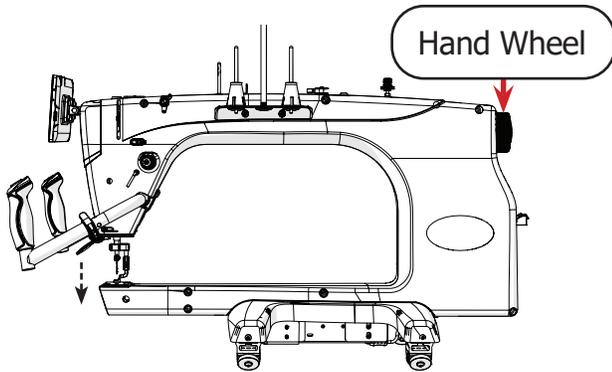


- 4 Remove the **hook holder** (shown in blue) from the hook assembly.

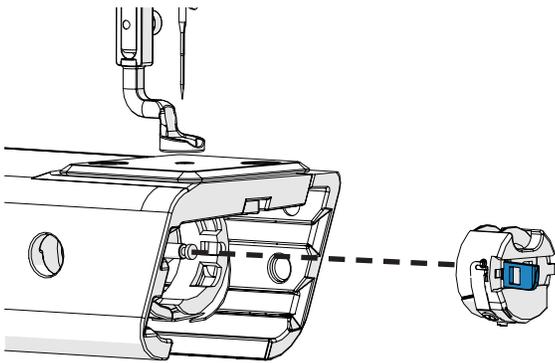


Installation Instructions

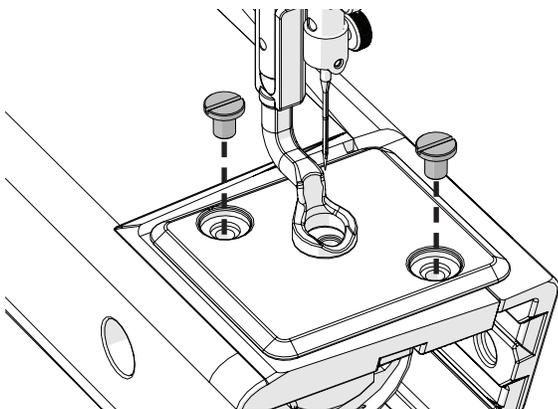
- 1 Turn off the machine.
- 2 Rotate the **hand wheel** to raise the needle to the highest point.



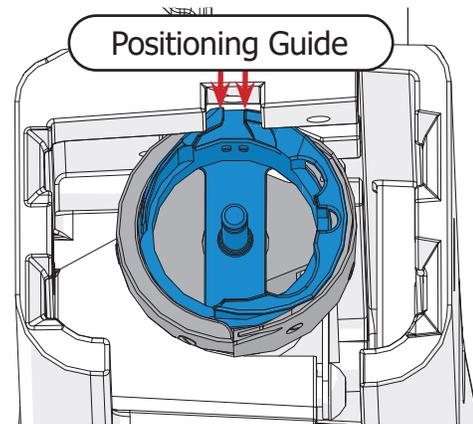
- 3 Remove the bobbin case (see "Task 11 - Loading the Bobbin Case" on page 31).



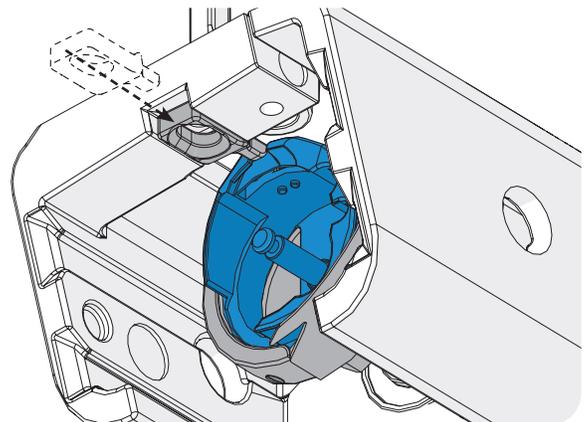
- 4 Remove the needle plate using the flat-head screwdriver (see "Reinstalling the Needle Plate" on page 81).



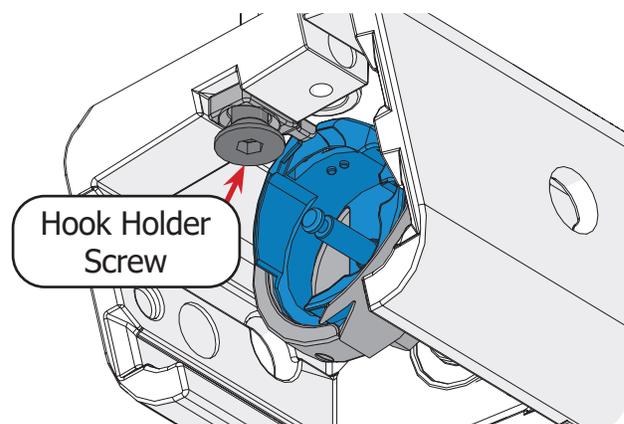
- 5 Turn the inside part of the **hook assembly** (shown in blue) so that the **positioning guide** is at the highest point.



- 6 Slide the finger of the **hook holder** (shown in gray) into the middle of the hook assembly's positioning guide.

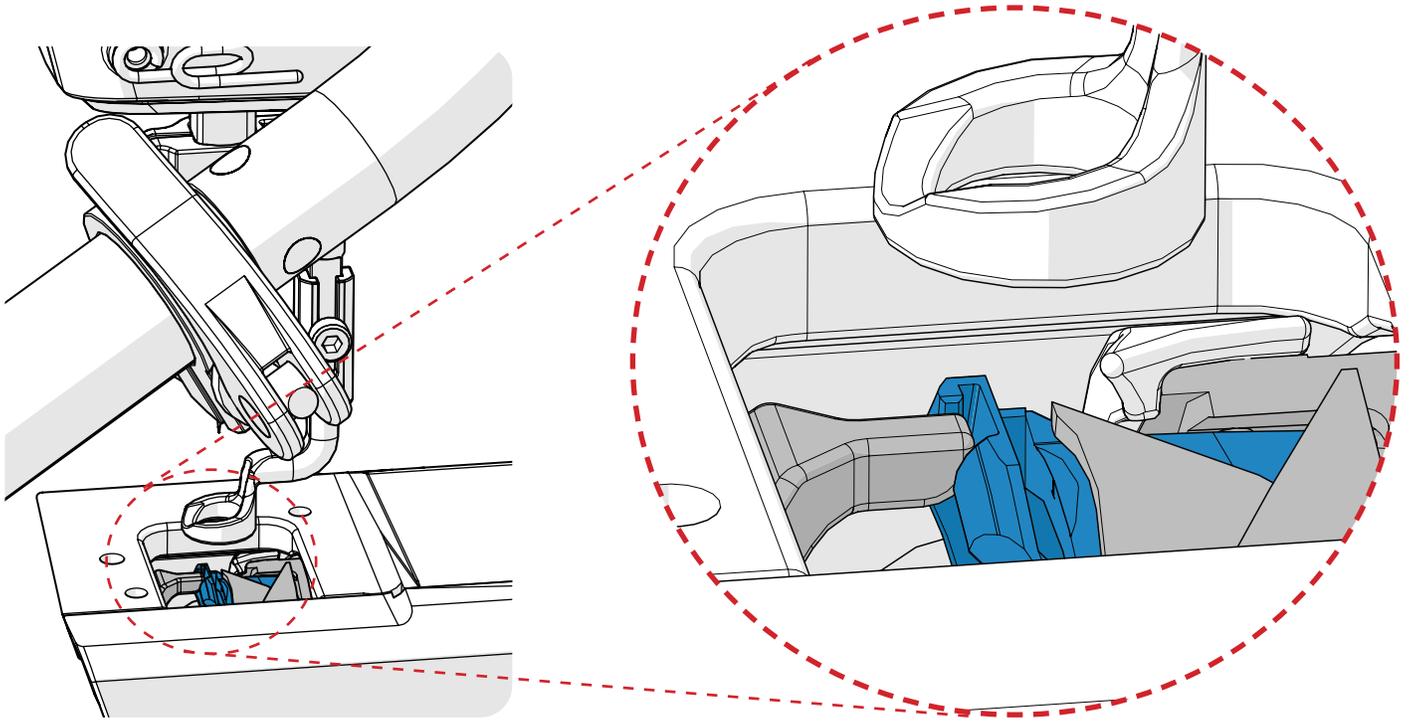


- 7 Attach loosely with the **hook holder screw**. Do not tighten.

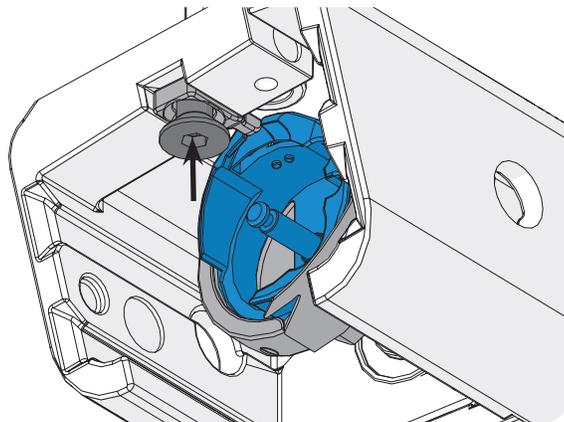


Reinstalling the Hook Holder (Continued)

- 8 Align the **hook holder** with the inside edge of the **positioning guide**, as shown below.



- 9 Tighten the hook holder screw to fasten the hook holder in place. The inside part of the hook assembly should no longer rotate freely by hand.

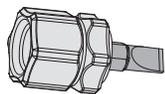


Timing the Machine

Please speak to a Grace Company support technician before attempting these instructions.

Parts & Tools Needed:

Flat-head Screwdriver



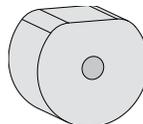
Box 1

T-handle Allen Wrench 2 mm



Box 1

Timing Spacer Tool

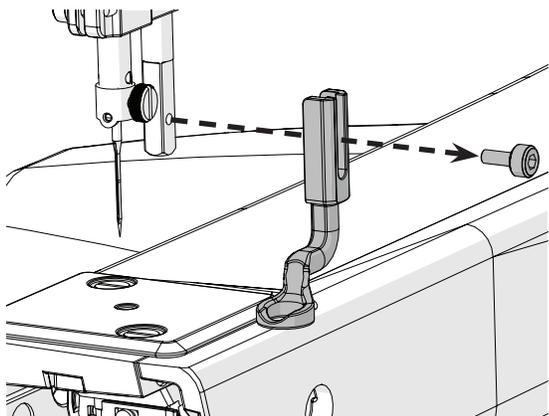


Box 1

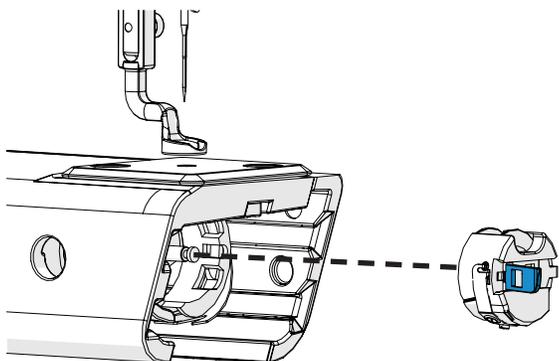
Instructions

Timing your machine aligns the needle and hook assembly so that they are in the correct places during the creation of a stitch. Improper timing can result in damage to the machine and needle, or make sewing impossible. Please consult with a Grace Company support technician before attempting to adjust the timing on your machine.

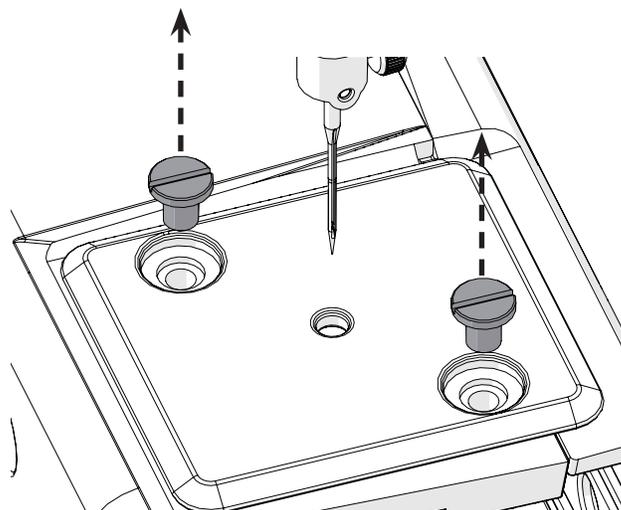
- 1 Turn off the machine.
- 2 Remove the hopping foot for better visibility (see page 64).



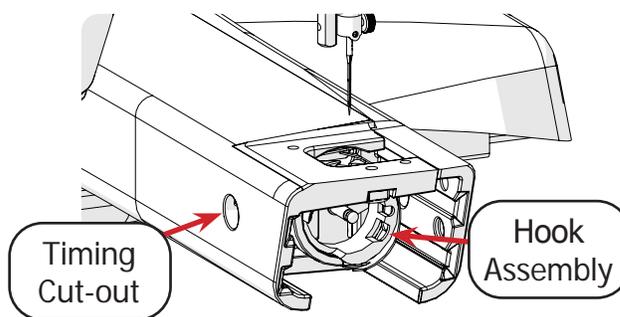
- 3 Remove the needle and replace if bent or damaged (see page 73).
- 4 Remove the bobbin case from the hook assembly (see page 31).



- 5 Remove the needle plate (see page 81).

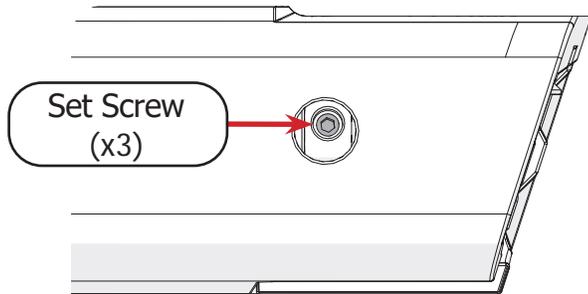


- 6 Look into the machine's **timing cut-out** and turn the hand wheel. The **hook assembly** will rotate.

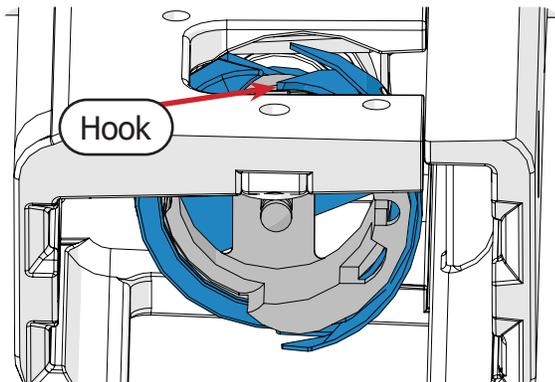


Timing the Machine (Continued)

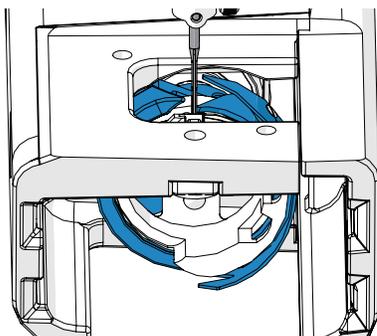
- 7 As each of the **3 set screws** aligns with the timing cut-out, loosen them with the 2 mm Allen wrench.



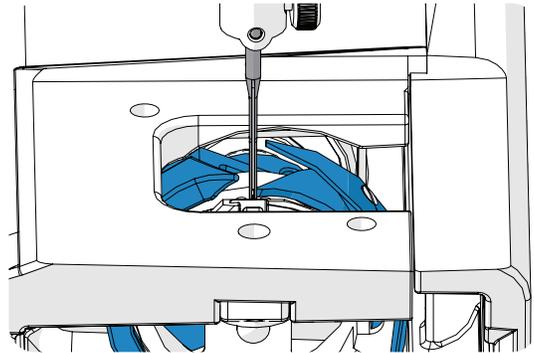
- 8 The **outside** part of the hook assembly (shown in blue) now rotates by hand. Turn the outside part of the hook assembly so that the **hook** is at the top.



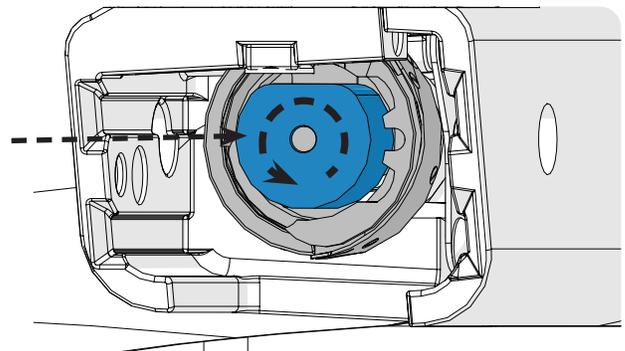
- 9 Hold the Hook Assembly and carefully rotate the hand wheel counter-clockwise to drop the **needle** (shown in gray) to its lowest point. Continue rotating the hand wheel the same direction. The needle should begin to raise up.



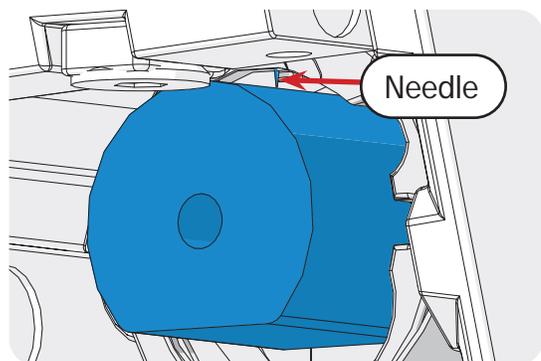
- 10 Stop raising the needle once the eye is about level with the **hook** (shown in blue). Do not continue to raise the needle. If the needle goes too high, start over at step 9.



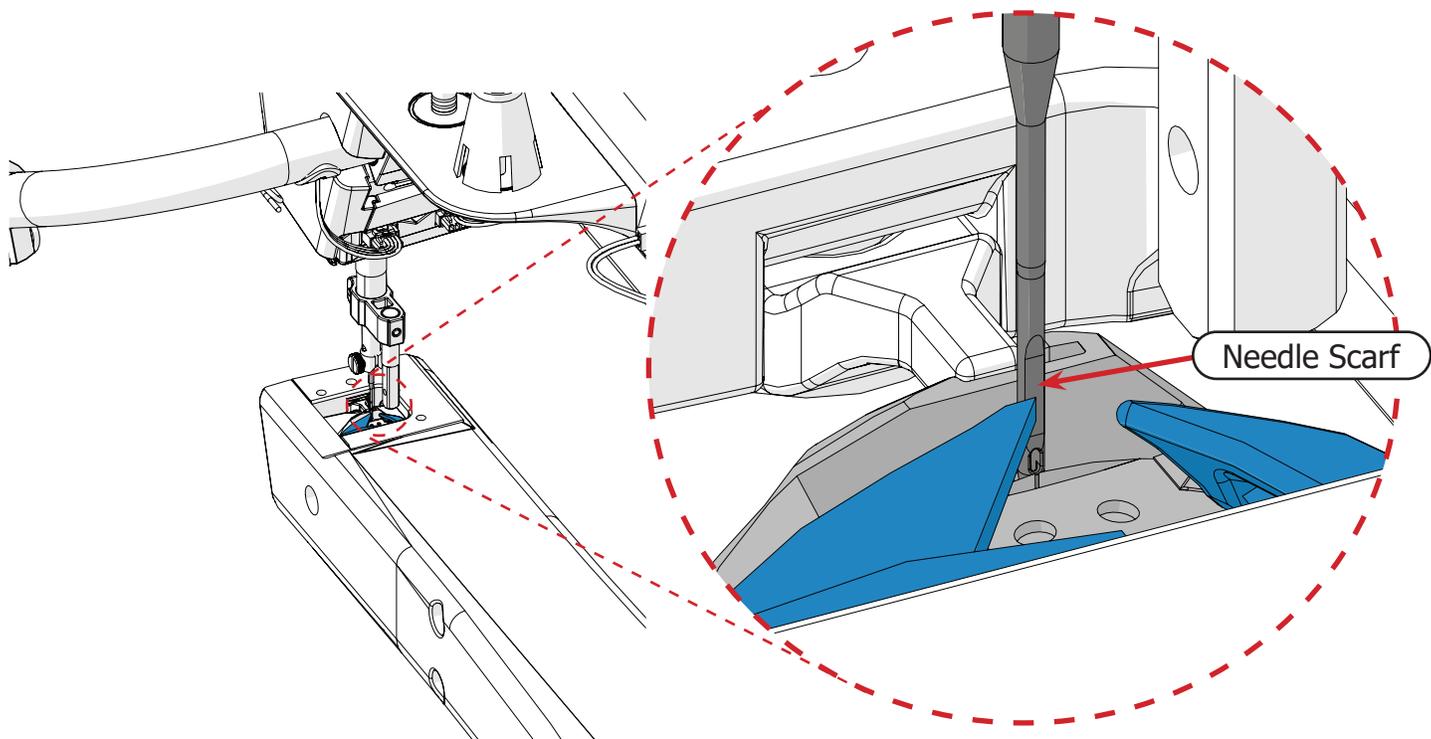
- 11 Slip the **timing spacer tool** (shown in blue) into the hook assembly with the flat side facing up. Then turn the timing tool until the flat side faces down.



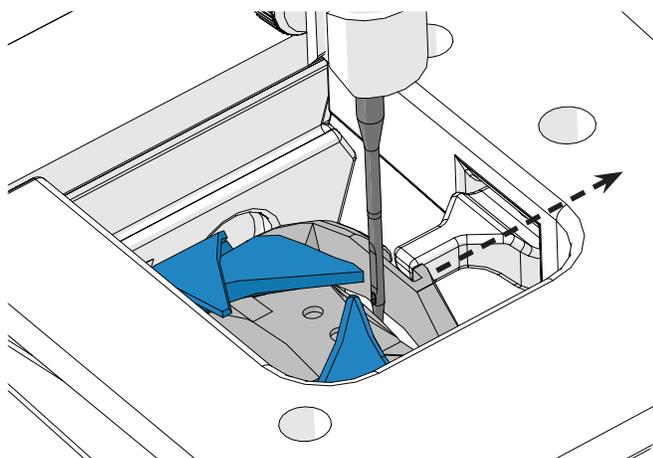
- 12 Turn the hand wheel clockwise to bring the **needle** back down until it rests on top of the timing spacer. Do not let the needle rise to the top before bringing it back down or you will need to repeat steps 8-11.



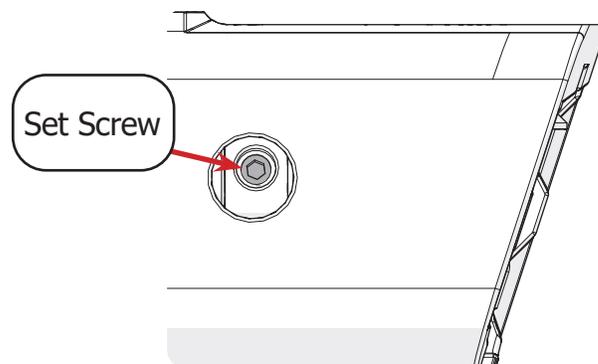
- 13 Position the tip of the **hook** (shown in blue) with the center of the **Needle Scarf** (shown in gray). This is easier to see from the back of the machine.



- 14 Pull the hook assembly toward the front of the machine until the hook is as close to the needle as possible without touching.

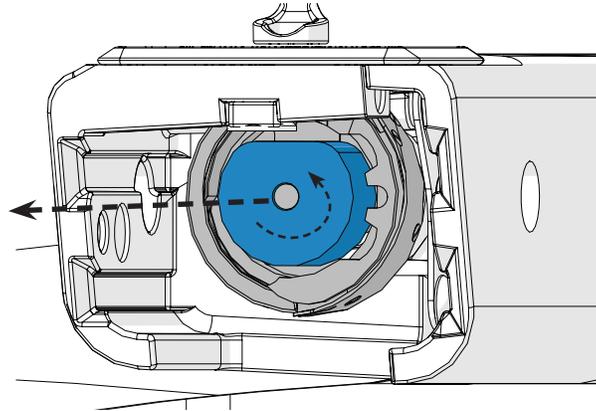


- 15 Use the 2 mm Allen wrench to tighten one of the three **set screws** through the timing cut-out window on the left.

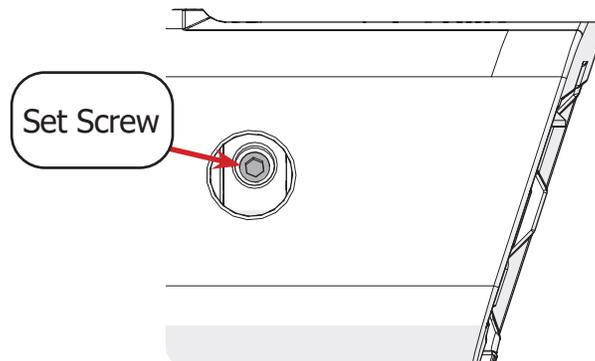


Timing the Machine (Continued)

- 16 Turn the timing spacer tool until the flat side is facing up and then remove it from the machine.



- 17 Turn the hand wheel a full rotation to listen for clicking noises and to ensure the needle does not bend or hit the hook.
- 18 Tighten the two remaining **set screws** through the timing cut-out.



- 19 Replace and align the needle plate (see page 69). Make sure the needle is in the center of the needle plate.
- 20 Replace the bobbin case (see page 31).
- 21 Replace the hopping foot and adjust hopping foot height (see page 67).
- 22 Test the machine and listen for any unusual noises. If there are any skipped stitches, the hook is too far away from the needle. If the thread breaks, the hook is too close to the needle.

Appendix

This section of this manual covers additional information on quilting with your machine.

Choosing Your Needle	page 97
Choosing your Thread	page 99
Choosing Your Fabric and Batting	page 102
Troubleshooting Guide	page 103
Index	page 105

Choosing Your Needle

Using the wrong type of needle, or using a needle that is bent, broken, or blunt, can damage the fabric, the machine, and needle. For best results:

- Use the recommended needle style for your machine (see below).
- Use the needle size appropriate for the weight and type of thread you're using (see below).
- Never use a needle that is dull, bent, burred, or damaged.
- Use multi-directional needles.
- Change your needle after 8 hours of use and at the beginning of each project.

Needle Style

The following are the recommended needle styles for your machine:

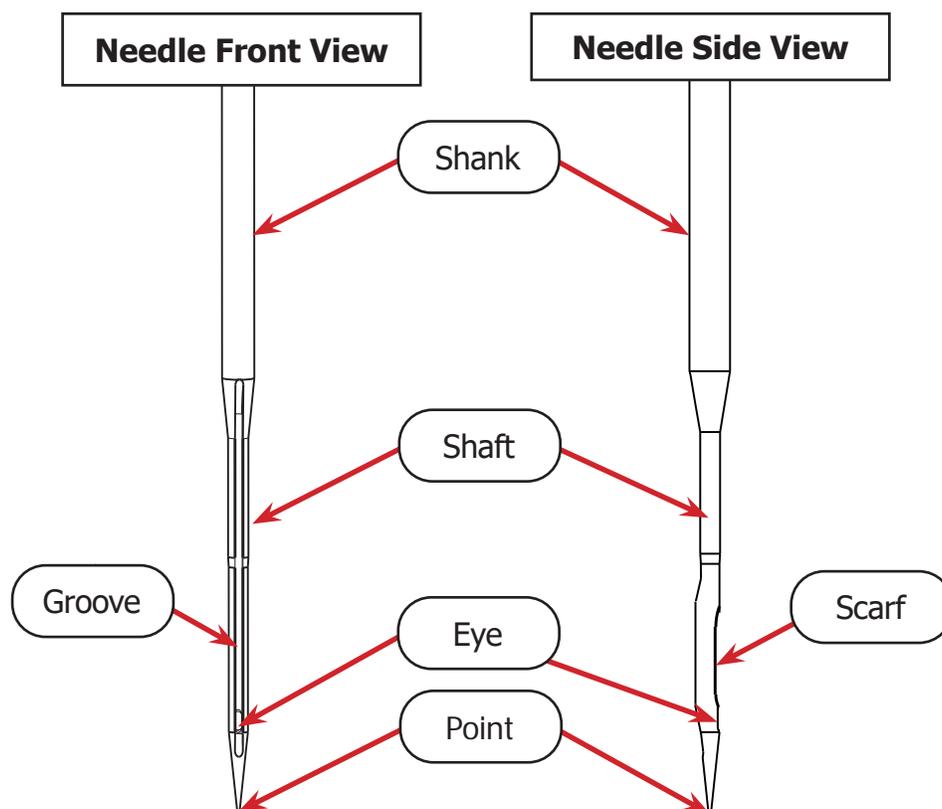
- DPX5 MR
- 134 MR
- 1955 MR

Needle Sizes

Choose the size of your needle based upon the thread you're using. Thicker thread requires a thicker needle. Remember, the thicker the thread, the lower the thread weight (wt.) number.

Needle Size	Thread Size and Type
14 / 90	<ul style="list-style-type: none">• mono-filament• 100 wt. silk• 60 wt. polyester
16 / 100	<ul style="list-style-type: none">• mono-filament• 60 wt. polyester or cotton• 50 wt. cotton
18 / 110	<ul style="list-style-type: none">• 50 wt. polyester• 40 wt. cottons and polyester• 30 wt. cotton and polyester
20 / 125	<ul style="list-style-type: none">• 30 wt. or heavier of any thread

Needle Diagram



- **Shank:** Where the needle bar grasps the needle.
- **Shaft:** The long, narrow part of the needle. Needle size is based upon the diameter of the needle shaft.
- **Groove:** Reaching from the top to the bottom of the needle shaft, the groove allows thread to pass through the fabric more easily and without getting damaged.
- **Eye:** Hole near needle point where the needle is threaded.
- **Scarf:** A cut-away on the back of the needle that allows the needle to fit smoothly within the hook assembly when quilting.
- **Point:** The sharp end of the needle. Choose the type of needle point to fit your project, and always replace your needle once the point is dull.

Choosing Your Thread

Choosing the best thread for your project is just as important as choosing the correct needle. Good thread is strong and can pass the “Yank Test” (see “Task 12 - Threading the Machine” on page 33). It holds its color well over time (colorfastness), and uses long fibers (extra-long staple) that resist pilling or creating lint.

Thread type and size determines not only which needle size to choose and what the thread tension must be set to on your machine, but also how visible the thread is on the project.

For best results:

- Use a cone-style thread unless you have the thread spool accessory for your machine.
- Test the strength of thread before use with the “yank test” (see “Task 12 - Threading the Machine” on page 33).
- Practice using new thread on spare quilting materials to find the ideal thread tension. Write this information down and store it with your thread for later reference.
- Keep thread out of sunlight to prevent fading, and do not store near extreme temperatures.
- Select thread that is ideal for the fabric you’re using (see the chart below).
- Avoid using different thread type for the top thread than you’re using for the bottom thread.

Thread Type Guide

Threads can be multiple strands, called plies, spun together, or it can be a single ply. The fibers that make up the ply can come from many sources, but the most common threads used in quilting are made from cotton, polyester, and silk. The unique properties of each material make some threads better suited for use on some fabrics than others.

Thread Type	Ideal Fabric
Cotton	<ul style="list-style-type: none">• Cotton• Linen• Rayon
Polyester	<ul style="list-style-type: none">• Knit or Stretch• Woven synthetic
Silk	<ul style="list-style-type: none">• Silk• Wool• Basting thread for all fabrics

Thread Size

The thickness of the thread is called the weight (wt.). This number is usually stamped on the edge of the top or bottom of the thread cone. Notice that as the thread becomes heavier and thicker, the weight decreases:

- 60 weight: Very thin, fine thread that will blend in to the fabric.
- 40 weight: Thicker thread that will show up on the fabric.

Note: Choose matching weight and thread type when picking top and bottom (bobbin) threads.

Tip: Not all manufacturers will have the same sizing method for their thread. Threads can be measured by weight, tex, denier, or scaling that is unique to its brand. Take the time to understand how the sizing works for a brand you're considering, and keep a few common sewing rules in mind:

- The thicker the thread, the larger the needle required. A needle that is too thin can shred thread.
- The thinner the thread, the smaller the needle should be. A needle that is too large will cause uneven stitching and can leave holes in the fabric.

Thread Processing

Sometimes thread is processed to change its properties. The chart below lists the processes common to cotton and polyester. No extra processing or treatments are typical for silk.

Thread Type	Processing
Cotton	<ul style="list-style-type: none"> • Mercerized: Treated to improve strength and colorfastness. • Glazed: Waxed or coated to give a polished appearance. The coating may rub off and build up in machine. • Gassed: Exposed briefly to a gas flame to burn away fuzz and lint, giving a smooth appearance.
Polyester	<ul style="list-style-type: none"> • Lubricated: Treated with lubricant to reduce friction. Avoid thread that is oily to the touch. • Bonded: Treated with resin to increase strength. This is typically used for heavy-duty applications, such as upholstery.

Appendix

Choosing Your Thread (Continued)

Our Recommended Thread

Finesse thread is specially-designed for quilting by the Grace Company. It can be used with domestic (sewing) and quilting machines, and comes in 60 colors.

- 100% Polyester, 3-ply thread
- 1,500 yards mini-cone
- 50 wt.
- 110/18 or 100/16 quilting machine needle
- Topstitch 90/14 sewing machine needle



Choosing Your Fabric and Batting

Fabric

Some fabrics are not recommended for use with the quilting machine. Thick fabrics, such as denim or leather, have a lot of resistance that can bend or snap a needle, and misalign or break internal machinery. When quilting, avoid any fabrics that are difficult to pierce, and take care that the fabric layers of the quilt are well balanced .

Batting

To choose the best batting for your project, consider the look and feel of the quilt that you're going for. Batting thickness is measured by its loft. A low loft batting is thinner and lighter, ideal for a quilt with a flatter appearance. High loft batting should be used if a fluffy, full quilt is the goal.

Typically, wool batting is the thickest batting while bamboo is the lightest. Wool provides the most warmth, followed by polyester, and then cotton.

Troubleshooting Guide

Issue	Cause(s)	Solution
Machine won't turn on.	Loose cables	Check that all cables are securely plugged in (page 26).
	Machine is not turned on	Check power button is pressed down on right side (page 26).
	If problem persists, please contact a Grace Company support technician. Call (800) 264-0644 .	
Stitches are skipped.	Damaged needle	Check needle (page 73).
	Machine improperly threaded	Check that all tensioners and guides were threaded correctly (page 33).
	Bobbin wound or threaded incorrectly	Check that the bobbin was inserted the correct direction in the case (page 31).
	Incorrect thread tension	Adjust top thread tension (page 57). Adjust bottom thread tension (page 29).
	Hopping foot incorrect distance from needle plate	Check hopping foot height distance with height tool (page 76).
	If problem persists, please contact a Grace Company support technician. Call (800) 264-0644 .	
Thread is breaking.	Damaged needle	Check needle (page 73).
	Incorrect thread tension	Adjust top thread tension (page 57). Adjust bottom thread tension (page 29).
	Machine improperly threaded	Check guides and tensioners for accidental double-wrapping (page 33).
	Stitching in place too long	Keep machine moving to avoid stitch build-up in one place, or switch to regulated precise quilting mode (page 44).

Issue	Cause(s)	Solution
Thread is breaking.	Bobbin inserted incorrectly	Check bobbin is the correct direction in the case and inserted firmly (clicked) into the machine (page 31).
	Debris on tension discs	Clean the machine (page 62).
	Burred bobbin	Check bobbin for sharp edges. Contact your dealer to replace if needed.
	Needle plate is rubbing needle	Check that needle plate is centered and does not hit needle (page 81).
	If problem persists, please contact a Grace Company support technician. Call (800) 264-0644 .	
Machine is running loud.	Machine and/or hook assembly needs oiling	Oil the machine and hook assembly (page 62).
	Bobbin winder is on	Check that bobbin cam is off (away from bobbin stand).
	If problem persists, please contact a Grace Company support technician. Call (800) 264-0644 .	
Thread is bunching up in hook assembly (bobbin case area).	Bobbin wound or threaded incorrectly	Check that the bobbin was threaded correctly and inserted the correct direction in the case (page 29).
	Machine improperly threaded	Check that all tensioners and guides were threaded (page 33).
	Incorrect thread tension	Adjust top thread tension (page 57). Adjust bottom thread tension (page 29).
	Bobbin case has damaged or missing spring	Check inside bobbin case to see spring. Contact your dealer to replace if needed.
	If problem persists, please contact a Grace Company support technician. Call (800) 264-0644 .	

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