

King Quilter

***Long arm
Quilting Machine***

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First Print

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Warranty

We believe that we have designed and are manufacturing the best long arm quilting machine available. **As you unpack your machine be sure to keep the box and packing materials designed to protect the machine during shipping. Should it become necessary for you to return the machine for warranty work please call us for specific instructions for packing and shipping your machine**

- Your Long arm Quilting Machine has a full labor warranty for one year from the day you receive your machine. We guarantee the machine parts for five years
- The machine must be cleaned and oiled regularly according to the instructions in this manual. Failure to properly maintain the machine will void this warranty.
- Your Long arm Quilting Machine must be plugged into a surge protected electrical outlet. We highly recommend using an Uninterrupted Power Supply (UPS) also known as a Battery Backup. This helps to ensure that you are getting a regulated 110 volts into your machine. See photo below of UPS Battery Backup.
- Should we mutually decide that your machine cannot be repaired using normal communications we will arrange for machine to be returned to the factory.

Should you have a Problem

Please contact your selling dealership they are your servicing dealership.

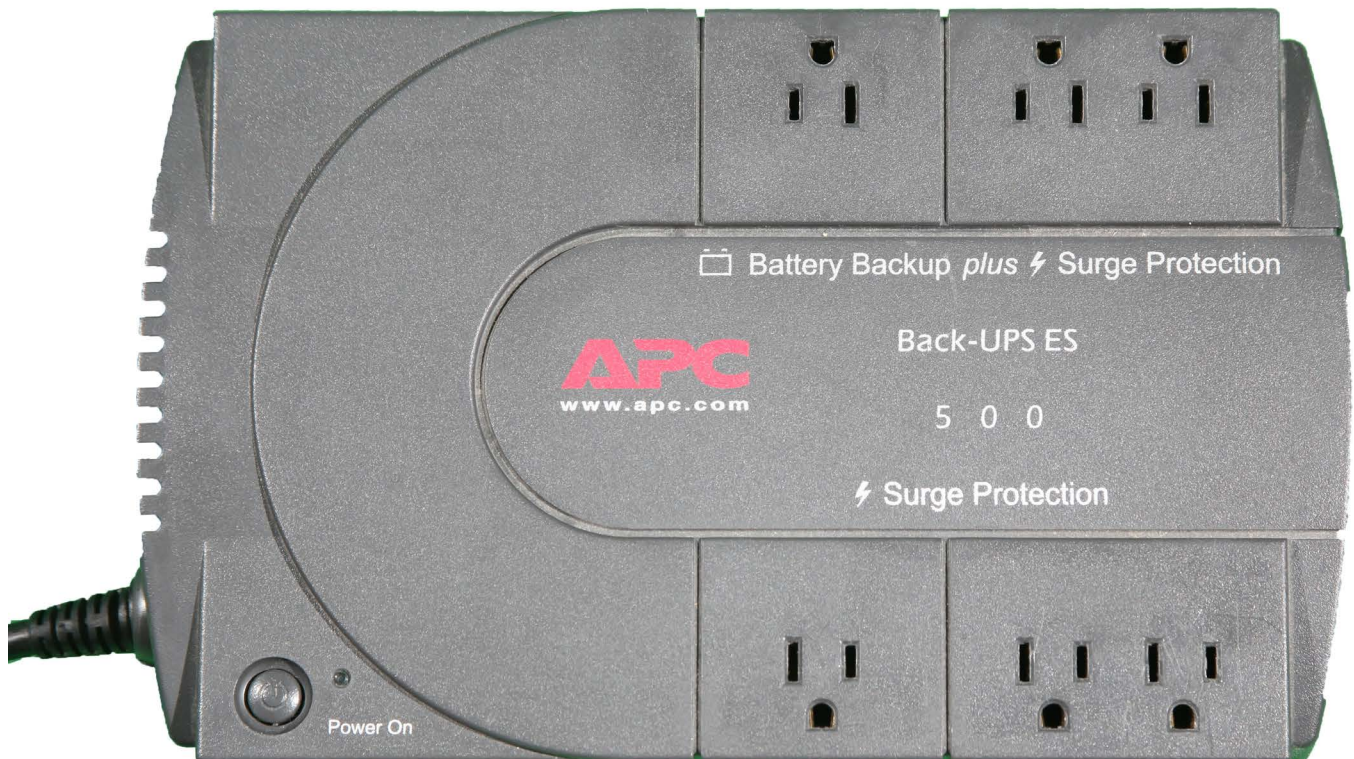
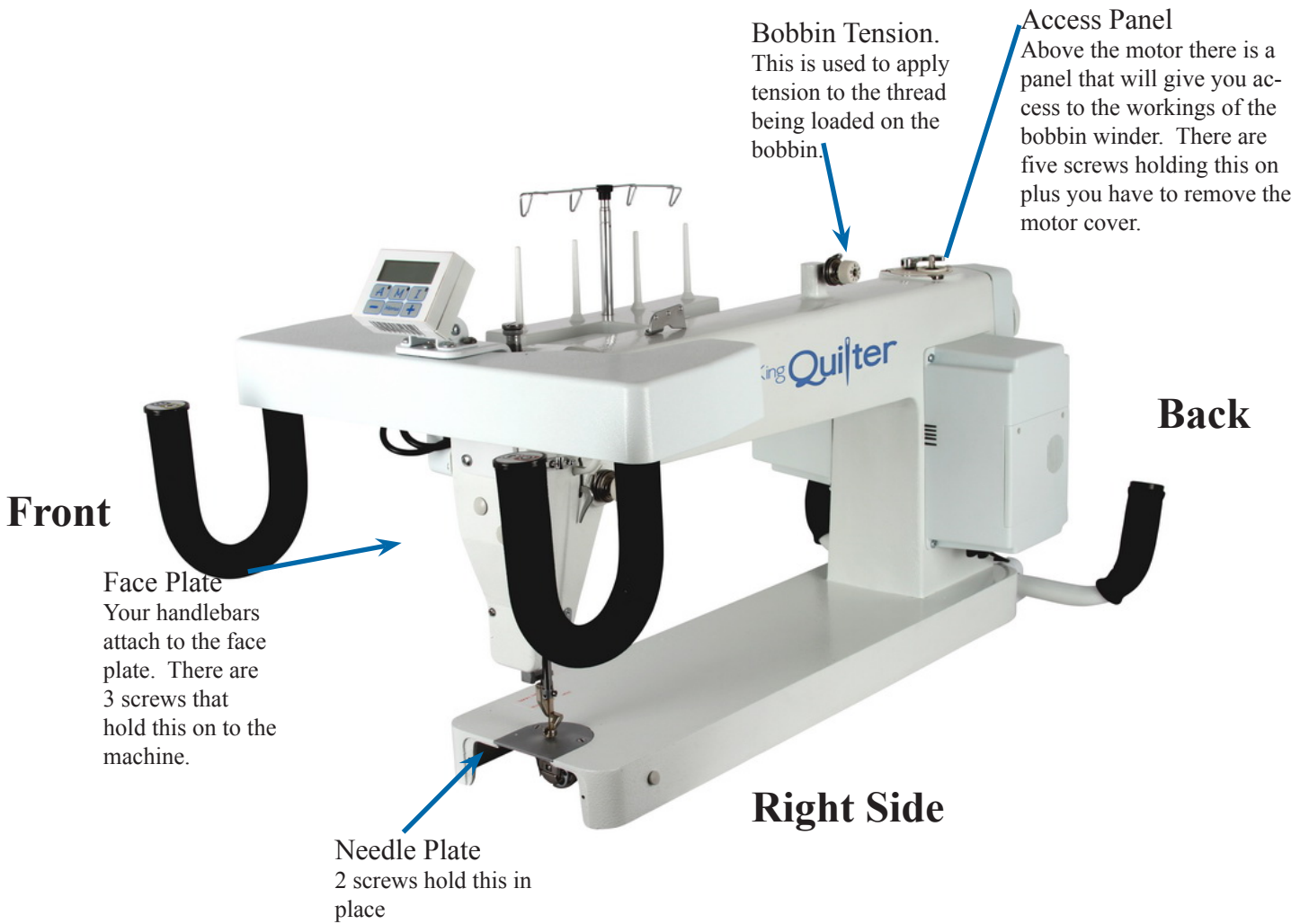


Diagram Showing the sides of the machine

Left Side



Attaching the handlebar

Your Long arm Quilting Machine comes with RAM style set of handlebars which will need to be attached to the front of the machine. These handlebars house the lights. The electronic controls for operating this machine are attached to the top of the handlebar. On the end of each of the RAM horn handles you have some soft touch key pads. These soft touch keys are from right to left start/stop, needle up, needle down and one stitch.

Step 1: Locate your set of handlebars

Step 2: Remove the 4 screws located on the front of the machine above the needle.

Step 3: Position the Handlebars in front of where you just removed the screws.

Step 4: Using one screw you removed from the front of the machine to install in the upper right of the four holes to hold the handlebar in place. You will use the other 3 screws after attaching the rocker arm cover. *See figure 1*

Step 5: Do not tighten the one screw in place as you will need to be able to pivot the handle bar for access to the screws on the side of the faceplate for securing the Rocker Arm cover.

Once you have the handlebars attached to the machine you will need to connect the Control unit onto the handlebar and connect the wires to the machine so that you have a connection with the power supply for the lights and the main controller to control the machine.

Step 1: Using two screws provide for the Control unit attach control unit to the L brackets on top of the handle bars. *See figure 2*

Step 2: Position control unit for easy viewing and tighten in place.

Step 3: Locate the cables which are hanging out of the handlebar for the lights and soft touch keys.

Step 4: Connect to the side of the machine.

Step 5: locate the control unit and connect to the phone jack side of the cable to the control unit on top of the handlebar

Step 6: Connect the other end of the control unit cable to the port on the side of the machine next too where you connected the handlebar cable.

Figure 4 shows cables connected.

With the control unit attached to the handle bars and the handle bars and control unit attached to the side of the machine we can now attach the Rocker Arm cover to the machine.



Figure 1



Figure 2



Figure 3



Figure 4

Attaching the Rocker arm cover

Your Long arm Quilting Machine comes with a cover to place over the rocker arm and the cables coming out of the side of the machine. Care must be taken when attaching this cover to not damage the cables.

To help with attaching the Rocker arm cover you may need to remove three (3) of the screws holding the handle bar on and loosen the fourth screw so that you can swing the handles out of the way of the front two screws used to hold the rocker arm cover in place. Be sure to move carefully to prevent damage to the connecting cables.

Step 1: Locate the rocker arm cover

While checking out the cover notice the two cut outs at the top of the cover. These will go around the casting arms holding the rocker arm parts. Also notice the channel running along the bottom of the cover with the notch at the front for the cables to extend out of the cover to the handle bar and the display/control unit.

Step 2: The two (2) screws to the left of the cables when looking at the cables connected to the side of the machine. Also the two (2) screws towards the front of the machine.

Step 3: Slide the cover into place while ensuring that the cables are in the path and feed out the notch in the front. *See figure 8*

Step 4: Once in place replace the four (4) screws. Only snug into place as if you over tighten the screws they will crack the cover.

Step 5: Use the remaining three screws for the handle bar to secure the handle bar in place. This will ensure you have positive control of the machine when operating.

Note: figure 9 shows Rocker Arm Cover and Handlebar securely in place.



Figure 5



Figure 6



Figure 7



Figure 8



Figure 9

Your Thread Stand

Your Long arm Quilting Machine comes with a four spool thread stand. This thread stand is connected to the side of your machine and can hold bobbin thread you are using to wind onto your bobbins and the top thread you are using to quilt. You can also have a second spool of thread on the stand if you are using two different threads on your quilt. This 4 spool thread stand has a telescoping thread holder which needs to be all the way up when you are quilting to help the thread come off the spool evenly and smoothly.

Step 1: Slide the telescoping thread tree into the hole provided between the tread holders.

Step 2: Using the supplied screw with washer insert from the bottom side to secure the telescoping thread tree in place.

Step 3: On the left side of your machine (the left side of the machine is the side with the motor) you will see two screws not holding anything on yet.

Step 4: Loosen these two screws. You don't need to take them out but they do need to be loose so that you can slide the thread stand over them.

Step 5: On the thread stand you will see two holes on the underside which can be placed over the two screws and then drop into place.

Step 6: Once you have the thread stand in place over the two screws tighten the screws to hold the thread stand in place.

Step 7: Locate the top thread tree guide and the plastic thread cones and position the tree on top of the upright shaft. Next place the 4 thread cones on the 4 post. These help keep the thread spools stable on the thread stand.

Remember to pull the telescoping thread tree to the full up position to use.

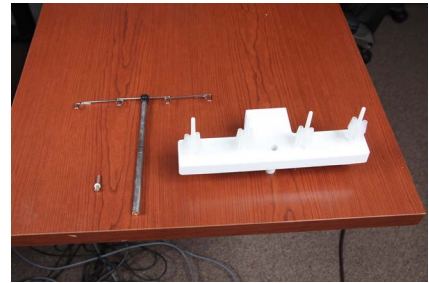


Figure 10



Figure 11



Figure 12

Attaching the Rear Handle Bars

The following instructions will help you install the rear handle bars to your Long arm Quilting Machine

Step 1: Locate your rear handles. *See figure 13*

Step 2: These handles are going to connect to the handle bar knuckles on the back of the machine below the belt guard on the base of the machine.

See figure 14

Step 3: Remove the two screws holding the knuckles on the machine.

Step 4: Position the handle bar in between the two knuckles reattach with the two screws.

Note: ensure you are using the right handle on the right side and the left handle on the left side.

Step 5: Before securing the handle bar, position the handle bar so that you are able to use them and they will not hit anything as you move the machine along the frame.

Note: complete these steps for both sides.

Step 6: Connecting the cables. Each handle has a wire coming out of the handle with a label right (R) or left(L).

Step 7: Connect the right cable to the connector on the bottom of the power box closest to the machine. *See figure 17*

Step 8: Connect the left cable to the connector on the bottom of the power box next to the right one you plugged in already. *See figure 18*

Step 9: Your handle bars will be ready to use when you turn on the machine.



Figure 13



Figure 14



Figure 15



Figure 16



Figure 17



Figure 18

Connecting your Long arm Quilting Machine to you Carriage Assembly (Deck)

You will need to attach the encoders with cables to the carriage. See the instruction for attaching the encoders. These cables are then connected to the back of your machine in the connectors provided on the power box. These cables and encoders are what sense the movement of the machine and transmit a signal to the controller board inside the power box to enable stitching when using the Auto or Idle Stitch mode.

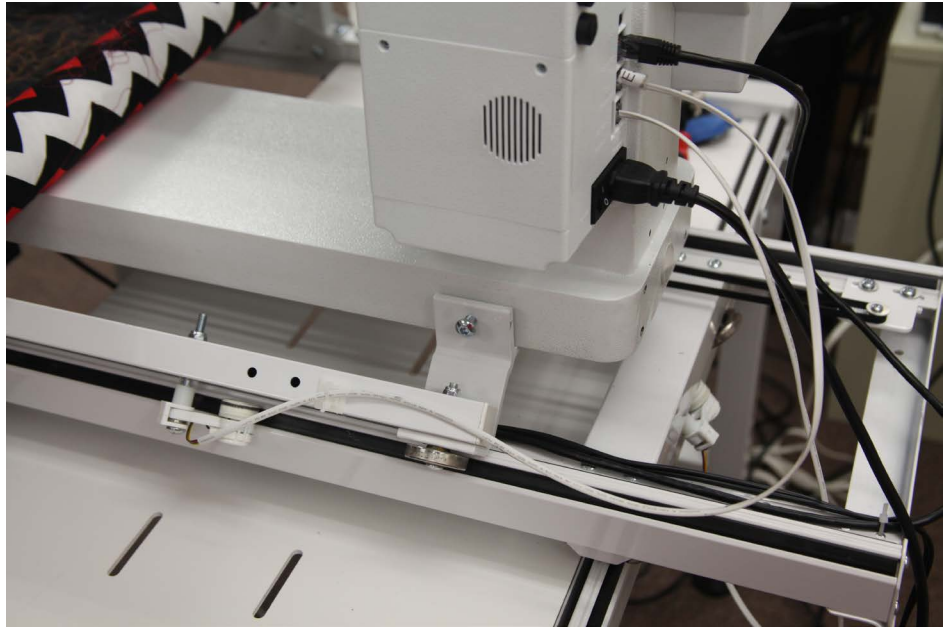


Figure 19

Step 1: Locate the encoders and cables on the carriage. Check them for damage prior to placing the machine onto the carriage. *See figure 19*

Step 2: Place the machine on the upper carriage. Check to ensure the machine is sitting centered on the carriage and not rocking.

Step 4: Locate the upper carriage encoder cable and connect it to the port marked Top Encoder *See figure 19 and 20*

Step 5: Locate the lower carriage encoder cable and connect it to the port marked Bottom Encoder *See figure 19 and 20*

Step 6: On the upper carriage where the machine sits you will find four screws to help secure the machine to the carriage. Use these to secure the machine to the upper carriage.

Step 7: Locate the power cord and connect to the wall and the machine.

Note: Check to ensure nothing is blocking your power cord from moving along the frame. This will ensure smooth operation while quilting.

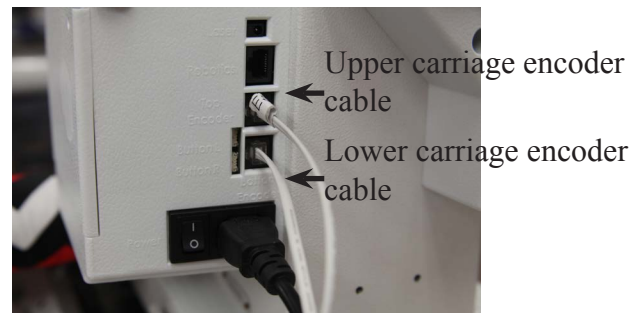


Figure 20

General Operation of the LCD key pad

When you turn on your Long arm Quilting Machine during start up you will see some screens flash by if you watch the display which show you the version and other things. Once you see the screen in Figure 21 you are ready to use the machine.

The controls keys are as follows:



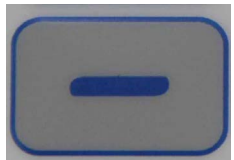
Auto Stitch
Pressing this button activates the Stitch regulation with stop feature



Manual Stitch
Pressing this button activates the manual stitch



Idle Stitch
Pressing this button activates the Stitch regulation without the stop feature



Decrease button
Lowers stitches per inch, speed or change menu options.



Menu button
Opens the Menu



Increase button
Increases stitches per inch, speed or change menu options.

Auto Stitch (Stitch Regulation)

At this point if you want to change the Stitches Per Inch (SPI) then you can press and release the (-) key to decrease the number of stitches or you can press and release the (+) key to increase the number of stitches. (Note: If you press and hold the (-) or (+) keys then you will see the numbers decrease or increase quicker than if you just press and release the (-) or (+) keys) Once you are happy with the Stitches Per Inch (SPI) then you can press and release the Start/Stop key and the LCD will change. You can see on the LCD that next to the Stitch you see the word ON. This means the quilter is ready to quilt and as you move the quilter it will stitch.

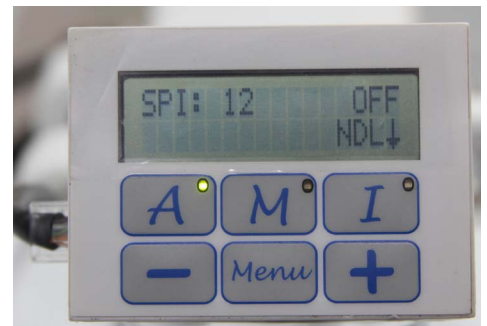


Figure 21

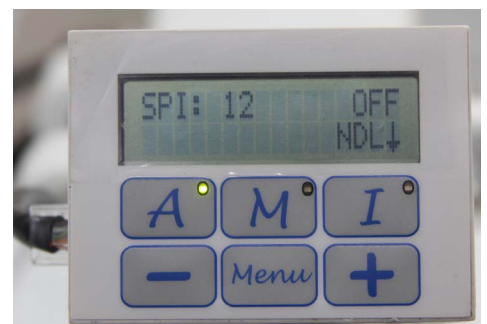


Figure 22

Manual Stitch

If you choose Manual you will be in the manual stitch mode of the machine. Fig 23 shows the LCD screen for the Manual. You will notice you have the OFF just like in the Auto but you have numbers with percentage at the top rather than just a number. Same as with the Auto the (start/stop) key will turn the machine on and you will be ready to stitch unlike the Auto once you hit the (start/stop) key the machine will begin sewing.

Like the Auto you can use the (-) or (+) keys to decrease or increase the speed of the machine. When in the manual mode the machine will not stop stitching just because you stop moving the machine. Stitches will begin to pile up if you stop moving but not press the start/stop button.



Figure 23

Idle (stitch regulation without stop)

Idle stitch gives you the stitch regulation with an idle stitch. Once you press and release the start/stop button the machine starts stitching when you come to a stop the needle continues to stitch at a slow speed, This mode allows for ease in and out of corners. Press and release start/stop button and machine will stop.

The asterisk * shows which feature you are changing. By pressing the "I" you can switch between the SPI and the SPD. Using the + and - key you can adjust the values.

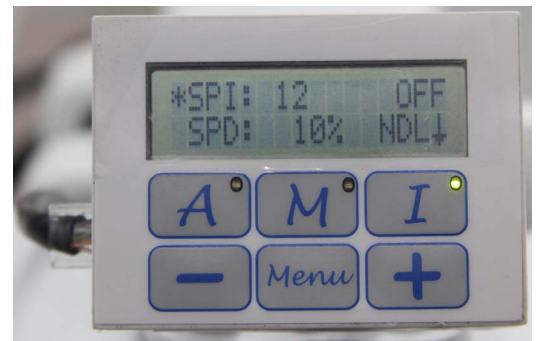


Figure 24

Changing Stitching Mode

To change the stitching mode simply push the corresponding letter button below the display to switch to a different mode.

Press the A button for the Auto stitch mode

Press the M button for the Manual stitch mode

Press the I button for the Idle stitch mode.

The Menu button will cycle through other options.

Stitch mode

White Lights

Black Lights

Laser Port

Encoder Test

Motor/Index Test

White Lights

By pressing the + key you can increase the intensity of the light from 0% to 100%

By pressing the - key you can decrease the intensity of the light from 100% to 0%

The lights change by 20% with each push of the + or - keys



Figure 25

Black Lights

The Black lights are either on or off. Pressing the + key turns them on and pressing the - key turns them off.

Laser port

The laser port is also either on or off. Pressing the + key turns the port on and pressing the - key turns the port off.



Figure 26



Figure 27

Encoders

Encoders shows two sets of numbers. When you are on this display you will see the numbers change as you move the machine and the encoders send a signal to the machine.

Encoder 1 is for the Top encoder port

Encoder 2 is for the Bottom encoder port

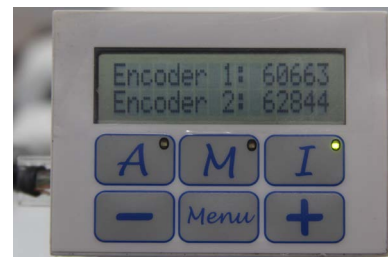


Figure 28

Motor/Index

Here you will see two sets of numbers as well.

Motor will show you if the motor is turning when the numbers increase. To see this change press the needle up button and you should see the Motor index numbers move 5800 - 6000 digits.

Index will show the needle up sensor reading the needle position sensor numbers will change. Index number will increase by one for every full revolution of the hand wheel or press of the needle up key.

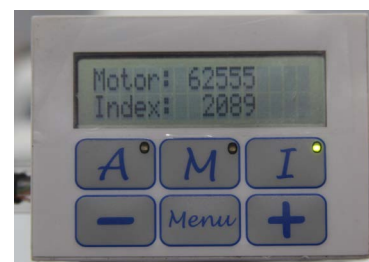


Figure 29

Handle Bar soft touch key pads

At the end of each handle bar is a set of two soft touch buttons.

Right handle bar has buttons for Start/Stop and needle up.

Left handle bar has buttons for needle down and full stitch.

This is the same for both the front handles and the rear handles



Figure 30



Figure 31

What is the Tension Release Lever?

The tension release lever raises the hopping foot and releases the tension on the thread. *See figure 32*

You can watch the tension disc plates open (this is not a huge open gap) as you lift the lever.

NEVER start sewing with the lever up.

There will be no tension on the thread which will result in stitches on the bottom being bad with huge loops and other bad looking stitches.



Figure 32

Tension Release Lever

Adjusting the Height of the Hopping Foot

There are many reasons to adjust the height of the hopping foot. You could be using a thicker batting, quilting a quilt with thicker seams, or just need a little more clearance. You don't want the foot to be too high as that can cause strain on the thread, create flagging of the fabric while stitching, or just be too high if you put a ruler next to it.

To adjust the height of the hopping foot use these steps.

Step 1: Lower the needle into the fabric to get the hopping foot to its lowest position. (close to a seam is a good place then you can tell how high you need to be to clear the seam.)

Step 2: Loosen screw (A) on the side of the hopping foot (B). *See figure 33*

Step 3: Move the foot up or down to adjust for your project.

Step 4: While holding the hopping foot where you want it tighten the screw back down.

Factory setting for this is with needle down a dime should be able to pass below the foot and touch the foot as it passes under. *See figure 34*

Adjusting the Stroke of the hopping foot

Factory setting is in the down position. The reason for less stroke is for better ability working with rulers. Adjustment of stroke is for going over thicker seams.

Note: For this you will need to remove 3 screws from the handlebar and loosen the 4th screw so you can pivot the handlebars to get to the front two screws for the rocker arm cover.

Step 1: Remove the four (4) screws (A) holding the Rocker arm cover (B) in place front left side of machine.

See figure 35

Step 2: Using a wrench loosen the bolt (C) on the link adjusting crank (D) slide up to increase the stroke down to decrease the stroke. *See figure 36*

Step 3: Use your wrench to tighten the bolt (C)

Step 4: For your safety replace the Rocker arm cover (B) prior to use. Using the four (4) screws (A)

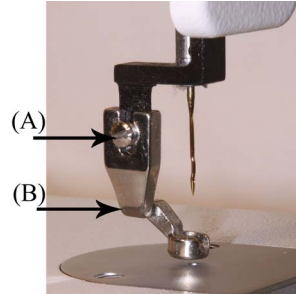


Figure 33



Figure 34

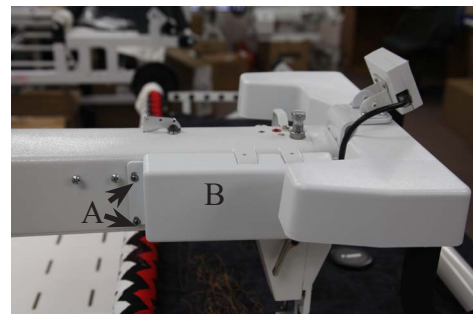


Figure 35

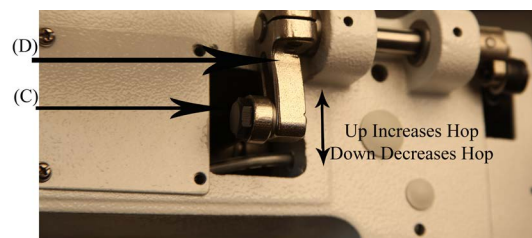


Figure 36

Routine Cleaning and Oiling

Routine cleaning and oiling is very important to the longevity of your quilting machine. Brush out the fuzz from around the hook and foot. Change your needle regularly to avoid thread breakage, tension problems and needle breakage. A worn needle can mean skipped stitches, shredded thread and a weakening of the needle itself. These things can lead to stitch quality issues.

Lint has a tendency to build up in the bobbin case. A tiny amount of lint can cause poor stitches. Check the bobbin case each time you change the bobbin to keep it clean. We suggest using a soft bristle brush to wipe out the bobbin case and the bobbin area. Canned air only blows the lint around. By using a soft bristle brush you collect the dust on the brush. Occasionally, place a drop of machine oil on a cotton swab to wipe out the bobbin case.

Keep your table clean of dust and oil. Clean the bars and carriage regularly for smooth movement.

Oiling is extremely important to the longevity of your quilting machine. Failure to oil your machine regularly can void your warranty.

The one oiling spot marked with red arrow is marked with red paint on your machine. An oil bottle is included with your machine. The one oiling spot marked with a blue arrow contains a dip stick. Remove the dip stick by lifting it up with a finger nail or screw driver. Place drops of oil in this same hole only if you find no oil on the dip stick.

Recommended oiling:

After every finished quilt place 3 to 4 drops of oil at the location with a red spot towards the front (needle side) of the machine. This is located on the top of the machine. *see figure 37* oil spot on top

The other location is the oil dip stick found just behind the needle. At this time make sure oil is present on dip stick. If not add 3-4 drops of oil where you pulled the dip stick out. Run machine to lubricate use a clear high grade sewing machine oil. (Note: the machine pictured here is before complete assembly from factory; your machine has more components attached.)

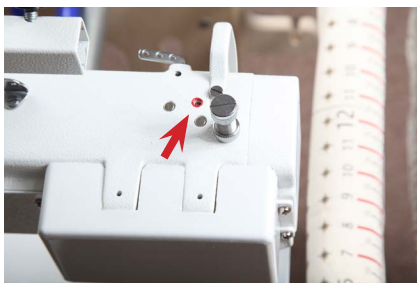


Figure 37 Oil Spot on top



Figure 38 Oil dip stick lifted



Figure 39 Oil Reservoir location

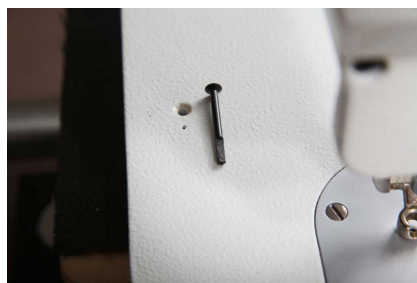


Figure 40 Oil Dip stick out

Bobbin Winder and Bobbins

A bobbin winder is included with your machine. The thread on a properly wound bobbin should be snug and have even layers of thread. A sloppy or mushy wound bobbin will result in poor stitch quality.

How do I wind a Bobbin?

Step 1: Insert an empty bobbin on the bobbin winder spindle.

See figure 41

Step 2: Place a cone of thread on the holder.

Step 3: Bring the thread up through the guide over the cone of thread. *See figure 42*

Step 4: Insert the thread through the top guide hole on the bobbin tension post, then around the tension disk and through the bottom thread guide. *See figure 43*

Step 5: Wrap the thread around the bobbin clockwise three or four times

Step 6: Push trip mechanism forward until it snaps into position

See figure 44

Use step 7 if you plan to quilt while your bobbin is winding. or use step 8 if you are winding bobbins without quilting.

Step 7: Bobbin winder will start winding the bobbin once you press the start/stop key. You can quilt while your bobbin is winding once it is full it will stop.

Step 8: If you wind your bobbin only (When not quilting) ensure that you do not have thread in the needle to prevent jams. Also remove the bobbin and bobbin case to prevent damage. Select Manual stitch mode, then press and release the start/stop button. Once the bobbin is full press and release the start/stop button again to stop the machine. **Note: The Needle will continue to move up and down while you are filling the bobbin.**

The bobbin will fill until the trip mechanism is pushed out by the thread. It will then disengage the wheel. The bobbin should fill to just below the rim. Having the bobbin too full will cause tension problems.

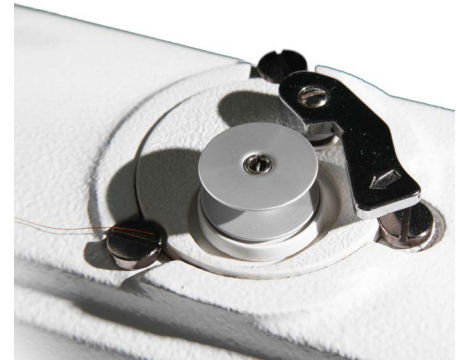


Figure 41

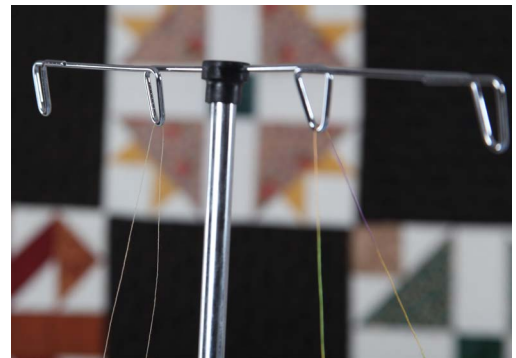


Figure 42



Figure 43



Figure 44

Check the tension of the bobbin by holding the loaded bobbin case in one hand. With one hand under the bobbin case, hold the tail of thread and watch as the thread flows out of the bobbin case. A slight bounce should cause the bobbin case to slide down the thread. If the thread slides out of the case as you pick it up, it needs more tension. If it barely moves down the thread or doesn't move at all, it needs less tension.

See figure 45

To adjust the tension: *See figure 46*

Use a small screwdriver to turn the largest set screw on the bobbin case to adjust tension.

Make very small adjustments.

Be very careful not to remove the screw as it is very small and difficult to find if lost.

Remember, righty (clockwise) tighty, lefty (counter clockwise) loosey.

To place the bobbin into the machine:

Step 1: Insert the bobbin into the bobbin case. It does not matter which way you put the bobbin in but once you have it one way just keep doing it that way.

Step 2: Holding the bobbin case pull the thread through the slot. *See figure 47*

Step 3: Draw the thread down and under the tension spring, making sure the thread is in the highest position of the bobbin case. *See figure 47*

Step 4: Place the bobbin case in the machine. Always listen for the pop as it engages in the machine. *See figure 48*

We suggest using a soft bristle brush to wipe out the bobbin case and the bobbin area. Canned air only blows the lint around. By using the soft bristle brush you collect the dust on the brush.

Use a business or index card to clean under the tension spring on the bobbin case *see figure 49*

Each day before you start quilting, unthread your machine past the take up lever and remove the bobbin case, place a small drop of oil on a Q-tip and use this to clean out the fuzz and lint. Place a drop of oil in the bobbin hook area. Turn your machine on to run at the slowest setting. This will ensure that your race and hook are running smoothly.

TIP: Lint has a tendency to build up in the bobbin case especially with cotton threads. A tiny amount of lint can cause a huge headache! Check the bobbin case each time you change a bobbin to keep it clean.



Figure 45



Figure 46

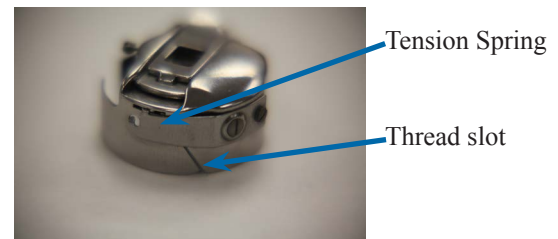


Figure 47



Figure 48



Figure 49

Threading overview with names

This is a diagram of the front side of your Long arm Quilting Machine

This is the side that faces the fabric. The back of your machine has the electrical outlet and stitch regulator connectors.

The numbers have been assigned in threading order.

See figure 50

1. Upper Thread Guide
2. Three Hole Thread Guide
3. Tension assembly disc
4. Check Spring
5. Silver Angle Bracket
6. Thread Guide
7. Take Up Lever

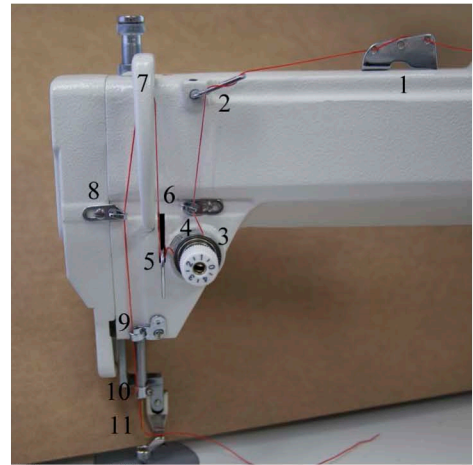


Figure 50

8. Thread Guide
9. Thread Guide
10. Thread Eyelet above the needle
11. Needle

Threading Your Long arm Quilting Machine

Your Long arm Quilting Machine is capable of sewing with many types of threads. One thing to keep in mind is this machine is an industrial machine so very light threads will be harder to use than the more traditional machine quilting threads. Use of the other threads is alright as long as you adjust the tension and slow down. These machines are test sewn with Superior King Tut thread which has a long staple and is a machine quilting thread. When we are at quilt shows we use the King Tut on top with a So Fine on the bottom. The reason for this is two threads of equal size will ride on top of each other and fight rather than to interlock. When using a smaller thread in the bobbin you can get more thread on the bobbin and the threads will interlock faster and with less fighting as the smaller thread will nestle right down into the twist of the larger thread creating a better locking of the stitches.

Lets get started threading the machine:

Step 1: Place a cone of thread on the thread holder.

Step 2: Pull the thread through eyelet above the cone of thread. Make sure to use the eyelet directly above the cone of thread. *See figure 51*

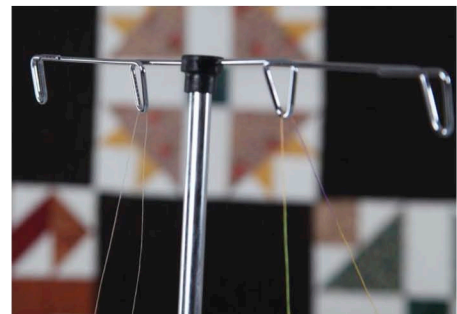


Figure 51

Step 3: Thread upper thread guide as show in figure 52 (if you use all three holes it will add drag/tension to the thread)



Figure 52

Step 4: Weave thread as shown on the three hole thread guide. (if you use all three holes it will add drag/tension to the thread)



Figure 53

See figure 53

Step 5: Take thread between the two tension discs from back to front all the way around. *See figure 54* (release the tension on the tension disc using the tension release lever. This will help to ensure your thread gets between the disc easier.)

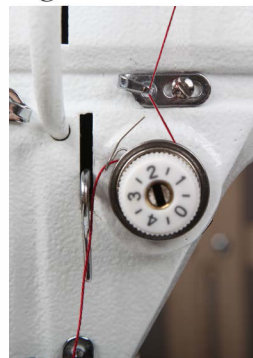


Figure 54



Figure 55

Step 6: While holding the thread up over the top of the tension hook the check spring. The check spring should come down as you pull thread.

Step 7: Thread now needs to run under the silver angle bracket *See figure 55* for details.

Step 8: Now bring the thread up to thread guide #6 above the tension assembly. You will be able to slide the thread into this thread guide. *See figure 56*

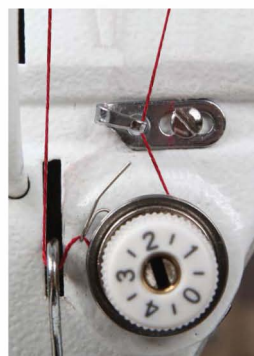


Figure 56



Figure 57

Step 9: The thread will now be threaded through the take up lever from the back towards the front. *See figure 57*

Step 10: Now bring the thread down the front of the machine snapping the thread into thread guide 8 and thread guide 9 on the *Figure 56* way down to the needle. *See figure 58 and figure 59*

Step 11: The thread will now go into the Thread eyelet above the needle. *See figure 60* This is a hole and you will need to thread this spot.

(TIP: Use a dental floss threader to thread the guide above the needle. The threader will also help thread the needle.)



Figure 58

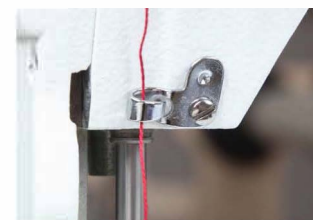


Figure 59

Step 12: Thread the needle from the front to the back of the needle. *See figure 61*

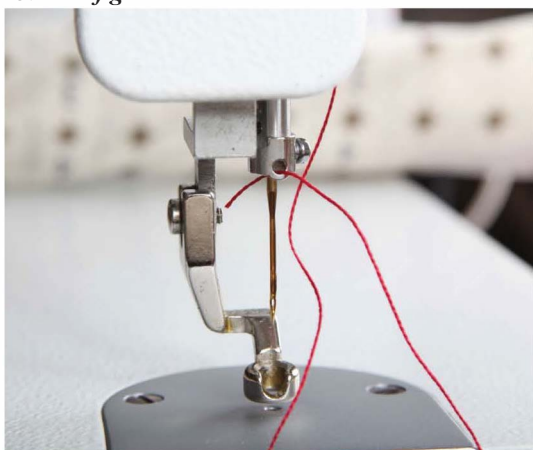


Figure 60



Figure 61

How do I change the Needle?

A 134RSAN needle (size 18) will be installed on your Long arm Quilting Machine from the factory. When it is time to replace the needle you can easily install one. Be sure the power switch is off on the machine. Remove the bobbin case.

To remove the needle use the smaller screwdriver included with your machine.

Step 1: Loosen the screw just above the thread guide on the needle bar; the needle should fall out as you loosen the screw.

Look closely at the needle. Your home sewing machine needle shank (top of the needle) has a flat side. The top of the long arm machine needle is round. On the point end of the needle there is a scarf, or notch, in one side.

The scarf must face the back of your machine.

The long groove at the eye of the needle faces you as you insert the needle.

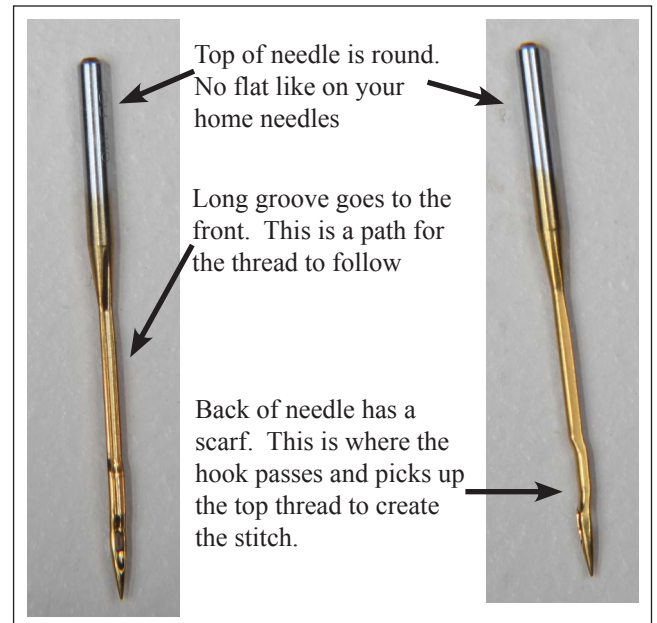


Figure 62

Why does the scarf go to the back of the machine?

When the needle goes down through the fabric into the bobbin case, the hook comes around behind the needle to pick up the thread. The scarf has to be there to provide a way for the hook to get between the needle and the thread in order to pick up the thread.

Step 2: Place the new needle up in the slot, **making sure the needle is up in the needle bar as far up as it will go.** Make sure the scarf is facing the back of your machine. Tighten the screw on the needle bar while holding the needle up.



Make sure before using your machine that you can see the needle through the hole on the side of the needle bar and the needle is pushed as far up as it can go.

TIP: Use the old needle to hold the new needle in place while you tighten the screw. By placing the point of the old needle into the eye of the new needle you can see how straight you are placing the scarf of the needle.

Before you turn your machine on go to the back of the machine and turn the hand wheel a complete turn making sure the needle goes down in the center of the throat plate and the hook in the bobbin area rotates with the needle smoothly. Put the needle down as far as possible. In the bobbin area, you should be able to see you the eye of the needle. When the hook rotates it picks up the thread at the back of the needle then the top thread pulls the bobbin thread up to create a stitch. The scarf must face the back of your machine.

How do I make adjustments to make the perfect stitch?

Understanding how your long arm machine makes a stitch will help you make the proper adjustments to make the perfect stitch. The technique all long arm machines use to make a stitch is basically opposite of the home sewing machine. The home sewing machine is designed to press together two layers of fabric and sew while the fabric is held in place by the presser foot. Long arm machines are designed to press and sew multiple layers together while the machine head is moving. The difference is that there is practically no needle deflection on a standard sewing machine and a large amount of needle deflection on the long arm. The higher the tension, the more the needle will deflect. Another cause for the needle to deflect on a standard machine is the type of fabric being sewn. A tightly woven fabric tends to force the needle in different directions as it penetrates the fabric. This type of deflection depends greatly on the type of needle and type of point you use, such as a ball point or sharp point.

Needle deflection, what is needle deflection? What causes needle deflection? How is needle deflection related to the stitches on my quilt?

On a long arm quilting machine a stitch is mechanically created the same as a home sewing machine except the quilter is the feeddog moving the machine head over the fabric. The hopping foot presses the fabric together tighter and quicker than a home sewing machine presser foot because the fabric must be able to slide between the foot and the needle plate as the machine is sewing. This means that the machine is moving while the needle is in the fabric. The worst thing for a needle is to be in the fabric while the machine is moving which bends the needle, creating needle deflection

Good stitches will interlock in the batting between the quilt top and backing. In real life, this goal is rarely achieved. For this reason, you need to be aware that you will have “pokies” if you use different colors of thread on top and in the bobbin. Pokies are where you can see tiny dots of the contrasting thread where the bobbin catches the top thread. If there is slightly more tension on the top than on the bottom, then you will see the pokies on the top side of the quilt. If the greater tension is on the bobbin, then you will see the pokies on the back of the quilt. If the pokies are objectionable to you, use the same color thread on both top and bottom.

TIP: *A general rule of thumb is that if the stitch looks bad on the top it is the bottom tension. If the stitch looks bad on the bottom it is the upper tension. The upper and lower threads play tug of war with each other.*

Tension, Tension, Tension

This probably causes more problems than anything else. You need correct tension on the top and bottom threads but you also must have correct tension on the quilt held between the bars. You should be able to gently rock the belly bar where the backing fabric is attached. This allows enough movement of your quilt layers for the needle to penetrate and make good stitches.

Before you start making adjustments to your machine ask yourself, “What changed?” If your machine was stitching great and all of a sudden it has loopies on the back or puckers, “What changed?” Did you just change the bobbin? Did you just lift the take up bar? Did you lower the take up bar after finishing your last quilt? Did you recently change the needle? Did you just roll the quilt?

If the take up bar with the quilted portion of your quilt is too high, it will result in poor stitch quality. You need a finger tip space between the quilt and the machine bed. Higher will result in poor stitch quality. Lower and the quilt will create a drag on your machine’s movement.

Look at your bobbin, a sloppy wound bobbin will not create a good stitch. Make sure that the threads on the bobbin are snug and evenly wound. Check to see if there is a piece of lint in the bobbin case.

Tension Trouble shooting checklist

- Is the side tension lever down?
- Have I oiled my machine regularly?
- Is the quilt too tight on the frame?
- Is the thread coming off the cone freely?
- Has your thread jumped out of the tension discs?
- Check your threading. Has anything been missed or has the thread flipped itself around something increasing your tension?
- Is the hopping foot too high or too low?
- Is your take up bar too high? Did you lower the take up bar after your last quilt?
- Do you need to change your needle?
- Is your needle in properly?

Top Thread Breaking

- Check to see that your thread is coming off the spool freely. The thread guide is centered over the spool and has not developed any burrs or catches.
- Check to see if the thread has looped itself around the spool pin.
- Check to see if the needle is in correctly, with the scarf facing the back of the machine.
- Have you recently changed the needle? Is it as high as it will go in the needle bar?

The Stitch Regulator does not keep up with me? Just like driving your car you need to make controlled starts and stops, practice being consistent in your movements.

Eyelashes

Eyelashes on the back of the quilt can be caused by too little top tension. Turn the thread tension disk clockwise ¼ turn. Make small adjustments. Repeat until stitch quality is good. Remember the upper and lower thread play tug of war with each other.

Loose Top Stitch

Is the tension lever handle down? It lowers the hopping foot and applies the tension disk.

Is the bobbin thread inserted in the slot of the bobbin case?

Adjust the tension disk small turns clock wise. Repeat until stitch quality if good.

Quilt Top Puckers

Is your backing fabric stretched too tight? While the backing fabric needs to lie flat and without wrinkles, stretching it too tight can make the quilt top pucker. After stitching and releasing the backing fabric the top will pucker.

The top tension is too tight. Adjust the tension disc small turns counter clockwise. Repeat until stitch quality is good.

Stitches are Skipped

Skipped stitches leave needle holes without thread while large and small stitches in regulated mode means the encoders are not picking-up the signal of your movements because of lint or thread stopping or slowing the reading.

First, check to see that your machine is threaded correctly. Look at the check spring, does the thread lay in the check spring? When properly threaded the check spring will move up and down as the machine is stitching and the thread is flowing freely.

Check the needle. Be sure it is all the way up into the shaft and the scarf is toward the back. If it has been used for some time, replace the needle. A blunt needle will make a popping sound as it penetrates the quilt sandwich.

Machine Drags Making it Difficult to Move

Check to make sure the quilt on the take up bar is not dragging on the bed of the machine. A finger tip distance between the take up bar and the bed of the machine is all that is necessary. Elevating the take up bar too high can cause loopies on the back. Look for lint or thread that might be snagging as you move the machine.

Difficult to Control the Movement of the Machine

Check for lint or other debris on the track and bars. Sometimes the smallest pieces of thread create the biggest headaches.

Replacing the Fuse

For protection of the power supply and the electronics the power supply has two fuses. It has an 5 amp power fuse and 10 amp motor fuse. These two fuses are located on the back of the power supply box on the right side of the machine.

To Replace this fuse follow these steps

Step 1: Locate the two round fuse holders on the backside of the power supply box above and too the left of the power switch.

Step 2: Using a small flat tip screw driver gently twist the cover off the fuse holders

Step 3: Replace the bad fuse with a correct size new fuse.

Step 4: Replace the fuse cover back into the fuse holder.

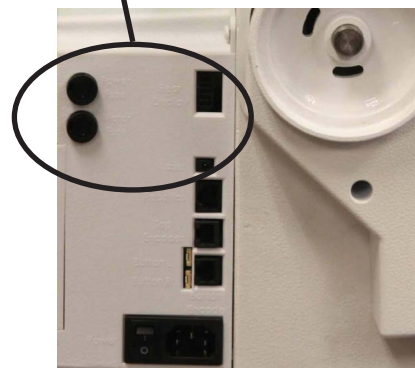


Figure 63

Check spring replacement/Tension Knob

From time to time you may need to replace the check spring. We will use a series of photos to help you.

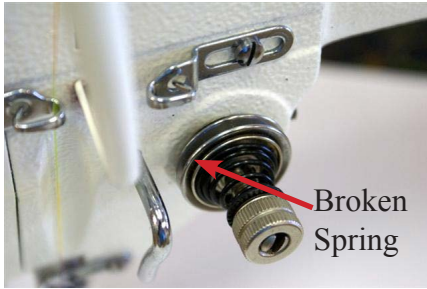


Figure 64

Tension Assembly with Broken Spring.
(old tension knob)



Figure 65

Tension Assembly with good
spring (new Tension knob)



Figure 66

Screw on inside of machine loosen
only. **DO NOT REMOVE**



Figure 67

Remove assembly from machine
Be careful of release pin



Figure 68

Machine with tension assembly re-
moved

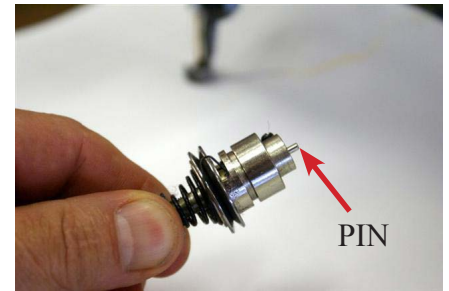


Figure 69

Tension assembly out of machine
DO NOT LOOSE PIN

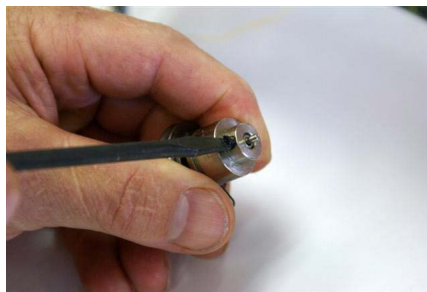


Figure 70

Loosen screw only
DO NOT REMOVE



Figure 71

Remove tension assembly from barrel

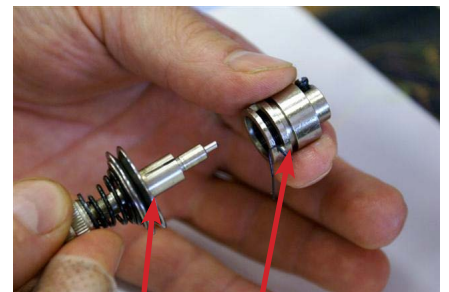


Figure 72

Tension assembly, Barrel



Figure 73

Remove spring



Figure 74

Spring Removal



Figure 75

Spring Removed

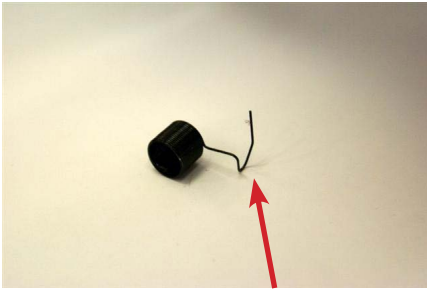


Figure 76
New Spring, This tail is what was broken



Figure 77
Insert the new spring



Figure 78
Twist while inserting the new spring

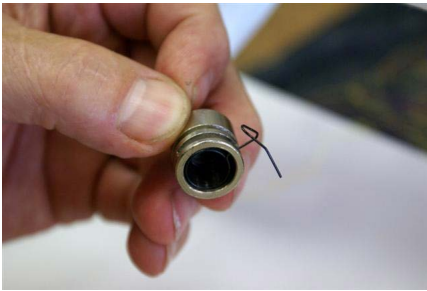


Figure 79
New spring in place



Figure 80
Insert the tension assembly back into the barrel. REMEMBER DO NOT LOOSE THE PIN



Figure 81
Insure that you are all the way in



Figure 82
Give the tension assembly a twist until you feel resistance on the check spring

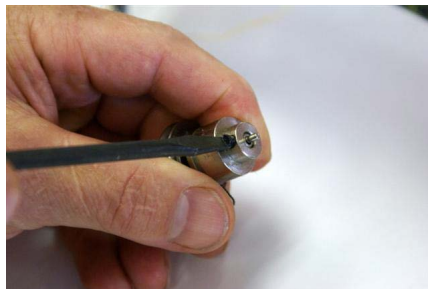


Figure 83
Tighten screw. Make sure the pin is still there.



Figure 84
Place the assembly back into your machine



Figure 85
Once in insure that your check spring is at 11:00



Figure 86
Press in and notice the tension disk opens



Figure 87
Release and the disk will close; this is the proper place for your tension assembly



Figure 88

Tighten screw on your machine



Figure 89

Tension assembly back in place with new check spring at 11:00



Figure 90

For fine adjustment of check spring insert screwdriver turn clockwise for more tension

Machine will not sew. I can not turn the hand wheel

No matter how hard you try to keep the bobbin area free of loose threads and lint we sometimes get a jam. Most jams start with the needle down as the jam is because something gets into the bobbin race. The bobbin race is a part of the bobbin hook which keep the hook rotating smoothly and no wandering as it rotates. **Don't panic this can be cleared it just sometimes take some work.**

Step 1: Turn the power off

Step 2: Remove the belt guard so that you can get a good grip on the hand wheel.

Normal sew rotation if you are standing at the back of the machine looking at the hand wheel is counter clockwise. If you turn the machine counter clockwise you will force what ever is jamming the machine deeper into the bobbin race.

Step 3: Rotate the hand wheel clockwise to back the jam out of the bobbin race. (This may take some work to get it worked free.) See figure 91

Step 4: Normally when you get it backed up it will fall out and you will be able to make a full rotation with the hand wheel.

Once it feels free take the needle plate off the machine and give it a good cleaning in the bobbin area. Prior to putting the needle plate back on rotate the hand wheel counter clockwise (normal machine rotation)

While rotating the hand wheel by hand ensure that you have free movement of the machine. If everything is working well you can put the needle plate back on and put the belt guard back on, You will be ready to start quilting again.

Figure 92 shows thread caught
Figure 93 show the race



Figure 91



Figure 92

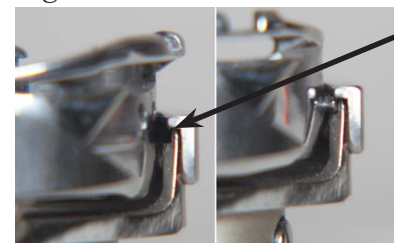


Figure 93

The Race is this small space here on the hook assembly

Timing between needle and rotating hook

If you need to adjust the timing of the machine follow these steps to help get the proper timing on your machines.

Step 1: Remove the two needle plate screws from your machine and set the needle plate to the side

Step 2: Remove the two screws on the protection cover which attach it to the face plate of the machine.

See figure 94

Step 3: Remove the three screws holding the face plate to the machine. Remove the face plate and set this part aside.



Figure 94

Step 4: Check the protection flange of the position bracket (A). This should be engaged in the notch (B) of the bobbin case holder. (D) in the drawing shows the set screw to adjust hook timing. *See figure 95*

Step 5: Turn the hand wheel to locate the needle to its lowest position. Note: correct needle position is when you can see a small portion of the eye of the needle. *See figure 96*

Step 6: If the needle is not stopping in the correct position you will need to proceed to the next step. If it is in the correct position move to step 9

Step 7: Loosen Needle bar connecting screw (A) This will allow you to raise and lower the needle bar for correct location. NOTE: CHECK ALL PHOTOS BEFORE MAKING ANY ADJUSTMENTS *See figure 97*

Step 8: Once you have the needle in the correct location tighten Needle bar connecting screw (A) to prevent the needle bar from moving out of position.

Adjusting rotating hook point timing with needle

Step 9: Turn the hand wheel counter clockwise to locate needle to its lowest position.

Step 10: At lowest position turn the hand wheel Counter Clockwise to raise the needle 2.5 mm (1/8") *See figure 97*

Step 11: Hook point should be just above eye of the needle. *See figure 99*

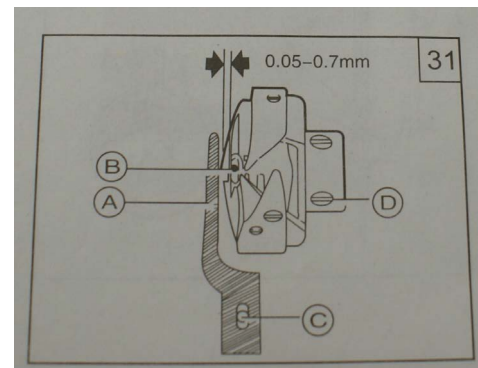


Figure 95

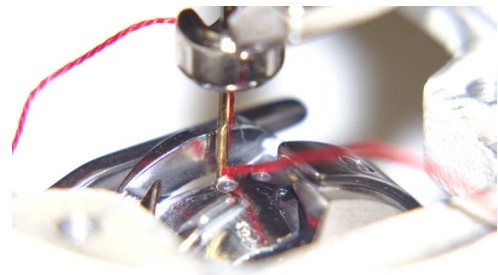


Figure 96

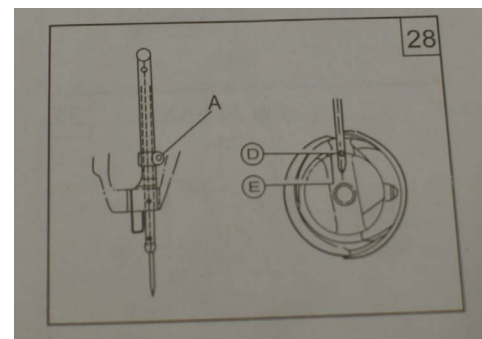


Figure 97

Step 12: If the hook point is in the correct position then move to step 18. If the hook point is past this point or not yet reached this position then you will need to follow the next few steps to adjust the hook so that when the hook point reaches this position it is just above the eye of the needle. Proceed to the next step.

Step 13: Refer to drawing 31 *see figure 95* for position of the three screws (D). Loosen the three screws holding the hook assembly to the shaft. (Note you will have to rotate the hand wheel to get to all three screws.)

Step 14: With the hook loose reposition the needle to the lowest position. Rotate the hand wheel counter clockwise to bring the needle up 2.5mm (1/8") *see figure 98*

Step 15: Now rotate the hook so that the point of the hook is just at the edge of the needle. *See figure 99*

Step 16: Lock one screw holding the hook into this position.

Step 17: Rock the hand wheel back and forth to ensure that you have the hook in the right position to pass the back of the needle just above the eye of the needle.

Step 18: When adjusting the rotating hook point timing also note that clearance between notch bottom of needle D and hook point C must be maintained. HOOK CAN NOT RUB AGAINST NEEDLE.

Step 19: Once you feel like everything is in the right place tighten all screws you loosened.

Step 20: Return all covers and screws back into place on your machine.

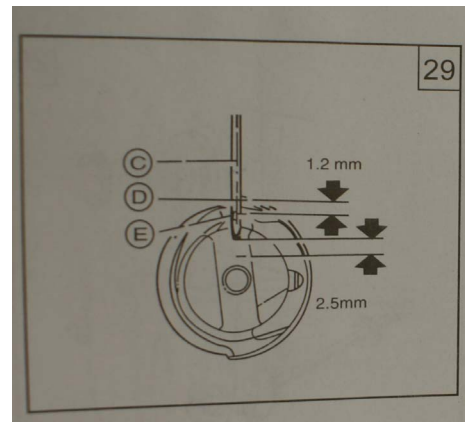


Figure 98

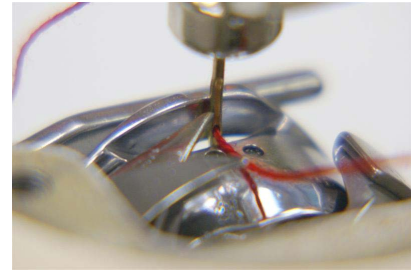


Figure 99

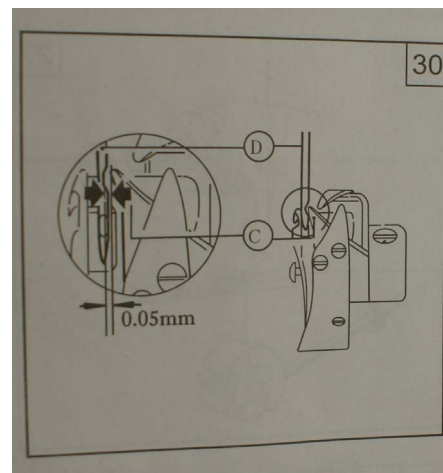


Figure 100

Adjusting the bobbin winder lever (amount of fill on the bobbin)

Step 1: Using your allen wrench loosen the set screw (A) holding the Bobbin winder Lever (B) in place. *See figure 101 and 102*
Note you do not need to pull the bobbin winder out to adjust this setting.

Step 2: Move the Bobbin winder lever in for less fill and out for more fil

Step 3: Tighten set screw (A) to prevent Bobbin winder lever (B) from moving

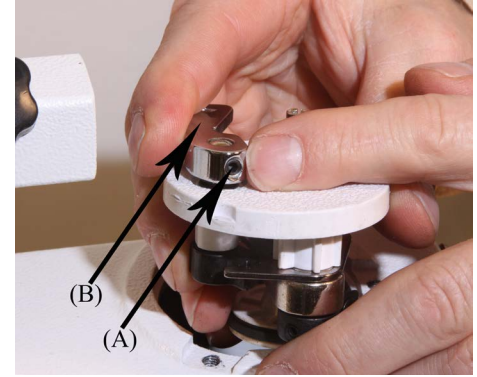


Figure 101

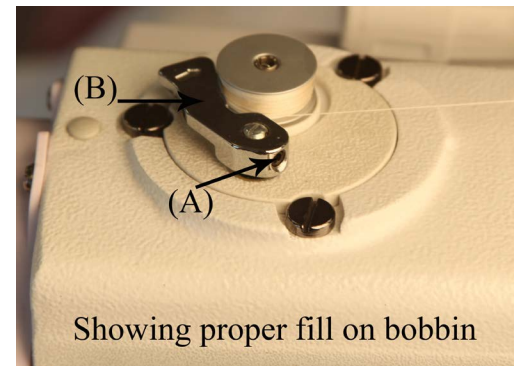


Figure 102

Adjusting the tension assembly thread guides for proper fill.

Step 1: Loosen the set screw (D) so that you can adjust the tension assembly thread guides (E). Adjust tension assembly thread guides (E) up and down until bobbin fills evenly top to bottom
See figure 103

Step 2: Tighten the set screw.

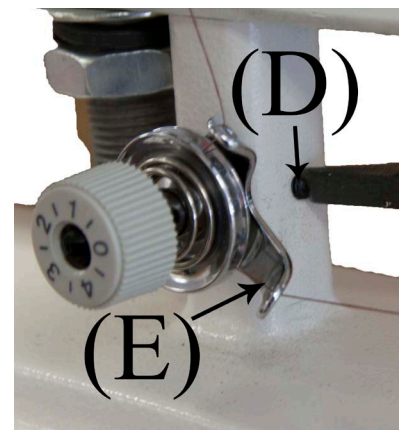


Figure 103

Adjusting bobbin winder and contact with the shaft

Step 1: Loosen the three (3) screws (A) holding the bobbin winder in place but do not remove them. *See figure 104*

Step 2: Twist the bobbin winder (B) to the right for more contact with the inner shaft or move left for less contact.

Note: When twisting the bobbin winder (B) you need to stand on the motor side of the machine with an access panel. You will need to remove the motor plastics in order to open this access panel.

Step 3: The bobbin winder disk with the friction ring needs to contact the disk on the upper shaft when engaged. *See figure 105*

Step 4: Once done moving the bobbin winder retighten the screws to hold the bobbin winder in place.

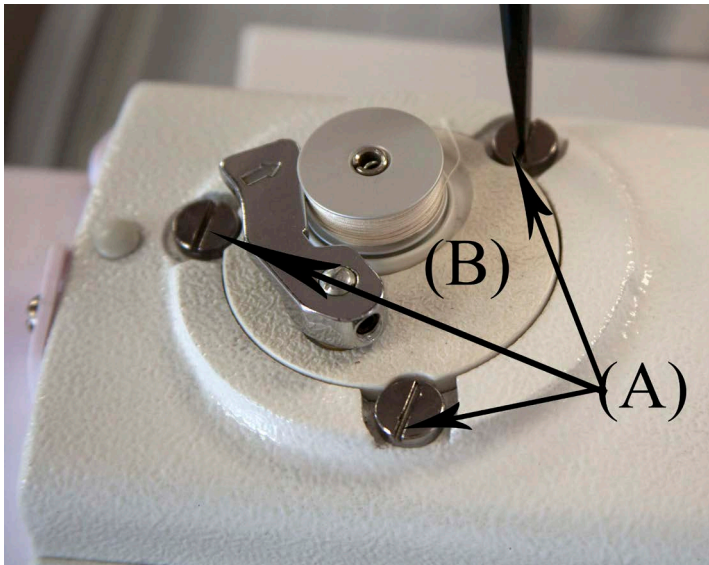


Figure 104

Turning the bobbin winder to the right will move the friction wheel closer

Turning the bobbin winder to the left will move the friction wheel away

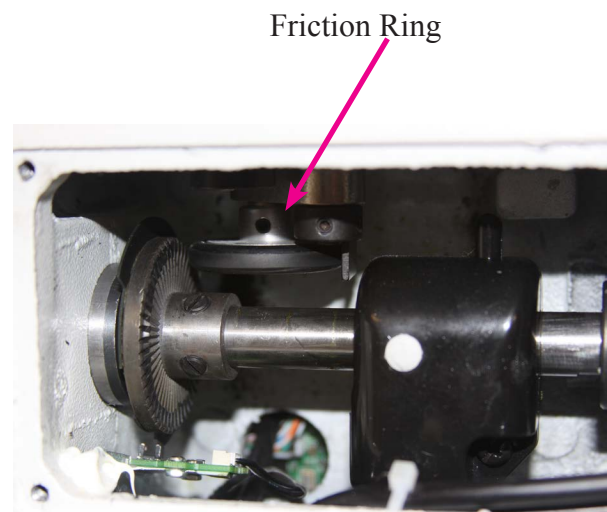


Figure 105