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Dear Apprentice Plus owner,

Thank you for your purchase of the Apprentice Plus Long Arm Quilting System by TinLizzie18... Your Affordable Long Arm Quilters. Apprentice Plus by TinLizzie18 offers you the ultimate marriage of affordability and functionality, and comes with a one-year complete warranty. We will always stand behind our products and any warranty issues will be fixed at no charge. Warranty on parts is five years and covers the sewing machine head, motor, electronics and frame.

At TinLizzie18, we view our customers as family, making great strides together to build a community of quilters. Having been in the sewing industry for over 60 years, TinLizzie’s experience runs deep. Our customers can expect nothing less than the best. We pride ourselves on customer service and continuing education to better your understanding of the mechanics, and also to unleash your artistic quilting abilities.

As we continue our long arm quilting journey together, please know that we are here, ready to assist you with any questions you may have, from quilting tips, ongoing education, and service assistance. Do not hesitate to call (888-QUILT-18) or email us (info@tinlizzie18.com). The TinLizzie18 website (www.tinlizzie18.com), contains information about long arm quilting, our company history, a lineup of educational videos and webinars and a listing of quilt shows coming to an area near you.

The TinLizzie18 long arm quilting system is large enough for the professional, yet affordable enough for the everyday quilter. No other machine offers you more for less. Happy quilting!

Sincerely,

The TinLizzie18 Team

Small enough to know you personally, yet large enough to service all of your long arm quilting needs.
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 Apprentice Plus 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 Apprentice Plus 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.

Be sure to register your warranty on the TinLizzie18 website.

Should You Have a Problem

Please contact your selling dealership as they are also your servicing dealership. If your dealership is unable to fulfill your needs, please visit www.Tinlizzie18.com and choose Service and Support.

Diagram Showing the Sides of the Machine

1. Handlebars
2. Control Screen
3. Thread Stand (left side of machine)
4. Bobbin Winder
5. Motor Cover
6. Hand Wheel
7. On/off Switch (power plug in)
8. Needle
Attaching the Handlebar and Control Box to the Front

Your Apprentice Plus comes with two handlebars (a right and left) along with the main control box which attach to the front of the Apprentice Plus. There are four screws and four clamps to hold these in place.

Step 1: Locate your set of handlebars and the control box.

Step 2: Remove the four screws and clamps located on the front of the machine above the needle. Figure 1 shows the front of the machine without the screws and clamps.

Note: The front and rear handlebars are set up for left and right. The right handlebar has red and white buttons while the left handlebar has blue and yellow buttons. See figure 2

Step 3: Place two clamps around the right handlebar as seen in figure 3

Step 4: Place the main control box with bracket behind the handlebar. See figure 4

Step 5: Using one of the four screws, attach the bottom screw in the right handlebar and secure to machine front finger tight, making sure that the main control box bracket is lined up with the four screw holes. See figures 5 and 6

Step 6: Place the brackets around the left handlebar and attach the lower screw to the main control box bracket to the machine. Finger tight for now. See figure 7

Step 7: Attach remaining two screws to secure the handlebars and main control box to the font of the machine. See figure 8. Figure 9 shows the handlebars and main control box in place.

Step 8: Check that all your screws holding the handlebars and main control box in place are tight.

Step 9: Use the remaining unconnected cable coming from the side of the machine to connect the main control box to the machine electronics. See figure 10

Your Rocker Arm Cover

The Apprentice Plus machine ships without the rocker arm cover attached to the machine.

Step 1: Remove the four screws from the casting so that you can install the rocker arm cover.

Step 2: Dress the cords so that they are in a group ready to be placed in the rocker arm cover. See figure 11

Step 3: Line up the cords in the base of the rocker arm cover thru the provided opening in the front of the cover. See figure 12

Step 4: Secure the rocker arm cover to the machine using the four screws you removed from the machine. See figure 13

Your Rear Handlebars

Step 1: Using the same style clamps but from the back of your machine you will attach your rear handlebars.

Step 2: Take the left handlebar (blue and yellow buttons) and attach to the left side of the machine when standing in the back.

Step 3: Take the right handlebar (red and white buttons) and attach to the right side of the machine when standing in the back.

Step 4: Set handles for your comfort and tighten in place.
Your Thread Stand

Your Apprentice Plus 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: If the telescoping thread tree is not on the thread stand then you will need to attach it.

Step 2: Slide the telescoping thread tree into the hole provided between the thread holders.

Step 3: Using the supplied screw with washer insert from the bottom side to secure the telescoping thread tree in place.

Step 4: 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. See figure 15

Step 5: 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 6: 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. See figure 16

Step 7: Once you have the thread stand in place over the two screws tighten the screws to hold the thread stand in place. See figure 16

Remember to pull the telescoping thread tree to the full up position to use. See figure 17

Connecting your Apprentice Plus to your Carriage Assembly

Your Carriage Assembly will need the encoder assemblies attached to the carriage before placing your machine on the carriage. Using the Apprentice Plus encoder assembly instructions attach your encoder assembly to the carriage.

Step 1: Locate the encoders and cables on the carriage. Check them for damage prior to placing the machine onto the carriage. See figure 18

Note: If your encoder assemblies are not installed on your carriage, use the Apprentice Plus install instructions and install the encoder assembly before loading your machine on the carriage.

Step 2: Place the machine on the upper carriage. Center the machine as much as possible to get the full range of the quilting area.

Step 3: Locate the upper carriage encoder cable and connect it to the second connection point on the side of the power box.

Step 4: Locate the lower carriage encoder cable and connect it to the third connection point on the side of the power box.
General Operation of the LCD Key Pad

When you turn on your Apprentice Plus, during start up you will see some screens flash by if you watch the display, which show you the version among other things. Once you see the screen in Figure 19, you are ready to use the machine.

The control 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

- **Menu Button**
  - Opens the menu

- **Decrease Button**
  - Lowers stitches per inch, speed or change menu options

- **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), 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, you will see the numbers decrease or increase more quickly than if you just press and release the (-) or (+) keys.

Once you are happy with the SPI, 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.

**Manual Stitch**

If you choose Manual, you will be in the manual stitch mode of the machine. Figure 20 shows the LCD screen for Manual. You will notice you have the OFF just like in Auto, but you have numbers with percentages at the bottom rather than just numbers. As with Auto, the (start/stop) key will turn the machine on and you will be ready to stitch. Unlike Auto, once you hit the (start/stop) key, the machine will be sewing.

As with Auto, you can use the (-) or (+) keys to decrease or increase the speed of the machine. Manual does not have a default to turn off once it has been turned on. If you stop moving, thread will build up until it runs out of thread or your thread breaks. It will keep running until you press the (start/stop) key.

**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.

**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.
What is the Tension Release Lever?

The tension release lever raises the hopping foot and releases the tension on the thread. See figure 24

You can watch the tension disc plates open 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 wrong looking stitches.

Adjusting the Height of the Hopping Foot

There are many reason 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 that can cause strain on the thread, create flagging of the fabric while stitching, or may be too high if you put a ruler next to it for measuring.

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 since you can then 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 25

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 26

Adjusting the Stroke of the Hopping Foot

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

Step 1: Remove the four (4) screws (A) holding the cover (B) in place on the front left side of machine. See figure 27

Step 2: Using a wrench, loosen the bolt (C) on the link adjusting crank (D) and slide up to increase the stroke or down to decrease the stroke. See figure 28

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

Step 4: For your safety, replace the cover (B) prior to use, using the four (4) screws (A)
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 deck 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 below) 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 below) contains a dip stick. Remove the dip stick by lifting it up with a fingernail or screwdriver. Place drops of oil in this same hole if you find no oil on the dip stick.

Recommended oiling:

After every finished quilt, place three to four drops of oil at the location with a red spot toward the front (needle side) of the machine. This is located on the top of the machine. The other location is the oil dip stick found just behind the needle. At this time make sure oil is present on the dip stick. If not, add three to four drops of oil where you pulled the dip stick out. Run the 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.

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 33*

**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 34*

**Step 4:** Insert the thread through the top guide hole, then around the tension disk and through the bottom thread guide. *See figure 35*

**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 36*

Use step 7 if you plan to quilt while your bobbin is winding. 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 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 the constant 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.
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 37

To adjust the tension: See figure 38
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.

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

Step 4: Place the bobbin case in the machine. Always listen for the pop as it engages in the machine. See figure 39

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 40

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 in the bobbin hook area before you begin quilting. This will 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.

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.

Threading Overview
This is a diagram of the front side of your Apprentice Plus. 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 41

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
8. Thread Guide
9. Thread Guide
10. Thread Eyelet Above the Needle
11. Needle

Threading Your Apprentice Plus
Your Apprentice Plus 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 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 tested with Superior King Tut thread, which has a long staple and is a machine quilting thread. When we are at quilt shows we use King Tut on top with Sofine on the bottom. The reason for this is two threads of equal size will ride on top of each other and fight 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 since the smaller thread will nestle right down into the twist of the larger thread, creating a better locking of the stitches.

Let’s get started threading the machine:
Step 1: Place a cone of thread on the thread holder.

Step 2: Pull the thread through the eyelet above the cone of thread. Make sure to use the eyelet directly above the cone of thread. See figure 42
Step 3: Thread the upper thread guide as shown in figure 43 (if you use all three holes, it will add drag/tension to the thread).

Step 4: Weave the thread as shown on the three hole thread guide. (if you use all three holes it will add drag/tension to the thread). See figure 44

Step 5: Take the thread between the two tension discs from back to front all the way around. See figure 45 (Release the tension on the tension disc using the tension release lever. This will help to ensure your thread gets between the disc easier.)

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

Step 7: Thread now needs to run under the silver angle bracket. See figure 46

Step 8: Now bring the thread up to the thread guide 6 above the tension assembly. You will be able to slide the thread into this thread guide. See figure 47

Step 9: The thread will now be threaded through the take up lever from the back towards the front. See figure 48

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 way down to the needle. See figures 49 and 50

Step 11: The thread will now go into the thread eyelet above the needle. See figure 51 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.)

Step 12: Thread the needle from the front to the back of the needle. See figure 52

How Do I Change the Needle?
A 134RSAN needle (size 18) will be installed on your Apprentice Plus from the factory. When it is time to replace the needle, you can easily install one. Be sure the power switch is off. 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.

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.

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 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 two layers of fabric together while the machine head is moving. The difference is, 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.

What is needle deflection? What causes it? And how is needle deflection related to the stitches on my quilt?

On a long arm quilting machine, a stitch is mechanically created the same way 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 more quickly 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 areas 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, you will see the pokies on the top side of the quilt. If the greater tension is on the bobbin, 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...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 must also 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 fingertip 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 Troubleshooting 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, and the thread guide is centered over the spool and has not developed any burns 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 clockwise. Repeat until stitch quality is 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 fingertip 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.

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.
New spring. This tail is what was broken.

Insert the new spring. Twist while inserting the new spring.

New spring in place. Insert the tension assembly back into the barrel. REMEMBER DO NOT LOSE THE PIN

Insure that you are all the way in.

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

Once in, ensure that your check spring is at 11:00.

Press in and notice the tension disk opens.

Release the disk will close; this is the proper place for your tension assembly.

Tighten screw. Make sure the pin is still there.

Place the assembly back into your machine.

Press in and notice the tension disk opens.

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

Tighten screw on your machine.

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

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

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

No matter how hard you try to keep the bobbin area free of loose threads and lint, we will sometimes get a jam. Most jams start with the needle down as the jam is due to something getting into the bobbin race. The bobbin race is a part of the bobbin hook which keep the hook rotating smoothly with no wandering as it rotates. Don't panic. This can be cleared. It just takes a little work.

Step 1: Turn the power off.

Step 2: Remove the belt guard so you can get a good grip on the hand wheel. See page 11 for instructions.

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 whatever 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 effort to get it worked free.)

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 the bobbin area a good cleaning. 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 81 shows thread caught. Figure 82 show the race.
Timing Between Needle and Rotating Hook

Follow these steps to help get the proper timing on your machine.

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 at attach it to the face plate of the machine. See figure 83

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

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 84

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 85

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 86

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 to raise the needle 2.5 mm (1/8”) See figure 86

Step 11: Hook point should be just above eye of the needle. See figure 88

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: See figure 84 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 87

Step 15: Now rotate the hook so that the point of the hook is just at the edge of the needle. See figure 88

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.
**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 figures 90 and 91* 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 fill.

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

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**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 93*

**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 side of the machine with the 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 94*

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

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**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 92*

**Step 2:** Tighten the set screw.

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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.