



SAILRITE

Est. 1969



SAILRITE PROFESSIONAL GUIDEBOOK

Set-Up, Use, Maintenance & Troubleshooting for the Sailrite
Professional and Sailrite Professional Long Arm Sewing Machines

Welcome to your Professional Sewing Machine!

The Professional is a production machine that can sew all day with its best-in-class power system.

Add in its slow speed power and control, which allows you to truly sew stitch-by-stitch, and you've got yourself a new trusty sidekick for all your sail and canvas projects.

This guidebook will give you in-depth knowledge of your machine including getting set up, sewing, advanced maintenance and troubleshooting.

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SEWING MACHINE SAFETY

Please observe the following when using your Sailrite sewing machine

- Do not operate in conditions where you or the machine are or may become wet.
- Operate the machine on a firm, level surface where there is adequate room for safe operation.
- Observe caution when placing your hands or other parts of your body or clothing near any moving parts including but not limited to the following: the walking foot, the needle, the drive belt, the balance wheel and any of its parts.
- Do not run the machine without its covers.
- Do not stop the movement of the balance wheel with your hands.
- Use caution in tilting the machine backwards in its table and in lowering it back into the table.
- Use proper lifting techniques when moving the machine.
- Do not drop the machine.
- Always use the proper voltage required for the motor and light.
- Wear protective eyewear when sewing.
- Wear shoes when operating the foot pedal.
- Provide supervision when allowing others to use the machine—particularly children and those who are unfamiliar with the machine's operation.
- Do not use around flammable materials.
- Use both hands to feed and guide the material while the belt and balance wheel are in motion.
- Maintain a safe distance from the belt and balance wheel when the machine is in motion.
- The operator's hand should not be near the wheel pinch point (where moving parts may cause harm to the user) except to raise and lower the needle, and only when the motor is disengaged.

WARNING: Some products may be fabricated from materials which may contain chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.

SAILRITE PROFESSIONAL SET-UP

Our expert Sailrite technicians have checked and adjusted every component of this machine. It has been test sewn and all accessories have been prepared for easy installation. With this guidebook, you should be able to maintain and adjust your own machine. Please do not make substantial adjustments to machine settings unless in consultation with Sailrite.



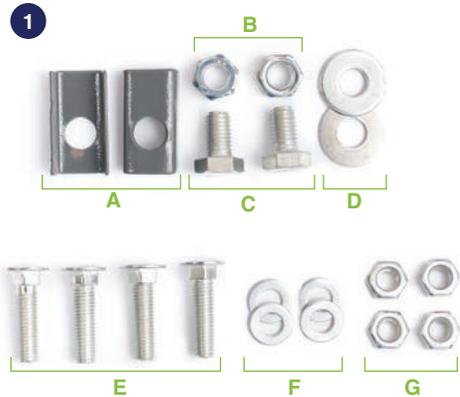
Unpacking the Sailrite Professional

To remove the machine head from the box, it is best to have help. While one person holds the box down on the floor, the other should reach under the arm of the machine and lift straight up. Set the machine on a solid surface or floor.

Tip: Place a newspaper or old towel down first to absorb any oil and protect the surface.

Power Stand Assembly

1. Find parts **A, B, C** and **D** (**Figure 1**). Stand both k-legs upright and bolt the back-support bar (**H**) to the bottom hole at the back of the table legs (**Figure 2**).
2. Find parts **E, F** and **G**. Flip the legs upside-down and place the treadle mount bar (**I**) at the back of the forward most slots (**Figure 3**). Bolt the treadle mount bar to the bottom surface of each crossbar of the k-legs (**Figure 4**).



3. Place the top of the table on the floor with the laminate surface down. Place on a soft surface to avoid scratching the tabletop. Squarely line up the table legs as shown (**Figure 5**). Be sure that the legs are facing the correct direction. Reference the cutout shape in the tabletop to aid in placement.



4. Use a pencil to mark screw locations for attaching the K-leg frame to the tabletop (**Figure 6**). Use a 5/32" drill bit and drill about 1/2" into the tabletop. Do not drill completely through.



5. Bolt the frame to the bottom of the tabletop using the enclosed hex head lag screws (**J**), locking washer (**L**) and washer (**M**) (**Figure 7**) to lock at each position (**Figure 8**).



Installing the Drawer

The drawer mounts to the forward, left, underside of the table when the stand is upright (**Figure 9**). To install the drawer, locate the rough position and put the drawer rails and the drawer in position. The drawer should pull open from the front of the table (**Figure 10**) and when pushed in, it will hit a stop. Secure the rails to the underside of the table with the included screws (**K**) (**Figure 7**).

Tip: Do not over tighten the screws or they will prevent the drawer from sliding freely.



Installing Rubber Foot Pads

Stretch the K-Leg foot pads onto the rectangular metal feet of the table legs (**Figure 11**).

Flip the table upright.

If the height needs adjusted, move the bolts up or down in the leg slots and holes then lock in place (**Figure 12**). Be sure to adjust the height before placing the sewing machine head in the tabletop.

Be sure all nuts and bolts are tight.

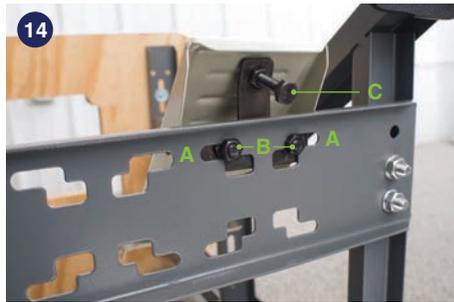


Installing Foot Lift Pedal

Flip the table so it is laying on its back. The foot lift pedal should be installed as far to the right (facing the front of the table) on the treadle mount bar as possible (**Figure 13**). The two top right most slots should be used (**A**) (**Figure 14**). There are two nuts and bolts on the bottom of the foot lift pedal (**B**), remove the nuts and position the bolts, while still through the foot bracket, in the correct position on the treadle bar mount. Replace the nuts on the bolts (do not tighten them completely, this will be done after the treadle has been installed (page 8 "Installing the Treadle").

The remaining long bolt (**C**) can be tightened to decrease the angle at which the pedal is positioned or loosened to increase the angle it is positioned. To adjust, loosen the nut and tighten/loosen the bolt until the desired position is found.

Note: It may be best to place the table upright in order to figure out the desired angle of the pedal. Ensure the bolt is not loosened so far that it hits the floor when the table is upright (**Figure 15**).



Installing the Treadle

The treadle is typically installed directly left of the foot lift pedal on the treadle mount bar, but it can be set to the user's preference anywhere to the left of the foot lift pedal.

After determining placement and taking note of desired location of the treadle, flip the table onto its back side.

The two end pivots (**A**) fit into the sides of the treadle pedal and are then bolted to the mount bar with 4 bolts to hold it in position (**Figure 16-17**).

The rubber pad will be face up and the side with the bolt holes will be to the back of the table (away from the machine operator). These holes will be used to attach the treadle to the motor.

Tip: Install the pivots first but do not tighten completely. Then place the treadle in position between the pivots and tighten bolts. Flip the table upright and check to make sure the treadle moves freely after the bolts of both of the foot pedals are tightened when the desired position is found.

BEFORE CONTINUING: See "Attaching a Pulley" and "Installing the Workhorse Servo Motor" in the Workhorse Servo Motor Instructions.



Installing the Linkage Bar

Bolt the L-bracket (B) to the holes on the back of the treadle so that its shorter leg is sticking out toward the back of the table, pointing toward the Workhorse motor. (Figure 18). The short leg should be roughly vertical to the motor operation lever (C) (Figure 19).

Bolt the linkage bar (D) to the outer most hole of the motor operation lever (C) on the Workhorse and the L-bracket (Figure 19).

By increasing or decreasing the overlap of the linkage bar, different treadle pedal angles can be achieved. Do not worry about the pedal angle at this point, in a future step we will alter the angle of the motor which will affect this setting. Use a size 14mm wrench to snug the bolt holding the two sections together. (Figure 20).

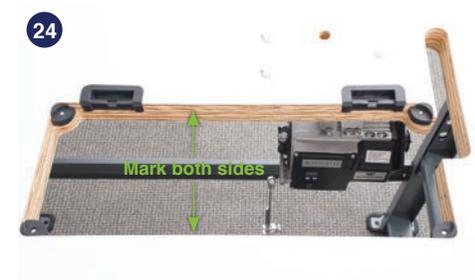


Oil Tray and Machine Installation

Locate the four corner cushions (A), the two hinge cushions (B), the two hinges (C), and 4 nails (D) (Figure 21).

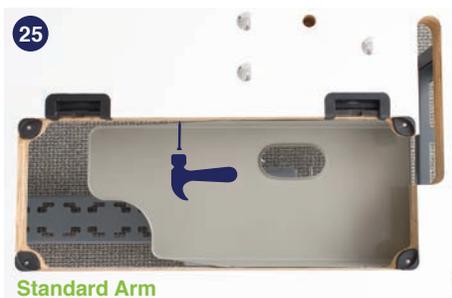
With the table upright, place a corner cushion in each of the four corners of the table cutout (E) and nail them in place. Then place the two hinge cushions in the back cutouts (F) (Figure 22).

Measure 1/8" from the bottom of the cutout (Figure 23) and mark this location along the length of the cutout on both sides (Figure 24).



Using 4 nails for the standard arm Professional and 6 nails for the Long Arm Professional, place the oil tray so the holes for the nails line up with the 1/8" mark and is positioned so the right side of the tray is lined up with the right edge of the machine cutout. Using a second person will make this process easier. Nail the tray in place (**Figure 25-26**).

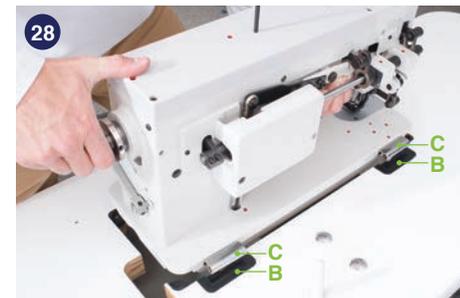
Note: Positioning the oil tray too far to the right can cause the timing belt to rub against it causing unnecessary wear on the belt.



Push the machine Support Pin (**G**) into the hole in the tabletop nearest the carriage bolts holding the motor. The fit may be tight so just push until snug (**Figure 27**).

Insert the hinges (**C**) into the two holes located on the back side of the sewing machine.

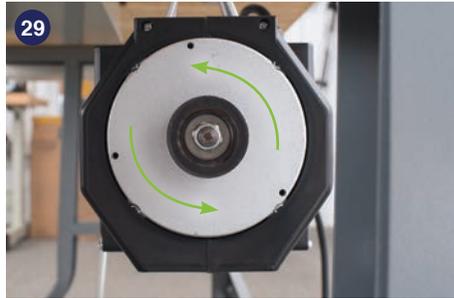
With help, lift and lower the sewing machine into the tabletop so that the hinges (**C**) fit into the hinge cushions (**B**) (**Figure 28**).



Check Motor Rotation

The machine's motor shaft should rotate counterclockwise when viewed from the motor shaft end. Plug in the motor, switch the power on and press down on the foot treadle to confirm operation now.

If motor rotation is not counterclockwise (**Figure 29**), please refer to "Changing Motor Rotation" in the Workhorse Installation Instructions.



Securing the Stitch PRO Balance Wheel

Find the Posi-Pin (**C**). Remove the two screws (**A**) for the belt cover installation (**Figure 30**). Position the C-shaped belt guard and reinstall the screws (**Figure 31**).

Unscrew the reverse-threaded Posi-Pin Nut (**B**) (**Figure 31**). Slide the Stitch PRO Balance Wheel onto the Posi-Pin Wheel Bushing, making sure it does not interfere with the belt cover. If the wheel hits the belt cover, move the bushing further out by loosening the two set screws in the bushing.

Thread the reverse-threaded nut back onto the bushing and tighten by hand. Rotate the balance wheel until the hole in the balance wheel is aligned with one of the four bushing holes. Push the Posi-Pin (**C**) through the holes to lock the balance wheel to the bushing (it will spring back slightly). Rotation of the balance wheel will now cause the machine to function (**Figure 32**).



Inspecting the Machine

Before use, thoroughly inspect the machine. It will arrive threaded with a fabric sample under the presser feet. To remove the fabric, untie the thread from the top of the machine and lift the presser feet with the hand lever (A) (Figure 33). Make sure the needle is up, out of the fabric. If it is not, rotate the balance wheel from the top toward you until the needle is out of the fabric. Pull the sample and all thread free from the top of the machine. Cut the bobbin thread and let it lay loose.



Belt Adjustment for the Workhorse Servo Motor

Before installing the drive belt, loosen the set screw (A) with a 5/32" Allen wrench to allow the Workhorse Servo Motor to freely pivot (Figure 34). This will prevent the belt from stretching or breaking while being installed.

With the machine tilted back, slip the drive belt over the balance wheel track and guide it onto the motor pulley. Carefully lower the machine into the cutout while judging belt tension (Figure 35). If the tension needs to be adjusted, follow the directions below:

Loosen the treadle linkage bar bolt (Figure 20). Pivot the motor back to tighten the belt and forward to loosen it. Proper adjustment of the belt results in 3/8" of slack when pressed by finger at its center. Retighten set screw (A) (Figure 34).

Once installed, the belt should not touch the table and should be centered on the track of both the balance wheel and motor pulley. Adjust the positioning of the motor left and right by loosening and sliding the bolts within the slots of the motor bracket. Tighten all of the bolts when the correct position is found. Position the overlap of the treadle linkage bar so the foot treadle is at a desirable angle and tighten the bolt. Remove the belt so the pulley bracket can be installed.

BEFORE CONTINUING: See "Installing the Pulley Cover" in the Workhorse instructions.



Attaching the Balance Wheel Belt Cover

Locate the remaining portion of the belt cover (**Figure 36**). It has a keyway (**B**) that locks onto post (**C**) of the C-shaped belt guard that was secured to the machine earlier (**Figure 37**). Connect the covers and remove the remaining screw/nut in the machine casting (**D**) (**Figure 38**) which is below the Stitch PRO Balance Wheel. Remove the nut on the screw and insert the screw through the slot at the bottom of the belt cover (**E**). Thread and position the nut back on the screw so they sandwich the cover loosely. The nut acts as a screw depth positioner allowing the cover to be positioned so the cover is not touching the balance wheel on the top (**F**) or bottom (**G**) (**Figure 38**). Position the screw in the slot (**E**) to provide proper belt clearance.



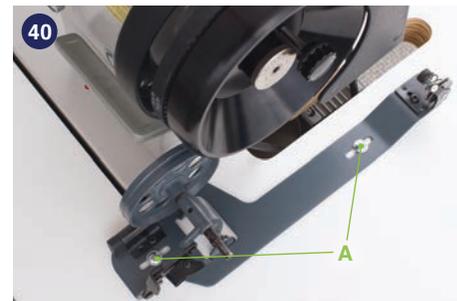
Attaching the Bobbin Winder

Now screw the bobbin winder to the tabletop. The large wheel of the winder, when in the disengaged position, should be about 1/8" forward of the belt (no contact) (**Figure 39**) and in line with the belt. The long edge of the bobbin winder should be parallel to the belt slot in the table (**Figure 40**). Mark the location in each of the slots where the screws will be positioned.

Remove the bobbin winder and using a 5/32" drill bit, create pilot holes about 3/8" deep. Place the bobbin winder so the slots are positioned over the pilot holes. Mount the bobbin winder to the tabletop with the two screws (**A**) (**Figure 40**) positioned in the bobbin winder slots.

Note: The bobbin winder should be disengaged before installation.

Pressing the thumb pad (**B**) will move the wheel into the belt in order to wind bobbins. The thumb pad is on a hinged bracket so that when thread has filled the bobbin, the mechanism will disengage the wheel from the belt.



Mounting the Flex20 LED Light:

To attach the Flex20 LED light, place the light in your desired location on the machine and plug it into a wall socket (**Figure 41**).

Optional: Attach the included adhesive plastic clips to the back of the sewing machine and use the zip ties to hold the cord.

To attach the light to the front face of the machine (**C**), use the adhesive pad included with the Flex20 light.



Mounting the Thread Stand:

Assemble the thread stand as shown (**Figure 42**). Secure it to the tabletop with included hardware.

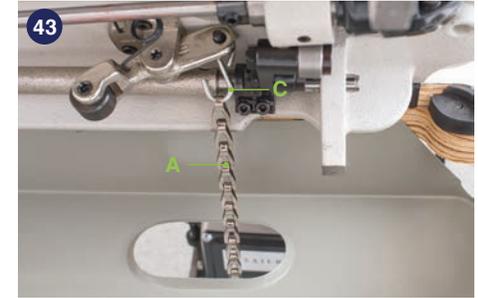


Attaching Foot Lift Assembly

Locate the 3-foot-long chain (**A**) (**Figure 43**) and "S" Hook (**B**) (**Figure 44**). Tilt the machine head back in the table so it is resting on the support pin. Attach the chain to the preinstalled "S" Hook (**C**) on the bottom of the machine so the wider teardrop section of the chain is down (**Figure 43**). The tail end of the chain should be fed through the hole in the oil tray. Lower the machine back into the table top so it is sitting upright and attach the second "S" Hook (**B**) to the bracket on the foot lift pedal (**Figure 44**).

Attach the chain to the "S" Hook (**B**) so it is as tight as possible. Depressing the pedal will now lift the presser foot.

Note: Once the chain is attached, it will need to be removed any time the machine is tilted back in the table.



Check the Machine for Operation:

Plug the motor in and flip the power switch on the motor front. Verify that there is no thread going through the needle's eye and that the fabric sample is removed from under the foot. Make sure the presser foot is up and push down slowly on the top of the foot pedal (A) to operate the machine (Figure 45). Use your heel to push the bottom of the pedal and the machine will stop. Turn the motor off.

See "Operation" in the Workhorse guidebook for more information and how to set the motor speed.



Standard Arm



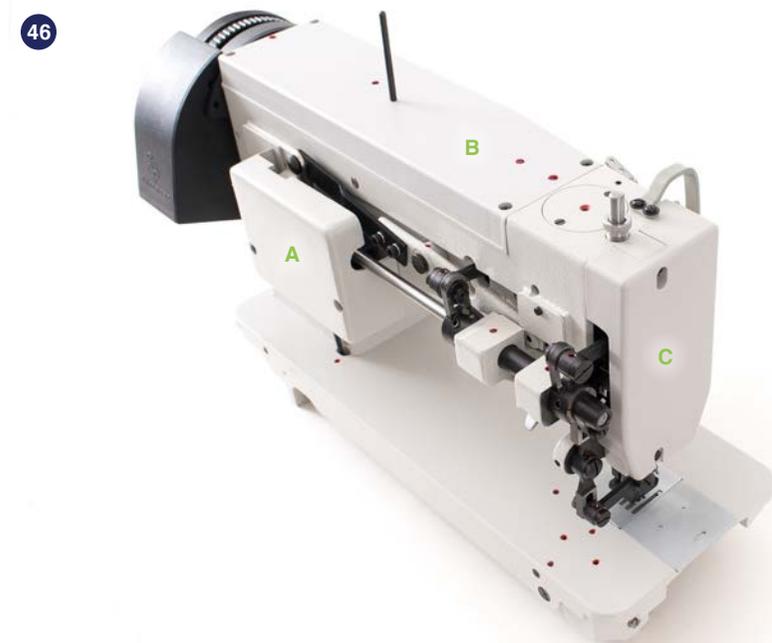
Long Arm

Manual Oiling

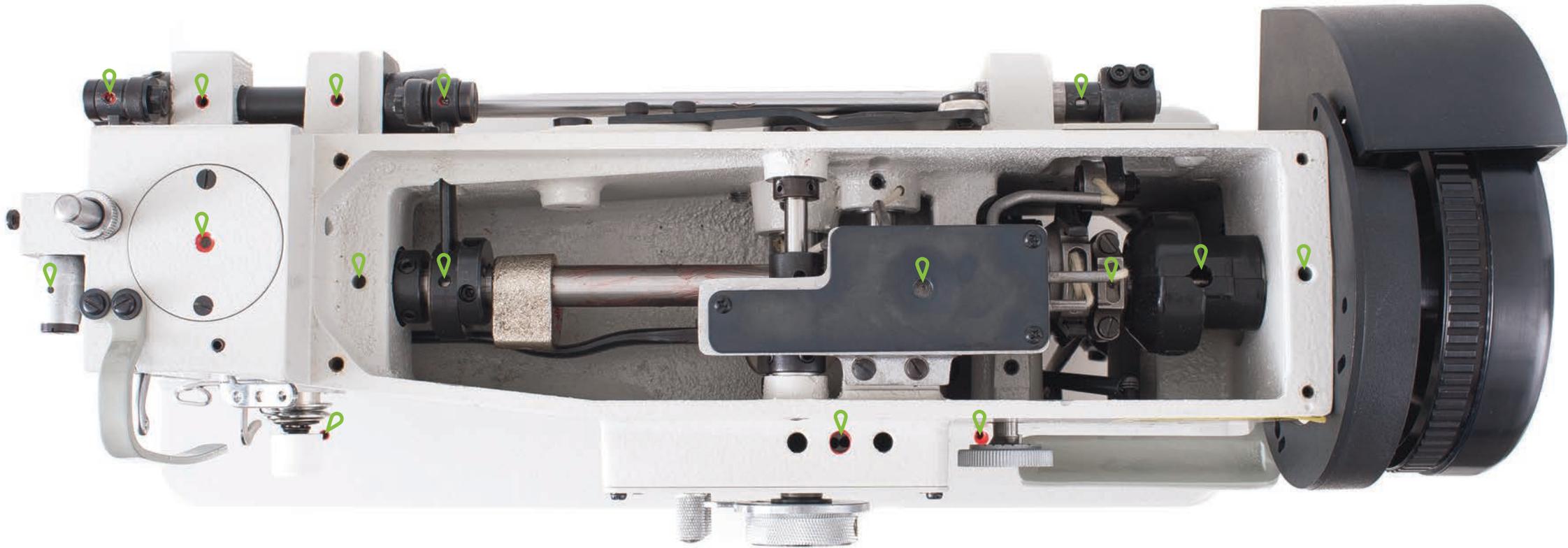
The Sailrite Professional sewing machines have holes throughout the casting with red paint marking them. These are the easy access oil points that can be used for quick machine oiling. After 40 hours of continual use, or before using the machine if it has been sitting unused for more than 30 days, the user should remove the three covers (A, B, & C) (Figure 46) and oil where detailed (Figure 47-49).

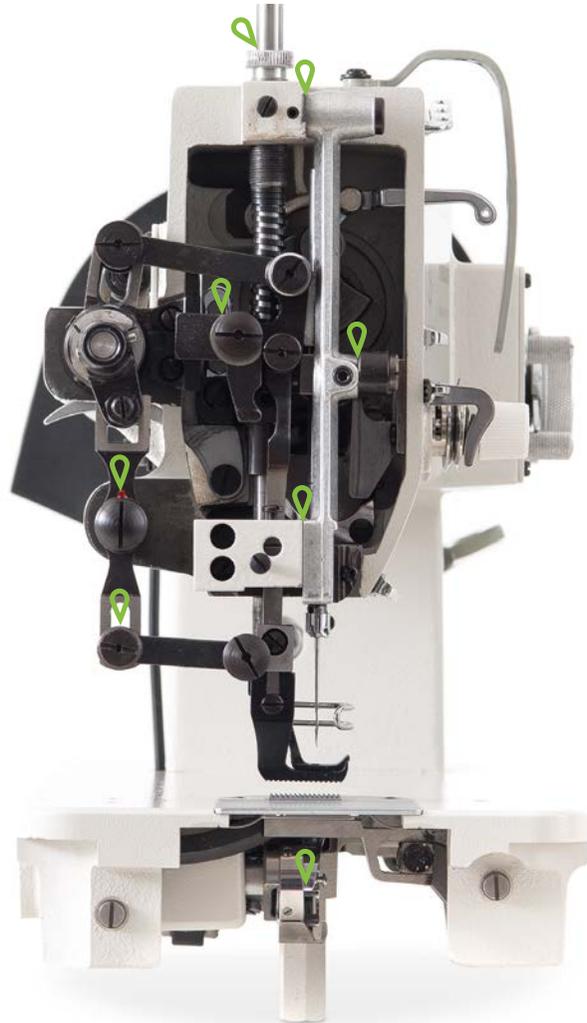
As a general rule, any component that looks like a gear, cam, or slide should be oiled.

Note: Once oiled, sew a scrap piece of material to make sure all excess oil is worked out of the machine so it does not leak onto your next project.









Using the Sailrite Professional

Now that your machine is all set up, it's time to start sewing!

This next section will explain setting up the machine to sew including how to wind bobbins, thread the machine and adjust the thread tension.

COORDINATING THE NEEDLE, THREAD AND MATERIAL

The Sailrite Professional uses system UY 128 GAS needles. Needle size depends on thread size and the fabric weight. Sewing heavy material with a small needle may result in needle breakage, skipped stitches or thread breaks, and too large of a needle may produce large holes that make tension adjustment sensitive and seams may leak. To select needle and thread combinations, see our recommendations on page 30 "Thread & Needle Recommendations".



Installing Needles

Turn the balance wheel to lift the needle bar to its highest point. Loosen the needle set screw (A) and remove the old needle (Figure 50).

Needles have two distinct sides (Figures 50-51). One side has a long channel or groove (B) (locate this groove with your fingernail if you cannot see it) and the other side has a scarf (D) i.e., a carved-out area just above the needle eye (C).

When inserting a new needle, make sure that the needle groove (B) is facing front when the operator is seated in front of machine (Figure 50) and that the needle shank is all the way up before tightening the set screw (A).

Tip: To make sure your needle is inserted far enough, you can look through the sighting hole (E) near the bottom of the needle bar (Figure 52). Lower the needle bar to its lowest position to have a better view. The top of the needle should be fully visible in the sighting hole and pushed all the way to the top.

Thread & Needle Recommendations

Polyester

Polyester is the most common choice for outdoor applications. Perfect for sail and canvas work, polyester thread has high strength and stretch control, stability in sunlight (UVR) and resistance to needle heat, abrasion, saltwater and mildew.

Nylon

Nylon threads have excellent elasticity, which makes them the perfect choice for upholstery projects. When you sit on a seat, you want the thread to be able to give and rebound under your weight. Nylon is excellent for indoor upholstery, automotive upholstery, luggage and more.

PTFE/Fluoropolymer

PTFE and fluoropolymer threads (Profilen & Tenara) come with a lifetime guarantee. These are the best threads to use for outdoor applications where your projects will see frequent, intense sun or other weather extremes. These threads are unaffected by exposure to UV rays, cleaning agents, pollution, saltwater, air, rain and snow.

Monofilament

Monofilament thread is a clear, strong nylon thread that blends in with fabrics. It is often used in upholstery because of its clear color.

STD	GOV	TEX	TENSILE (LBS)	NEEDLE SIZE	FABRIC WEIGHT
General Purpose	N/A	N/A	N/A	#12	< 6 oz
V-30	AA	30	4.5	#12 or #14	< 1.5 oz.
V-46	B	45	7.1	#14 or #16	< 3 oz.
V-69	E	70	10.6	#16 or #18	3 - 6 oz. & Sunbrella
V-92	F	90	14.2	#18 or #20	6 - 10 oz. & Sunbrella
V-138	FF	135	21.2	#20 or #22	> 10 oz.
Profilen/Tenara (V-92)	N/A	N/A	6.7 - 7.9 / 8 - 10	#14 or #16	3 - 20 oz. & Sunbrella
Heavy Tenara (V-138)	N/A	N/A	15 - 20	#19 or #20	> 15 oz.

This chart offers needle and thread size recommendations for sewing standard, woven fabrics. Needle and thread recommendations for sewing specialty fabrics are available online in our Thread & Needle Recommendation Guide, downloadable from every fabric detail page.

PREPARING TO SEW

Place a cone of thread on the thread stand, leading the thread up to the guide above the thread cone as shown (**Figure 53**). The following steps will show you how to wind a bobbin, put the bobbin in the bobbin case and thread the machine.



53

How to Wind a Bobbin

1. Push the bobbin on the bobbin winder spindle as far as it will go (**Figure 54**).
2. Pass the thread from the thread stand to the back end of the bobbin winder. Pull the thread through the hole near the thread tensioner (A) and then behind and under pulling the thread between the discs of the tensioner (**Figure 55**).
3. Bring the thread forward to the bobbin and push the thread tail through one of the holes in the bobbin from the inside. Pull the tail out enough to comfortably grip it (**Figure 56**).



4. Push the bobbin winder lever (B) forward to move the wheel against the drive belt of the sewing machine (Figure 57).

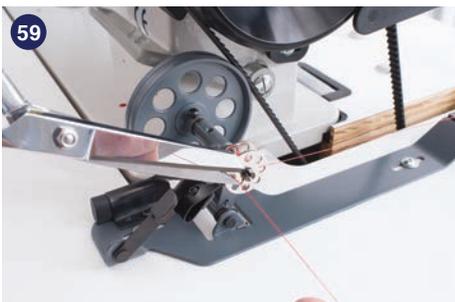
5. Disengage the Posi-Pin clutch system to allow for bobbin winding without running the machine. Pull the pin out of the balance wheel and place it in the center hole, as shown, to store (Figure 58).

Note: Bobbins can also be wound while sewing by utilizing a second thread cone.

6. Hold the thread tail and power the machine to start winding the bobbin. Cut the tail flush with the edge of the bobbin after about twenty rotations (Figure 59) and then continue under power until the bobbin is full. If adjustments are necessary, see page 34 "Bobbin Thread Winding Adjustment".

7. To re-engage the clutch:

- Push the Posi-Pin gently into the hole in the balance wheel.
- Rotate the balance wheel while lightly pushing on the Posi-Pin until you feel it connect with any of the 4 bushings holes.
- Push the Pin all the way in and release.

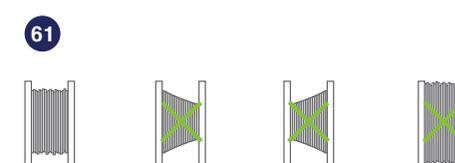


Bobbin Thread Winding Adjustment

If the wound bobbin thread is not tight, adjust the thread tension by turning the tension stud thumb nut of the bobbin winder (A). If the wound bobbin is not even, loosen screw (B) and move tension bracket (C) to the right when the bobbin is not filling enough on the right or move it to the left when the bobbin is not filling enough on the left (Figure 60). An even fill is desired (Figure 61). Once it is filling properly, tighten screw (B).

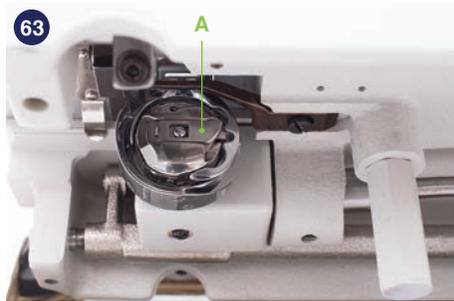
Do not overfill the bobbin as the thread may jam in the bobbin case. Fill it to about 80% of bobbin's outside diameter. Use the stop latch screw (D) to control the fill. Rotate the screw clockwise to increase the amount of thread on the bobbin and counterclockwise to decrease the amount of thread.

Note: The metal finger (E) can be bent by hand if more adjustment is required.



Removing and Installing the Bobbin Case

1. Rotate the balance wheel to move the needle to the top of its travel.
2. To remove the bobbin case, lift the spring-loaded lever (A) and pull the bobbin case out. (Figure 62). Release the lever and the bobbin will fall out.
3. To install the bobbin case, lift and hold the spring-loaded lever and push the case onto the axle of the shuttle assembly. The position of the bobbin case should be installed as shown, noting the directional position of lever (A) (Figure 63).



How to Thread the Bobbin

Insert the wound bobbin into the bobbin case (Figure 64).

The thread tail should remain outside of the case and be passed through the slot in the side of the case (Figure 65).

Pull the thread under the tension spring (Figure 66).

As you are holding the case with a view of the bobbin, the bobbin should turn clockwise when pulling on the thread tail (Figure 67). If it is not, take the bobbin out and flip it over.

Now refer back to page 35 "Removing and Installing the Bobbin Case" to put the bobbin case back in the machine.



Threading the Sewing Machine

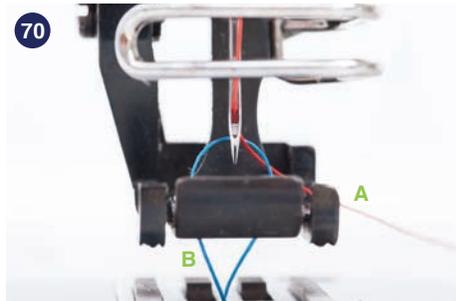
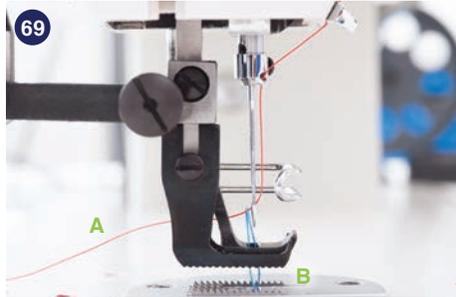
1. Lift the feet.
2. Raise the needle bar to its highest position by rotating the balance wheel.
3. Thread comes off the top of the cone to the thread stand arm (A).
4. In the most direct path, pass the thread through the spool pin on the top of the machine, using either the top or bottom holes (B).
4. Pass the thread through the three-hole finger (C) from right to left going from top to bottom on the first and last hole, skipping the middle hole.
5. Pass the thread through the thread finger (D).
7. Pass the thread around and between the tension disks (E), in a clockwise motion being sure the thread goes all the way to the core post.
8. Pass the thread up through the thread take up spring (F).
9. Pass the thread under the thread guide (G).
10. Lead the thread upward through the thread finger (D) and then through the take-up arm (H) from right to left.
11. Lead the thread down through thread finger (I) then (J) and then through the needle bar thread guide (K) from front to back.
12. Pass the thread from front to back through the eye of the needle (L) and draw the thread about 4 inches through the needle eye.



Pulling Up the Bobbin Thread

To pull up the bobbin thread, make sure the presser feet are up, grasp the end of the needle thread (A) then rotate the top of the balance wheel toward you to lower the needle. Continue to rotate the wheel until the needle is once again in its highest position. Pull on the needle thread (A) and the bobbin thread (B) will be drawn up through the needle plate (Figure 69-70).

Use a small instrument (seam ripper, screwdriver, pencil etc.) to slide under the feet and pull both threads outward (Figure 71). The needle thread (A) should be through the inner presser foot when completed.



SEWING WITH THE SAILRITE PROFESSIONAL

Starting to Sew

1. Use the hand lever (C) (Figure 72) or foot lift (page 20 "Attaching Foot Lift Assembly") to raise the presser feet. Then place the material to be sewn under the feet and use the hand lever/foot lift to lower it onto the material.
2. The threads from the needle and bobbin should be behind the feet as you start to sew. Hold them down with your finger.
3. Press the motor pedal to begin sewing. After the first couple of stitches are made, you may let go of the thread ends. (If the thread ends are not held down for the first few stitches, they may get tangled.)

Always turn the balance wheel of the machine toward you to reduce the possibility of a thread jam in the lower mechanism.

Never operate the machine (when threaded) without material under the presser foot.



Setting the Stitch Length and Operating in Reverse

The stitch length regulating dial (A) indicates the stitch length in millimeters. Lift the presser feet and rotate the dial within its range of 0mm and 5mm to your desired stitch length (Figure 73).

Note: To more easily rotate the dial, depress the stitch length dial to its midpoint.

Do not force the dial beyond the ends of the range.

To sew in reverse, press lever (B) down fully. Forward movement is automatically restored when lever (B) is released. It is best to initiate reverse when the machine is in motion, but you may also manually rotate the balance wheel so the needle is either in its highest or lowest position before pressing the reverse lever and starting to sew.



Sewing Straight and Zigzag Stitches

The Sailrite Professional sewing machine has the capability to sew both straight and zigzag stitches. In order to sew straight stitch, the zigzag dial (A) must be rotated down toward zero (0) (Figure 74). In order to sew a zigzag stitch, the dial can be turned in any increment up to 10mm (the maximum width zigzag stitch with the 4-point cam installed) (Figure 75). Make sure the needle is out of the material before moving from straight stitch to zigzag or vice versa.

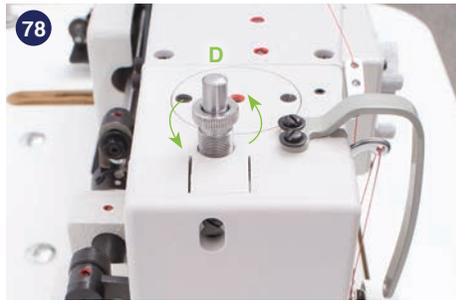
Note: The zigzag dial and stitch length dial can be used in tandem to get varying stitches (i.e. 6mm wide zigzag and 3mm long stitch will result in a more compact zigzag stitch while a 10mm wide zigzag and 5mm long stitch will be a wide and long stitch). Figure 76 shows some of the wide variety of stitch combinations the Professional sewing machine can produce.



Adjusting the Pressure of the Presser Foot

Different materials require different presser foot pressure in order to feed properly. Heavy materials require more foot pressure and light materials sometimes pucker with too much foot pressure. To increase foot pressure, turn the pressure regulating thumb screw (D) clockwise as shown (Figure 77).

To reduce pressure, turn the pressure regulating thumb screw (D) counterclockwise as shown (Figure 78).



Adjusting Upper Tension Assembly

Tension adjustment refers to the combination of tension on both the upper thread and the bobbin thread.

The tension stud can be turned clockwise or counterclockwise in order to compress or decompress a spring that squeezes two disks together increasing or decreasing tension.

A good starting tension point for sewing heavy canvas is when the outside surface of the tension nut (C) is flush with the end of the post it is threaded on (D) (Figure 79).

When the presser foot is lifted, the upper tension disks are separated. This releases the top thread tension so fabric can be removed from under the machine foot without fighting thread tension.

DO NOT lift the presser foot when the tension knob (C) is less than a 1/2 turn from maximum (turned snugly clockwise).

If upper tension is tightened all the way down, raising the presser foot may bend the lever inside the machine that separates the disks, preventing the disks from opening correctly.



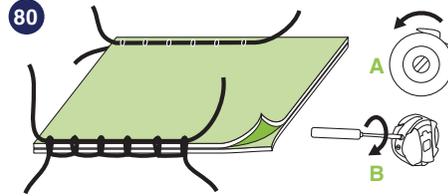
Adjusting Bobbin Thread Tension

The correct combination of thread tension (**Figure 80**) results in a stitch that looks identical on both sides of the material (i.e., the knots of the stitches are pulled into the fabric and are no more visible on the top than on the bottom).

When stitch tension is a problem, it is usually a consequence of too much or too little tension on the upper thread.

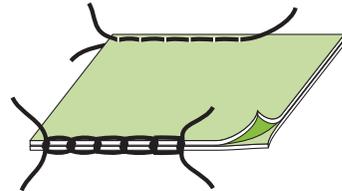
Tension changes to the bobbin thread should only be made when upper tension changes alone do not solve the stitch tension problem. In general, bobbin tension requires just about a two-ounce drag on the thread (similar to what you feel when pulling dental floss off a spool).

Note: Always set the machine with too little tension first and then slowly increase the upper tension to the point that the knots just disappear on the bottom side of the fabric.

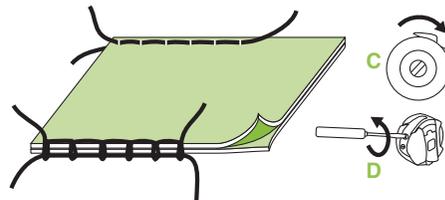


Knots pulled to top:

1. Decrease upper tension (A)
2. Increase bobbin case tension (B)



Knots centered — Perfect Stitch



Knots visible on bottom:

1. Increase upper tension (C)
2. Decrease bobbin case tension (D)

Removing Material from Under the Presser Feet

1. Stop the machine with the needle at its upward-most position.
2. Lift the hand lever to raise the presser foot or use the treadle lift.
3. Pull the material straight back to remove it from under the foot.

Note: It is sometimes helpful to rock the balance wheel forward and back to free the thread from the tension assembly.

Sewing in Light to Moderate Weight Fabrics

1. Be sure to use an appropriate thread. Nylon thread is often preferred for interior upholstery.
2. Select an appropriately sized needle, i.e. match the fabric and thread weight to the needle size. Don't be afraid to experiment. See page 30 "Thread & Needle Recommendations".

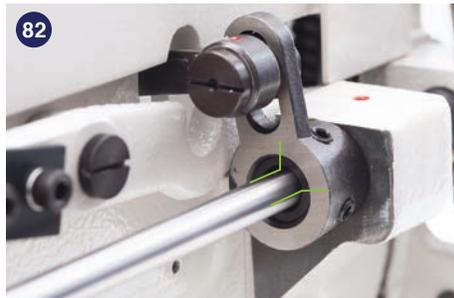
Note: Using the improper needle and thread combination will make sewing consistent stitches impossible.

3. Decrease pressure on the feet. In heavy fabrics, more pressure aids in feeding. In lighter fabrics, too much foot pressure may pucker the fabric. See **Figure 77-78** for the location of the thumb screws to adjust the foot pressure.

4. Decrease the upper thread tension. Too much upper thread tension will cause puckering of the fabric. It may be necessary to increase pressure on the bobbin case spring when using light weight thread. The bobbin spring will not clamp down on the smaller diameter thread like it does on heavier thread. See page 44 "Adjusting Upper Tension Assembly" & page 45 "Adjusting Bobbin Thread Tension" for tension adjustment.

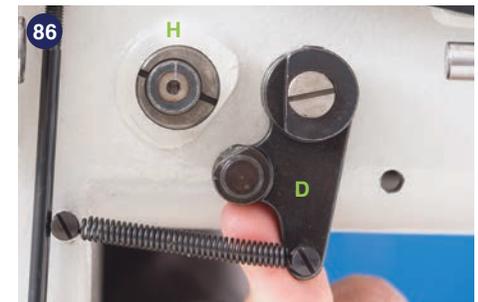
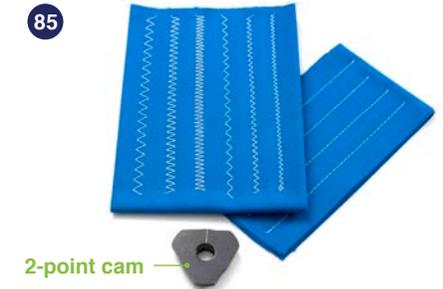
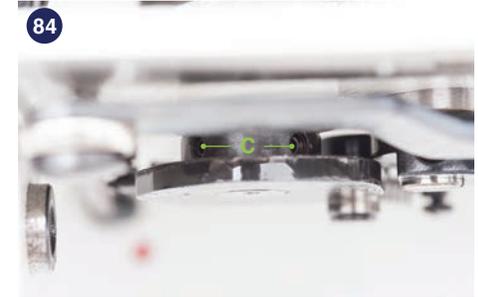
Changing Between the 2- and 4-Point Cams

In order to change from a 4-point zigzag to a 2-point zigzag or vice versa you will need to begin by removing the back cover. Using a black permanent marker, place two sets of position marks (one on the shaft the other on the sleeve) as shown in **Figure 81** and another two position marks as shown in **Figure 82**. These marks will allow you to reposition the shaft in the correct orientation. Using a 3mm Allen wrench, loosen the two set screws (**A & B**) holding the shaft in place. Facing the backside of the machine, pull the shaft to the right (toward the needle end of the machine). Do not pull the shaft all the way out. Stop once you have enough space to remove and replace the cam (**Figure 83**).



Place the machine in straight stitch. There are two Allen screws on the flange of the cam toward the machine. If they cannot be reached rotate the balance wheel until they can be easily accessed. Loosen the set screws (**C**) (**Figure 84**) then remove the cam.

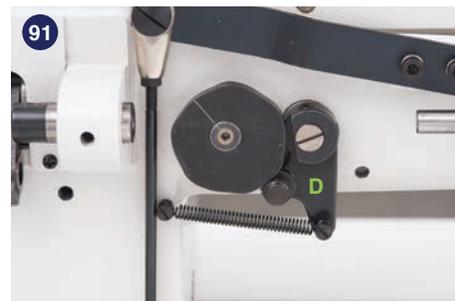
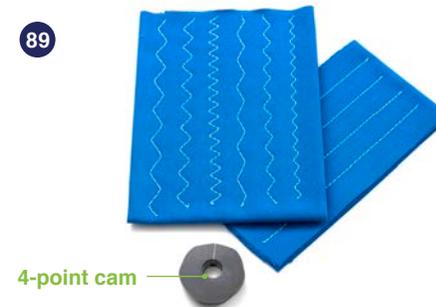
To install the 2-point cam (**Figure 85**), hold the roller post (**D**) back (**Figure 86**) and rotate the balance wheel until the score line (**H**) on the shaft where the cam gets positioned is pointing directly up.



Place the 2-point cam on the shaft (**Figure 87**). The score line on the cam should be lined up with the score mark on the shaft. Tighten the set screws. To confirm the setting, place the machine in zigzag, then rotate the balance wheel until the needle is in the far, bottom right position. The score line should be pointing at the roller post (**D**) (**Figure 88**).



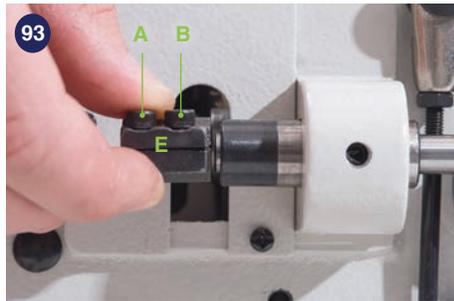
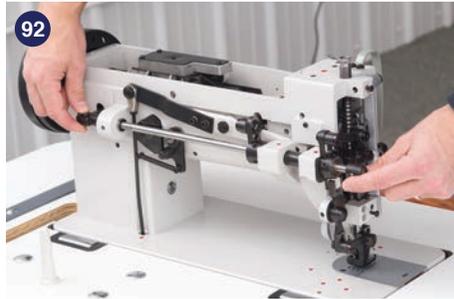
To install the 4-point cam (**Figure 89**) hold the roller post (**D**) back (**Figure 86**) and rotate the balance wheel until the score line (**H**) on the shaft where the cam gets positioned is pointing directly up. Place the 4-point cam on the shaft (**Figure 90**). The score line on the cam should be lined up with the score mark on the shaft. Tighten the set screws. To confirm the setting, Place the machine in zigzag, then rotate the balance wheel until the needle is in the far, bottom left position. The score line should be pointing away from the roller post (**D**) (**Figure 91**).



Replace the shaft in its prior position by sliding it to the left (toward the balance wheel) **(Figure 92)** making sure the shaft goes through the sleeve **(E)** **(Figure 93)** and the sliding box **(F)** fits into the forked assembly **(G)** **(Figure 94)**. There is only one way the sliding box will fit into the forked assembly so make sure not to force it in if it does not fit.

Once the shaft is in position, check the four marked locations **(Figures 81-82)** to ensure the proper position is relocated. To line up the marks, grab the sliding box assembly and move it forward or back until the desired location is set. Maintaining that location, partially tighten set screw **(A)** then partially tighten set screw **(B)** alternating until the two are fully tightened.

Check the rotation of the machine to see that the zigzag movement functions properly. Replace the back cover and you are ready to sew!



Sailrite Professional Maintenance

After years of use, industrial sewing machines usually require a few adjustments.

This section explains in detail how to make the adjustments most often made by sewing machine mechanics on industrial machines. This knowledge empowers you to be able to maintain the Professional yourself.

Feed Dog Height

The feed dog should be roughly 1mm above the surface of the needle plate when at the top of its travel (**Figure 95**). To adjust, position the feed dog at the top of its travel by rotating the balance wheel toward you from the top. Tilt the machine back so it is hinged back in the table. Loosen screw (**A**) and pivot the clamp to adjust the feed dog height as needed (**Figure 96**). Tighten screw (**A**) and look at the base of the feed dog plate to ensure it does not hit the bottom of the needle plate or top of the hook when rotating the balance wheel. If it does, loosen screw (**A**) and adjust the feed dog until it no longer collides with either the needle plate or the hook.



Feed Dog Position

Move the balance wheel until the needle is at the very top of its travel. The feed dog will be in its upward most position. Check to see if the feed dog is slightly behind center. If so, then no adjustment is necessary.

Otherwise, move the feed dog by tilting the machine so it is hinged back in the table top. Find and loosen set screws (**A**) (**Figure 97**). Move the feed dog support (**B**) up or down which will move the feed dog within the needle plate opening (**Figure 98**). Set the feed dog slightly back of center (about 0.5mm) and tighten set screws (**A**).

To test the position of the feed dog, set the stitch length to maximum length (5mm). Rotate the balance wheel manually, actuating both forward and reverse sewing directions in order to look for contact between the feed dog and the needle plate ends. If there is contact at one end, move the feed dog slightly to eliminate it. When set properly, the feed dog will be very close at both ends but should not make hard contact with either.



Adjusting Straight Stitch "Straightness"

If the machine's straight stitch wanders a bit from side-to-side it is necessary to make an adjustment. To check the machine, remove the bobbin case/bobbin and unthread the machine. Set the machine to straight stitch, making sure the thumb stop is all the way down.

Note: Sometimes what appears to be an adjustment issue is related to the thread, needle and fabric combination. For instance, a slight stitch offset might occur when a large thread is used in thin fabric assemblies or a fabric with coarse fibers.

To make an adjustment, loosen regulator screws (A & B) and tension screw (C) (Figure 99). Twist the stitch length regulator so that the arm is positioned midway between the two thumb screw stops (Figure 100) and tighten screw (A).



Run the machine while moving the stitch length regulator up and down slightly until the needle bar holder (D) (Figure 101) is not moving back and forth and remains completely stationary. When the proper position is found, loosen screw (A) (Figure 99) enough to allow the dial to drop and the arm of the stitch length regulator to rest on the bottom thumb stop. It will point to "0". Tighten set screws (A and B), then snug screw (C). If the dial moves too easily up and down, increase the resistance by tightening set screw (E). If there is too much resistance, loosen set screw (E) (Figure 102).

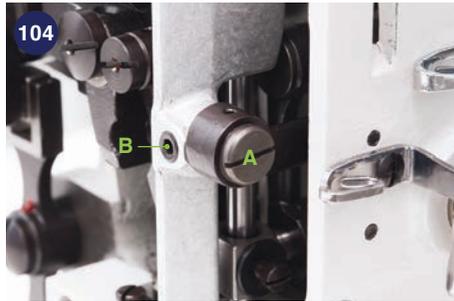
Note: Snugging screw (C) before set screws (A and B) will cause a bind in the dial. Always tighten set screws (A and B) before screw (C).



Centering Needle Position in Straight Stitch

Set the machine to straight stitch and raise the feet. Turn the balance wheel toward you from the top until the needle reaches the lowest point of its downward stroke. Check if the needle enters the center of the needle slot in the needle plate (**Figure 103**).

If the needle is not centered, adjust the needle bar frame eccentric stud (**A**) (**Figure 104**) by loosening set screw (**B**). Turn the stud (**A**) until the needle is centered and then tighten the set screw (**B**).



Timing

If, during stitching, needle penetrations leave a hole without thread knotted through the hole, a skipped stitch has occurred. Correcting this situation is referred to as sewing machine timing which is accomplished in two steps; setting the depth of the needle travel downward, and then setting the rotary position of the hook on its shaft. Only make the following adjustments if skipped stitching is occurring. Only do so after first changing the needle and checking thread tension.

Note: Timing should always be completed with a #20 needle of system UY 128 GAS.

Needle Bar Height

Remove the left end cover from the machine by loosening the two screws and sliding the cover up and off the machine. Set the machine to straight stitch and remove the bobbin case/bobbin. Lift the presser feet and rotate the balance wheel until the needle is at the bottom of its stroke. Loosen the needle bar clamp (**A**) (**Figure 105**) and gently twist/lower the needle bar until it rests on the shelf of the bobbin case (**Figure 106**).



Representation of where needle resides when lowered completely

Raise the needle bar 1.8mm and tighten the needle bar clamp (A). This is most easily done by placing a mark on the needle bar 1.8mm below the machine casting when the needle point is resting on the bobbin case shelf.

Note: A great way to make the mark on the needle bar is to use a small piece of paper and scribe a mark 1.8mm from the paper edge. Hold the paper under the casting and use the scribe mark to transfer a mark to the needle bar (Figure 107). Then raise the needle bar until the mark lines up with the machine casting (Figure 108). Be sure the needle is positioned in the correct direction (see page 29 "Installing Needles") and tighten the clamp screw.

Rotate the balance wheel through a full rotation making sure the needle does not hit anything throughout the rotation. Do this in both straight stitch and the maximum zigzag (10mm).

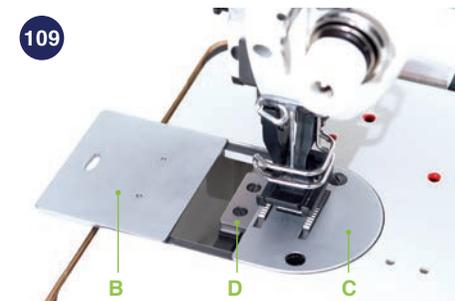


Gib Hook Timing

Remove the slide plate (B) by sliding it all the way to the left until the plate comes off the machine. Raise the presser feet and rotate the balance wheel until the needle is up. Remove the needle plate (C) and feed dog (D). Each are held in place by two screws (Figure 109). Set the zigzag regulator to 10mm.

Rotate the balance wheel until the needle is at its lowest point on the left-hand side. Slowly continue the rotation of the balance wheel and observe the point of the hook as it passes the needle. Stop when the sharp point of the hook is centered in the needle. The point of the hook should be 0.5mm above the top of the eye of the needle as they intersect (Figure 110). There should not be any gap between the hook and the needle. They should be touching (Figure 111) (a slight deflection is best). If the relationship to the needle is not correct, determine which way the hook needs to be turned on its drive shaft to correct the timing.

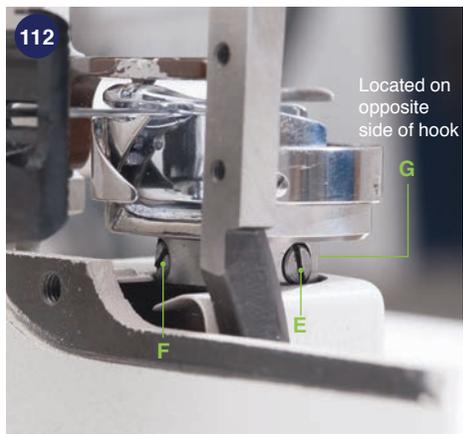
Note: Do not adjust the needle bar height to get the 0.5mm gap between the hook and top of the needle eye. If the gap is larger than 0.5mm, retard the rotation of the hook by turning the hook clockwise on its drive shaft so it passes the needle later. Conversely, turn it counterclockwise if the gap is less than 0.5mm so it passes the needle sooner.



To adjust, rotate the balance wheel until the point of the hook is centered on the needle, which occurs shortly after reaching the bottom of the stroke on the left side of the needle rotation. Take note of the easiest screw to access (E) at the base of the rotary hook (Figure 112), don't loosen it yet. Rotate the balance wheel and loosen the other two screws (F & G). Then return the needle to the lowest left-hand position. Slowly continue the rotation of the balance wheel to once again find the spot where the hook point is centered on the needle. Refer to the above adjustment directions (See "Note" on page 60) and loosen screw (E), making adjustments to achieve the proper relationship between the needle eye and hook point. It is best to work with this one screw gently tightening it as you check and tweak and recheck the setting. Tighten all three screws holding the hook in place when satisfied with the setting.

Following the same process, the hook can be moved in or out on its shaft to close or open the space between the needle and the hook point. Just make sure not to re-corrupt the rotation of the hook while making adjustments.

Reinstall the feed dog and needle plate taking care to center (left/right) the feed dog in the needle plate. Reinstall the slide plate.



Machine hinged back in table

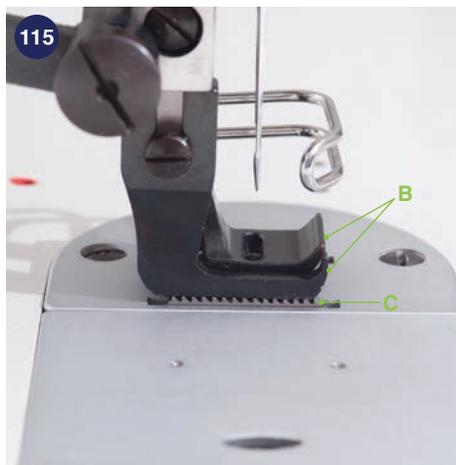
Walking Foot Position

A mismatch to the alignment of the walking foot and the feed dog can result in fabric surface damage when sewing delicate materials. It can also create feed puckering. To check for the issue, rotate the balance wheel with no bobbin, thread or fabric under the feet. Lower the presser feet and listen for an audible "click" in full length forward and reverse. The click is an indication that the gripper teeth are not meshing well and there is a need to check the position of the walking foot. Teeth should mesh throughout the full rotation of the balance wheel.

Lower the feet and rotate the balance wheel until the walking foot and feed dog are meshed together (Figure 113) then completely loosen the two set screws (A) (Figure 114). This will release the walking foot position allowing it to slide freely forward or back. Having the walking foot and feed dog meshed together prevents this "free" movement. Instead it allows for the walking foot to self-align with the feed dog as the teeth are firmly engaged. Retighten the set screws and rotate the balance wheel to ensure the teeth mesh properly in forward and reverse. Listen to see if the clicking noise is gone.



The front toes of the walking foot (B) should be in line with or slightly behind the front toes of the feed dog (C) (Figure 115). When the walking foot is positioned further forward than the feed dog, the walking foot and presser foot will collide when the machine is operated. If they are not as pictured in Figure 115, rotate the balance wheel until the feet are no longer touching and move the walking foot forward or back as needed (by loosening two screws (A) in Figure 114). Tighten the two set screws (A) and make a full rotation of the balance wheel to ensure the proper location has been set and the walking foot no longer "clicks" during operation.



Adjusting Thread Take-Up Spring

The normal sewing range of the thread take-up spring is 7/32" to 1/2" (Figure 116). For sewing lightweight materials (sewn in a short stitch), weaken the spring tension and increase the range of the spring. For sewing heavyweight materials, strengthen the spring tension and decrease the range of the spring.

Adjust Spring Tension

Lower the feet to relieve pressure on the tension assembly. Note the insertion depth of the tension assembly core. Place a mark on the assembly showing proper depth. Loosen set screw (A) (Figure 117) then pull out the assembly. Pinch it together from the white knob to the back of the core or it will separate (E) (Figure 118).

Loosen spring set screw (B), turn tension stud (C) clockwise for more spring tension or counterclockwise to decrease tension. Tighten spring set screw (B). The core should be reset to the original depth. Tighten set screw (A).

Note: To set the spring tension back to Sailrite's original setting, loosen spring set screw (B) and turn tension stud (C) counterclockwise to reduce tension of the thread take-up spring (D) to zero (the spring should no longer be resting against the edge of the cutout). Turn tension stud (C) clockwise until spring (D) just comes into contact with the end of the slot on the thread take-up spring regulator. Turn tension stud (C) clockwise by 3/8" turn. Tighten spring set screw (B).



Adjust Tension Range

Loosen set screw (A) and turn the complete tension assembly clockwise to increase the spring range or turn counterclockwise to decrease the spring range (Figure 119).

After all adjustments, make sure all screws and set screw are tightened.



TROUBLESHOOTING

Lack of Stitch Tension

Ensure the proper needle and thread is being used for applications as described on page 30 "Thread & Needle Recommendation". If this does not solve the problem, then refer to pages 44-45 "Adjusting Upper Tension Assembly" and "Adjusting Bobbin Thread Tension".

Skipped Stitches

If your machine is skipping stitches, the hook is not catching the thread consistently. This is usually because either the fabric is not being held down by the presser foot as the needle is withdrawn which does not allow for the loop of thread to be formed for the hook as it passes the needle, or the hook may not be passing the needle at the proper time. It may be passing the needle before a loop is formed or, at the opposite extreme, after the thread has been pulled upward out of the path of the hook.

Three Ways to Eliminate Skipped Stitches

1) CHANGE THE NEEDLE: The first thing to do is simply change the needle. A bent needle will cause skipped stitches because the loop is not where the hook expects it to be. The needle

could also have become covered with adhesive if you are using basting tape or sewing insignia cloth. In either case, the new needle will resolve these problems.

Also, make sure that the needle is in correctly (page 29 "Installing Needles"), and check the upper thread path (page 37 "Threading the Sewing Machine"). The thread should pass from front to back through the needle eye.

2) ADJUST THE FOOT PRESSURE: Next, check for adequate foot pressure. Heavy, closely-woven materials like sailcloth and canvas can make the withdrawal of the needle from the fabric difficult. If the presser foot is lifting as the needle comes out of the cloth, the effect is the same as if the needle were not going far enough into the cloth. The loop that it forms will be too small. To solve this problem, more downward pressure must be placed on the feet (page 43 "Adjusting the Pressure of the Presser Foot").

3) RESET THE NEEDLE BAR HEIGHT AND TIMING: If skipped stitches continue to be a problem, the machine has most likely gone out of time. Check the height of the needle bar as described on page 58 "Needle Bar Height". Then reset the timing of the machine by following the steps on page 60 "Gib Hook Timing".

MACHINE SPECIFICATIONS

SHUTTLE	Full Rotary, Gear Driven, Large Style M Bobbin (25.7mm Dia. x 10.4mm H)
STANDARD ARM WEIGHT:	132 Pounds Assembled, 176 Pounds Total Shipping Weight
LONG ARM WEIGHT:	164 Pounds Assembled, 208 Pounds Total Shipping Weight
VARIABLE MAX SPEED:	123 Stitches Per Minute - 1,108 Stitches Per Minute
MAX STRAIGHT STITCH LENGTH:	5 mm
4-POINT MAX ZIG ZAG WIDTH:	10 mm
2-POINT MAX ZIG ZAG WIDTH:	8 mm
NEEDLE SYSTEM:	UY 128 GAS, Sizes #10 - #22
BED SIZE:	18.75" x 7" (Standard), 28.75" x 7" (Long Arm)
UNDERARM SPACE:	10.75" x 4" (Standard), 20.5" x 4" (Long Arm)
LUBRICATION:	Manual
PRESSER FOOT LIFT:	Hand Lever 8 mm (5/16") / Treadle Pedal 11 mm (7/16")
TABLE TOP DIMENSIONS:	20" Deep x 47.5" Wide, Adjustable Height (28" - 34")
NEEDLE BAR STROKE:	33 mm
THREAD RANGE:	V-30 to V-138

The sewing machine casting does not have an internal motor. It is powered by Sailrite's exclusive Workhorse Servo motor using Sailrite's patented Posi-Pin system (Pat. #7438009) and Stitch PRO Balance Wheel.

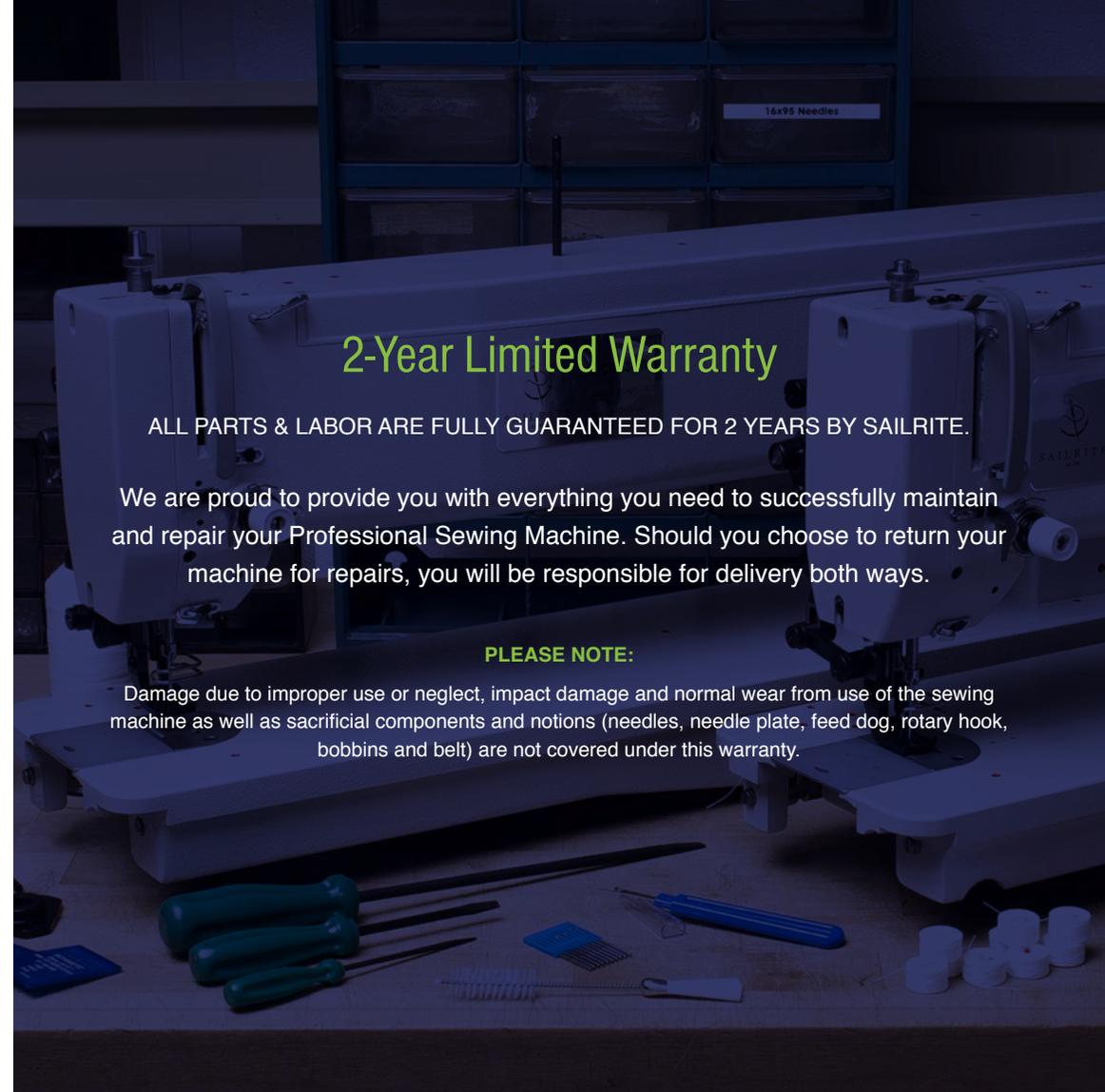
2-Year Limited Warranty

ALL PARTS & LABOR ARE FULLY GUARANTEED FOR 2 YEARS BY SAILRITE.

We are proud to provide you with everything you need to successfully maintain and repair your Professional Sewing Machine. Should you choose to return your machine for repairs, you will be responsible for delivery both ways.

PLEASE NOTE:

Damage due to improper use or neglect, impact damage and normal wear from use of the sewing machine as well as sacrificial components and notions (needles, needle plate, feed dog, rotary hook, bobbins and belt) are not covered under this warranty.





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Sailrite Professional Guidebook

V-2