HOW TO ADJUST & REPAIR SEWING MACHINES FOR YOURSELF EXTRA CASH OR A NEW CAREER

BY: F-Asef
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PRINCIPAL PARTS

Thread Take-up Lever

Needle Position Selector

Reverse Sewing Button

Sew-light

Extension Table

Stitch Length Knob

Upper Thread Tension Dial

Bobbin Winder

Presser Foot Lever

Spool Pin

Balance Wheel

Clutch Release Knob

3-prong Socket
Thread Cutter
Presser Foot Screw
Presser Foot (Zigzag)
Needle Plate (Zigzag)
Needle Camp Screw
Needle
Feed Dog
Bobbin Case
Shuttle Hook
ACCESSORIES AND TOOLS

- Straight Stitch Needle Plate
- Regular Single Needle No. 14

- Straight Stitch Foot
- Sew-light Bulb
- Bobbins
- Oiler
- Seam Ripper
- Screw Driver (Large & Small)
- Phillips screwdrivers
- Nut drivers
- Offset box wrenches
- Hex wrenches
In this section, we'll take you through a list of common sewing machine problems, their causes, and how to fix them at a basic level.

1. THE MACHINE WON'T START

- Make sure the machine is connected to the electrical supply.

- Check to see whether you've turned on the power and light switch.

- It's possible the bobbin has been wound too full. It should not be wound beyond its outer ring. To correct this problem, simply remove the excess thread.

2. MACHINE NOISE

- It's possible your machine needs oil or may be reacting to inferior quality oil that has coagulated. If so, clean it thoroughly and oil again with high quality sewing machine oil. (See "Oiling the Machine," page 23.)

- Dust and waste thread may have collected in the hook mechanism.

- Perhaps the tension on the belt is too tight. Loosen it.

- If the treadle is noisy, check the screws on which it pivots. Using a wrench, back off the nut one or two turns, then place a screw toward the needle, enough to take up the slack. Now tighten the nut and test the treadle. If the noise persists, repeat the process on the other side.

- If the rotary hook is noisy, it might be too dry. It should be lubricated with high quality oil. (See "Oiling the Machine," page 23.) The rotary hook also might be clogged with dirt or thread remains.

- If you hear a jamming, knocking noise, it may be thread caught in the shuttle.

- In this case, take the shuttle apart and clean it. Or, there might be lint in the bobbin case or shuttle, which needs to be cleaned out.
3. THE MACHINE WORKS HEAVILY

• This problem can occur after the machine has been standing without use for some time. It's probable the machine is **gummed** and needs an overall cleaning.

• A **tight belt** may be putting too much pressure on the bearings.

• A **loose belt** (on a treadle machine) may be slipping on the balance wheel, creating the need to treadle more than necessary.

• There may be thread wound around the hub of the **balance wheel** and the ends of the **band wheel crank**. This can happen when the threads jam their way next to the bearings and slow down the machine. Using a stiletto or another sharp instrument, remove the thread.

• The **bobbin winder** might have been left down or accidentally snapped down, creating pressure on the bobbin wheel. Make sure the bobbin winder is released.

• The **shuttle race** may be tangled with loose threads.

4. THE NEEDLE WON'T MOVE

• Be sure the machine is **connected to the electrical supply**, the **power and light switch** is turned on, and the **controller** is connected.

• Check to be certain the **hand wheel** is engaged for bobbin winding.

• Check the **hand wheel disc**, making sure it is in sewing position.

5. THE FABRIC WON'T MOVE

• The **darning plate** may not be properly placed. If not, remove it.

• **Thread may be knotted beneath the fabric.** If it is, you need to put both threads beneath the presser foot before you resume stitching.
Check to see the following:

* The presser foot accessory is correctly attached to the machine.

* The presser foot is down and the pressure dial set for the weight and texture of your fabric.

* The stitch length selector is set correctly.

* The feed cover needle plate is correct for the stitching involved.

* All lint has been removed from around the feed.

6. THE NEEDLE IS BROKEN OR DAMAGED

• Remember to CHANGE NEEDLES FREQUENTLY. When a needle goes dull, when the tip breaks, or when it burrs or slightly bends, your material can snag or pucker, and right away you've skipped a stitch and probably more. Or perhaps your material jams into the needle hole, and the machine comes to a stop. You get the idea, so repeat the mantra: CHANGE NEEDLES FREQUENTLY.

• Basic causes of needle breakage include the wrong class of needle, an inappropriate-sized needle for the thread and material being used, and an incorrect setting of the needle position lever and/or the bight lever.

• During sewing, the material may have been pulled. The needle bends and hits against the needle plate near the stitch hole.

Check to see whether

* the thread is knotted

* the upper thread tension is too tight

* the needle is poorly centered and is striking the needle plate or the darning plate

* the presser foot is loosely fastened or needs special fittings

* the needle is fully inserted into the needle clamp
Preventing broken needles

* avoid using a fine needle to sew heavy seams

* make sure you've chosen the appropriate needle for the thread and material you're using.

* be sure needle is all the way in the needle clamp

* set controls properly

* check presser foot or attachments to ensure they are securely fastened to the bar; make sure needle doesn't hit the edge of the hole or the slot in the presser foot or attachment

* when taking material from the machine, don't pull it to one side

* when sewing, don't pull the material

* be careful not to bend the needle when pulling out material before you cut the thread

* avoid a needle that is too long, and you'll avoid a possible wrecked bobbin case to go with your broken needle

* after basting, check to be certain you haven't left pins in the material...to avoid sewing over them

* when you're using straight-stitch needle plate and foot, be sure the machine is set for straight stitching at the center needle position

* when you do twin-needle stitching, don't let the twin needle hit the needle plate

* make sure the presser-foot shank is securely fastened to the presser bar

* make sure the needle plate is seated properly and the slide plate is shut

* guide and support fabric behind the needle, don't pull it too hard or too fast
How to change the needle

1. Raise the needle clamp to its highest position.
2. Loosen the needle clamp screw and remove the old needle.
3. Insert the new needle as far as it will go against the stop.
4. Tighten the needle clamp screw.

7. THE NEEDLE MOVES BUT NO STITCH FORMS

- Check to see that the needle is straight and sharp, it's the right size for your machine, it's the right size for the thread you're using, and it has been fully inserted into the needle clamp. (Also, this problem may occur if you are using a ball-point, yellow band needle to sew knit or stretch fabrics.)

- Make sure the machine is correctly threaded.

- The problem may be with the bobbin: Does it contain thread? Is the bobbin latch in the "sew" position? Is the bobbin case area free of lint and ends of loose thread? Is the bobbin correctly inserted in the bobbin case? Are the bobbin and bobbin case correctly inserted in the machine?

8. NEEDLE PLATE PROBLEMS

- Make sure the power and light switch is on, the machine is connected to the power supply, and the controller is connected.

- The hand wheel must be engaged for bobbin winding, and the hand wheel disc in sewing position.

9. SKIPPING STITCHES

- Always pre-wash your material.

- Be sure to use the correct needle, and always attach the needle to the needle bar correctly.

- If the needle is bent or blunt, insert a new one.
• Use the correct stitch length.

• Check to see the pressure of the pressure bar is enough. If not, tighten it.

• Make sure the needle you're using is suited to your thread and fabric, and you are using the correct needle plate.

• Your needle setting may be incorrect.

• Make sure the upper thread tension is not too tight.

• Use the correct presser foot pressure.

• Remember to baste or pin, according to how slippery the material is.

  **Caution:** If you use knits, polyesters, tricot, qiana or, in general, stretch fabrics, remember that they stretch with the needle. The material clings to the needle, and can pouch down and up. This can be difficult to see, yet all it takes to skip a stitch is a tiny fraction of an inch.

10. LOOPED STITCHES

  It's important to remember that the main cause of looped stitches is improper tension. Tighten the lower tension to correct looping on the upper side; tighten the upper tension to correct looping on the lower side. You may need to consult your instructions for tips on adjustment.

• You may need to replace your machine's thread take-up spring. Check to be sure it's working.

• Make sure your needle is threaded correctly, with the appropriate size (good quality) thread for the material you are using.

• It's possible there's been an improper placement of the bobbin case or shuttle, so that thread is pulling from the wrong side of the bobbin...or that the bobbin has been wound too full.

• Be sure the needle you're using suits the weight and thickness of the material you're using.
11. BUNCHING THREAD

• Before beginning a seam, it's possible the upper and lower threads have not been drawn back under the presser foot. When you start a seam, check to make sure both threads are drawn about 4 inches under and in back of the pressure foot. Then hold the threads until you've formed a few stitches.

12. SHRINKING OR PUCKERING SEAMS

• This can happen for a number of reasons. If your thread tension is too tight, the pressure of the pressure foot is too strong, or the position of the feed dog is too high, see your instructions for the appropriate problem.

• Shrinking or puckering may result from your using two different sizes or types of thread. Both the upper thread and the bobbin thread should be the same size and type.

• Check to see whether your needle is bent or blunt and needs to be changed.

• If you are using very sheer or very soft fabric, or with a very wide bight, use an underlay of tissue paper or tarlatan backing.

13. IRREGULAR STITCHING

• As usual, make sure your needle is the correct size for the thread and fabric you're using and that the thread and fabric are of high quality.

• You may be using inappropriate pressure on the presser foot for the cloth you're working with. The threads under the presser foot need to be correctly placed.

• Thread may be wound around the bobbin. You'll need to rewind it.

• The upper thread tension may need tightening.

• Your feed dog may be too low.

• Be sure to guide fabric gently. Don't pull it.

• If there are nicks or burrs at the hole of your needle plate, replace it or polish off the burrs completely.

• Clear bobbin-case area of lint and loose thread ends.
14. THE MACHINE WON'T FEED PROPERLY

- Check the teeth of the feed dog by running your finger over them. If they are not sharp, contact an adjuster.
- The pressure you're using might be too light for the material you're sewing.
- Check the stitch regular to see whether the feed is in neutral.
- Make sure the needle is not bent.
- You may need to tighten the thumb screw in the feed lowering device.

15. BROKEN UPPER THREAD

- You may need to replace your needle, or the thread is too heavy for the needle and needs to be replaced. Other parts that may need replacing include the thread take-up spring, the needle plate, the hook, or the pressure foot.
- Make sure the tension of the thread is not too tight and that the needle threads correctly, set the needle correctly, and begin stitching at a moderate speed. Don't hurry when you sew.

16. BROKEN LOWER THREAD

- Check to see that the lower thread is wound properly, the lower thread is not off the tension spring of the bobbin case, the bobbin case is threaded properly, and the bobbin case and shuttle are free of lint.

17. THE ROTARY HOOK IS BLOCKED

- Check for loose thread in the rotary hook. Manually turn the flywheel in both directions. There will be resistance. Turning the flywheel will cut the thread.
- Take out what's left of the thread. Oil the rotary hook. For a few minutes, let the machine run without thread.
Note: Needlepoint is not always sharp. Changes in the shaft and flat side can be made to accommodate needles used for special sewing tasks.

- STANDARD SHARP: Best used on cotton, wool and linen, and most other materials, this needle’s sharp point meets the least resistance as it penetrates the cloth.

- BALL: Its point is rounded, yet when you touch it, it is sharp. The reason for the round point is to penetrate the spaces between fibers instead of cutting them.

- WEDGED NEEDLE: Used on material that does not have fibers, this needle makes a wide hole. It is used on leather, vinyl, nylon, and some plastics.

- SPECIAL PURPOSE NEEDLE: Used on stretch, polyester, knits, and special weave materials, this needle has a flat side shaved to .0012 inch. This means the needle comes closer to the hook. Because the indentation is enlarged, it provides a place for the hook to take the thread and avoid striking the needle.

HOW TO CHANGE THE NEEDLE

1. Lift the needle clamp to its highest position.
2. Loosen the needle clamp screw and remove the old needle.
3. Make sure the new needle is in as far as it will go.
4. Secure the needle clamp screw...tightly.
NEEDLE PLATE PROBLEMS

If you are experiencing skipped stitches, your trouble may be the "hole." On a straight stitch machine, the needle plate hole is small. There's not much space for the needle to pass through the opening. The presser foot also is smaller.

Use the straight stitch needle plate for stretch material, instead of the zigzag needle plate. This narrows the hole almost five times. The advantage of the small hole is that not as much material will pouch into it. If your machine doesn't allow you this option, buy a different model.

NEEDLE, FABRIC AND THREAD

If you want a fine stitch, you must select the correct needle and thread.

- For thin calico, silk, serge and muslin use a No. 9 needle and No. 80-100 cotton thread or fine silk thread.
- For thin calico, cotton cloth, crepe de Chine, hosiery and silk, use a No. 11 needle and No. 60-100 cotton threads or ordinary silk thread.
- For ordinary cotton cloth, denim thin woolen goods, polyester, towels and shirting, use a No. 14 needle and No. 40-60 cotton thread or polyester thread.
- For thick cotton cloth, denim serge and thin woolen goods, use a No. 16 needle and No. 30-60 cotton thread or polyester thread.
- For ordinary woolen goods, trousers, overcoats, thick calico and children's clothes, use a No. 18 needle and No. 30-60 cotton thread or polyester thread.

DON'T MAKE THE MISTAKE OF USING OLD THREAD OR "BARGAIN" THREAD. Old thread breaks more, frays more and sheds more lint than quality thread. Pay a little extra, and you'll save yourself headaches.

We also recommend that you use a ballpoint needle for sewing tricot, knits and elastic material. This will avoid damaging the material, skip stitching (Ball point needles go between threads in the fabric, whereas ordinary needles can damage the material or skip stitches.)
**REPLACE YOUR OLD NEEDLE** with a good one. Making the switch, see that the needle fits correctly into the needle bar. Otherwise, you soon may experience broken thread, more noise than is normal during operation, throat plate damage, sewing hook damage, or skipped stitches. After taking off the throat plate, clean the area around the feed dog to remove lint and dirt. Check the feed dog, between the slats or rows. Replace the throat plates if the needle hole has scored marks or burrs around it.

**IF THE NEEDLE THREAD BREAKS...**

...your best bet is to check for
(1) knotted thread
(2) thread too coarse for the needle
(3) a needle that is too fine for the size of thread and the material you are sewing
(4) incorrect threading
(5) too much upper tension
(6) a bent or blunted needle
(7) incorrect needle setting
(8) damage to the hole in the throat plate
(9) a burr on the presser foot's needle hole
(10) incorrect thread arrangement (check this before you begin to sew)
(11) needle thread tension that is too tight
(12) a needle that is too long for your machine or not inserted fully in its clamp
(13) bending or breakage in the take-up spring
(14) thread working in a groove due to wearing of the tension discs
(15) thread that is not unwinding freely from the spool
(16) the appropriate spool cap
(17) an incorrectly inserted bobbin case
(18) a marred bobbin rim
(19) the setting of the Flex-Stitch dial (it should not be set at "0" when straight or zigzag
(20) darning thread not having a left twist
(21) too-dry thread, due to long storage
(22) dirt on or in the machine.

**IF THE BOBBIN THREAD BREAKS...**

...(1) the bobbin case or shuttle may be threaded wrong
(2) there may be too much bobbin thread tension
(3) the bobbin may be bent
(4) the bobbin case may be damaged
(5) the thread on the bobbin may be wound unevenly or too full
(6) you may have a worn spring or a shuttle worn to a sharp edge
(7) check for a burr on the throat plate's bottom side
(8) check for lint or loose threads around and on the bobbin case
(9) make sure the bobbin case is inserted the right way
(10) check the slit on the thread spool to see that no thread is hanging it up
(11) look above the needle plate to make sure the thread has been brought up the right way.

IF THE UPPER THREAD BREAKS WHILE YOU'RE WINDING THE BOBBIN...

...be sure
(1) you have the presser bar in a raised position
(2) the spool has thread unwinding freely
(3) the spool holder holds the spool correctly
(4) you've threaded the machine correctly.

IF THE THREAD DOES NOT WIND ONTO THE BOBBIN...

...(1) it may be that your bobbin latch is not in winding position
(2) make sure the thread goes beneath the toe of the presser foot before you put it on the thumb screw spring
(3) check to see that the thumb screw spring securely holds the thread end.

IF THE THREAD BREAKS AFTER YOU'VE WOUND THE BOBBIN AND HAVE BEGUN TO SEW...

...(1) check to be sure that in winding the bobbin, you haven't gone beyond the "FULL" ring (if the bobbin is over-wound, turn the hand wheel away from you and the excess thread will go free of the bobbin) (2) loose threads and lint may have contaminated the bobbin case area. Clean up the mess.
To prevent puckering, and to prevent a number of other problems that get in the way of good sewing, it is essential that you make the tension of the upper and lower threads equal.

To get an indication of the balance or imbalance in the tension of your upper and lower threads, try sewing with a spare or "practice" piece of material.

To change the tension of the upper thread, first lower the presser foot, then turn the thread tension dial. (Note: The zigzag stitch takes less upper tension than the straight stitch.) The higher the number on the dial, the greater the tension, and vice-versa.

Maybe changing the thread tension does not make better-quality stitches. Here is.
HOW TO TAKE APART AND REASSEMBLE
THE THREAD TENSIONER

1. Loosen the set screw.
2. Unscrew the knob.
3. Pull the dial off the shaft.

4. In the following order, remove the dial stop, tension spring, tension releasing disc, two tension discs and the tension release pin.
5. Loosen the two set screws.
6. Pull out the tension stud and the check spring.
   CAUTION: Some check springs pull up, some down.
7. If the check spring shows wear or breakage, replace it.
8. Reverse the above process to reassemble the thread tensioned.
The **tension of the lower thread**, having been set at the factory, should not need adjustment for most sewing conditions. However, if you are sewing with extremely thin or heavy material, you'll need to make a change in the lower thread tension.

Find the small screw on the tension spring of the bobbin case. Use a small screwdriver, turning slightly clockwise for greater tension and slightly counterclockwise for less tension.

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**CLEANING YOUR MACHINE**

Rule number one when cleaning your machine is to unplug it: Disconnect the power-line plug from the electrical source.

Rule number two is to clean your machine regularly. Frequency is the key: If you use your machine a lot, clean it often. The rule of thumb is to clean every three months for normal use, more frequently if you sew often.

Always take time to remove lint and fluff from the outer parts of your machine.

Different surfaces in your machine require different cleaning devices and different approaches:

1. Using a **soft brush**, clean the tension discs, presser bar, needle bar take-up lever, thread guides, and the machine surface. For the latter, you may have to dampen a cloth and use mild soap.

2. Using a **fine cord or multiple strands of thread**, clean the thread-retainer spring.

3. Open the slide plate, take out the bobbin and the plate, and use a **lint brush** to clean the area around the feed and around the bobbin case.

4. Using a **lint brush or a soft cloth**, clean the bobbin window. If the underside of the window needs cleaning, you'll need to tilt the machine back at a slight angle.
5. Pay special attention to the feed dogs and shuttle race areas. Dust and lint find their way to these areas. A loose thread can cause your machine to operate sluggishly or knock.

To clean the feed dogs, begin by unplugging the machine.

Next, take off the presser foot and needle. Now, using a screwdriver, take off the needle plate.

Clean the feed dogs with a lint brush.
Put back the needle plate.

To remove the shuttle hook, lift the needle to its uppermost position, open the shuttle cover, remove the bobbin case, push the latch levers to the outside (and remove the retaining ring), and remove the hook by holding its center post.

Clean the shuttle race about every three months, removing dust, lint and tangled thread.

To clean the shuttle area, put the needle bar as far up as it will go, and take off the bobbin case. After pushing the shuttle race levers aside, take up the shuttle race cover and remove the shuttle.

Using a lint brush, clean the shuttle race.

Apply one drop of oil to the center pin of the shuttle and shuttle race. Be careful to use no more than one drop.
**Put the shuttle assembly back together**, beginning by placing the shuttle race as shown in the illustration below. Make sure the shuttle driver forms a half-moon on the left side of the machine.

Holding the center pin, place the shuttle to make a half moon on the right side. **Note:** The pointed hook now is at the bottom.

Put the shuttle race cover in the plate over the shuttle assembly, and snap the levers so that they are in their original position.

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**CHANGING THE LIGHT BULB**

When the light bulb goes out during operation, chances are it will be very hot. Be sure your fingers are protected. Also, be sure the machine is unplugged from the electric socket before you change the bulb. Be sure you are using the correct bulb for your machine. The maximum input of a 12 watt lamp is 110/120 volts.

To replace the bulb, remove the face plate by loosening its screws and lifting it off. Rotate the light bulb counter clockwise to take it out. Screw in the new bulb and return the face plate to its working position.
Push the bulb up and turn it counter clockwise. This will release the bulb. To insert the new bulb, push it up and turn it clockwise.

NOTES ON OILING YOUR MACHINE

How often should you oil your sewing machine? If you want to avoid sluggish running or loud knocking, the answer is at least once a year. Note that if you use your machine frequently, you should oil under the top cover once every three months.

If you are sewing for the first time since an extended period of nonuse, be sure to oil it before use.

Be sure to choose the finest quality sewing machine oil you can buy, and remember that one or two drops is plenty.

After oiling, don't forget to wipe away all excess oil. You don't want to stain your fabric.

Oiling tips:

♦ Use sewing machine oil exclusively. Household oil is not made for this job.

♦ Do not oil the tension disks.

♦ Before you oil, be sure the machine is unplugged.

♦ Take out the needle, and move the needle bar to its full down position.
Do not oil the motor unless otherwise instructed by your owner's manual. In the event you do oil the motor, be especially careful not to let on the internal parts, with the exception of the shaft at the brushings.

Never oil gears. They receive grease or special lubricant. Some lubricants may cause gears made of synthetic material to break down due to a chemical reaction between the two substances.

At each oil point, there will be a hole that guides you. Oil all metal-to-metal moving parts and all shaft bearings. To view the joints that move and the moving rocker points, move the hand wheel back and forth. Any cam lobe point receives gear lubrication.
INSTALLING A NEW MOTOR

Your machine's motor may begin to run slowly or may not run at all. The first places to check are the two carbon brushes, one on each side of the motor. Using a flat screwdriver, loosen the screw and remove the carbon brushes. If they are gone, replace them.

If the motor does not run after you've replaced the carbon brushes, replace the motor. Begin by loosening the screw on the bracket. Remove the old motor and install the new one. In doing so, it is important not to tighten the belt. And be sure to oil the new motor frequently with a small amount of sewing machine oil.

Carbon Brush IS Cap- Screw Spring

HOW TO ADJUST THE BOBBIN-WINDER TENSION DISC

Placing a screwdriver in the slot of the bobbin-winder disc, push down on the foot pedal while turning the screwdriver to the left or right depending on whether you want to tighten or loosen. Be sure the thread is properly and evenly wound on the bobbin. If the thread forms a cone, you will know it is not adjusted. By trial and error, find the correct adjustment.

Motor Bracket

Locknuts
If the bobbin will not spin in its winder, check the tire, which on most machines is under the machine's top cover or on its side. If it's on the top cover, unscrew the cover and find the tire. Check to see whether the rubber friction ring is torn or cracked. If it is, pull it off the wheel, install a new tire, and replace the cover.
If you are using a Singer sewing machine, chances are its needle bar has been marked at the factory for timing. Look for two lines around the needle bar, about 2 inches from the bottom. If they're not there, you'll need to know...

### HOW TO SET AN UNMARKED NEEDLE BAR

1. Make sure the hook is timed.
2. Loosen the pinch screw.
3. By raising or lowering the needle bar, place the eye of the needle 3/32 of an inch below the point of the hook after the needle has risen 3/32 of an inch from its lowest point.
4. Tighten the pinch screw.
5. Check to see that the stop screw is in place. If it's not, it will adversely affect the timing.

### HOW TO SET A MARKED NEEDLE BAR

1. Find the two lines as mentioned above.
2. Follow the same directions for setting an unmarked needle bar, with the following exception:
3. When the needle bar is at its lowest point, the upper mark should be barely visible at the bottom of the needle bar bushing.

![Marked vs Unmarked Needle Bar Diagram]
TIMING HOOK WITH NEEDLE

A high-priority item to check in your machine is the shuttle. Always check to see that it is in top condition.

First, remove the shuttle hook from the shuttle race. To reach the shuttle, you'll need to remove the needle plate and check the shuttle timing in relation to the needle.

Also:

♦ Check the point of the hook by running your finger across the point. You should not feel any burrs or sharp edges.

♦ Make sure the shuttle is not rough, because this will lead to broken or frayed thread.

♦ There should be no breaks or cracks in the hook.

♦ Check to see whether there is worn on the sides of the shuttle that run in the shuttle race. If so, install a new hook.

THE TIMING PROCEDURE

After checking the timing of the hook and determining it needs adjustment, follow these steps:

1. Set the pattern selector knob at (symbol) and the zigzag regulator knob at "0."
2. Go to the position at which the shuttle hook point joins the needle. Make sure that the distance between the shuttle hook point and the center of the needle eye is 3/32 of an inch.

Shuttle Hook
3. Make sure the needle is as far up into the needle bar as possible, and check to see the stop screw is placed correctly.

![Screw](image1)

4. Go to the balance wheel and turn it toward you so that the needle bar is at its lowest position, then rises 3/32 of an inch. Now go to the hook shaft and loosen its set screws.

![Setscrew](image2)
As you hold the needle in that position, use your fingers to turn the hook. Move the point of the hook so that it crosses the center of the needle 3/32 of an inch above the eye. Keeping the hook where it is, tighten the set screws.

Shuttle Hook

6. The set screws must be set firmly. They are not positioned or spotted in a notch, and setting them firmly will ensure the part will not move around on the hook driving shaft.

**HOW TO TIME THE FEED DOG, NEEDLE AND THREAD TAKE-UP LEVER**

The feed dog might be the reason your machine is not feeding material in the correct fashion. Check to see whether the position of the feed dog is too high or too low, or out of time with the needle.

Once you have determined the problem, you can adjust the feed dog accordingly. Here's how:

1. Remove all dirt and lint. To get to the feed dog, take off the needle plate. Be sure there's no dirt or lint between the rows of the feed dog.
2. Check to see whether the feed dog is worn, and replace it. This can happen especially if you own a Singer machine with a rubber feed dog. Also check the needle plate for score marks or burrs around the needle hole. If you find any, replace the needle plate.
3. When you check the timing of the feed dog in relation to the needle, make sure that when the needle penetrates the fabric, the top of the feed dog is flush with the top surface of the throat plate when the feed dog is on its downward stroke.
4. Loosening the screw on the feed shaft will adjust the height of the feed dog.

Lift the needle until it is at its uppermost position, and set the feed dog 1/32 to 1/16 of an inch (.8 -1.6 mm) above the needle plate.

Loosening the set screw in the cam on top of the arm shaft will enable you to time the feed dog. Next, move the cam so that the aligning mark is even with the mark on the top shaft.
HOW TO ADJUST THE DIRECTION OF THE PRESSER FOOT

Check to see whether the presser foot is parallel with the feed dog slots in the needle plate. If it is not, here's how to adjust it:

1. Take out the lamp and the other fixtures in the machine's front side.
2. Raise the presser bar lifter, and then loosen the set screw in the presser bar bracket.

3. Change the alignment of the presser foot, making sure both sides are parallel with the feed dog slots in the needle plate.

4. Look at the height of the presser foot in its raised position. Make sure the needle bar does not come in contact with the presser foot in its down position. Proper clearance is 1/16 of an inch (1.6 mm).
5. Now move the needle to its down position, along with the feed dog. Move the presser foot so that it sits flat against the needle plate. There should be at least 1/16 of an inch between the presser foot lifter and the presser bar bracket.

6. Secure the set screw firmly, and then replace the light fixture.

NOTE: A device called a pop-up damer, which regulates the pressure on the presser foot, appears on most late-model sewing machines.
Press the button above the pop-up darned all the way down.

If you are darning or sewing monograms, find the bottom, metal ring and press down on it to release the button and the pressure on the presser foot. Experiment with the button by pressing it down in various pressures.
HOW TO TIME SINGER MACHINES (MODELS 900, 200 AND 2000)

CAUTION!!! Before beginning the adjustments below, make sure your electrical connections are unplugged and your bottom covers are removed.

The steps in timing the above models include:

1. Bring the needle bar to its lowest dead point by turning the hand wheel. Make sure the upper mark on the needle bar is even with bottom edge of the presser bar bushing.

2. If the upper mark on the needle bar is not in line with the bottom edge of the presser bar, loosen the pinch screw and adjust the needle bar in the appropriate direction.
3. Bring the needle bar to the point where the lowest timing mark on the needle bar is lined up with the bottom edge of the presser bar bushing. Do this by turning the hand wheel.

![Diagram of Presser Bar Bushing, Needle Bar, and Timing Marks]

4. Check to sure that the point of the rotary hook is at the center of the needle.

![Diagram of Rotary Hook]

5. Find the set screws on the drive pulley (see illustration below). Loosen the set screws, move the rotary hook into the position in the illustration above. Tightly secure the setscrews.

![Diagram of Motor Belt, Drive Pulley, and Setscrews]
HOW TO ADJUST THE BOBBIN CASE
AND BOTTOM TENSION FOR
SINGER MODELS 240, 250, 360

NOTE: You may need to remove the bobbin case and the bobbin itself before timing the hook with the needle.

The steps:

1. Take the front edge of the spring position bracket, lift it and slide it to the right. Do not remove the spring position bracket.

2. Take out the bobbin case.

3. Time the hook. In reverse order, reassemble, making sure there is 1/32 of an inch (.8 mm) clearance for the thread to pass between the bobbin case and the spring position bracket. If there's not, loosen the screw and adjust the bracket.

4. Lighten the tension of the bobbin by adjusting the screw.

5. Apply a small amount (a few drops) of high quality machine oil on the hook before you resume sewing.
**HOW TO ADJUST THE BOBBIN CASE AND BOTTOM TENSION ON SINGER MODELS, SERIES 400, 500 AND 6105**

**NOTE:** You may need to remove the bobbin case and the bobbin itself. On the left side of some models, you will find a retainer plate. You may need to turn the retainer plate to remove bobbin case and the bobbin. If not, follow these steps:

1. Find all three screws and loosen them.
2. Move the retaining plates to the right.
3. Take out the bobbin case and the bobbin.
4. Time the hook, then reassemble the mechanism in reverse order.
5. Leave 1/32 of an inch between the two retaining plates so there's clearance for the thread to pass.
6. If necessary, turn the screw to adjust the bobbin tension.
   **NOTE:** Make the tension light.
7. Place a small amount (a few drops) of high quality sewing machine oil on the hook before you resume sewing.
NOTE: On the Singer machines in these series, you may need to remove the bobbin case and the bobbin itself. If so, here are the steps to follow:

1. Lift the spring position bracket so it is above the eccentric screw. Slide it to the right, making sure not to remove it.

2. Remove the bobbin case and bobbin. Time the hook. Reassemble the mechanism in reverse order, making certain there is 1/32 of an inch (.8 mm) between the bobbin case and the spring position bracket so the thread can pass through.

3. If the clearance is not there, go to the front of the machine base, loosen the set screw and position the bracket by turning the eccentric screw.

4. Tighten the set screw again.

5. If you need to, turn the tension adjusting screw to change the tension on the bobbin. Be sure to keep the tension light.

6. Before you sew again, apply a few drops of high quality sewing machine oil to the hook.
HOW TO ADJUST THE BOBBIN CASE
AND BOTTOM TENSION IN SINGER MACHINES,
900, 920 AND 2000 SERIES

NOTE: On the Singer machines in these series, you may need to remove the bobbin case and the bobbin itself. If so, here are the steps to follow:

1. Go to the spring clip and the round nut and remove them.

2. Remove the retainer plate.

3. Remove the bobbin case and the bobbin.

4. Time the hook, and put the mechanism back together in reverse order. Leave 1/64 of an inch (.4-.8 mm) between the bobbin case and the retainer plate, so thread can pass through.

5. If the clearance is not correct, loosen the set screw on the front of the machine base, then position the retainer plate by turning the eccentric screw.

6. Tighten the set screw again.

7. If you need to change the tension on the bobbin, do so by turning the small screw on the inside of the bobbin case. Don't forget to adjust to light tension.
HOW TO TIME THE FEED ON
SINGER MODELS, 700 SERIES,
737, 750, 755, 756, 758, 770, 775, 778

You will know if your machine's feed is out of time if:

♦ the machine does not feed the material properly and
♦ the needle hangs in the cloth while the feed dog moves

Here are the steps to follow to time the feed:

1. Work the set-stitch-length knob so the setting is for the longest stitch.

2. Be sure all connections to your electrical supply have been removed.

3. Remove the plastic cover at the bottom of the machine.

4. Put the needle bar at its lowest dead point by turning the hand wheel. Check the bottom of the needle bar bushing to see whether the upper mark on the needle bar is visible. If it can't be seen, you'll need to adjust the needle bar up or down. Loosen the pinch screw and make the adjustment.
5. Raise the needle bar, using the hand wheel, to the point where the lowest mark is visible at the bottom of the needle bar bushing.

![Diagram](image1.png)

Once you have moved the needle bar into position, adjust the feed lifting cam by...

6. Go to the two set screws in the cam. Loosen them, and then turn them slightly in either direction, so that the timing mark on the cam lines up with the timing mark on the drive connector link.

7. Tighten the set screws.

![Diagram](image2.png)
HOW TO TIME THE FEED FOR
SINGER MODELS 900, 920, 2000

You will know the machine is out of time if it does not feed your material, and the needle hangs in the cloth while the feed dog is moving.

Here's how to adjust the feed:

1. Turn the stitch-length knob so the setting is for the longest stitch.
2. Be sure the machine is disconnected from all electrical sources.
3. Remove the plastic cover at the bottom of the machine.
4. Place the needle bar at its lowest dead point by turning the hand wheel. To line up the upper mark on the needle bar with the bottom edge of the presser bar bushing, loosen the pinch screw and move the needle bar up or down.
5. Using the hand wheel, place the needle bar at the position where its lowest timing mark is even with the bottom edge of the presser bar bushing.

Now adjust the feed lifting cam by...

6. Loosening the two set screws in the cam, turning a little either way.
7. When you have brought the timing mark on the cam even with the timing mark on the drive connector link, tighten the set screws.
SEWING MACHINE PARTS

Sources:

1. Local Sewing Machine Dealer.
3. Sears Store for Kenmore Machines.

IMPORTANT: Full description, number of part, name and model number of your machine has to be send when you order parts from a Dealer.

CHECK SPRINGS

- Bernina: 318.002.03
- Elna: 711094
- Neechl: 206510-10, 857180-01, 857180-11, 7141
- Pfaff: 8186, 132304001, 82208006, 4277, 857180-30, 762-56608
- New Home: 60009
- Brother: 106708
- Neechl: 106355
- Free Vib: 237174
- White Rot 75: 9249
BOBBINS

2518
2518NS
2518T

2518P
81348

172222
172222T

172222P
172222PS

163131

136492-001
136492-101
55623NS
X80309001

8228
181551
312956
283395
503855

0115367

R22J

493500-10
4011770
11770
11770P

1645322
1645330
1975330-00
2518

102261103
9033
9033NS
9033P

4123078-45
4120975-45
9304097045
BOBBIN CASES

BOBBIN WINDERS
TENSIONS COMPLETE

TENSION PARTS

KNOBS
NEEDLE CLAMPS

FEED DOGS

50
Sinner Zia Zan & Straight Stitch Needle Plates

- 383339
- 447580 (6 mm zig zag)
- 444443
- 8323
- 125319
- 32602
- T63727
Japanese Zia Zag Needle Plates
European Zia Zaa Needle Plates

4111555

4115628

456

58
In these days, it's becoming increasingly difficult to make ends meet with just one source of income. Thus, more and more people are investigating the possibilities of starting their own extra-income business. Most of these part-time endeavors are started and operated from the comfort and privacy of the home.

Most of these people are making the extra money they need. Some have wisely and carefully built these extra income efforts into full-time, very profitable businesses. Others are just keeping busy, having fun, and enjoying life as never before. The important thing is that they are doing something other than waiting for the government to give them a handout; they are improving their lot in life, and you can do it, too!

The first thing you must do, however, is some basic market research. Find out for yourself, first-hand, just how many people there are in your area who are interested in your proposed service, and would be "willing to stand in line and pay money for it." This is known as defining your market and pinpointing your customers. If after checking around, talking about your idea with a whole lot of people over a period of one to three months, you get the idea that these people would be paying customers; your next effort should be directed toward the "detailing" of your business plan. The more precise and detailed your plan - covering all the bases relating to how you'll do everything that needs to be done - the easier it's going to be for you to attain success. Such a plan should show your start-up investment needs your advertising plan, your production costs and procedures, your sales program, and how your time will be allocated. Too often, enthusiastic and ambitious entrepreneurs jump in on an extra income project and suddenly find that the costs are beyond their abilities and the time requirements more than they can meet. It pays to lay it all out on paper before you get involved, and the clearer you can "see" everything before you start, the better your chances for success.

Now, assuming you've got your market targeted, you know who your customers are going to be and how you're going to reach them with your service. And you have all your costs as well as time requirements itemized. The next step is to set your plan in motion and start making money.

You can make up to $5000 per month to repair sewing machine at home, spend as much or as little time you want.
This is your business and you are the one make decision work the hours you want. You can start working few hours a day or weekends and turn sewing machine repair into full time business.

Start sewing machine business can be done with little money up front. You can first let friends know you are able to work on their sewing machines, and the business will start.

After that print your flyer and go around to tailor shop, dry cleaner, hospital, department store, etc. Let know you work on their sewing machine.

I would suggest that you find a used cheap sewing machine at a garage sale. Use this sewing machine booklet to repair and re-sell it. Until you become a proficient sewing machine repairman. Now you are ready to go out and make big money.

Put time and effort into this business I am sure you will be successful!

**HOW TO START YOUR BUSINESS**

You have to choose one of these three types of business organization to start your business:

1. sole proprietorship
2. partnership
3. corporation

**SOLE**

This type of business has only one owner. It is the most common business organization for home based business.

The owner has responsible for any debts and fail sales tax and income tax. This type of business is the easiest to start your business.
PARTNERSHIP

This type of business is two or more individuals agree to open a business and every partner is responsible for any debts and fails taxes.

If you decide to go with partnership business we recommend to go to an attorney for write the partnership agreement.

CORPORATION

This type of organization is the corporation. A Corporation is the type of business set up by law.

There are several people involved in this type of business. The company has vice president, a board of directors, officers, etc.

This type of organization requires a lot of paperwork for a small business.

FIND THE NAME FOR YOUR BUSINESS

Keep the business name as simple as possible, it is easy for the customers to remember you.

Use your name, as part of the business name and you won't have to file for a fictitious name.

Sample: "Mike's Sewing Machine Repair." Now

is time to get some business cards.

Put your business name on the top with the logo, if you have one, then your address and phone number at the bottom of the card.

Print some self-adhesive labels with your business name and phone number.

After each repair attach one to the sewing machine. This is the best reminder for your business and they need you for the next service.
GET YOUR BUSINESS LICENSE

To get your business license you have to check with clerk's office on your local city and ask them about their policy. Because each state have different rules to get business license.

Also you have to apply for tax ID number from your local city tax office (some state don't have sales tax.)

When you collect the sales tax from your customer you have to pay every month or quarterly to the state.

When you purchase parts from supplies for resell you have to give them tax ID number. The state doesn't want to charge twice on the same item.

LIST OF STATE GOVERNMENT INFORMATION

<table>
<thead>
<tr>
<th>STATE</th>
<th>PHONE NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALABAMA</td>
<td>(205) 832-6011</td>
</tr>
<tr>
<td>ALASKA</td>
<td>(907) 465-2111</td>
</tr>
<tr>
<td>ARIZONA</td>
<td>(602) 255-4900</td>
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<tr>
<td>ARKANSAS</td>
<td>(501) 371-3000</td>
</tr>
<tr>
<td>CALIFORNIA</td>
<td>(916) 322-9900</td>
</tr>
<tr>
<td>COLORADO</td>
<td>(303) 839-5000</td>
</tr>
<tr>
<td>CONNECTICUT</td>
<td>(203) 566-2211</td>
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<tr>
<td>DELAWARE</td>
<td>(302) 736-4000</td>
</tr>
<tr>
<td>FLORIDA</td>
<td>(904) 488-1234</td>
</tr>
<tr>
<td>GEORGIA</td>
<td>(404) 656-2000</td>
</tr>
<tr>
<td>HAWAII</td>
<td>(808) 548-2211</td>
</tr>
<tr>
<td>IDAHO</td>
<td>(208) 334-2411</td>
</tr>
<tr>
<td>ILLINOIS</td>
<td>(217) 782-2000</td>
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<tr>
<td>INDIANA</td>
<td>(317) 232-3140</td>
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<tr>
<td>IOWA</td>
<td>(515) 281-5011</td>
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<tr>
<td>KANSAS</td>
<td>(913) 296-0111</td>
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<tr>
<td>KENTUCKY</td>
<td>(502) 564-2500</td>
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<td>LOUISIANA</td>
<td>(504) 342-6600</td>
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<tr>
<td>MAINE</td>
<td>(207) 289-1110</td>
</tr>
<tr>
<td>MARYLAND</td>
<td>(301) 269-6200</td>
</tr>
<tr>
<td>MASSACHUSETTS</td>
<td>(617) 727-2121</td>
</tr>
</tbody>
</table>

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MICHIGAN (517) 373-1837
MINNESOTA (296) 296-6013
MISSISSIPPI (601) 354-7011
MISSOURI (314) 751-2151
MONTANA (406) 449-2511
NEBRASKA (402) 471-2311
NEVADA (702) 885-4065
NEW HAMPSHIRE (603) 271-1110
NEW JERSEY (609) 292-2121
NEW MEXICO (505) 827-4011
NEW YORK (518) 474-2121
NORTH CAROLINA (919) 733-1110
NORTH DAKOTA (701) 224-2000
OHIO (614) 466-2000
OKLAHOMA (405) 521-2011
OREGON (503) 378-3131
PENNSYLVANIA (717) 787-2121
RHODE ISLAND (401) 277-2000
SOUTH CAROLINA (803) 758-0221
SOUTH DAKOTA (605) 773-3011
TENNESSEE (615) 741-3011
TEXAS (512) 475-2323
UTAH (801) 538-3000
VERMONT (802) 828-1110
VIRGINIA (804) 786-0000
WASHINGTON (206) 753-5000
WEST VIRGINIA (304) 348-3456
WISCONSIN (608) 226-2211
WYOMING (307) 777-7220
HOW TO MARKET YOUR SEWING MACHINE BUSINESS

To find the customers look up to your telephone book under the cleaners, hospitals, schools, clothing stores, etc. section.

Start to contact them and let them know you have the sewing machine repair business.

Also print some flyers and give to your friends, relatives, neighbors, etc.

Run small ad in your local newspaper about your sewing machine repair business.

Sample: Sewing Machine Repair. Free pick up and delivery.
        Phone: 123 4567.

HOW TO CHARGE YOUR CUSTOMER FOR SEWING MACHINE REPAIR

The best and easiest way to find out how you can charge your customer for sewing machine repair; look up in your local phone book under sewing machine repair section.

Choose several sewing machine repair shops. Call them and ask how much they will charge for repair and service. Write all prices, go $5 or $10 under the lowest price you have. Usually for service sewing machine the price is between $40 to $55.