Chapter 4: Troubleshooting and Maintenance

– Basic Troubleshooting/ Sewing Interruptions
  • Handling Sewing Interruptions: Thread breaks, hoop strikes, needle breaks, birdnests
  • Troubleshooting thread breaks page 3

– Maintenance and Upkeep
  • Cleaning the rotary hook area page 4
  • Oiling: daily and weekly schedules

– Advanced Maintenance/Repair Techniques
  • Rotary hook timing page 5
  • Hook retainer adjustment page 8
  • Setting/adjusting presser foot height page 9
  • Setting needle depth page 10
Recovering From Sewing Interruptions

Your machine remembers the last-sewn stitch and position after most sewing interruptions, including thread breaks, hoop strikes, or shut-down. As long as the garment remains hooped, there is a good chance you can resume sewing once you've fixed the problem. Note: Sudden power loss or emergency shut-down may result in slight mis-alignment.

General Steps for Recovering from Sewing Interruptions

1. **Fix the problem.** Repair thread break/replace needle, clear any blockage of thread or broken needle. Check that the bobbin and needle are re-threaded properly.

2. **Verify sewing position.** If the current needle does not appear to be over the correct position to resume sewing, press `FUNC`, then arrow down to `POSITION`, and press `SET`. If the sewing arm has been moved off the current sewing position, the carriage should return to this position now; otherwise it will not move. The stitch counter should also now reflect the current sewing position.

3. **Back up if necessary.** To overlap slightly to prevent gaps, press the `STOP` key until the satisfied.

4. **Press `START` to resume sewing.**

If the Garment Has Become Mis-Aligned

If you find the machine is slightly off-alignment when resuming sewing, follow this procedure:

1. **Make note of the current sewing position (stitch#).** At this point, also make a mental note (best-guess) of how far off the sewing position is, and in what direction.

2. **Return to the design Origin position.** Do this by pressing the `FUNC` key, selecting `ORIGIN`, and pressing `SET`.

3. **Adjust the position of the hoop** using the arrow keys based on your guess in step 1.

4. **Return to the stitch # of the last-sewn position** by pressing `MENU`, choosing `POSITION`, and pressing `SET`. Arrow down to the third option (stitch #), enter the stitch # from step 1 using the arrow keys and press SET. The sewing arm will now move to the last-sewn position. Press `ESC` to return to the main (drive) screen.

5. **Test-sew or trace to verify before resuming sewing.** If you’re still slightly off, repeat steps 1-4 above.
Basic Troubleshooting: Thread Breaks

We’ve listed the most common causes for thread breaks are listed in a flowchart below, in order of frequency. Learn this checklist to keep your machine sewing trouble-free.

- Is the thread actually broken?
  - NO: Check if: (1) bobbin out & reload or (2) if sensor is working/properly threaded
  - YES: Check Thread Feed/Path:
    - thread path: is it correct at all points?
    - feed: is it smooth? Is it catching on anything?
    - Correct Needle orientation? Scarf should be at back
    - If path/feed is not the cause, then:
      - Check condition/quality of thread:
        - Old or mis-handled thread will break more frequently, especially when running in significant volume/speed.
        - Use quality 40-wt polyester or rayon embroidery thread.
      - Maybe a design problem if breaks in the same place(s).
        1. Turn on the Stitch Sweeper, and reload the design, or
        2. Have the digitizer fix the bad section or run a design cleanup to remove short stitches.
  - If the design is not the cause, then:
    - Check for damage/scarred surfaces from hoop strike or needle break. Broken bits of needle/other metal may scar/bur surfaces that contact thread i.e. needle, presser foot, needle plate, point area of rotary hook. Replace needle, use fine abrasive cord/cloth to “polish” these surfaces smooth again.

Re-thread and sew again.

Thread Breaks: Other Causes

Sometimes less-obvious causes may contribute. These regular maintenance steps will further reduce causes for thread break:

Keep Hook Area Clean
Over time, lint, bits of thread and other debris + oil combine in the rotary hook area to coat important sewing surfaces and interfere with sewing. Clean this area from time to time (more if you run your machine hard) with compressed air and/or a spray cleaner such as Hook Wash.

Improper Thread Tension
Over-tight AND over-loose tension either at the bobbin or the upper thread contribute indirectly to thread breaks.

Rotary Hook Timing
If you’ve eliminated the most common causes, check to see if the rotary hook may have slipped slightly out of time. Read more on rotary hook timing, its significance, how to check and adjust later on in this chapter.
General Maintenance and Upkeep

- **Oiling:** Use only white sewing machine oil

  There are 2 oiling schedules based on how frequently the machine is used:
  
  - **Every 8 hours** (or more if used heavily) – 1 drop of oil on the "race" of the hook as shown.
  
  - **Every 40 hours** (as shown in diagram below, right)
    
    (a) **needle bars:** 1 drop on each
    
    (for b, c, and d, move head to Needle 1)
    
    (b) **"cup"** cut-out marked in yellow on machine
    
    (c) **reciprocator and presser foot shafts,** upper portion
    
    (d) **reciprocator and presser foot shafts,** lower portion

- **Cleaning**

  Clean the rotary hook area on a regular basis (especially with regular use) using solvent and compressed air. Helps prevent buildup of debris/oily film from lint/dust and oil spray. Reduces thread breaks & other sewing problems. Remove the needle plate first to get better access for cleaning.

  Removing the needle plate exposes more of the rotary hook area for more-thorough cleaning.
Inspecting Rotary Hook Timing and Clearance

If you suspect that your rotary hook timing is off, you can check this easily yourself following this short procedure.

1. **Select needle six (6).** Do this using the keys on the control panel.

   Note: While the timing can be set on any of the twelve needles, it is generally a better idea to use a needle that is near the center of the moving head to account for possible side-to-side variation between needles one and fifteen.

2. **Remove the needle plate.** Do this by loosening each of the two (2) flathead screws with an offset screwdriver.

3. **Remove the bobbin case.**

4. **Engage the needle.** Do this by pressing the P.FOOT key, which lowers the presser foot. Then, grab the needle bar over the presser foot, and pull it down until it locks into place.

5. **Turn shaft to 25 degrees.** Do this with a 3mm Allen wrench. Turn the main shaft from the rear of the machine clockwise to L+25 (25 degrees). The needle should be down and in the basket area of the rotary hook at this point.

Advanced Maintenance/Repair: Hook Timing

- **Rotary Hook Timing**
  
  **About the Rotary Hook**
  
  The rotary hook is responsible for catching the top thread and creating a loop around the bobbin thread in order to form a stitch. To catch the top thread, the point of the rotary hook must arrive at a precise moment and distance to the needle (timing and clearance). When the timing and clearance are out of adjustment, the machine will generally experience missed stitches, looping, thread breaks and needle breaks.

- **Timing for HCS-1201 is at 25 degrees.**

   Needle in rotary hook basket
Inspecting Rotary Hook Timing and Clearance *(continued)*

**TIMING:**
Viewing the hook assembly from the front of the machine, the point of the rotary hook should be hidden behind the needle.

If this point is visible to the left or right of the needle, the machine is not in time and will require adjustment.

**CLEARANCE:**
Viewing the hook assembly from the side of the machine, the point of the rotary hook should be approximately 0.1-0.15mm from the back of the needle (about the thickness of a business card).

If the point is either touching or too far from the needle, the machine is not set correctly and will require adjustment.

Timing for HCS-1201 is at 25 degrees.
To Adjust Rotary Hook Timing

It is important that all owners learn to inspect rotary hook timing, but the actual adjustment requires some precision and skill, and should not be attempted if you do not feel comfortable doing this. If in doubt, consult appropriate support staff before continuing.

1. **Prepare the Machine.** Do this by completing steps 1-5 on page 5 of this chapter.

2. **Loosen the Rotary Hook.** Do this by loosening each of the three (3) set screws that attach the rotary hook to the rotary hook shaft. To access each of these screws, use the start and stop keys to turn the rotary hook clockwise or counterclockwise (or turning the wheel manually with the 3mm T-handle). Try to loosen the screws only just enough to break the rotary hook loose on the shaft.

3. **Reset the dial to 25 degrees.** Check that the needle is lowered into the rotary hook basket once more and that the main shaft dial is set 25 degrees. Adjust the main shaft as necessary by hand at rear of the machine.

4. **Move hook and tighten screws.** Adjust the timing and clearance simultaneously according to the diagrams on the previous page. Tighten screws carefully.

**Helpful Hints**
- Have a helper hold the timing wheel at 25 degrees with the T-handle wrench as you make your adjustments and tighten the screws.
- Tighten each screw just enough to snug the hook back on the shaft, then re-check the timing, then tighten each screw further. Tighten all screws as firmly as you can manage!
- Use a quality flat-tip screwdriver with a wide grip to help you apply enough torque to secure the rotary hook tightly on the shaft.
Advanced Maintenance: Hook Retainer Adjustment

About the Hook Retainer
The hook retainer is located at the front of the rotary hook, near the top of the bobbin case. It is responsible for keeping the inner basket and bobbin case from spinning freely, while still allowing thread to pass across the front of the rotary hook.

Adjusting the Hook Retainer
Follow this short procedure to adjust the hook retainer:

1. **Remove the needle plate.** Do this by loosening each of the two (2) flathead screws with an offset screwdriver.

2. **Loosen the black screw.** But do not remove. This will be the small button head Allen screw toward the right corner, facing downward.

3. **Move the retainer.** Looking downward, set the stub located at the center of the retainer to approximately 0.8mm from the back edge of the rotary hook basket; or about halfway into the basket.

4. **Tighten Screw.** And check that the inner basket of the rotary hook does not rotate freely.
Advanced Maintenance: Presser Foot

Inspecting Presser Foot Height
Follow this procedure to check proper presser foot height:

1. **Engage the needle.** Do this by pressing the \textit{P.FOOT} key, which lowers the presser foot. Then, grab the needle bar over the presser foot, and pull it down until it locks into place.

2. **Turn the shaft to 0 degrees.** Do this with using a 3mm hex wrench to turn the timing wheel at the rear of the machine.

3. **Check the clearance.** The distance between the plate and pressure foot should be approximately 1.2mm; or about the width of a dime.

Adjusting Presser Foot Height

1. **Prepare the machine.** Do this by completing steps 1-3 above.

2. **Remove the front panels.** These include the upper and lower face plates, & the center thread guide.

3. **Loosen the set screw.** This is the phillips-type screw that fastens the pressure foot to the needle bar. Do not remove the screw.

4. **Adjust.** The pressure foot is mounted by an eccentric hole. Move the pressure foot up or down until the clearance measures approximately 1.2mm.

5. **Tighten the set screw.**
Advanced Maintenance: Needle Depth

Inspecting Needle Depth
It may be useful to obtain a needle depth gauge to check this more easily.

1. **Engage the needle.** Do this by pressing the *P.FOOT* key, which lowers the presser foot. Then, grab the needle bar over the presser foot, and pull it down until it locks into place.

2. **Turn the shaft to 5 degrees.** Use a 3mm hex wrench to turn the timing wheel at the rear of the machine.

3. **Check needle depth.** Inserting the plastic depth gauge into the rotary hook. The tip of the needle should lightly scratch the surface of the gauge.

Adjusting Needle Depth

1. **Prepare the machine.** Do this by completing steps 1-3 above.

2. **Remove the lower faceplate.** You may need to un-thread the lower faceplate to do this.

3. **Loosen the upper needle bar boss.** Do NOT loosen the lower needle bar boss.

4. **Move needle bar to correct depth.** Continue to adjust until the needle lightly scratches the gauge.

5. **Tighten the upper needle bar boss.** Make certain to aim the needle forward to its original position before tightening.