



Training:

HAPPY HCD-1501 Operations & Maintenance

Chapter 4: Troubleshooting and Maintenance

– Basic Troubleshooting/ Sewing Interruptions

- Troubleshooting thread breaks 2

– Maintenance and Upkeep

- Oiling: daily and weekly schedules 3
- Cleaning (rotary hook area)

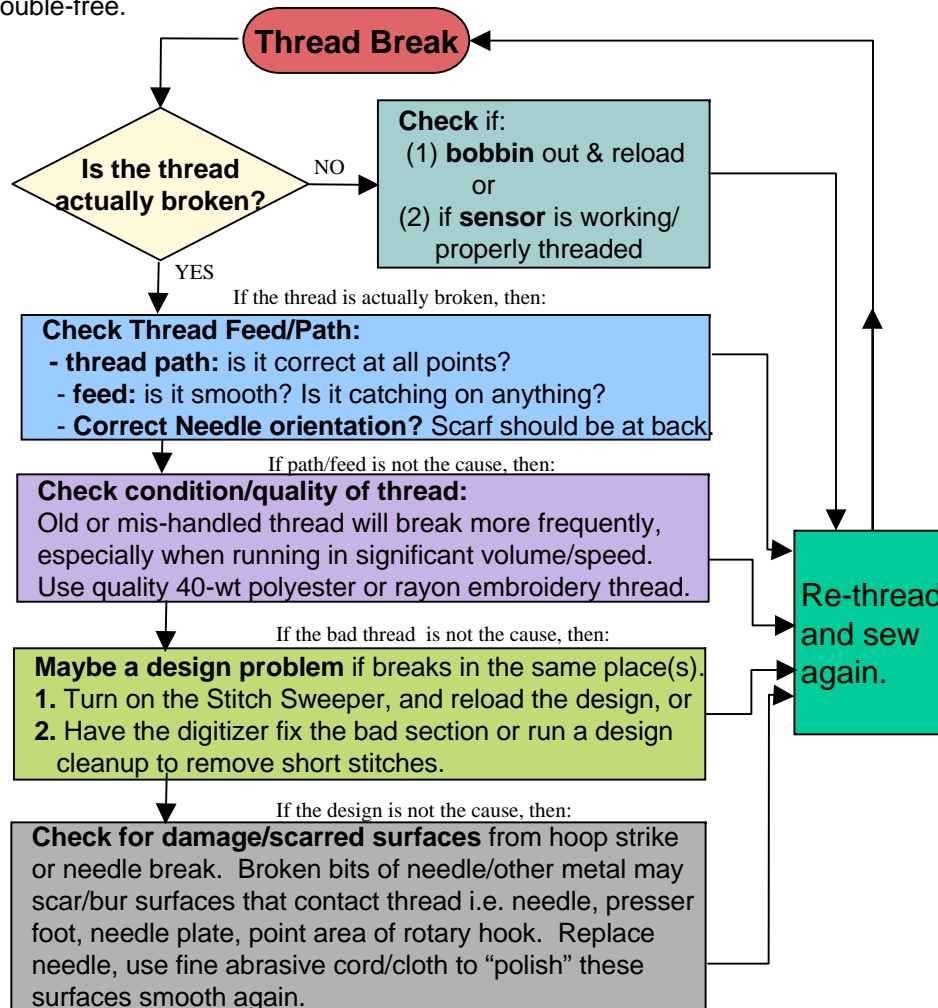
– Advanced Maintenance/Repair Techniques

- Rotary hook timing 4
- Hook retainer adjustment 7
- Setting presser foot height 8
- Setting adjusting needle depth 10

Updated March 17, 2010: Improved photos/illustrations for timing, needle depth and retaining finger, and pressure foot adjustment.

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.



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

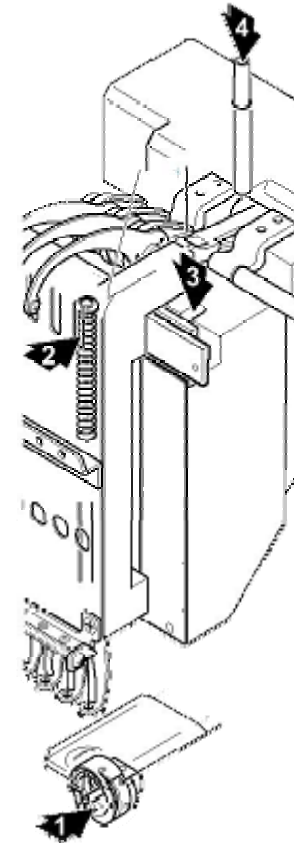
Be sure to use only white sewing machine oil. There are 2 oiling schedules based on how frequently the machine is used, as shown on the right.

- **Every 8 hours** (or more if used heavily) – 1 drop of oil on the “race” of the hook as shown as point **(1)**
- **Every 40 hours** (as shown in diagram on the right)
 - (2) needle bars:** 1 drop on each, through the springs.

NOTE: for points 3, and 4, move head to Needle 1.

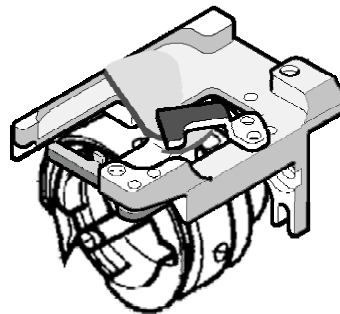
(3) “cup” cut-out marked in yellow on machine

(4) “tube” for upper shaft



• 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, which in turn reduces thread breaks & other sewing problems. Remove the needle plate when doing this to get better access for cleaning.



Removing the needle plate exposes more of the rotary hook area for more-thorough cleaning.

Advanced Maintenance/Repair: Hook Timing

Rotary Hook Timing

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.

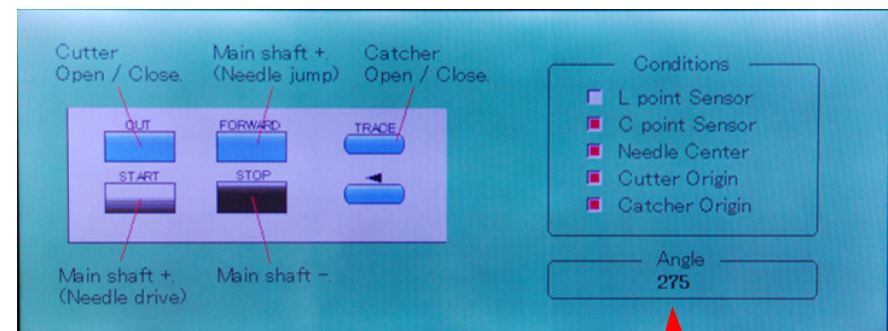
Checking Rotary Hook Timing and Clearance

If you suspect that your rotary hook timing is off, you can check this by following these steps:

1. **Power the machine on** and allow it to continue to the main drive screen.
2. **Select needle seven (7)**. Do this using the ◀ ▶ keys on the control panel
3. **Remove the needle plate and bobbin case** . Do this by loosening each of the two (2) flathead screws with an offset screwdriver (provided in the machine's toolkit)
3. **Remove the bobbin case.**
4. **Engage the needle.** Do this by pressing **MENU**, navigating to the second page of menu items. Choose **OTHER**, arrow down to MAINTENANCE and press **SET**. The screen on the right appears. As the diagram indicates, press or tap the **START** button to slowly turn the main shaft until you see the needle start to come down. Continue until the Angle indicator is as close to 25 degrees as possible. (note: the Angle shown is only approximate – you only need to get somewhat close to 25 degrees)
5. **Turn shaft to 25 degrees by hand.** Do this with a 3mm hex wrench. Remove the 2 small round black rubber caps at the rear of the machine and turn the dial exactly to 25.



Remove the needle plate with an offset screwdriver as shown above.



The indicated shaft position here is only approximate.

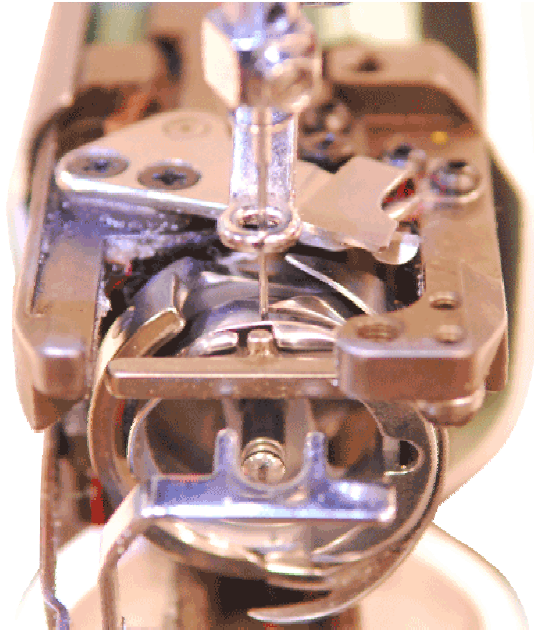
Advanced Maintenance/Repair: Hook Timing

Inspecting Rotary Hook Timing and Clearance (continued)

6. Inspect **TIMING & CLEARANCE** at **THIS** point. (25 degrees) based on the illustrations below.

TIMING (left-right) at 25 degrees:

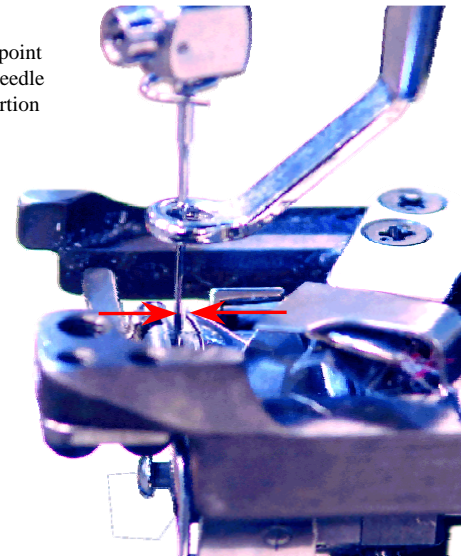
Viewing the hook assembly from the front of the machine, the point of the rotary hook should be hidden behind the needle.



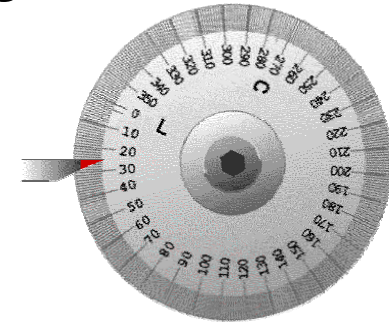
HOOK-NEEDLE CLEARANCE (front-back)

at 25 degrees: 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.

Note that the hook point passes behind the needle across the lower portion of the scarf.



This clearance should be about the width of a business card.



Timing for HCD-1501 is at 25 degrees.

Advanced Maintenance/Repair: Hook Timing

To Adjust Rotary Hook Timing

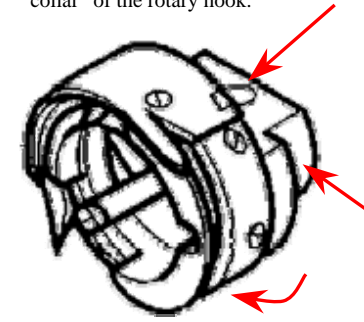
It is important that all owners learn to inspect rotary hook timing, but the actual adjustment requires some precision and skill, and should not be attempted if you do not feel comfortable doing this. If in doubt, consult appropriate support staff before continuing.

1. **Prepare the Machine.** Do this by completing steps 1-7 on page 6 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.

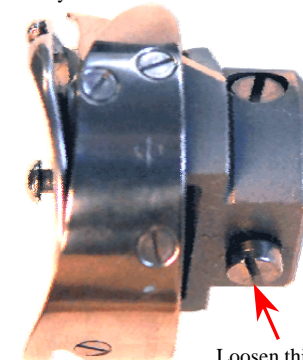
Helpful Hints

- 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.

3 set screws are located along the rear "collar" of the rotary hook.



(side view) Turn the hook as necessary for easy access with a screwdriver.



Loosen this screw first before the other 2.

Hook Retainer Adjustment

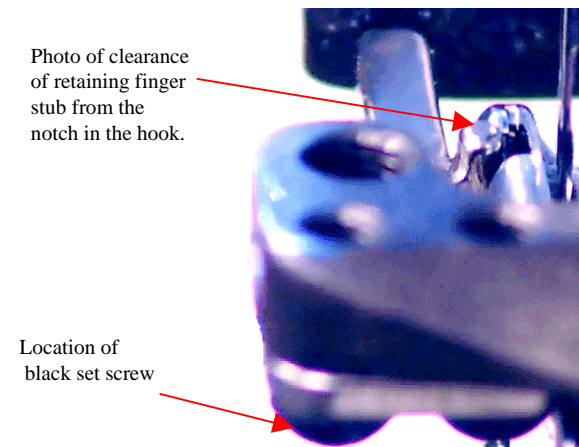
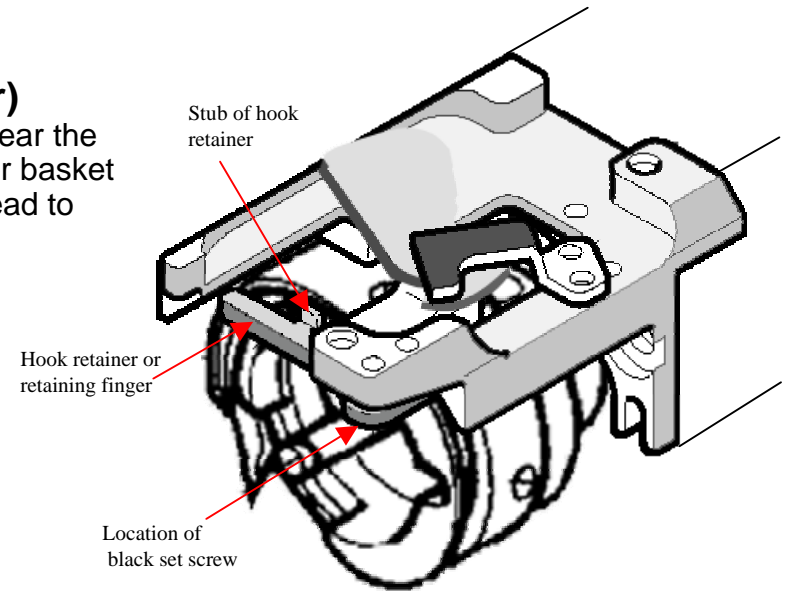
About the Hook Retainer (also called retaining finger)

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 set screw.** But do not remove. This will be the small button head hex 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. The photo on the lower right shows a retaining finger close-up with proper clearance.
4. **Tighten Screw.** And check that the inner basket of the rotary hook does not rotate freely.



Side view, retaining finger

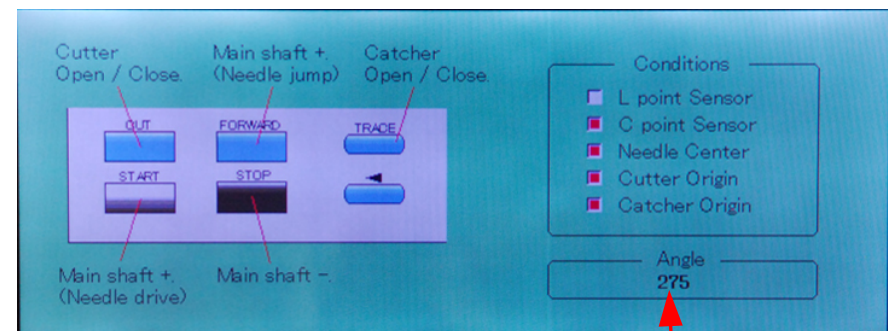
Advanced Maintenance: Presser Foot

Inspecting Presser Foot Height

Follow this procedure to check proper presser foot height:

1. **Turn the machine on.** Then press the *Set* button.

2. **Engage the needle.** Do this by pressing **MENU**, navigating to the second page of menu items. Choose **OTHER**, arrow down to **MAINTENANCE** and press **SET**. The screen on the right appears. As the diagram indicates, press or tap the **START** button to slowly turn the main shaft until you see the needle start to come down. Continue until the Angle indicator is as close to 0 (zero) degrees as possible. (note: the Angle shown is approximate – you only need to get somewhat close to zero)



The indicated shaft position here is only approximate.

3. **Turn the shaft to 0 degrees by hand.** Do this with a 3mm hex wrench from the reverse side of the machine.

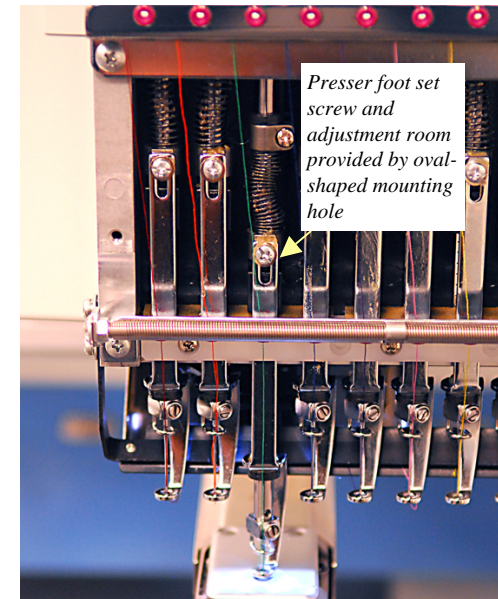
4. **Check the clearance.** The distance between the plate and pressure foot should be approximately 1.2mm, or slightly less than the width of a dime.

Advanced Maintenance: Presser Foot

Adjusting Presser Foot Height

Follow this procedure:

1. **Prepare the machine.** Do this by completing steps 1-4 on the previous page.
2. **Remove the lower faceplate.** Remove the 2 Phillips screws on either side of the faceplate, then slide the faceplate off to either side.
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 – loosen just barely enough so that the presser foot can be adjusted.
4. **Adjust.** The pressure foot is attached to the set screw with an oval shaped hole. Slide the pressure foot up or down until the clearance measures approximately 1.2mm.
5. **Re-tighten the set screw.**

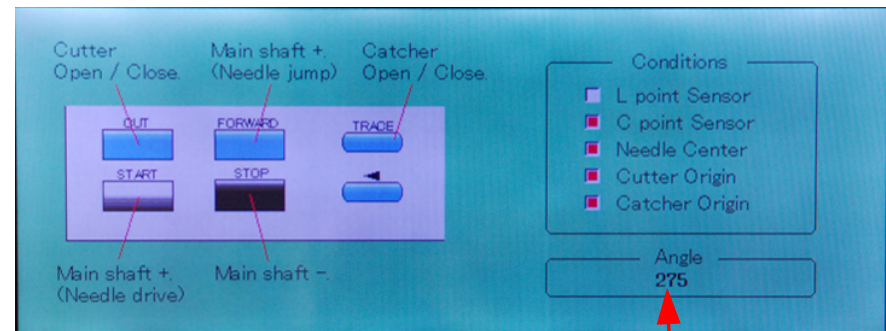


Advanced Maintenance: Needle Depth

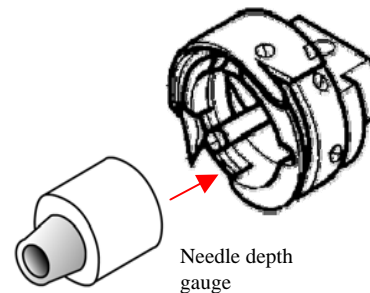
Inspecting Needle Depth

Follow this procedure to check proper needle depth:

1. Turn the machine on. Then press the *Set* button.
2. Remove the bobbin case.
2. **Engage the needle.** Do this by pressing **MENU**, navigating to the second page of menu items. Choose **OTHER**, arrow down to **MAINTENANCE** and press **SET**. The screen on the right appears. As the diagram indicates, press or tap the **START** button to slowly turn the main shaft until you see the needle start to come down. Continue until the Angle indicator is as close to 5 degrees as possible. (note: the Angle shown is approximate – you only need to get somewhat close to 5 degrees.)
4. Turn the shaft to 5 degrees manually with your 3mm hex wrench.
8. **Check needle depth.** Do this by inserting the plastic depth gauge into the rotary hook as shown on the right. The tip of the needle should lightly scratch the surface of the gauge.



The indicated shaft position here is only approximate.



Needle depth gauge

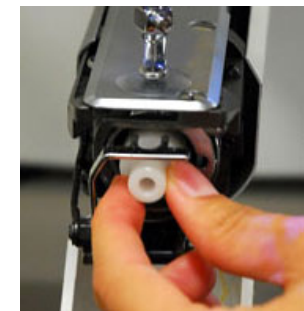


Photo of needle depth gauge in use

Advanced Maintenance: Needle, Presser Foot depth

Adjusting Needle Depth

Follow this procedure:

1. **Prepare the machine.** Do this by completing steps 1-8 on the previous page.
2. **Remove the lower faceplate** by removing the 2 phillips-type screws on either side of the faceplate.
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.



(above) You can remove the lower faceplate by removing the 2 Phillips screws on either side. Caution: do not over-tighten these screws when replacing.



(Left) with the lower plate removed, the needle bar boss screw is easily accessible for adjustment.