Basic steps to time the Gammill quilting machine’s rotary sewing hook

1.) Turn the machine off and unplug it.

2.) With the needle bar in the raised position, remove the bobbin and bobbin case.

3.) Remove the throat plate cover by unscrewing the four screws with a flat-blade screwdriver, or remove both front screws and one rear screw, loosen the remaining rear one and then swing the plate out of the way.

4.) Insert a needle of the proper type and seat it completely, then tighten the screw that secures the needle. The needle eye should be facing forward, with the groove that runs the length of the needle shaft on the front side. The “notch” down at the eye (the scarf) should be to the rear.

5.) Rotate the hand wheel clockwise (as you face the machine at the needle end of the machine) until the needle is at its lowest point.
6.) Look at the needle as it extends into the area where the bobbin and case normally are. The eye of the needle should be completely visible under the edge of the bobbin case carrier. The top of the eye should extend exactly to the inside edge of the bobbin case carrier; you should NOT see any of the needle’s shaft above the eye. If you do see part of the needle shaft above the eye, or the entire eye is not visible, the needle bar height must be adjusted accordingly.

Here is where we want to look.

7.) Once the needle position is properly adjusted, affix the timing device to the needle bar. Rotate the pivoting leaf to the closed position, and rotate the hand wheel clockwise so the needle is at its lowest point. Gently tighten the timing device onto the needle bar so it is pressing up against the bushing that supports the needle bar. Gently “rock” the hand wheel to ensure the needle is at its lowest point, and the timing device is seated and tightened against the bushing.
8.) Pivot the timing device’s leaf to the open position and gently rotate the hand wheel clockwise until the timing device rises up and touches the bushing. The needle will rise about $\frac{3}{32}$ of an inch. With the needle in this new position, look at the position of the sewing hook.

9.) The sewing hook rotates counter-clockwise as you face the machine (arrows in photos below), and with the needle bar raised to the new position (step 8) the tip of the hook should be directly behind, and in line with the center of the needle. The tip of the hook should NOT actually touch the needle, but should be as close as possible without actually touching it.
10.) If the tip of the hook is not in this position, the hook assembly must be moved on its shaft until it is in this described position. There are two screws that hold the hook assembly on the shaft that must be loosened. Once loosened, the assembly can be moved slightly forward and backward, and can freely rotate on the shaft. With the needle in the correct position (see step 8 above) move the assembly to the correct position and gently tighten one of the collar screws. Remove the timing device and rotate the hand wheel so the machine goes through a complete stitch cycle.

11.) Replace the timing device and position the needle correctly (steps 7-8). Look to see if the tip of the hook is still positioned correctly (step 9). If it is, fully tighten both screws holding the hook assembly to its shaft; otherwise go back through steps 7-11 until everything aligns correctly.

12.) Replace the throat plate cover, making sure that it is properly positioned so the needle goes through the center of the hole. If the plate is on backwards, the needle will not line up with the hole at all.

Chapter 8 of the Service Manual covers the process of timing the machine.
Basic steps to check and properly adjust the Gammill quilting machine’s needle bar height

Turn the machine off and unplug it.
Make sure that the machine has the correct type of needle and it is properly installed.
Raise the needle bar and remove the bobbin and bobbin case.

For Plus machines, the front control panel display must be removed (four small Allen wrench screws). On machines without a control panel on the face of the machine, the hole that provides access to this clamp screw is covered by a plastic plug. It is the lower of the two plugs on the face of the machine.

Rotate the hand wheel so that the needle bar is at its lowest position.

Look into the control panel housing for a hole that should line up with a flat-head screw. This screw is on the clamp that secures the needle bar. If it does not line up, gently rotate the hand wheel while looking through the hole until the clamp aligns correctly.

Look at the needle as it extends into the area where the bobbin and case normally are. At the very bottom of the machine’s stroke, the eye of the needle should be completely visible under the edge of the bobbin case carrier. The top of the eye should extend exactly to the inside edge of the bobbin case carrier; you should NOT see any of the needle’s shaft above the eye.

If the needle comes too far down, or the eye doesn’t fully extend into the bobbin case carrier, the height of the needle bar must be adjusted.

To adjust the needle bar height, loosen the screw on the needle bar clamp and ensure the bar is at the low point of the stroke. Making sure the clamp does not move, gently raise or lower the needle bar until the needle’s eye is correctly positioned, and then gently tighten the needle bar clamp. When you raise or lower the bar, before tightening it, make sure that the orientation of the needle remains correct (groove stays on the front, scarf on the back).

Using the hand wheel, rotate the machine through a complete stitch cycle or two, then stop it when the needle is at the lowest point. Look inside the bobbin case carrier again to ensure that the needle is in the correct position. If it is not, repeat the steps to loosen the clamp, move the needle bar and re-tighten, then rotate the hand wheel through a couple of stitch cycles.

Once everything is properly aligned and adjusted, tighten the needle bar clamp until it is tight.

Replace the control panel display, or the plastic plug on the face of the machine.

Chapter 7 of the Service Manual covers the process of adjusting the needle bar height.
Basic steps to properly adjust the Gammill quilting machine’s hopping foot height

The hopping foot can have both its stroke and its height adjusted. The proper height of the foot when it is at the bottom of its stroke is approximately the thickness of three business cards. If the stroke of the hopping foot is adjusted, the height must be adjusted afterwards. Always adjust the height after adjusting the stroke.

The “three business card” height is a rule of thumb and may not be correct depending on the thickness of the quilt being sewn. In the vast majority of cases though, this height is proper.

Turn the machine off and unplug it.
Raise and remove the needle.

Standing at the needle end of the machine, rotate the hand wheel clockwise until the needle is at the bottom of its stroke.

Continue to rotate the hand wheel until the needle is raised about 3/32 of an inch. This is the thickness of the “leaf” on the timing device.

At this point the hopping foot should be at the bottom of its stroke.

Take a stack of three business cards and slide them under the hopping foot. The cards should slide under the foot between the base of the foot and the raised section of the throat plate cover surrounding the hole.

If the cards do not fit, or there is excessive space, you might consider adjusting the hopping foot height.

To adjust the hopping foot height, remove the plastic plug on the right side of the machine (as you stand facing the machine at the needle end) below the take-up lever and in front of the rotary tension device. You may need to use a small screwdriver to pry or pop it out.

Look into the hole and find the flat head screw on the clamp that should be visible. If things don’t line up just right, gently rotate the hand wheel until you see the clamp. Return the machine to the correct position in its stroke.

Loosen the screw on the clamp and raise or lower the hopping foot to the desired height. Tighten the clamp and manually rotate the hand wheel through a couple of stitch cycles, then re-check the foot’s height at the low point of its stroke.

Once the foot is adjusted, make sure the clamp it tight then replace the plastic plug.

Chapter 7 of the Service Manual covers the process of adjusting the hopping foot.