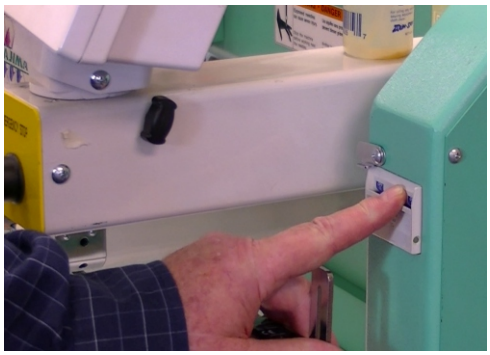
Using the RhAT II Universal

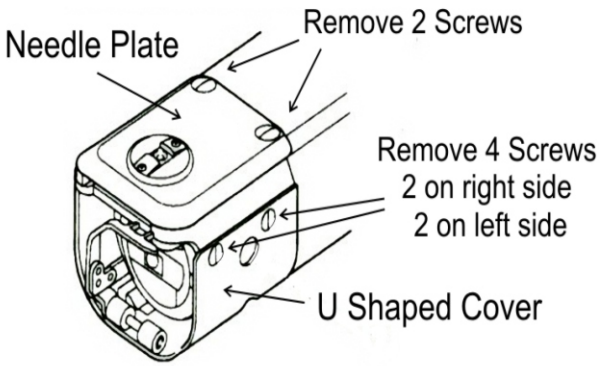
To use the Original RhAT Tools, the main shaft of the machine had to be rotated to the setting position, either mechanically or electronically, while the needle bar was disengaged and free to be lowered independently. Since that is not possible on many machines, the **RhAT II Universal** was developed.

The following instructions use references to the parts for a Tajima TFMX machine. Your machine may be made by a different manufacturer and the parts for your machine may have different names. Your Setting Point and the Upper and Lower Dead Points may be different. If so, you will need to adjust the numbers in these instructions accordingly. These instructions are based on the Setting Point being 201 degrees, the Lower Dead Point at 180 degrees and the Upper Dead Point at 0 degrees.

With the power on, select Needle one. It will give you better access to the screws in the Rotary Hook and better visibility.



Turn off power to the machine.



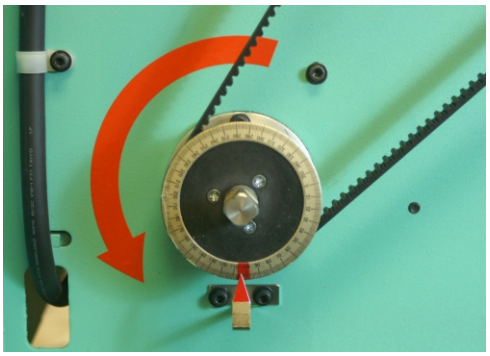
Remove two screws and the Needle Plate (this may also be called the Throat Plate).

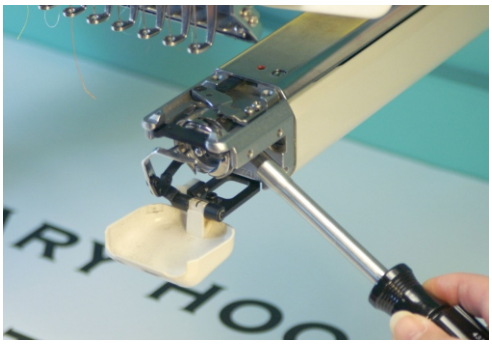
Remove the Bobbin.

Remove four screws and the U Shaped Cover from the lower arm of the machine.

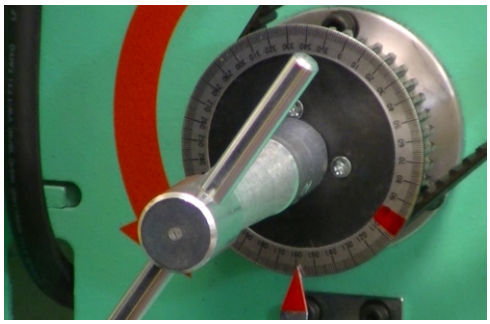
There are three screws securing the Rotary Hook to it's shaft. Two are recessed and one protrudes.

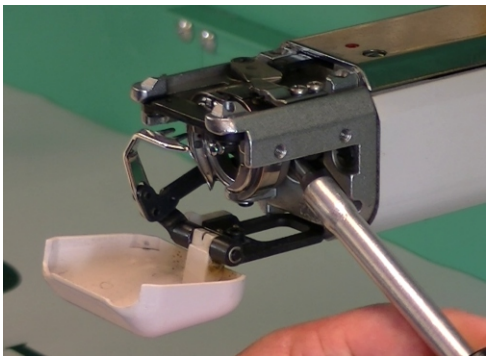
With the Degree Wheel for the Main Shaft in the Red Zone, you can loosen one of the recessed screws from the right side of the arm.





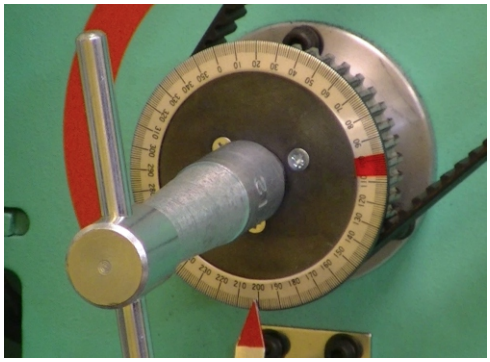
Rotate the Main Shaft using your T-Handle in the correct direction (counterclock-wise on the TMFX) until the pointer is at 160 degrees.

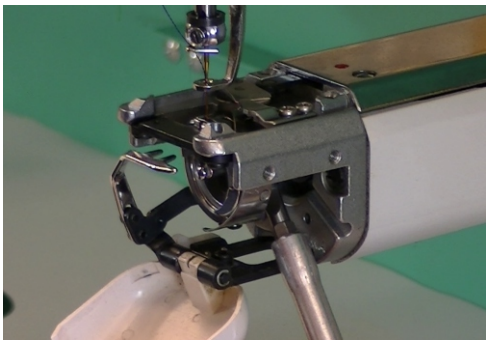




At 160 degrees, you can loosen the other recessed screw in the Rotary Hook.

Rotate the Degree Wheel to about 200 degrees.

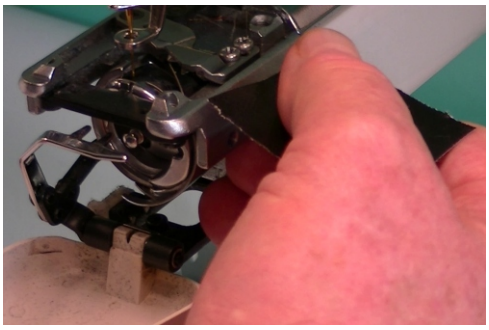


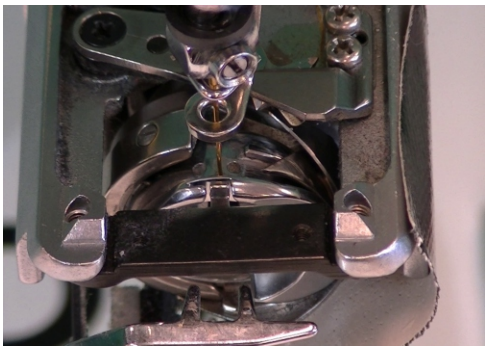


With the Degree Wheel at about 200 degrees, you can now loosen the protruding screw on the Rotary Hook.

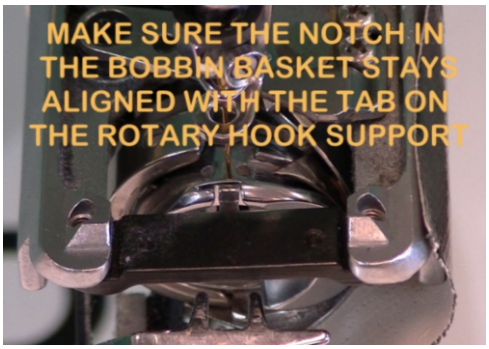
The Rotary Hook should now be free to rotate and slide on it's shaft.

Center the Rotary Hook in the gap. The point of the Rotary Hook should be about 1/8” to the right of the needle. While holding it in place, press a piece of tape against the side of the Rotary Hook and secure it to the Arm. This will keep the Rotary Hook from rotating until you make the adjustment later.

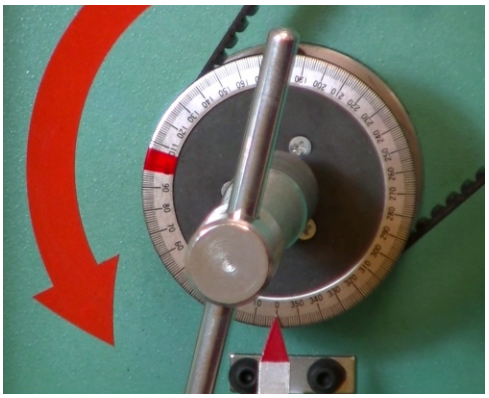




The needle is shown here properly centered in the gap. The Rotary Hook is taped to the arm.



Make sure the tab on the Bobbin Support stays in the notch on the Bobbin’s basket.



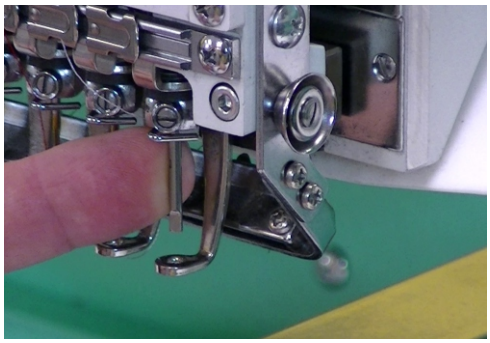
Rotate the Main Shaft to 0 degrees.

The Needle and Needle Bar should fully retract.

The RhAT tools come in a fitted hardwood case. They are precision machined from Stainless Steel.

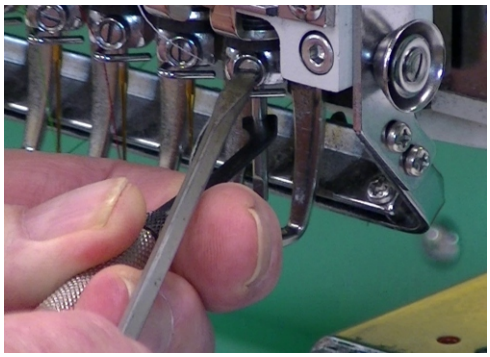
There is a legend Laser Engraved on the inside of the case. It shows how the vertical position of the two notches on the tools indicates their number.

There are 5 RhAT tools in the set. You should start your adjustments with RhAT 0. The RhAT 0 tool will provide an adjustment setting in the middle of the recommended gap for most machines. The +1 RhAT adds approximately .002” to the gap and the +2 RhAT will add .004”, which is usually the maximum recommended gap. The -1 RhAT will narrow the gap by about .002” from that provided by RhAT 0 and the -2 by about .004”. The gap provided by using -2 corresponds to the smallest recommended gap.



Remove the needle that is currently in position over the Lower Arm. Replace it with one of the RhAT tools. The Flat on the bottom of the RhAT tool should face the front of the machine. The Notch at the bottom of the tool should face the back.

There is a Wrench included with the tool set. Fit the Wrench into the two slots on the RhAT tool and use it to hold the tool up while you tighten the screw which holds the needle in place. **Do not** over tighten the screw, it only needs to be snug. Use the Wrench to align the tool. The offset on the Wrench should be to your left and the Wrench should stick straight out from the machine. The two slots and the Wrench provide alignment for the tool.

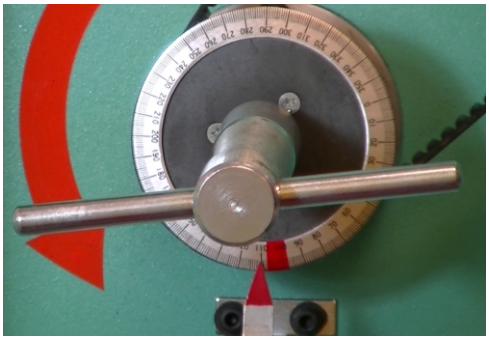


Proper alignment is important. The flat at the bottom of the Tool should be parallel to the frame of the machine. Make sure the RhAT tool is as far up into the needle bar as it will go.

To avoid damage to the machine and/or the RhAT tool, the next few steps need to be followed carefully, as interference between the RhAT tool and Rotary Hook is possible.

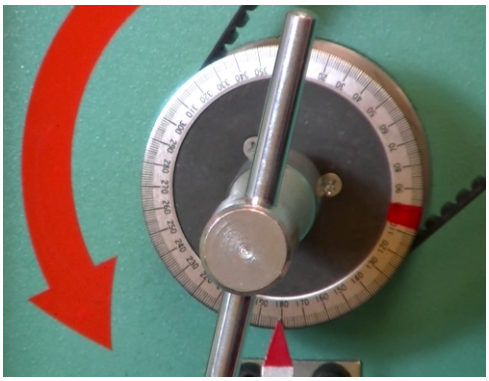
VERIFY that the Rotary Hook has not moved and is still held in place by the tape.

Rotate the Main Shaft to 110 degrees.



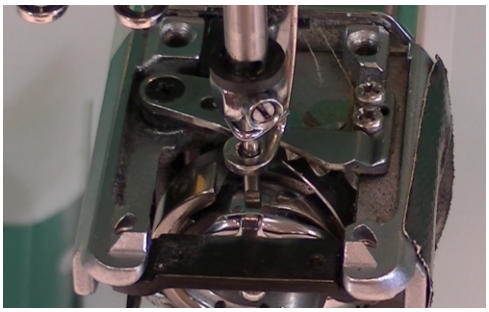
Grip the back of the Presser Foot as shown and push it up. The RhAT tool should slide easily through the hole in the Presser Foot. If the hole is to small, stop and see the notice at the end of this instruction sheet. If the presser foot has been bent from striking a hoop or other object, The RhAT tool may be deflected when making the adjustment.

You may need to use pliers to bend the Presser Foot back into a proper position or you may need to replace it. Ideally the RhAT tool will have clearance on all sides as it passes through the presser foot.



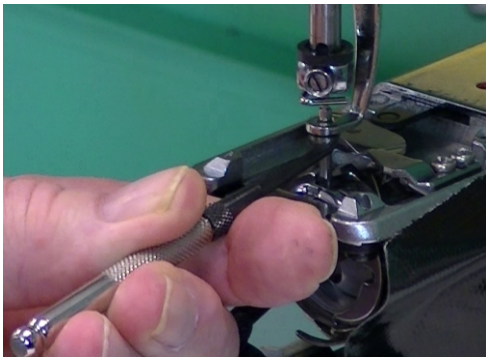
Slowly rotate the Main Shaft of the machine to 182 degrees (or 2 degrees past the lower dead point on your machine).

While turning the Main Shaft to 182 degrees, the RhAT tool should come all the way down and start back up. You may not be able to see the movement as it starts back up. It should not make contact with the Rotary Hook. You might want to have someone watch for interference the first time you use the tool on your machine.



After rotating the Main Shaft to 182 degrees, the tip of the RhAT tool will be about .090” above the basket of the Bobbin and centered in the gap. The point of the Rotary Hook should still be about 1/8” to the right of the RhAT tool.

To lower the RhAT Tool, use the Wrench and fit it to the two slots. You will probably have to push up the presser foot to insert the Wrench.



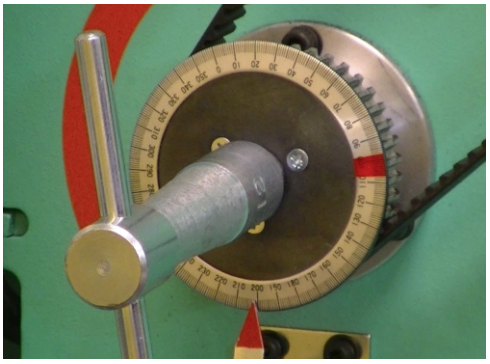
While holding up on the Wrench, loosen the needle retention screw and let the RhAT tool slide down until it rests on the bottom of the Bobbin basket. Retighten the Screw holding the RhAT tool (do not over tighten the screw) and remove the Wrench.

WARNING Do Not Turn the Main Shaft Backwards After Lowering the Tool. Do Not Turn the Main Shaft in the Proper Direction Past 0 Degrees or the Upper Dead Point with the RhAT Tool Installed.

If you are correctly at 182 degrees (or 2 degrees past the lower dead point on your machine), when the Main Shaft of the machine is turned in the proper direction, the Needle Bar and the Tool will rapidly rise.

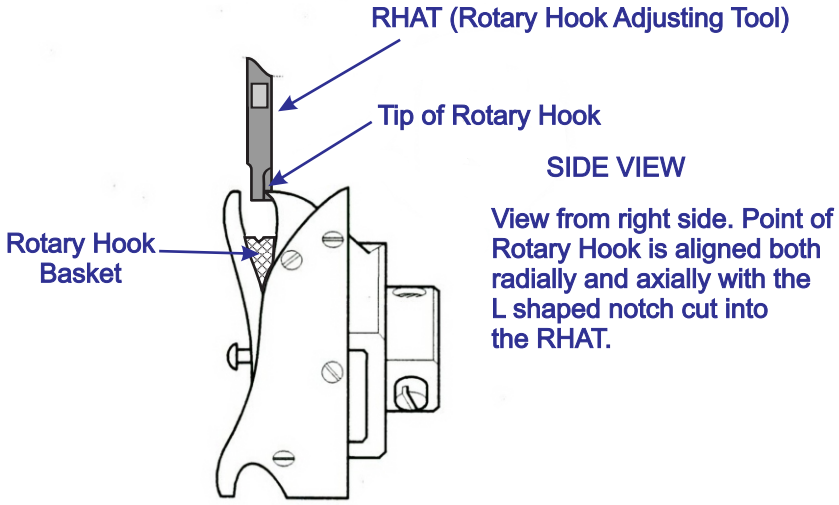
Turn the Main Shaft in the proper direction and stop at the correct setting position for your machine (201 degrees for the Tajima TFMX). You don't have to turn the shaft very far.

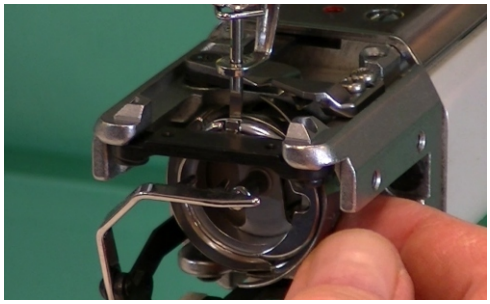
If you overshoot the mark, return the machine to 0 degrees, raise the RhAT tool in the Needle Bar and rotate the Main Shaft once more to 182 degrees before lowering the Tool. Then repeat the step above.



If you are at the correct setting position, remove the tape that has been keeping the Rotary Hook from moving.

Guide the point of the Rotary Hook into the slot on the back of the RhAT Adjusting Tool. Rotate the Rotary Hook counter clockwise while sliding it forward so the point of the Rotary Hook is nestled into the slot on the back of the RhAT.





Be careful to NOT EXERT pressure that will deflect the RhAt and/or the Needle bar. If you see the RhAT and the Needle Bar shift or deflect, either to the left or forward, you are pushing to hard and your adjustment will be wrong.

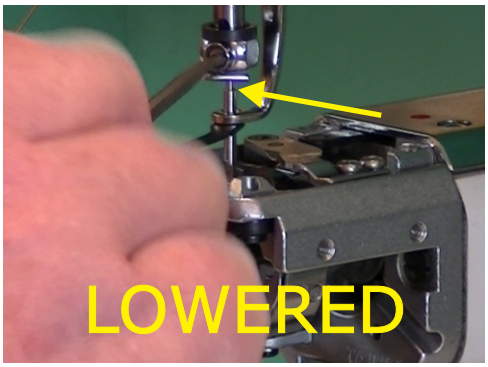
While holding the Rotary Hook in position with your left hand, tighten the protruding screw on the Rotary Hook. Check your work.

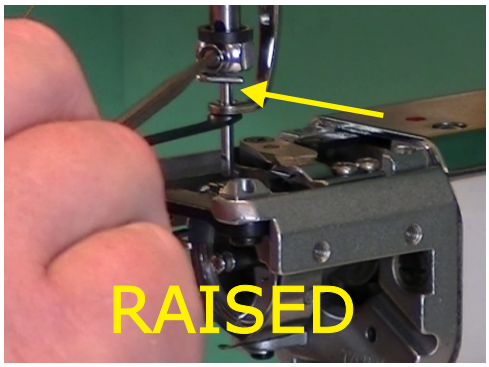
You should be able to make the RhAT and the Needle Bar deflect by rotating the Rotary Hook counter-clockwise or by pulling it forward. Even a slight pressure on the Rotary Hook should make it move.

When you release the Rotary Hook, it should return to a free position. This may take a little practice, but it is far easier to attain a repeatable correct result using the RhAT Tools than it is to hit a two dimensional spot in space.

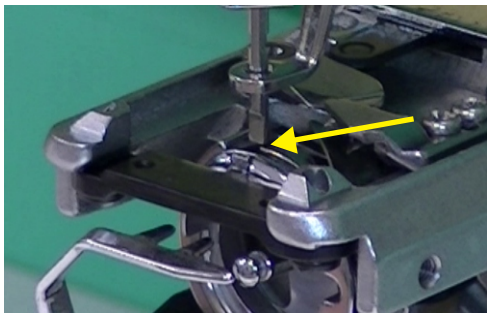
With the adjustment made, we need to raise the Tool. Use the Wrench and fit it to the two slots. You may have to push up the Presser Foot to insert the Wrench or the slots may be above the Presser Foot.

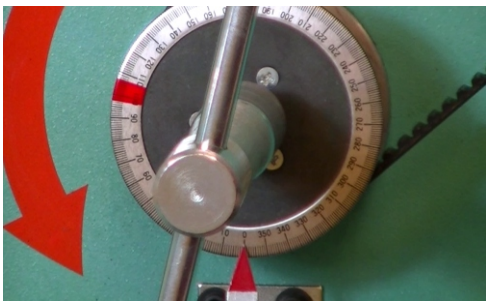
Loosen the Needle retention screw and slide the RhAT tool back up into the Needle Bar. Retighten the screw holding the RhAT tool (do not over tighten the screw) and remove the Wrench. You may want to hold up on the Presser Foot while you remove the Wrench.





Verify that the tip of the RhAT tool is above the tip on the Rotary Hook. If for some reason it will not clear, loosen the protruding screw on the Rotary Hook, recenter the tool in the gap, secure the Rotary Hook with tape again before returning the main shaft to 0 degrees (or Upper Dead Point).

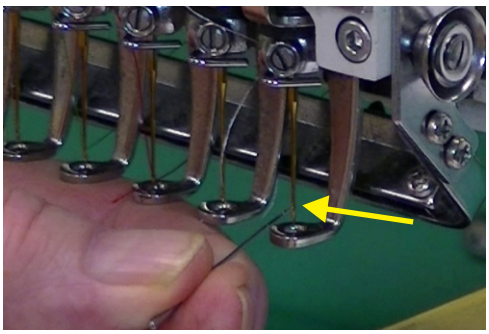




If the tip of the RhAT tool is above the tip on the Rotary Hook, turn the Main Shaft to 0 degrees (or the Upper Dead Point).

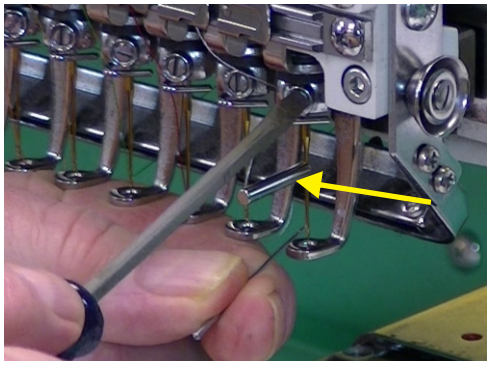
Remove the RhAT tool from the machine. Replace the Needle in the Needle bar. Make sure the Needle is aligned.

An easy way to get the Needle into position is by using an old Needle. Stick the old Needle's point in the new Needle's eye and use it to hold the Needle up in the Needle bar while tightening it. This should get you close.

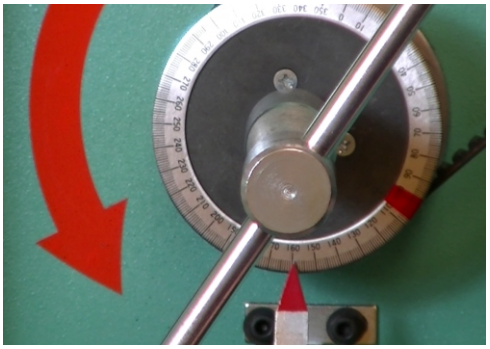


Included in the RhAT set is a Cylindrical Magnet. Use it to verify that the grooves in all of your Needles are aligned.

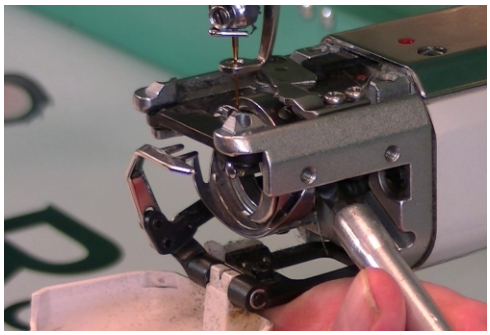
Each Needle has a groove ground or formed in it's face, a slot for the thread to ride in.



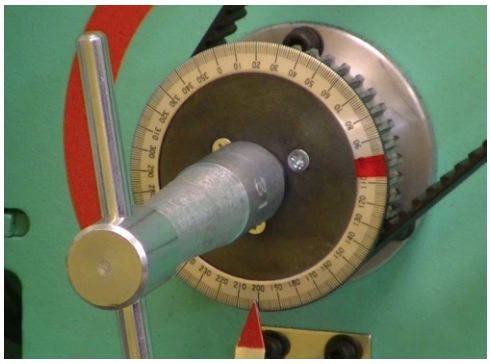
Place the Magnet on the front of each Needle across this groove and it will indicate whether it is straight or not. If it is at an angle, correct it. A rotated Needle will cause frayed and broken thread, as it will affect the timing and clearance of the Rotary Hook. Check your Needles whenever you change them.



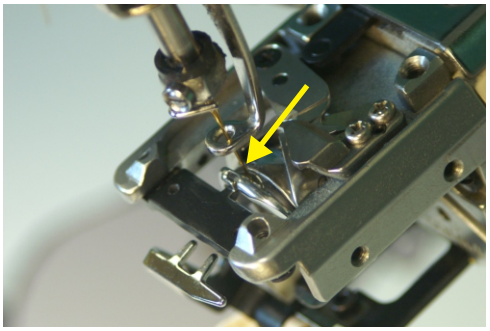
Rotate the Main Shaft to 160 degrees.



Tighten the one accessible screw.

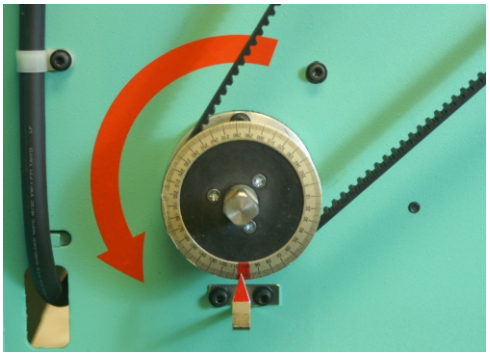


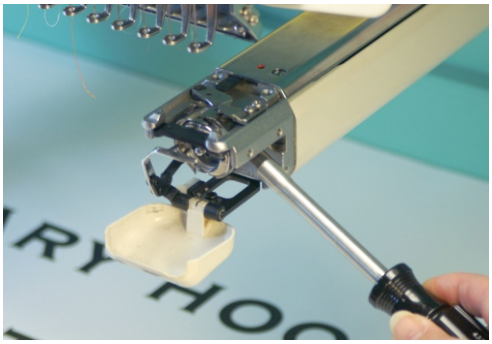
Rotate the Main Shaft to 201 degrees (or the setting point of your machine).



CHECK YOUR WORK. The point of the Rotary Hook should be directly behind the Needle. The gap should be just large enough for a thread to go through. A gap that is too wide will cause looping and missed stitches. A gap that is too narrow will result in numerous thread breaks. That is why there are five tools included with the set.

Rotate the main shaft to the Red Zone. Tighten the remaining screw.





Reinstall the U Shaped Cover and the Needle Plate. Replace the Bobbin. Rotate the Main Shaft back into the Red Zone. Restart the Machine.

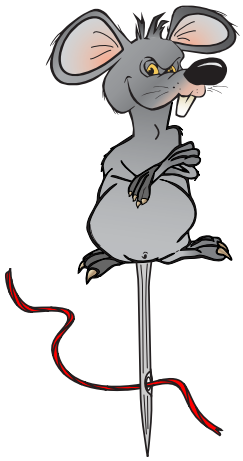
Do a trial sewout. An embroidery design is available from our "Using the RhAT" page that will let you check he sewing condition for all your Needles on each head. It stitches in every direction and runs both a Tatami Fill and a Satin Stitch for every needle.

Thread should be tight on top and only have about 1/3 of the Bobbin thread showing underneath. If some colors or needles sew better than others, check your tensions. You should invest in a Upper Thread Tension Gage and use it whenever you change threads. Tension should always be the first thing to check when loose stitching in encountered.

The RhAT tool set will also allow you to fine tune the radial position of the Rotary Hook. Keep a record of which RhAT tool you used and on which head. Record the degrees it was set at. If the rotation is off by a few degrees after (the rotary hook arrives late behind the scarf of the needle) the stitches may be loose and the quality of the embroidery will be poor. If the rotation is off by a few degrees before (the rotary hook arrives early before the loop is fully formed), the stitching may by tight but the machine may miss or fail to make stitches.

Under no circumstances is RhAT.com or Hogwild Imprints, Inc., its principals or owners responsible for injury to technicians or operators, machines, equipment, garments and apparel while using the RhAT tools or after adjustment of your machine. The RhAT tools are for adjustment only. You must verify that the machine functions correctly before resuming power and beginning sewing operations.

To use the RhAT tools, the hole in the presser foot needs to be larger than .105" diameter, the same size as many of the plastic ink cartridges in a cheap ball point pen.



NOTICE for New Tajima Owners

Tajima has recently made a running change to the diameter of the hole in the presser feet on some machines. It was 3mm and has now been reduced to 2mm, which is smaller than the diameter of the shank on the RhAT tools (both the Original and the Universal). The current replacement part for the new presser feet is the old part with the 3mm hole.

If you want to use the RhAT tool on these machines, you can replace one presser foot on each head (typically on needle #1) with the old style. Or you could enlarge the hole in one of your presser feet, but care needs to be used to avoid any burrs or sharp edges that could cause damage to apparel.