

Service Seminar



Model MB4

Table of Contents

MB 4

Tension Cover Removal	pg. 2
Stationary Head Cover Removal	pg. 3-4
Right Cover Removal	pg. 5-6
Left Cover Removal	pg. 7-8
Base Cover Removal	pg. 9-10
Bed Cover Removal	pg.11
Checking the Thread Paths	pg. 12-13
Tension Unit Removal	pg. 14-15
Tension Unit Observation	pg. 16
Face Plate Removal	pg. 17-18
Check Spring Replacement & Adjustment	pg. 19-22
Removing the Head	pg. 23
Take Up Lever Replacement	pg. 24-26
Horizontal Drive Removal	pg. 27-28
Replacement of Horizontal Unit	pg. 29
Head Replacement	pg. 30-31
Center Needle Position Left to Right	pg. 32-33
What To Do if the Head is Jammed	pg. 34
Adjusting Needle Front to Back	pg. 35
Adjusting Play in the Head	pg. 36
Removing the Presser Foot , Needle Bar & Springs & Installation	pg. 37-44
Hook Timing	pg. 45-47
Adjusting the Hook Stopper	pg. 48
Thread Catcher Removal & Replacement	pg. 49-53
Replacing the Face Plate	pg. 54-55
Replacing the Tension Unit & Horizontal Plate	pg. 56-59
Replacing the Dynamic Cutter Blade	pg. 60-63
Replacing the Static Cutter Blade	pg. 64-65
Dynamic Cutter Adjustment	pg. 66-67
Bobbin Thread Holder Adjustment	pg. 68-69
Thread Keeper Adjustment	pg. 70-72
X belt Replacement & Tension	pg. 73-79
Y Belt Replacement & Tension	pg. 80-85
B-Board Removal & Installation	pg. 85-93
Needle Head Stop Position – Part 1	pg. 94-98
Needle Head Stop Position – Part 2	pg. 99-101
Carriage Arm Adjustment X/Y Positions	pg. 102-109
Screen Calibration	pg.110
Free Arm Replacement	pg. 111
Base Cover Replacement	pg. 112-113
Left Cover Replacement	pg. 114-115
Right Cover Replacement	pg. 116-117
Replacing the Stationary Head Cover	pg. 118-119]
Tension Cover Replacement	pg. 120
X- Arm Replacement	pg. 121

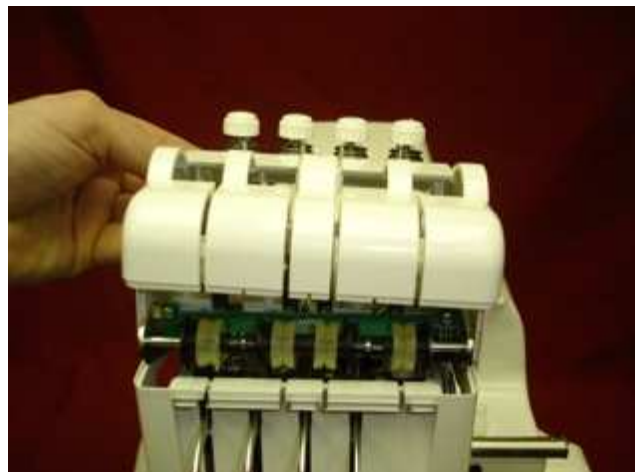
TENSION COVER REMOVAL

1. Remove the screw on the right side.



2. Remove the screw on the left side.

3. Lift the cover off.

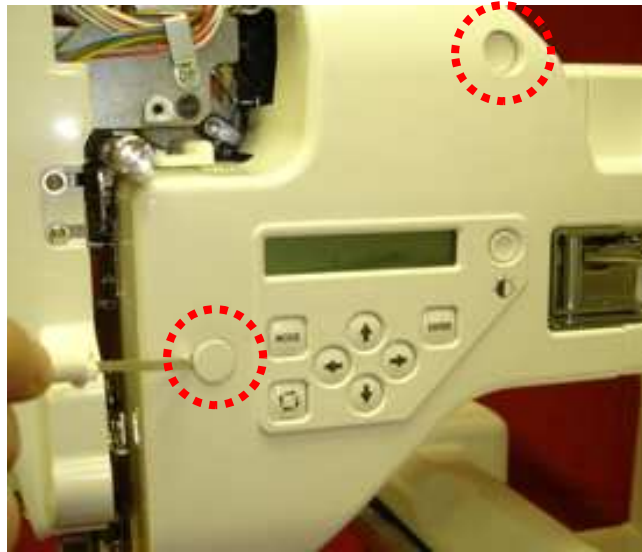


STATIONARY HEAD COVER REMOVAL

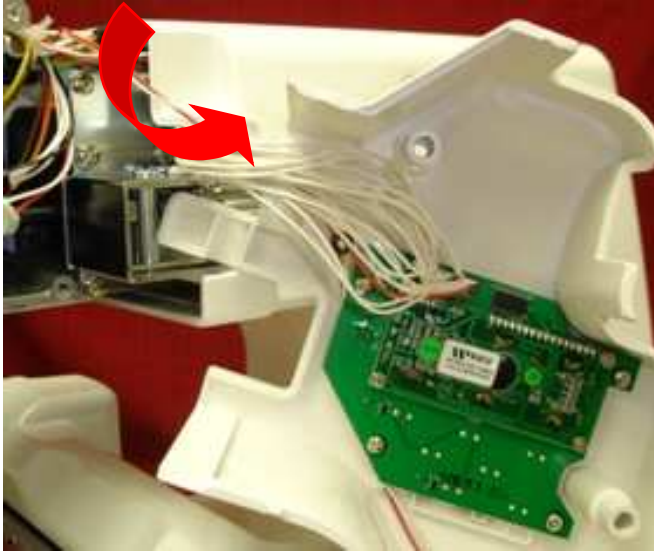


1. Loosen the RCS mounting screw and remove it.

2. Remove the two white caps.



3. Remove the screws.



4. Gently remove the cover by pulling it towards the front and out. Do not remove all the way because there are two wire connections attached to the cover.

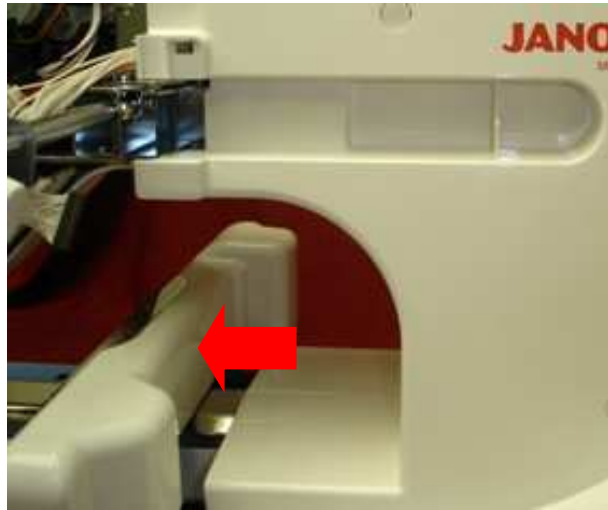
5. Disconnect the LED lamp connector from the C board.



6. Disconnect the K board connector from the K board unit.

RIGHT COVER REMOVAL

1. Slide the carriage arm to the front of the machine.



2. Swing the RCS mounting bar open.

3. Remove the two white caps on the right side and then the screws.

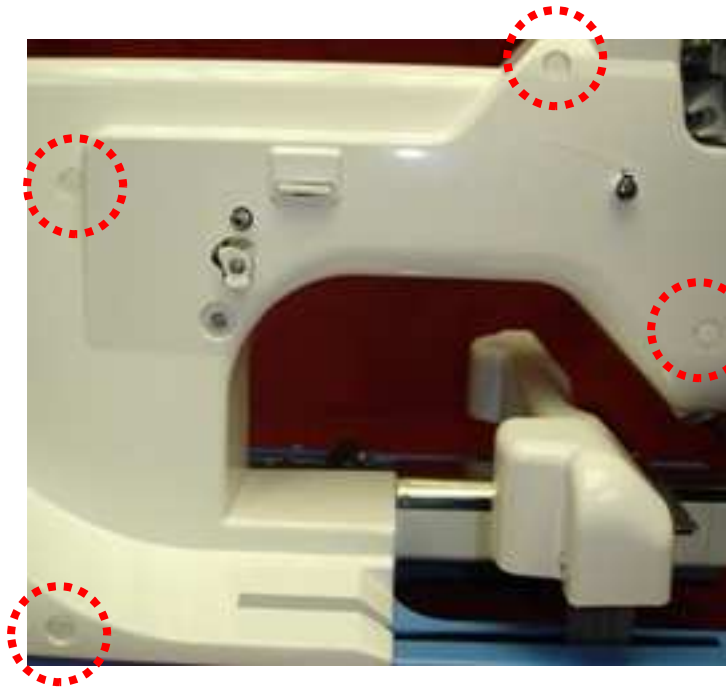


4. Remove the white cap under the hand wheel followed by the screw.



5. Put one hand on top of the machine and the other underneath the hand wheel and pull toward the front and away from the machine.

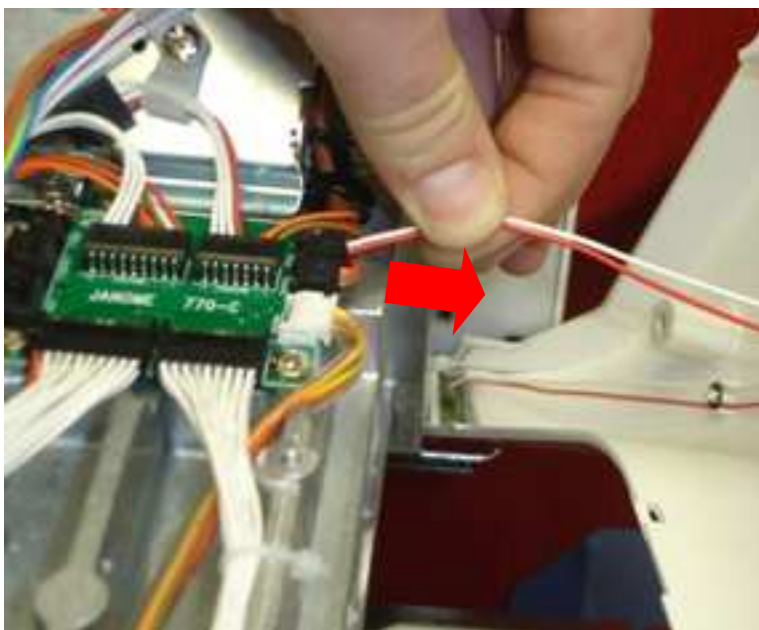
LEFT COVER REMOVAL



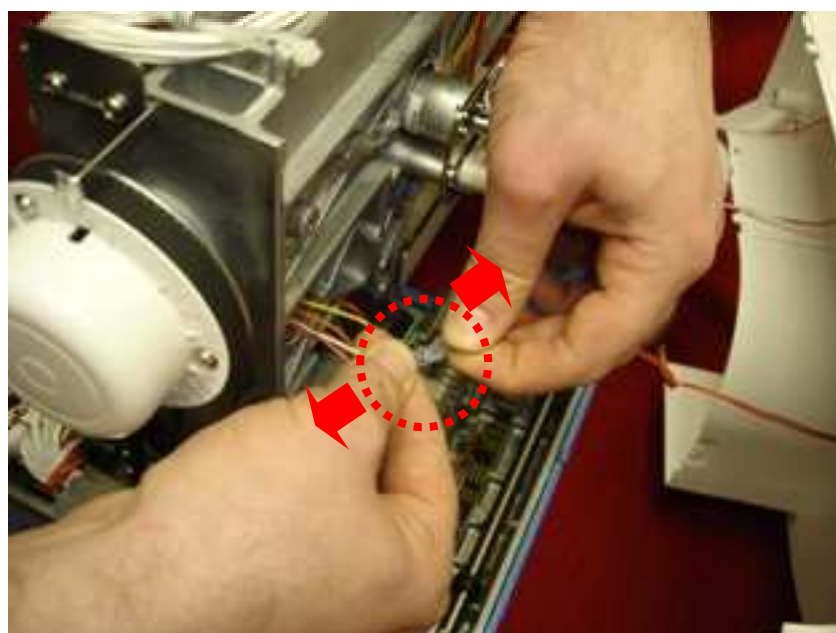
1. Remove the four white caps from the left side cover followed by the screws.



2. Gently remove the cover from the back towards the front and remove slightly away from the machine. There are two wire connections that need to be unplugged before complete removal.



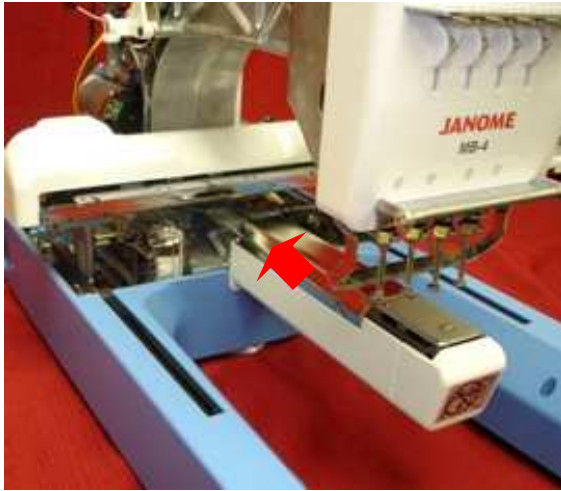
3. Unplug the LED lamp wire from the C board.



4. Disconnect the bobbin winder wires.

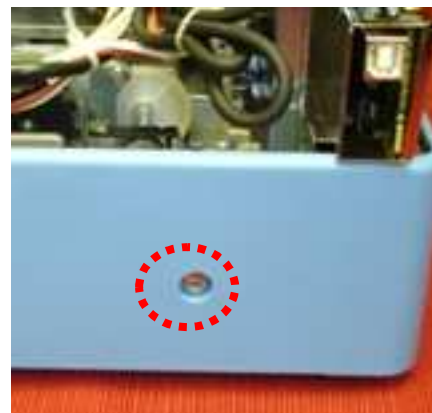
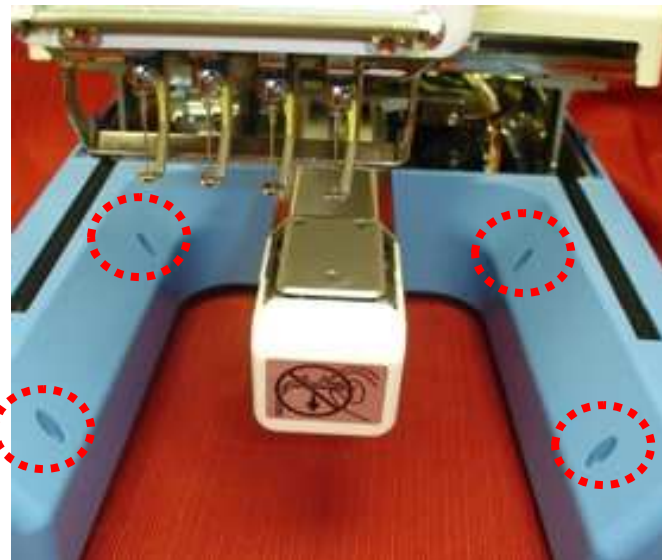
Remove the cover.

Base Cover Removal

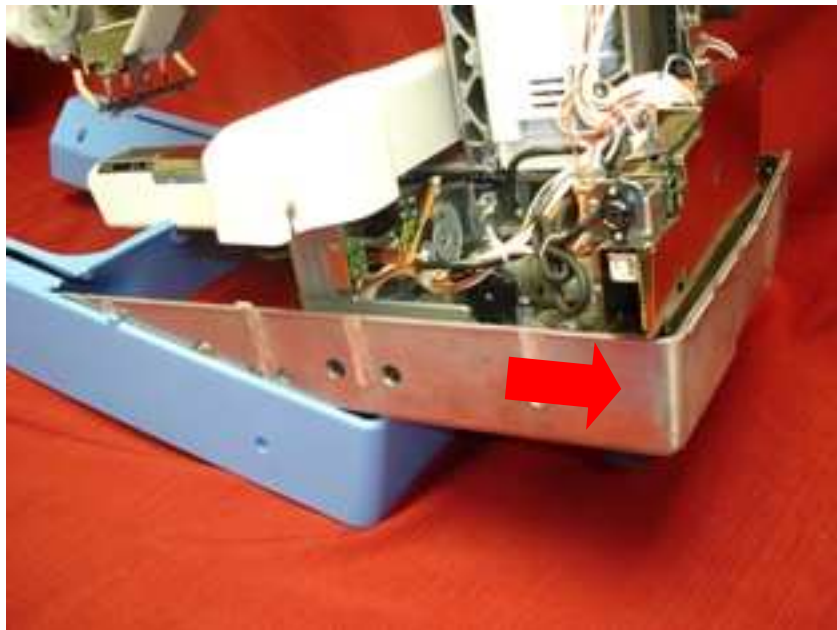
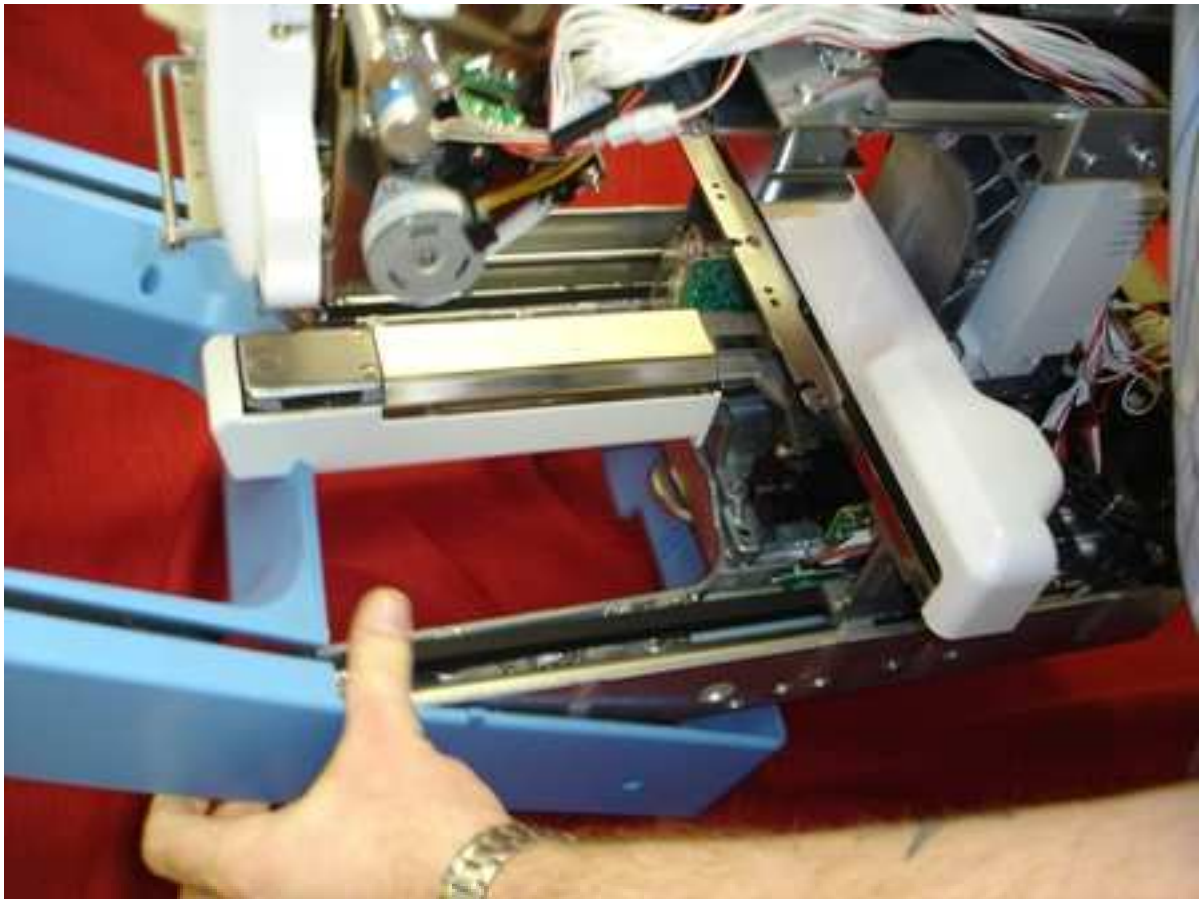


1. Slide the carriage arm all the way back against the machine.

2. Remove the 4 screws that are on the inside of the legs.



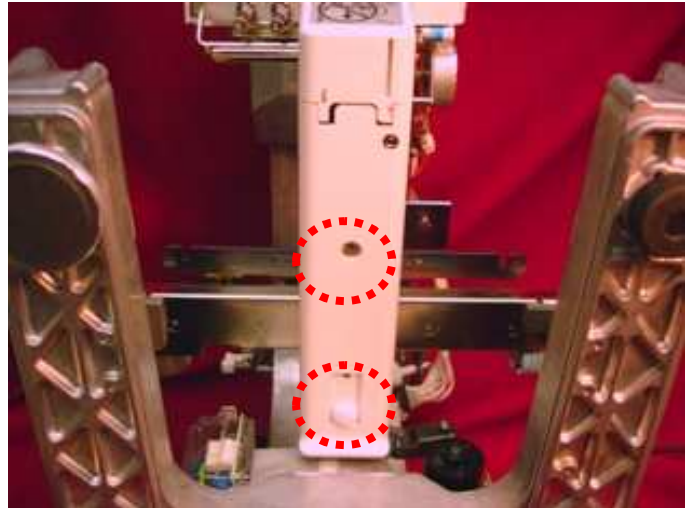
3. Remove the screw on the side by the power plug and the other screw on the opposite side.



4. Hold the front of the blue cover down and lift the back of the machine up, and slide it away from the blue base cover.

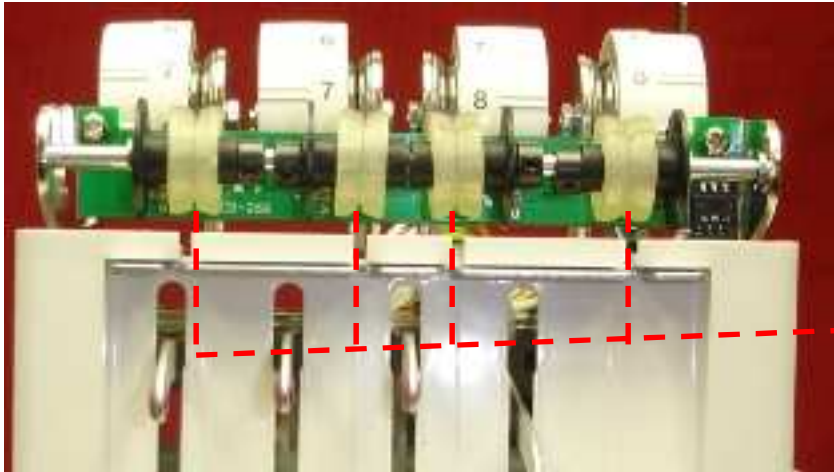
BED COVER REMOVAL

1. Remove the screw and the white plastic adjusting screw.

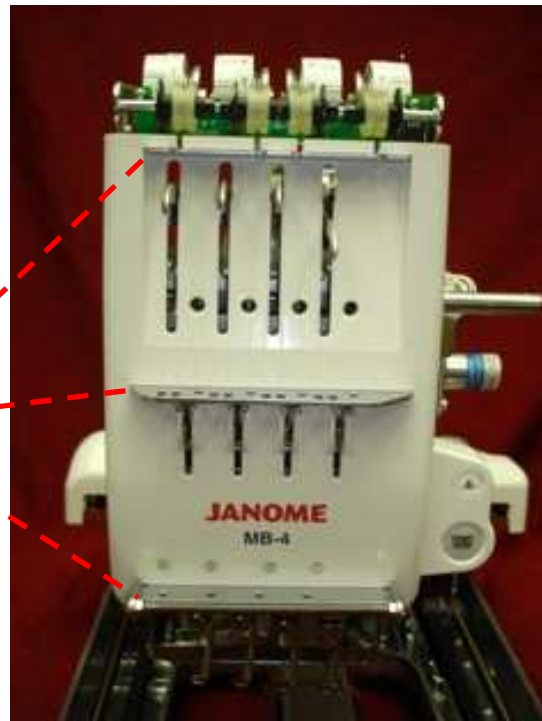


2. Remove the cover.

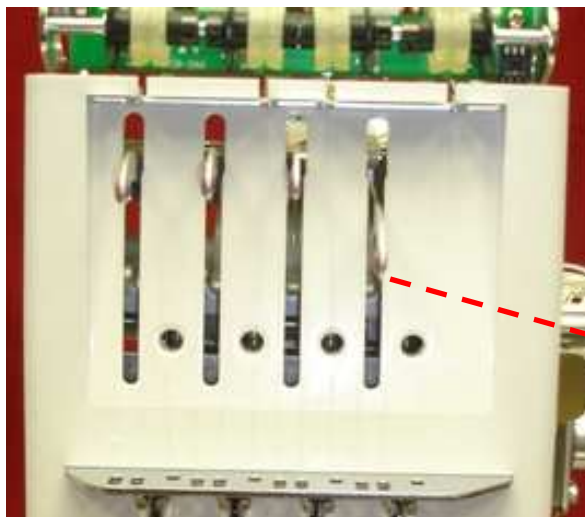
CHECKING THE THREAD PATHS



1. Check the detecting rollers and tension discs to make sure they are okay and that there is no lint or thread blocking them.

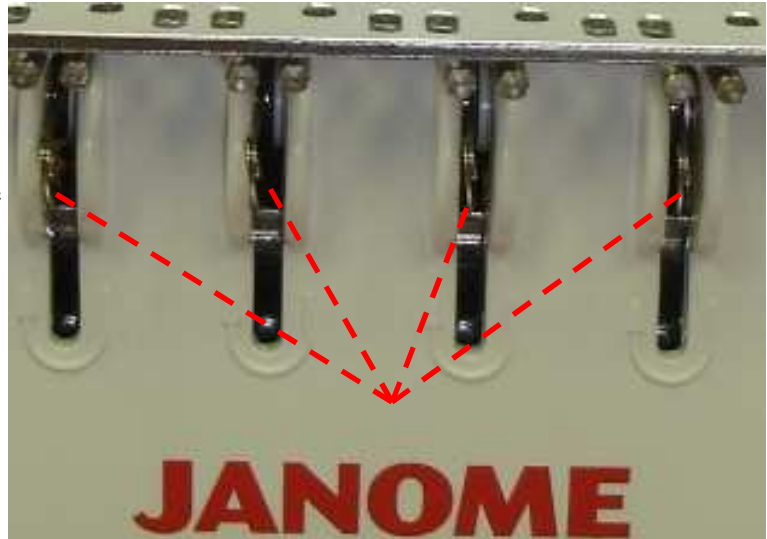


2. Check the thread guides for burrs or scratches.



3. Check the take up levers for burrs or scratches.

4. Check the check springs to make sure they are not worn or broken.



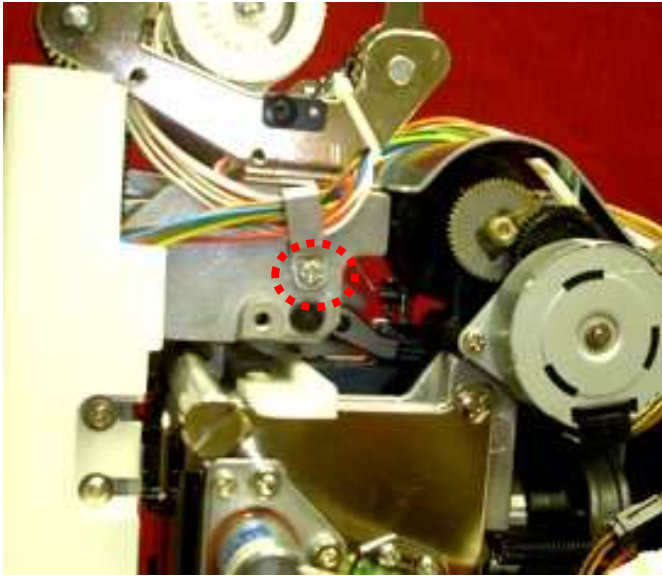
5. Check the presser foot for burrs or scratches. The presser foot should not be warped.

6. Check the needle plate on both sides for any burrs or scratches.

Check the hook race and the thread keeper for burrs or scratches.

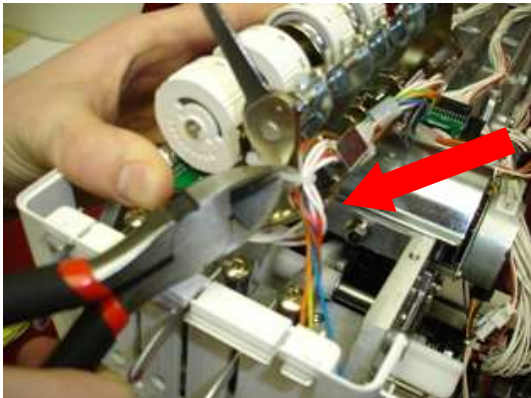


TENSION UNIT REMOVAL



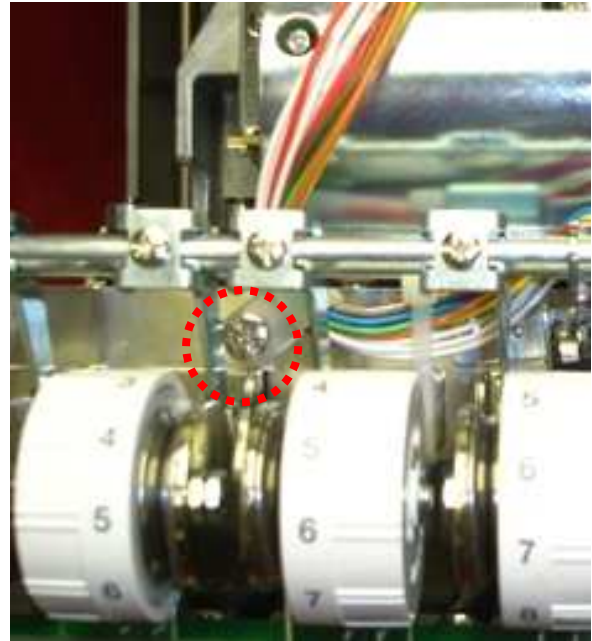
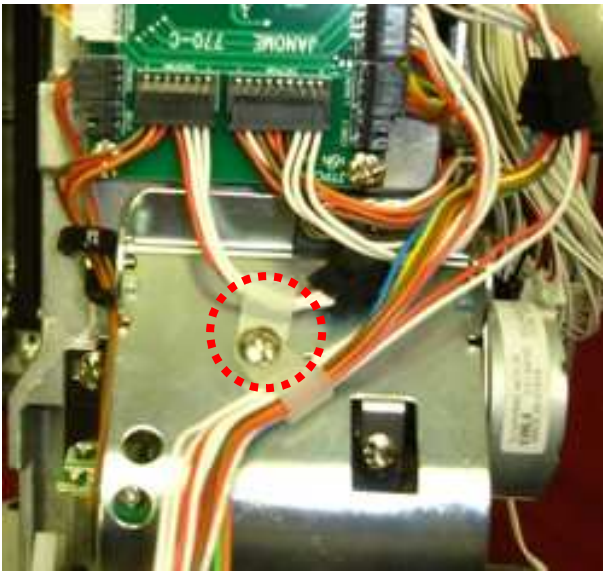
1. Remove the screw and holding bracket from the side of the head.

2. Remove the two screws from the top of the tension unit. Be very careful of the micro switch for the tension release lever.

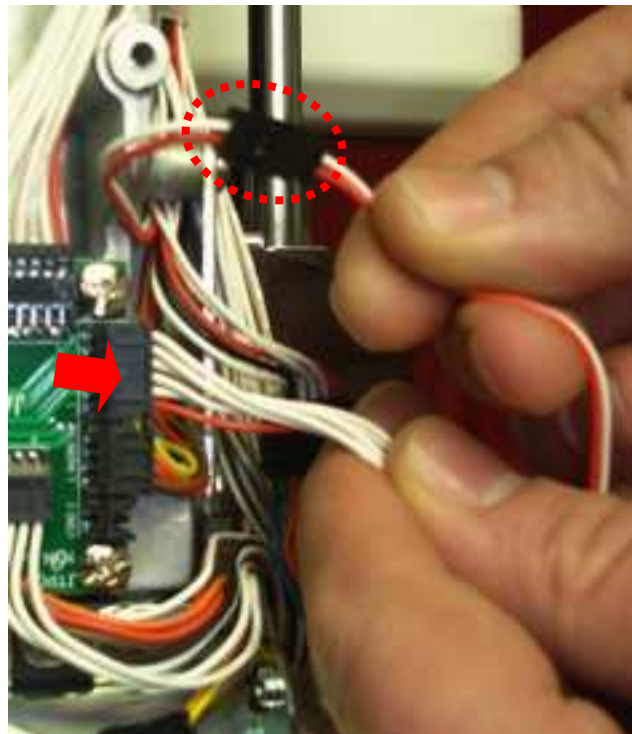


3. Cut the 2 white zip ties that hold the wires to the tension unit. Be careful not to clip any of the wires.

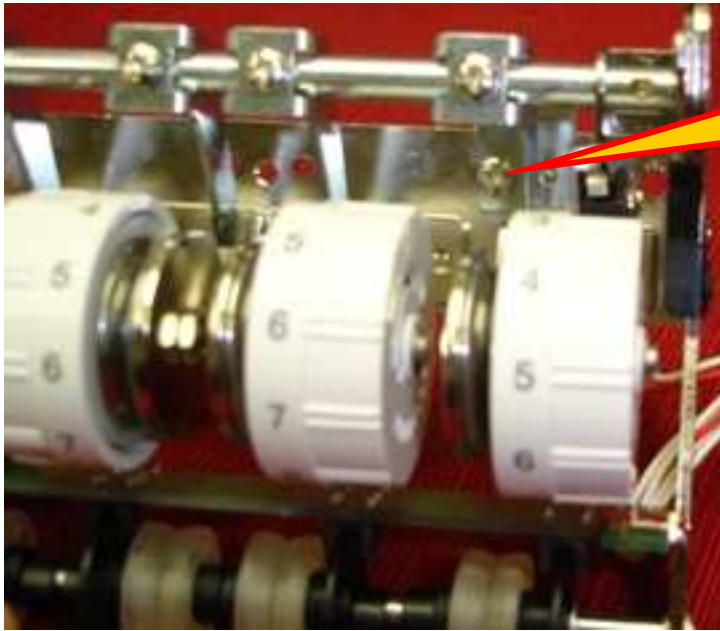
4. Remove the screw that goes through the white wire holder on the tension unit followed by the screw that goes through the two white wire holders on top of the horizontal drive gear cover plate.



5. Disconnect the two wires coming from the tension unit.



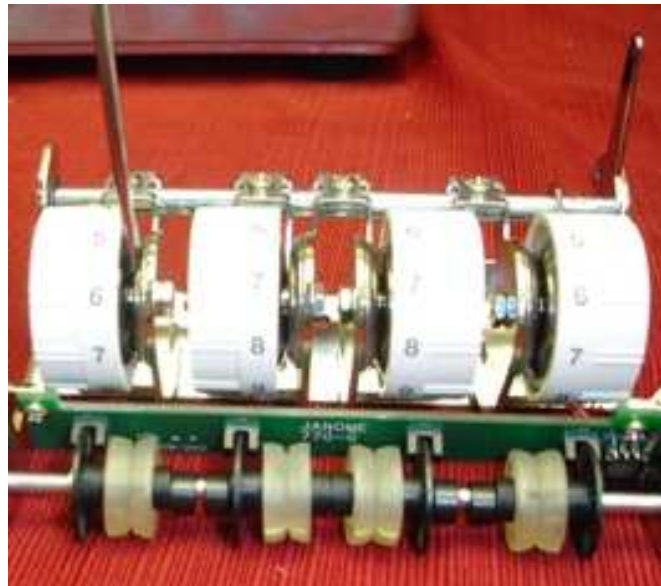
TENSION UNIT OBSERVATION



Micro Switch Screw

1. Locate the micro switch and move the lever to see if the switch is engaging and disengaging. If an adjustment is needed locate the screw in the bracket that holds the micro switch and loosen and move the bracket to a correct position.

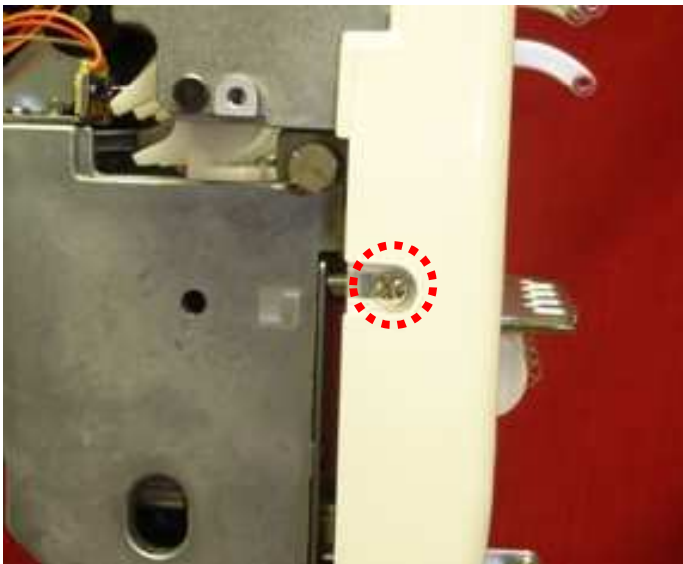
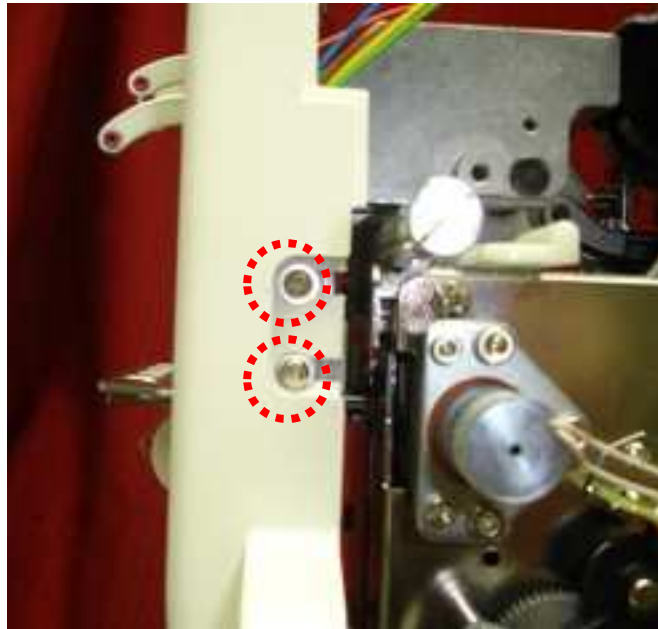
2. Clean the tension discs if necessary.



3. Check the rollers to see if they are okay and that the shield plates are going through the sensors properly.

FACE PLATE REMOVAL

1. Loosen the two small screws on the right side of the face plate.



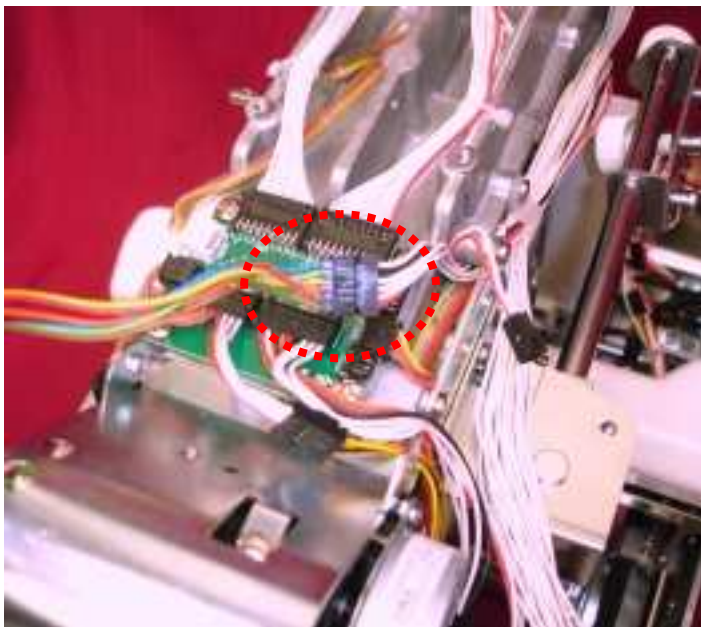
2. Loosen the one screw on the left side of the face plate.

3. Remove the two setscrews on the bottom of the lower thread guide and remove the thread guide.



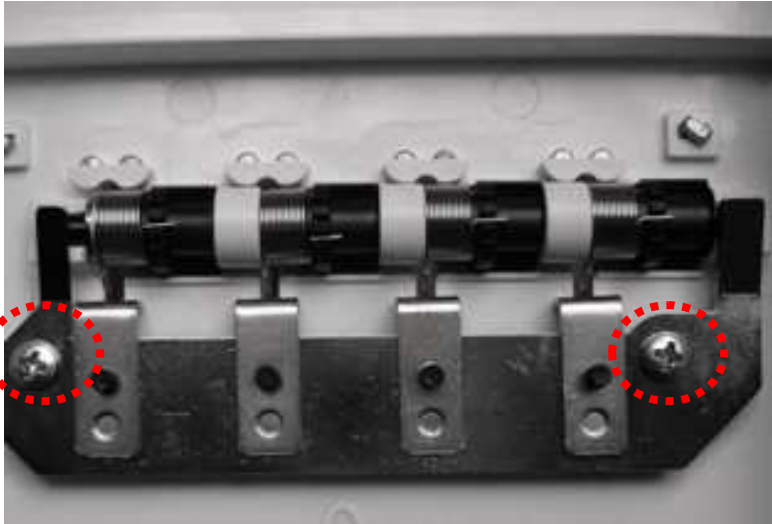


4. Gently remove the cover off the front of the machine being careful of the take up levers.



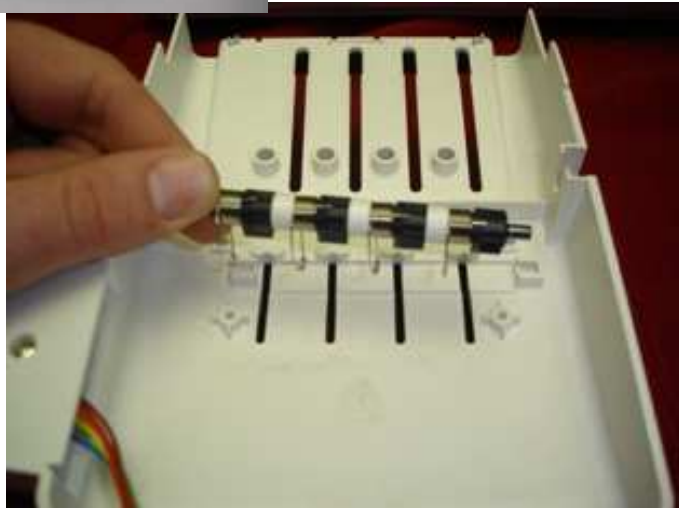
5. Disconnect the cable and remove the face plate.

CHECK SPRING REPLACEMENT AND ADJUSTMENT



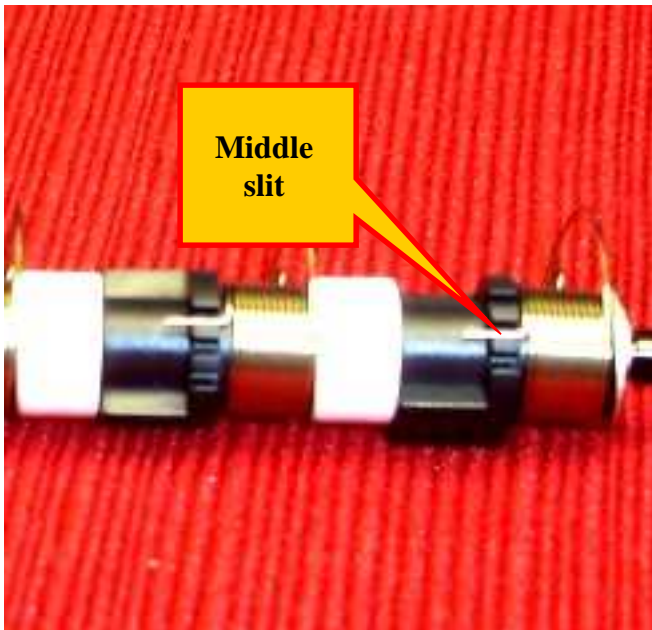
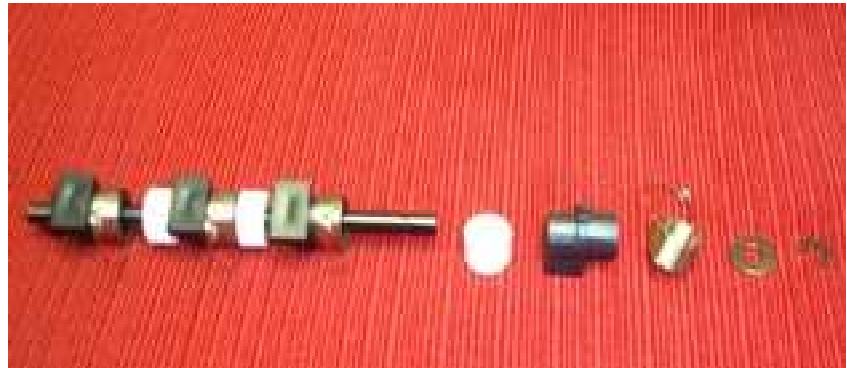
1. Remove the two screws that are on the check spring set plate and remove the plate.

2. Lift up on the check spring shaft and remove it.



3. Only remove the c-clip on the one end of the shaft.

4. Remove the pieces until you get to the one that needs to be replaced.



5. When replacing the check spring make sure to put the spring on the shaft with the tail resting into the middle slot of the black block.

TOP SLIT=HIGHER TENSION
MIDDLE SLIT = STANDARD TENSION
BOTTOM SLIT= LOWER TENSION



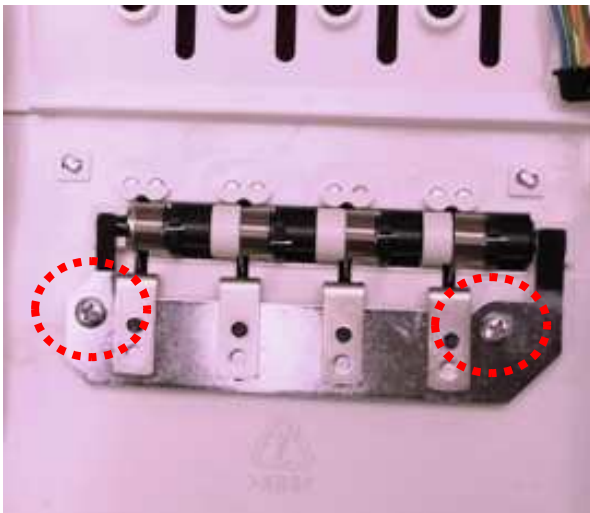


6. Install the C-ring.

7. Place the check spring shaft back into position making sure that all the flat spots on the black blocks are laying into the face plate.



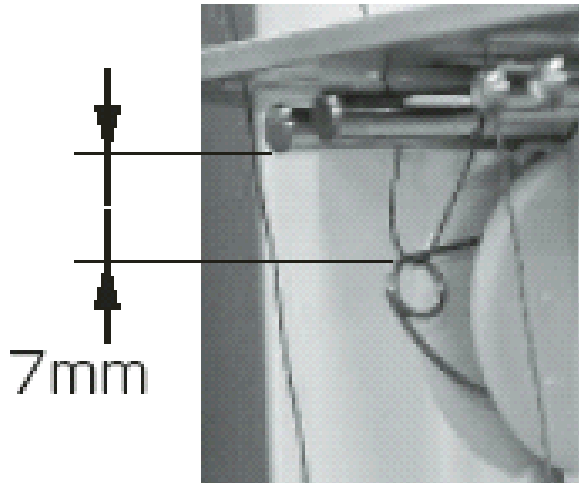
3.



8. Replace the check spring set plate and the two screws.

CHECK SPRING ADJUSTMENT

1. The top hole of the check spring should be 7mm away from the post that is on the bottom of the top thread guide.

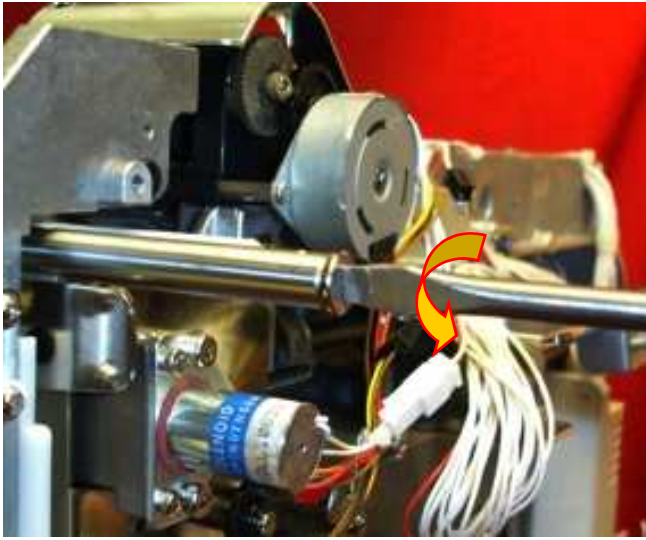


2. If an adjustment is needed take the 2mm hex driver and locate the black hex screw by looking at the front of the face plate underneath the check spring.

3. Loosen the hex screw and use the hex driver to either move it up or down until the proper position is found.



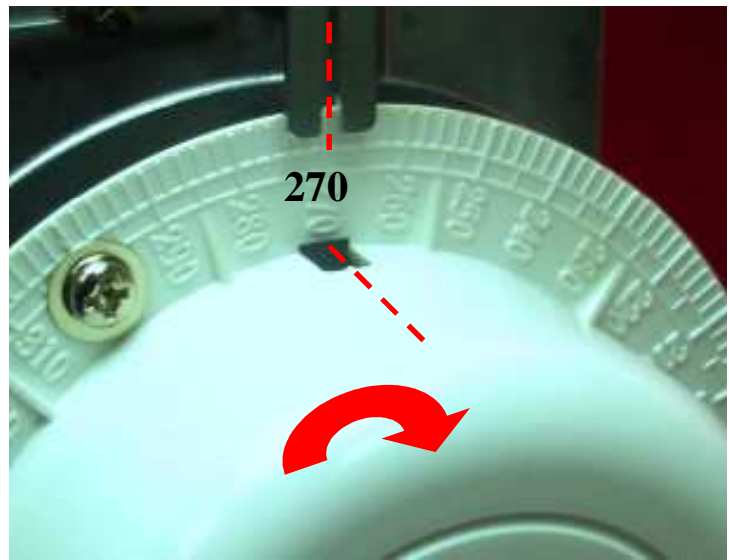
REMOVING THE HEAD



1. Remove the right side stopper screw on the end of the rail shaft.

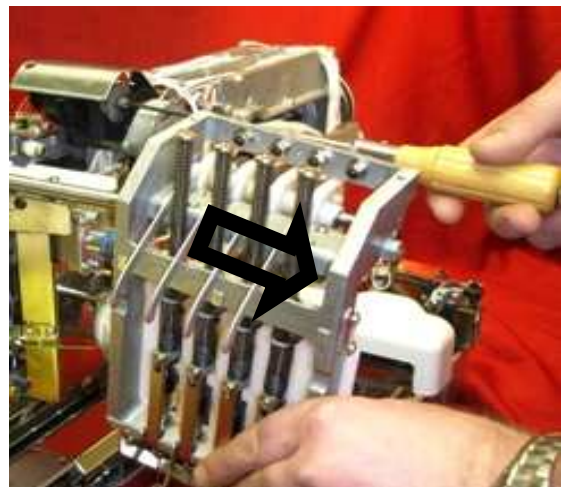
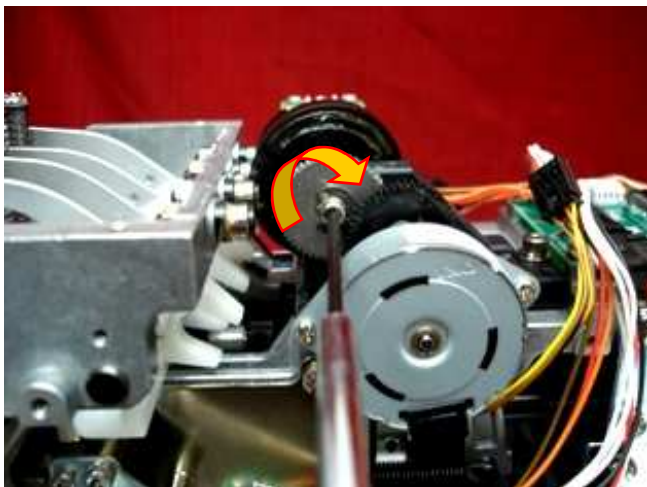
2. Turn the hand wheel clockwise to set the index at 270.

*****The hand wheel must only be turned clockwise.*****



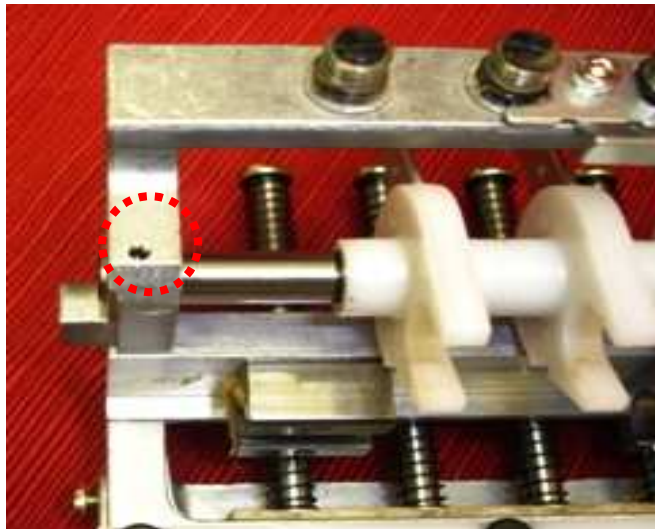
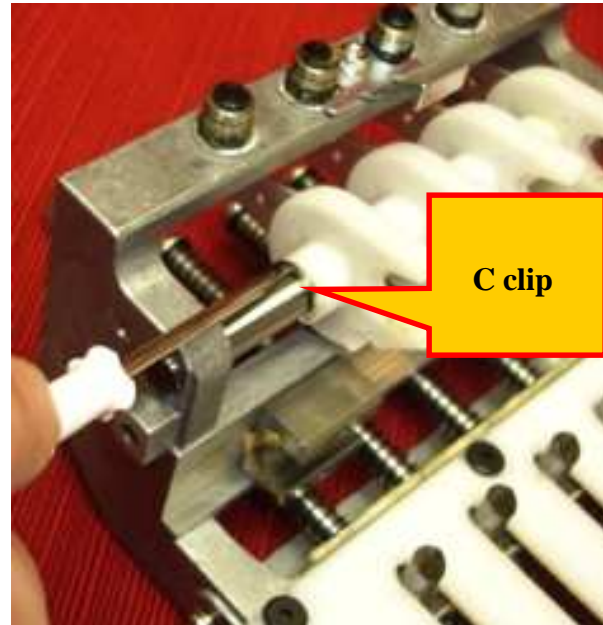
3. Turn the horizontal step motor gear **clockwise** to start removing the head.

The head will start moving to the end of the rail shaft. Support the head and help it slide off and hold it so it doesn't fall.



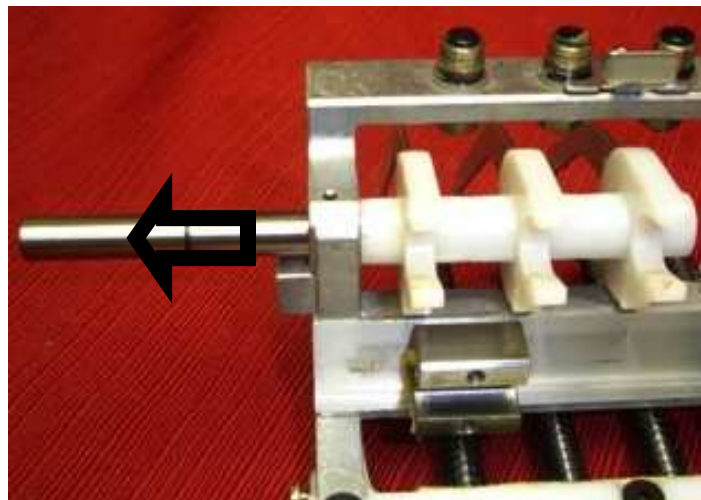
TAKE UP LEVER REPLACEMENT

1. Remove the c-clip from the thread take up lever shaft.

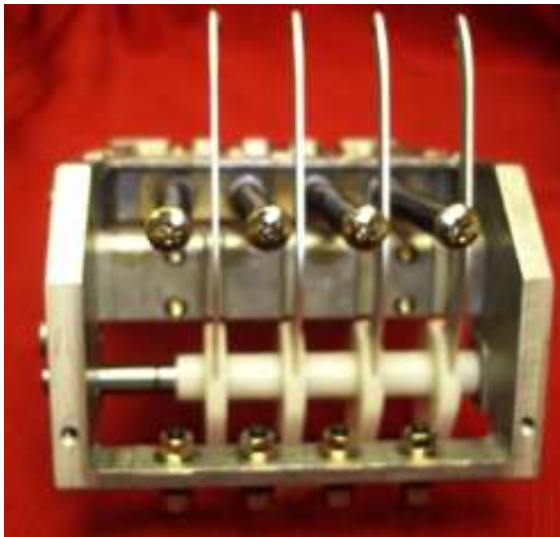
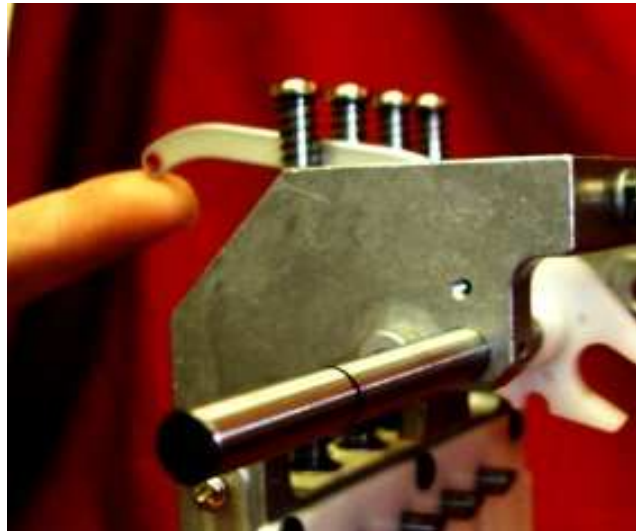


2. Loosen the 1.5 mm hex screw that holds the take up lever shaft.

3. Take the shaft out in the direction of the arrow.



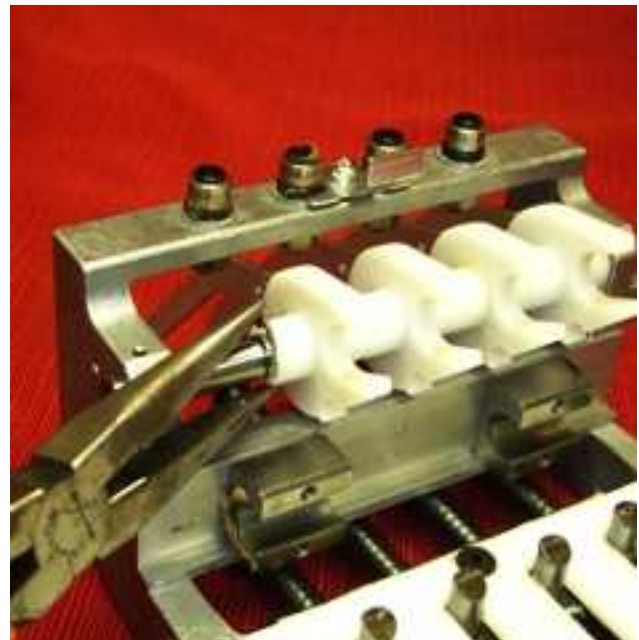
4. When replacing the take up lever make sure to put the lever in with the curve facing down when looking at the front of the head.



5. Slide the shaft through the head attaching the take up levers as it goes.

The take up levers will be lined up with grooves that are indented on the head. If not, slide the shaft back out and start over.

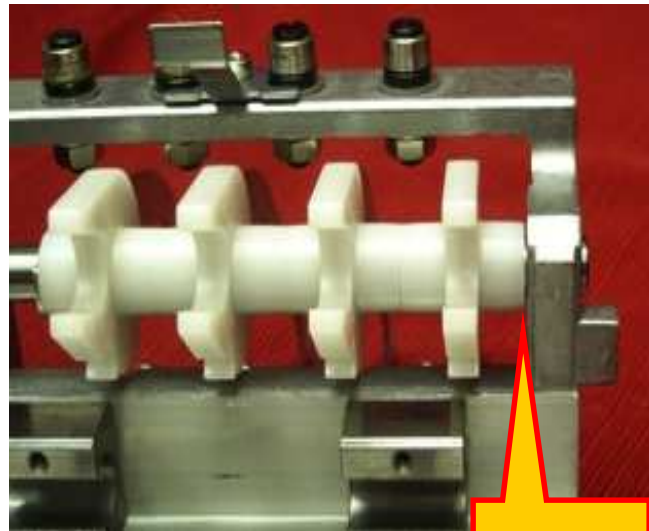
6. Reattach the C clip onto the shaft.



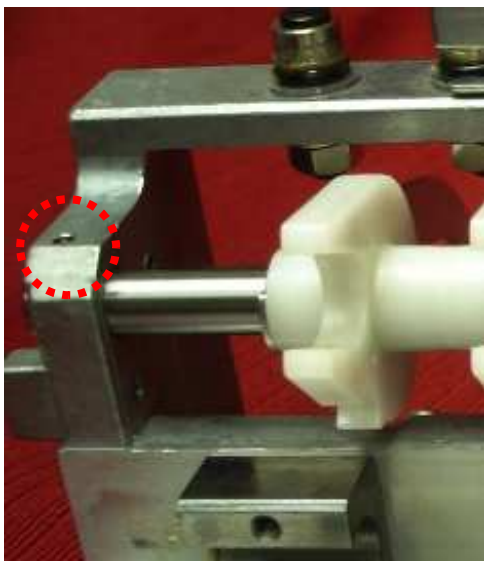


7. Slide the shaft all the way in to the right side of the head.

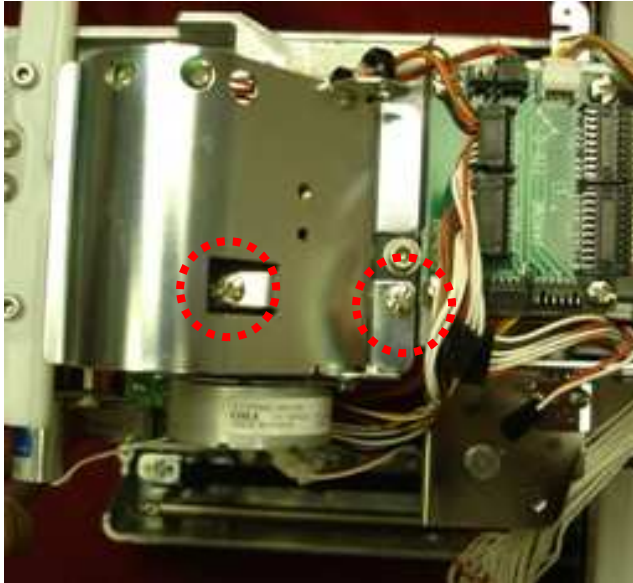
8. Back the shaft off slightly leaving a 0.2 mm gap on the right hand side and then tighten the 1.5 mm hex screw to hold the shaft in place.



0.2 mm
gap

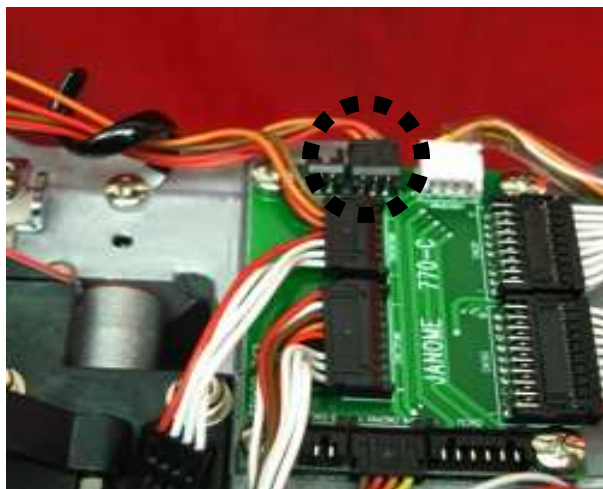
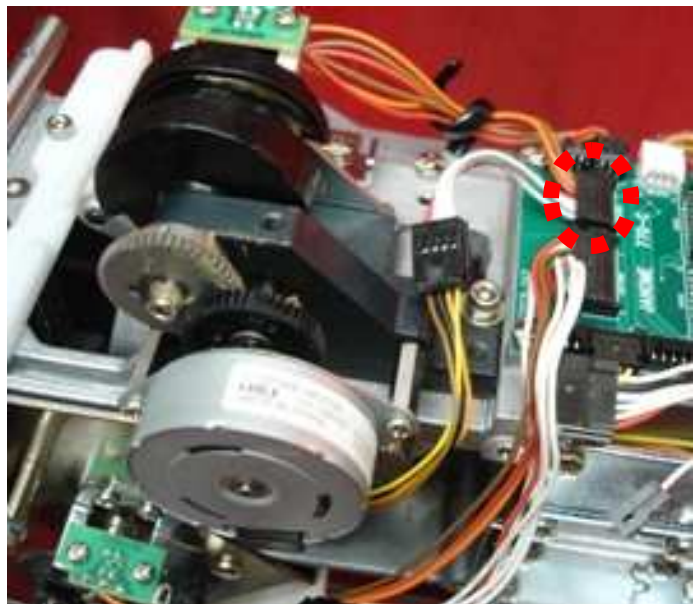


HORIZONTAL DRIVE REMOVAL

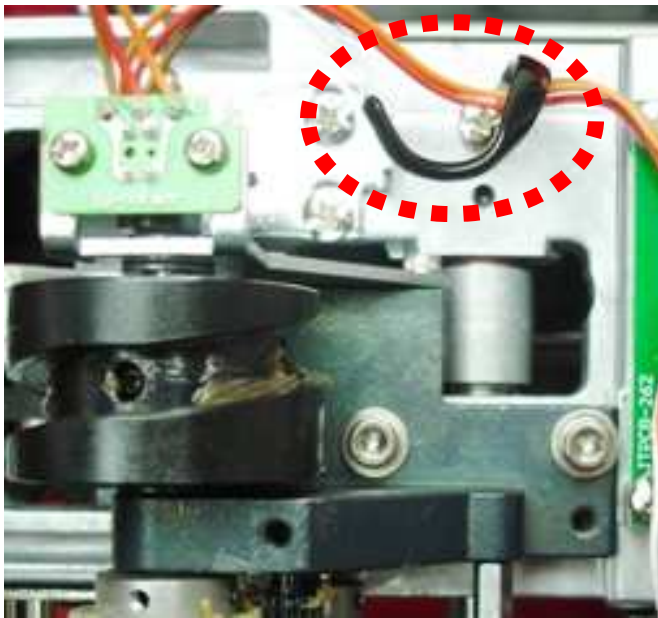


1. Remove the two set screws that hold the cover plate on top of the drive cam and gears.

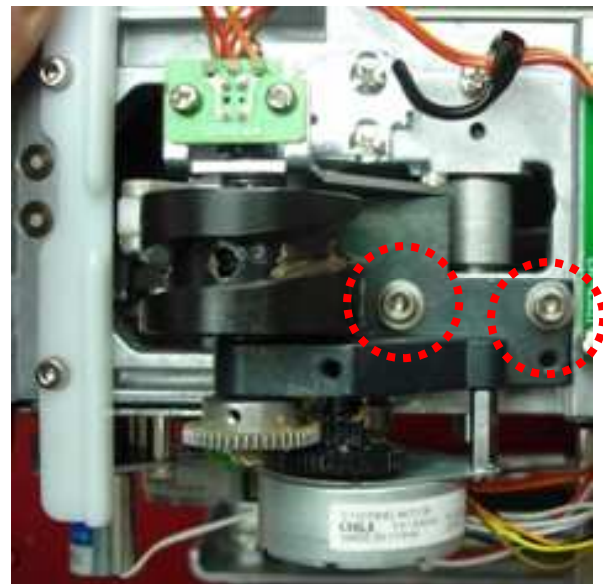
2. Disconnect the black plug from the C-board that is from the stepping motor.



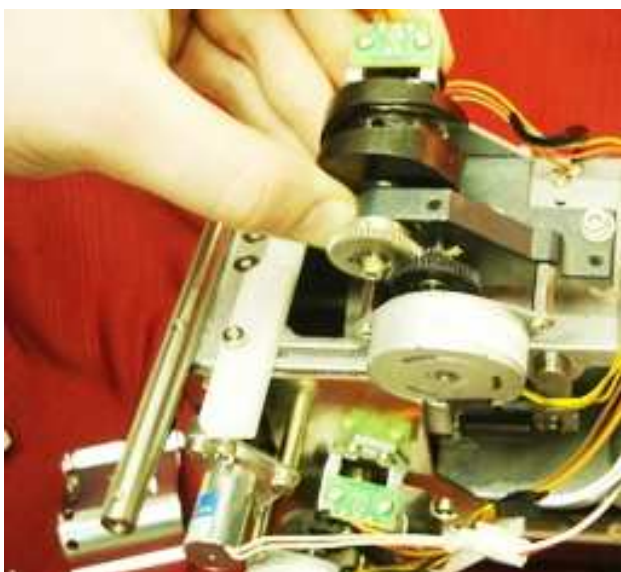
3. Unplug the little black plug from the C-board that is from the sensor on the left side of the horizontal unit.



4. Untangle the wire from the black protective guard.



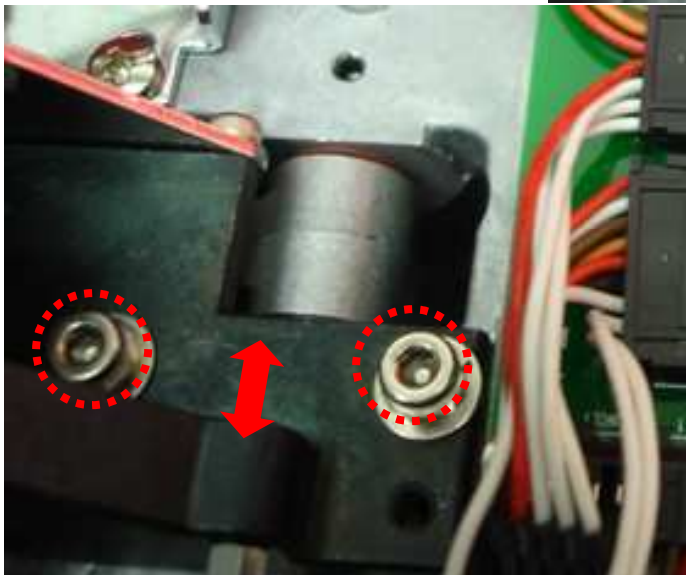
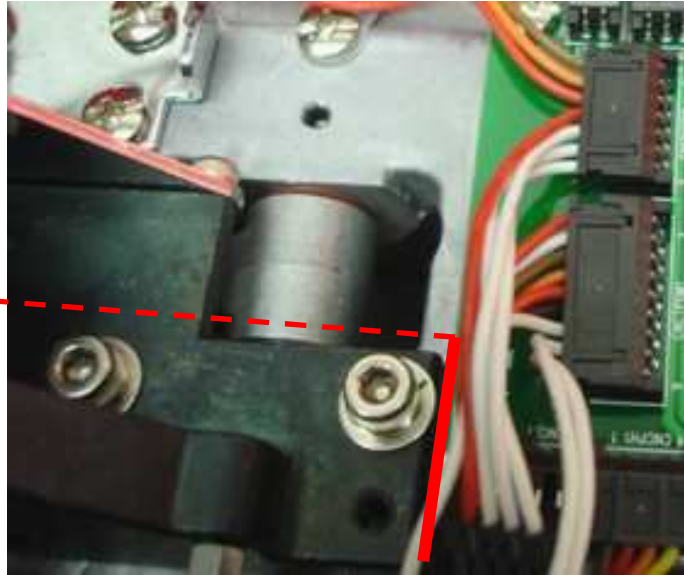
5. Using a 3mm hex driver remove the two hex screws.



6. Remove the horizontal nit.

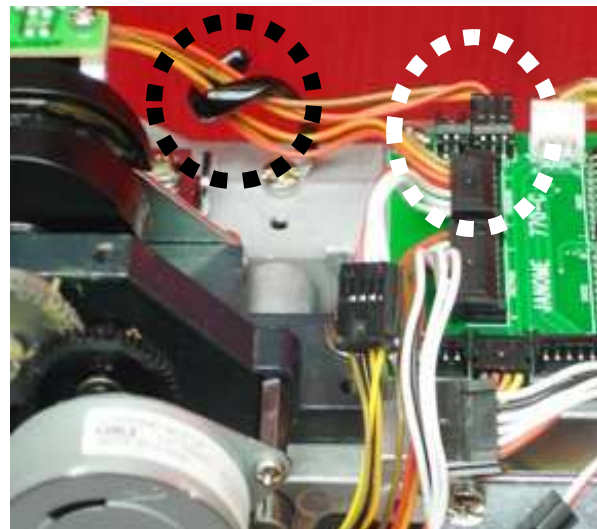
REPLACEMENT OF HORIZONTAL UNIT

1. Place the horizontal unit back on top of the machine and push it towards the back so it is flush with the casting.

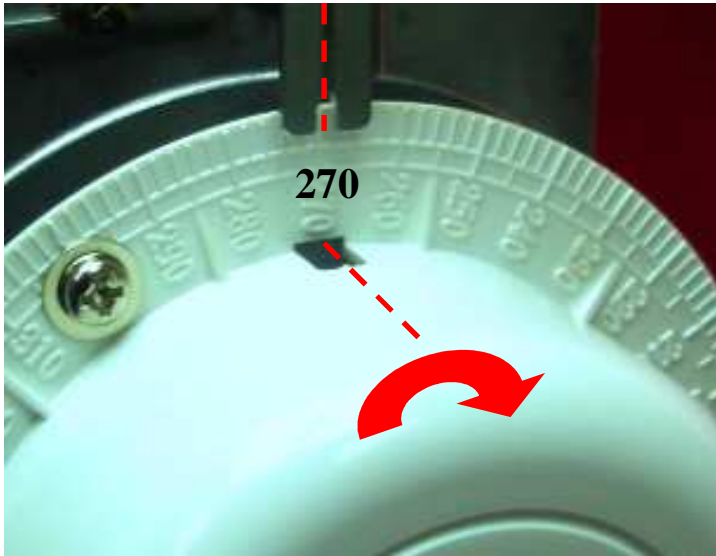


2. Tighten the two 3mm hex screws *temporarily*. This unit is the adjustment for left to right needle position.

3. Connect the two plugs into the C- board and wrap the black protector around the sensor wire.

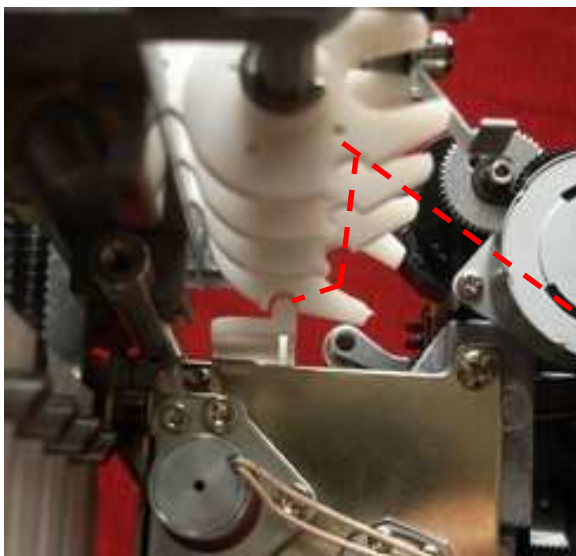
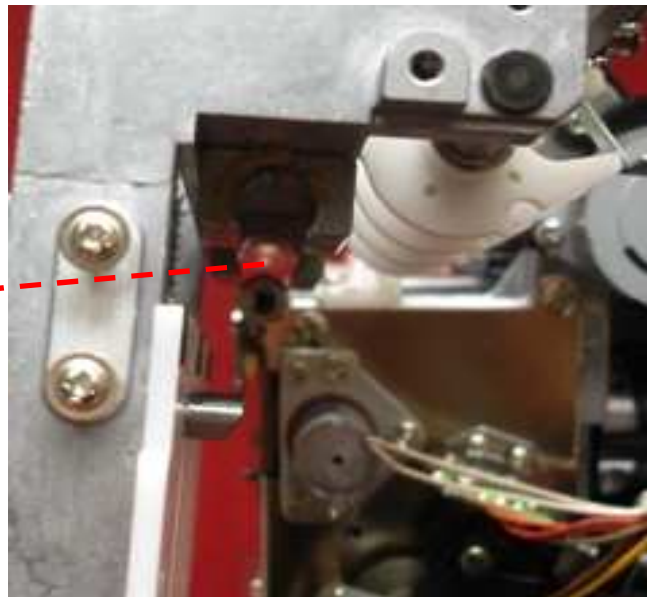


HEAD REPLACEMENT

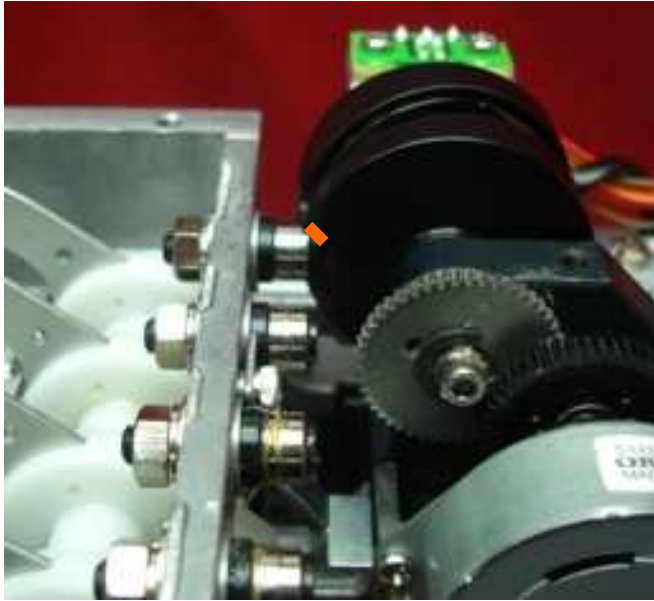


1. Turn the hand wheel clockwise to set the index at 270. ***Only ever turn the hand wheel clockwise.***

2. Align the head so the head drive guides are in alignment with the rail shaft and start to slide the head on.

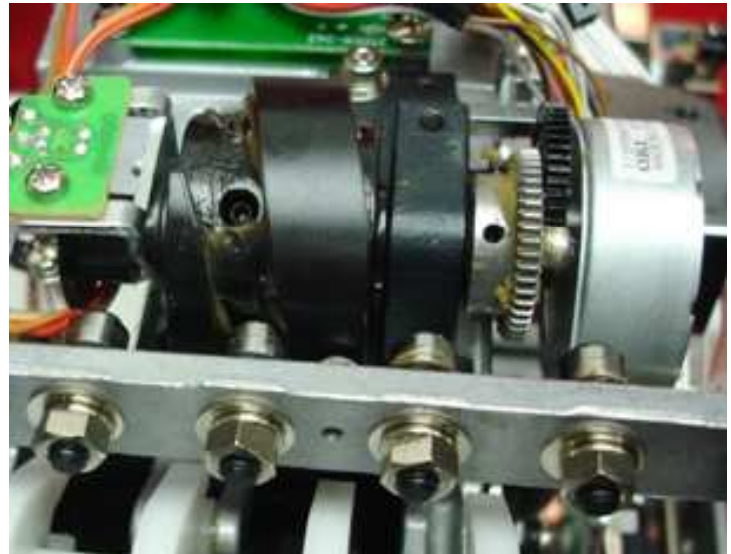


3. As you slide the head on, lift up on the take up levers so they fit over the white guide on the inside of the machine.

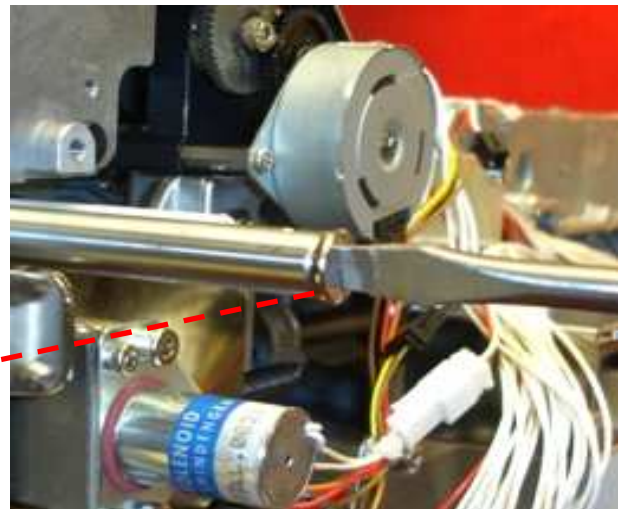


4. Turn the horizontal drive cam so that the opening edge is towards the top position. When it is in this position you will be able to slide the head into it, and the drive rollers attached to the head will lock into it and will be able to turn within the cam.

5. Once the drive rollers are locked in, take the 2.5 hex driver and turn the step motor to move the head further into position and try to line it up with a particular needle bar.

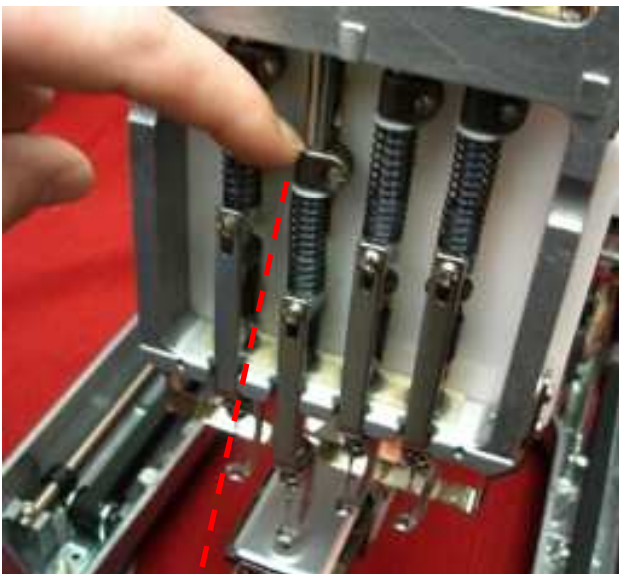


6. Put back the stopper screw on the end of the shaft.



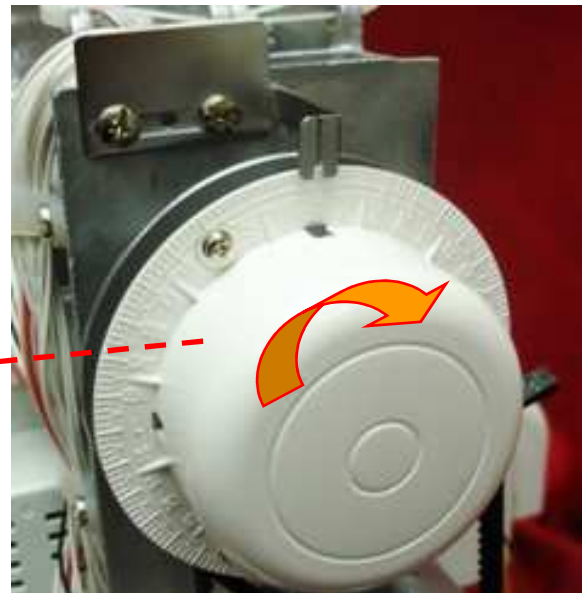
CENTER NEEDLE POSITION (LEFT TO RIGHT)

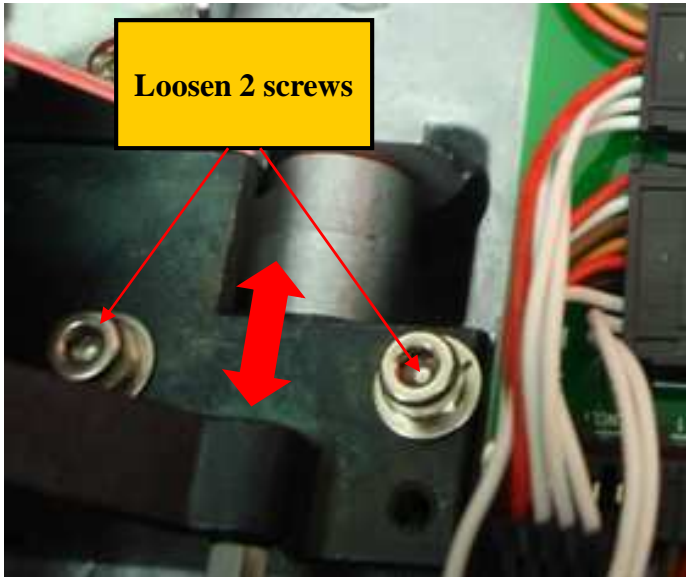
1. Make sure the hand wheel is set at 270. Turn the horizontal gear if you need to line up the needle bar with the needle plate.



2. Push the needle bar down to engage the needle bar clutch and so that the needle bar stays in a down position.

3. Hold onto the needle bar clamp and turn the hand wheel clockwise to lower the needle into the needle plate.





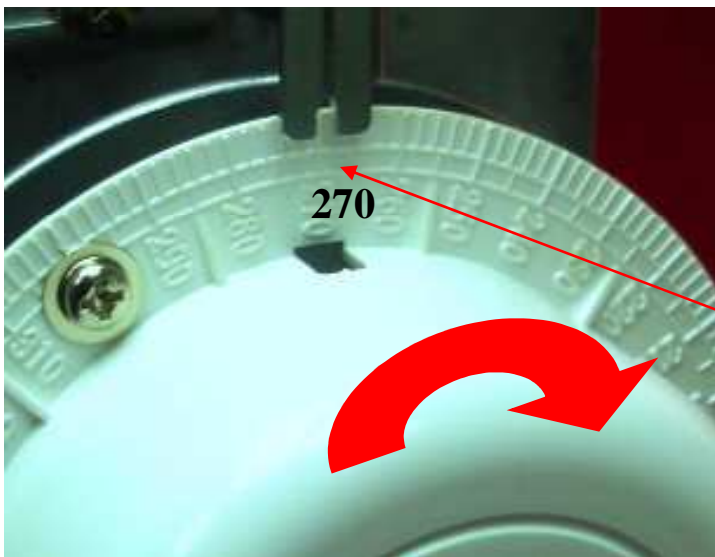
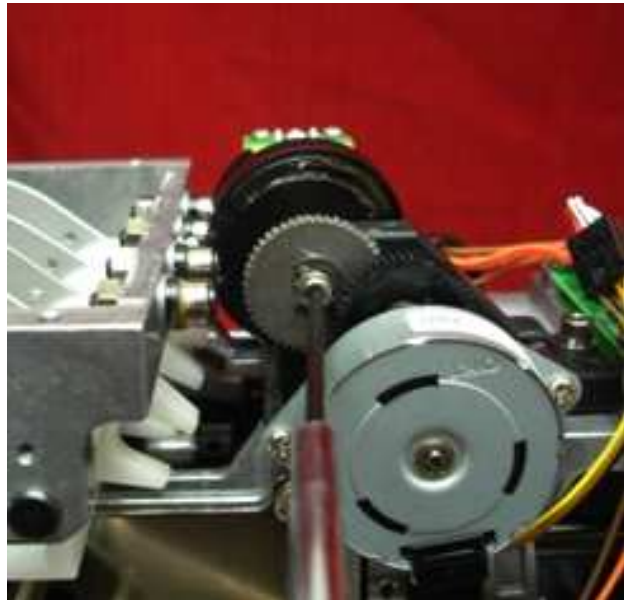
4. If the needle is not centered go to the top of the machine and loosen the two 3mm hex screws on the horizontal unit and either move it left or right to center the needle.

5. Once the needle is in the center, tighten the 2 screws.



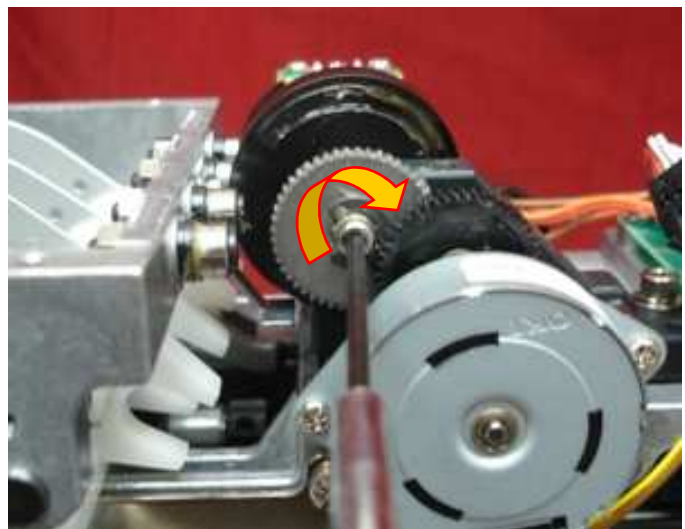
WHAT TO DO IF THE HEAD IS JAMMED

1. If the head is jammed first take the 2.5 hex driver and turn the horizontal gear to set the particular needle bar as close to alignment with the needle plate as possible.



2. Turn the hand wheel only in a clockwise position to set the index at 270.

3. Turn the horizontal gear clockwise to free the head.

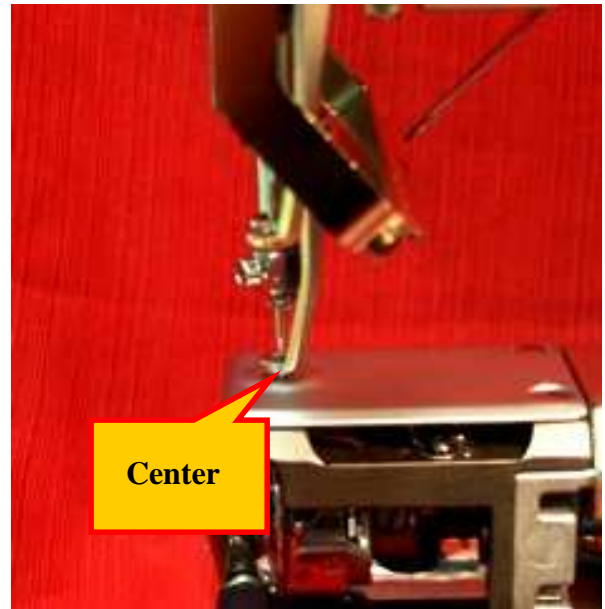


ADJUSTING NEEDLE FRONT TO BACK



1. If the needle is off front to back locate and loosen the two 3mm hex screws.

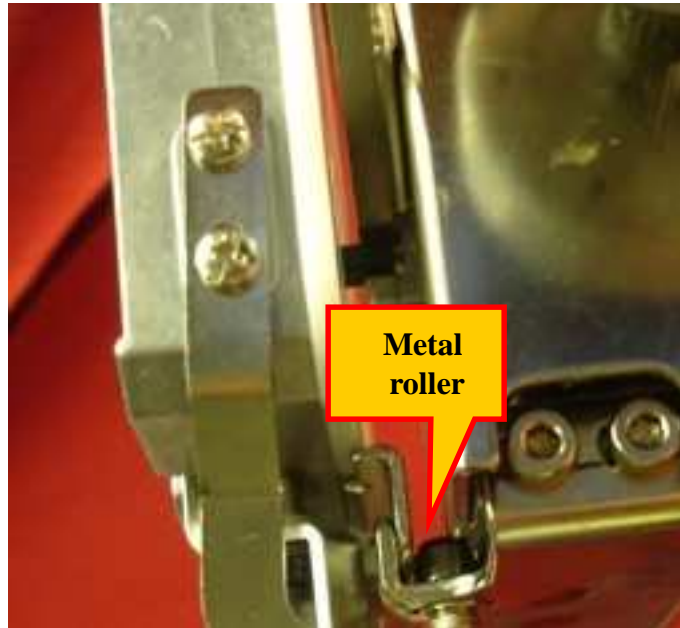
2. Move the head to center the needle.



3. Then tighten the screws.

ADJUSTING PLAY IN THE HEAD

1. If the head has play in it where you can rock it front to back locate the hex screw on the bottom side of the head.



2. Loosen the 2.5 mm hex with an allen key and move *only* the roller to take away the play in the head.

3. Tighten the 2.5 mm hex screw.

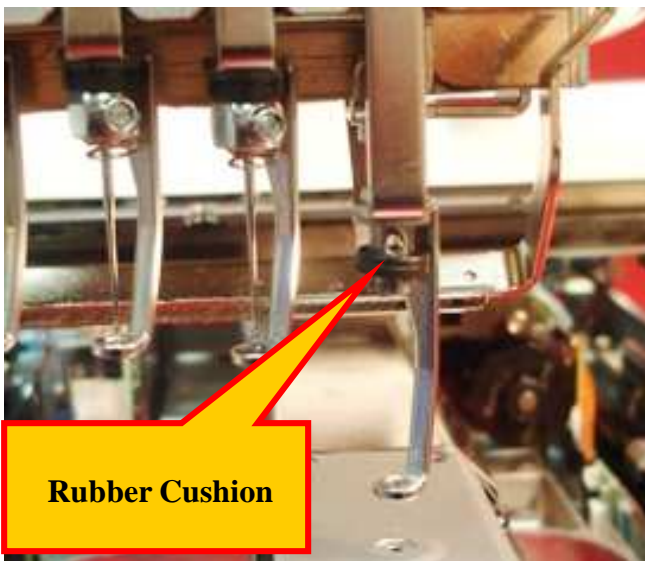
REMOVING THE PRESSER FOOT, NEEDLE BAR AND SPRINGS



1. Remove the needle. Grab onto the needle bar clamp and with the other hand turn the hand wheel clockwise to lower the needle bar slightly.



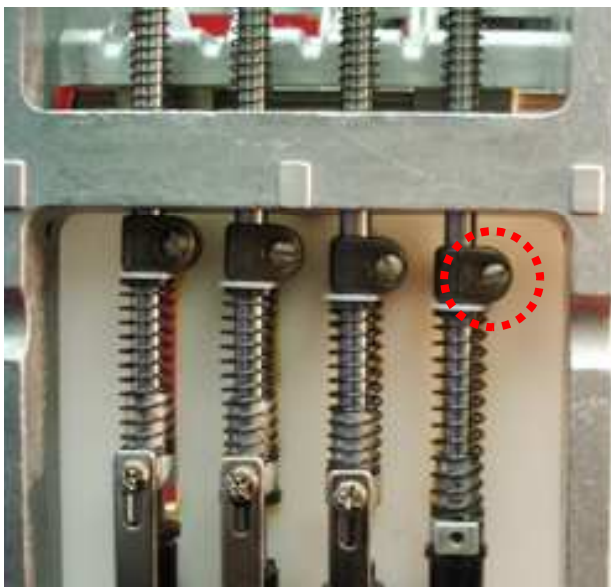
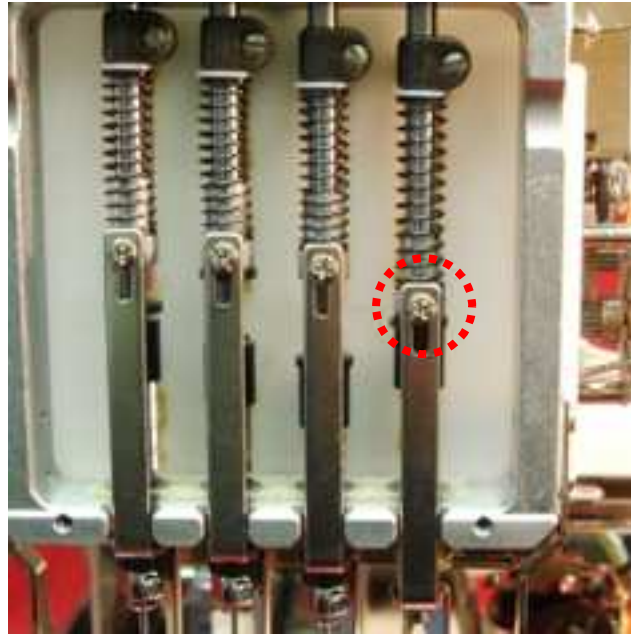
2. With a 1.5 mm hex driver loosen the set screw on the back of the needle clamp.



3. Go back to the front of the needle clamp and loosen the screw enough to pull the needle clamp off of the needle bar.

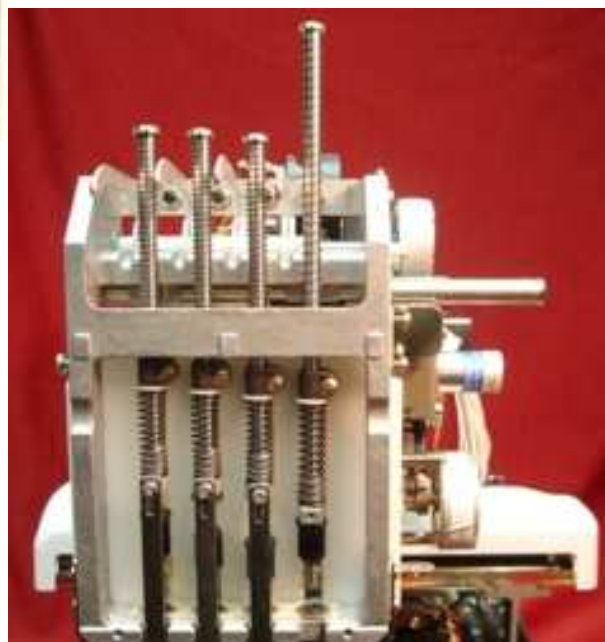
Remove the cushion that is above the needle clamp.

4. Raise the needle bar back up and remove the screw that holds the presser foot and carefully remove the foot.



5. Carefully loosen the screw on the needle bar holder.

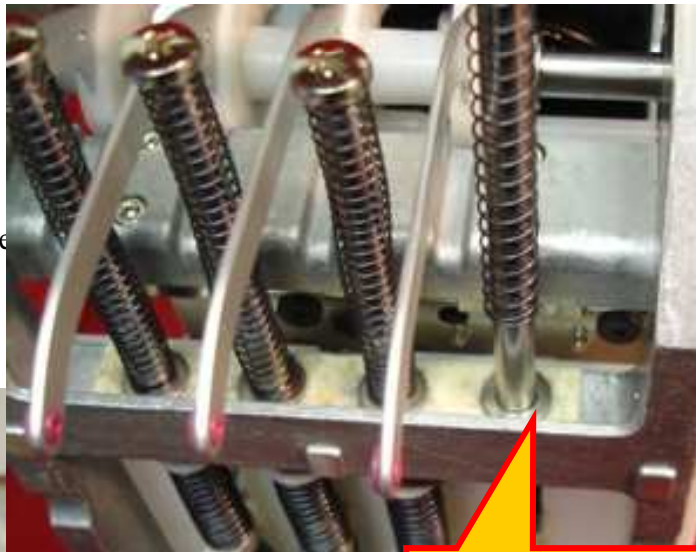
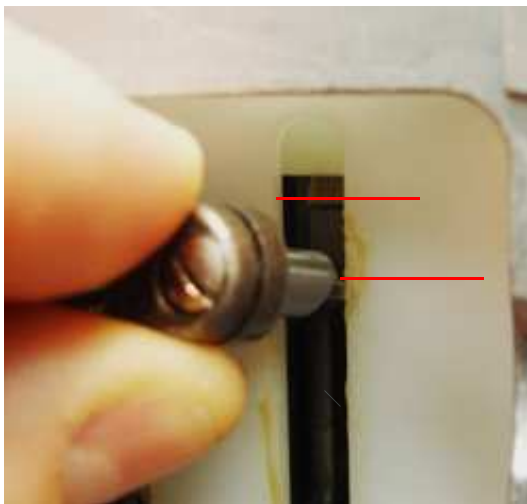
6. Start to lift up on the needle bar and remove it from the **top of the machine**. As you remove the needle bar carefully remove the pieces coming off of it and line it up for easy assembly later.



INSTALLING THE NEEDLE BAR



1. Take the needle bar with the long spring on it and line it up with the hole at the top of the machine. Make sure the washer is at the top of the machine and start to insert the needle bar into the machine head.



Metal washer

2. Place the needle bar holder clamp into the machine and continue to slide the needle bar in.

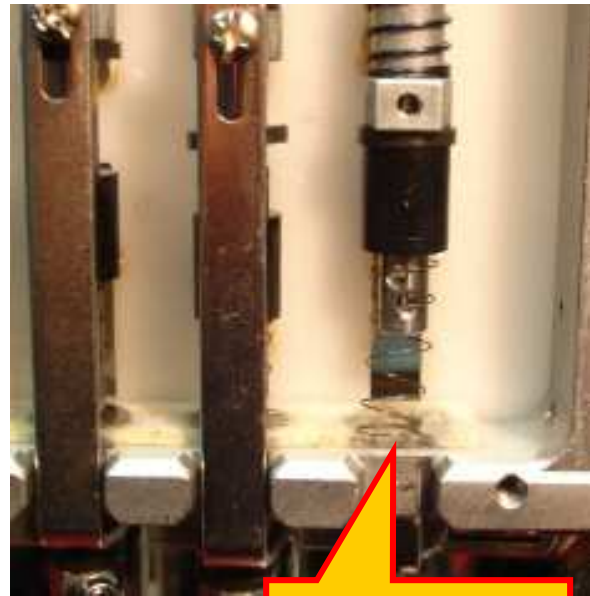
**** Important****The needle bar holder must fit into the upper needle bar crank which is represented by the two red lines.



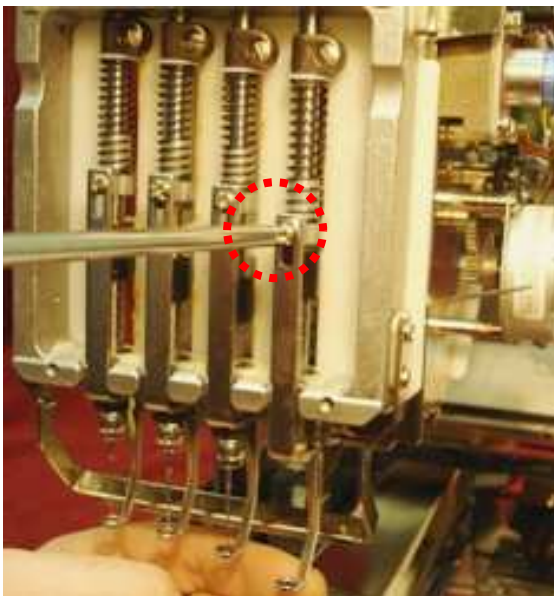
3. Place the spring base under the needle bar holder with the narrow part facing down. Insert the larger spring followed by the presser foot block, the black washer and then by the presser foot holder which must fit into the lower needle bar crank.



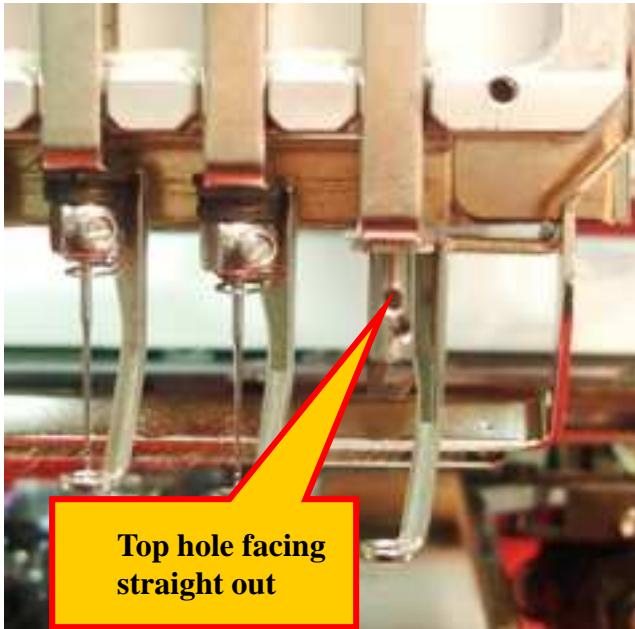
4. Insert the presser foot return spring followed by the silver washer and slide the needle bar through the bottom hole in the head.



Metal washer

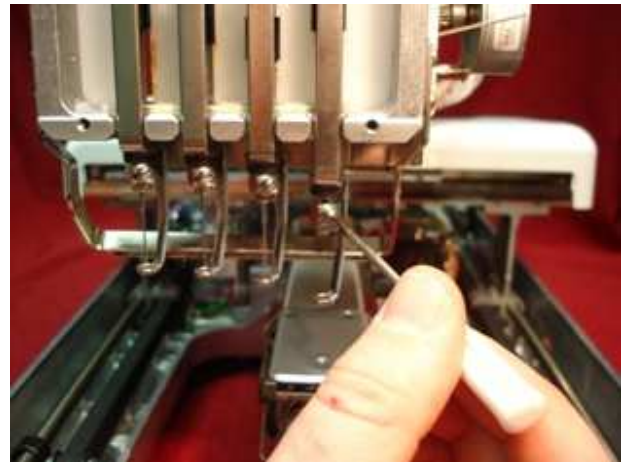


5. Reattach the presser foot and tighten the screw temporarily.



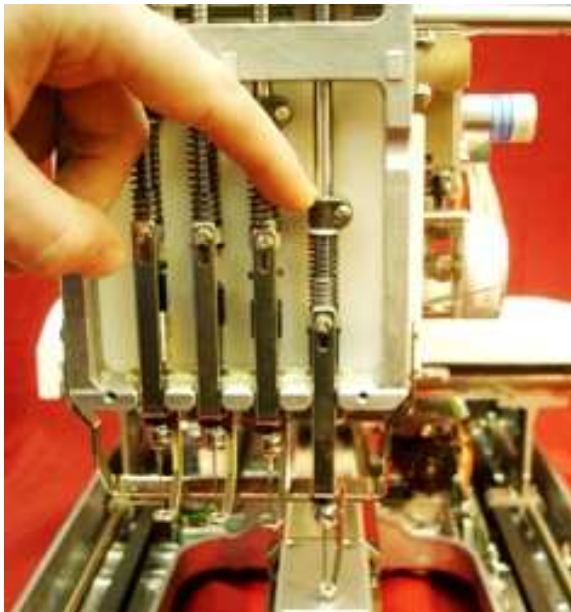
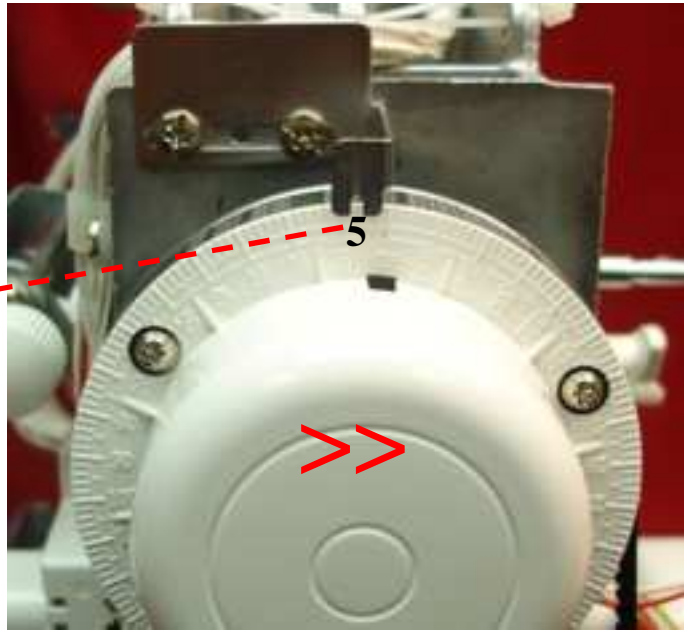
6. Continue to lower the needle bar making sure that the top hole on the bar near the bottom is centered and facing straight out.

7. Reattach the black washer followed by the needle clamp which goes on an angle with the thread guide down. Start to screw the needle clamp back on.



8. Insert the needle making sure it is going in the right way and that the eye is lined up with the top hole on the needle bar.

9. Turn the hand wheel clockwise to set the index at 5.



10. Push down on the needle bar holder until the needle bar is in a locked position.



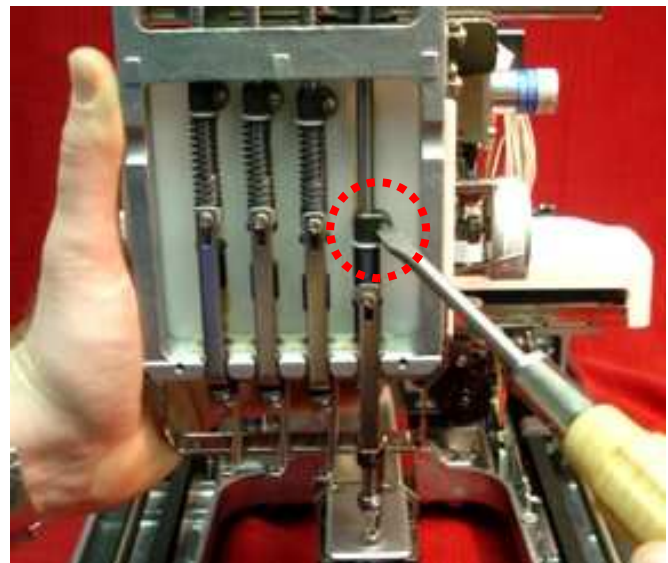
11. Insert the 17mm black needle bar height gauge into the hook race.



12. Make sure that the top hole on the needle bar is facing straight out and from the very top of the needle bar gently push the needle bar down until the tip touches the gauge. *****Do not slam the needle bar unit into the gauge.*****



13. When the needle bar is down, the tip of the needle should slightly touch the black gauge.

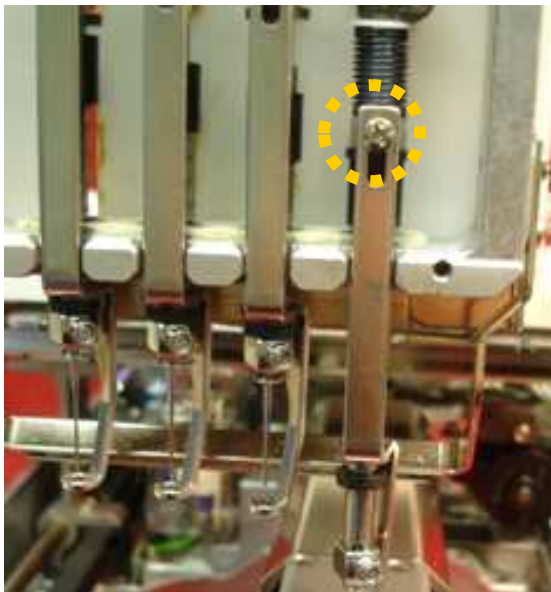


14. Tighten the needle bar holder screw. ****Do not over tighten or it could crack.****



15. Tighten the 1.5 mm screw behind the needle clamp.

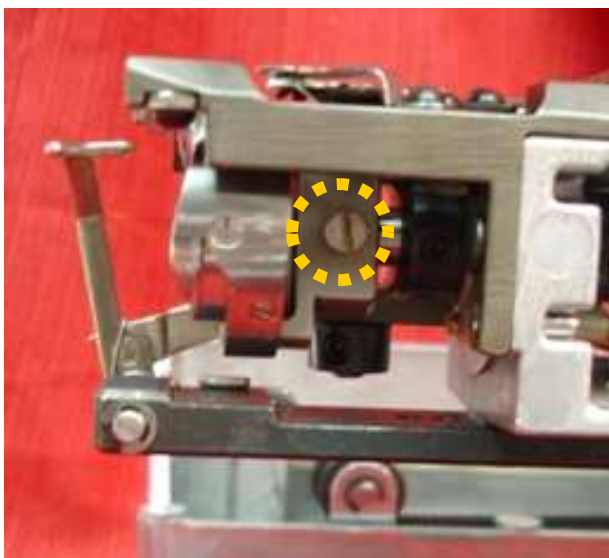
16. Insert the presser foot gauge between the needle plate and the presser foot.



17. Loosen the presser foot holder screw and lower the presser foot on top of the gauge. Tighten the screw. Remove the gauge and turn the hand wheel clockwise to raise the needle bar.

HOOK TIMING

1. Remove the set screws on the needle plate and remove it.

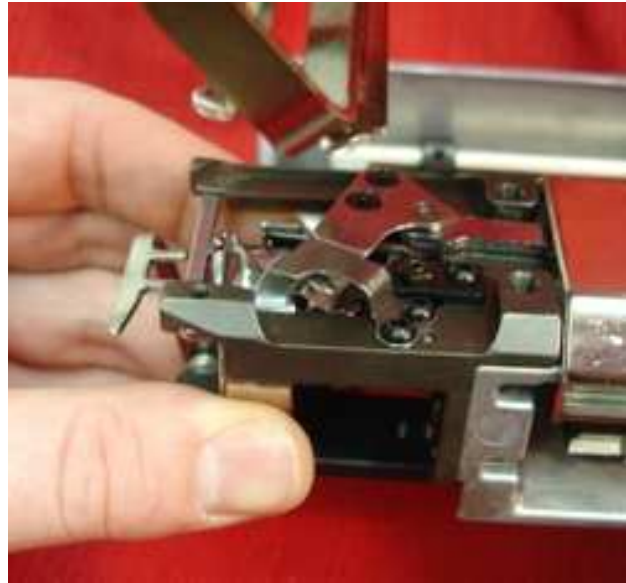


2. Loosen the three set screws on the hook race.

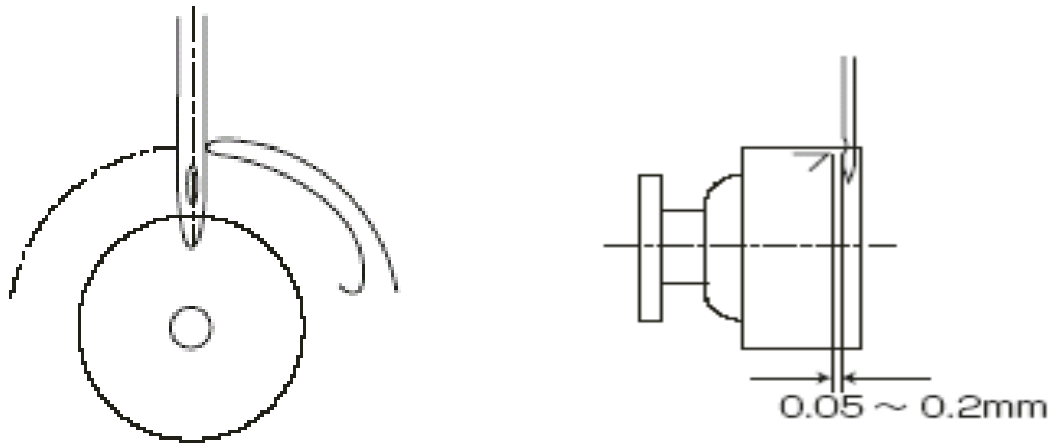
3. Start to turn the hand wheel clockwise while pulling down on the needle bar clamp to get it started.



4. To prevent the needle from hitting the hook body, hold the hook with the point up while turning the hand wheel.

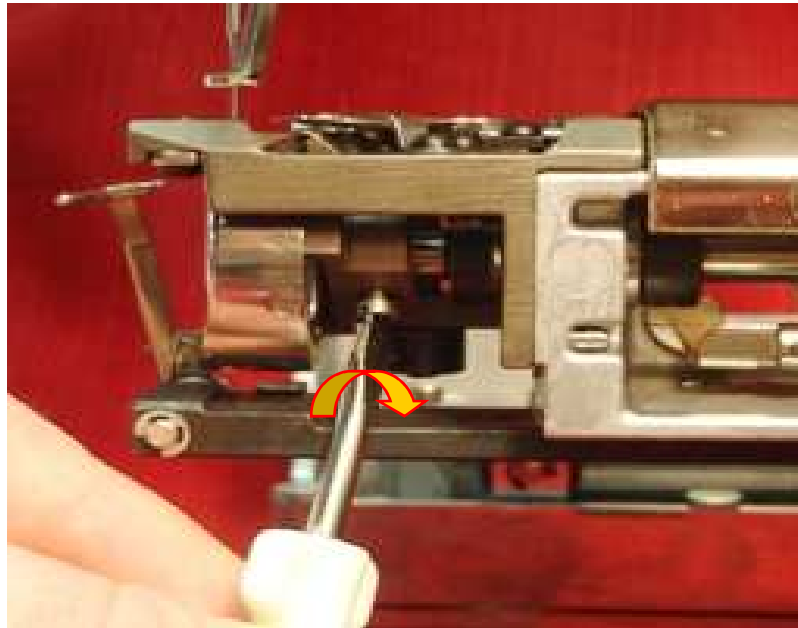


5. While holding the hook body, turn the hand wheel clockwise to set the index at 21.



6. While holding the hand wheel, turn the hook unit to align the hook point with the right side of the needle (*use DBxK5Q1NY needle*).

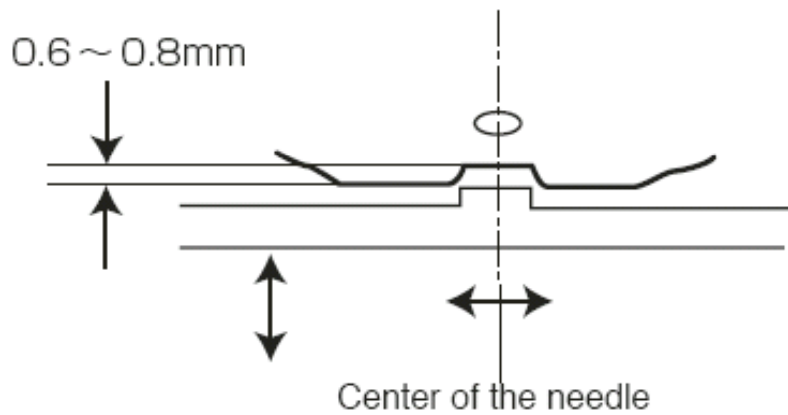
Make sure to maintain a clearance of 0.05-0.20 mm between the tip of the hook and the needle.



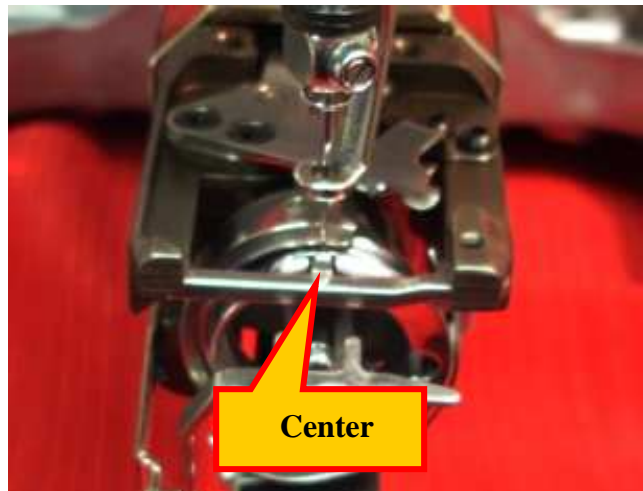
7. Tighten the one set screw first to hold the timing and clearance in place then you can turn the hook race and tighten the remaining two screws.

ADJUSTING THE HOOK STOPPER

1. Loosen the 2 mm set screw to move the stopper.



2. Move the hook stopper to align the center with the needle and make a 0.6 – 0.8 mm clearance between the hook race and the stopper. Tighten the screw.

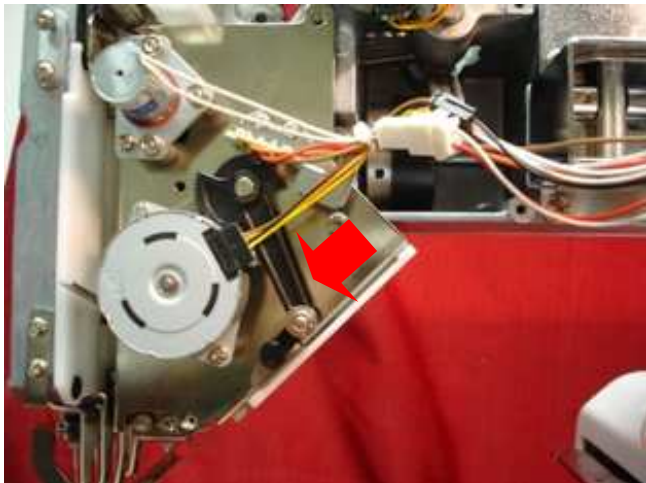
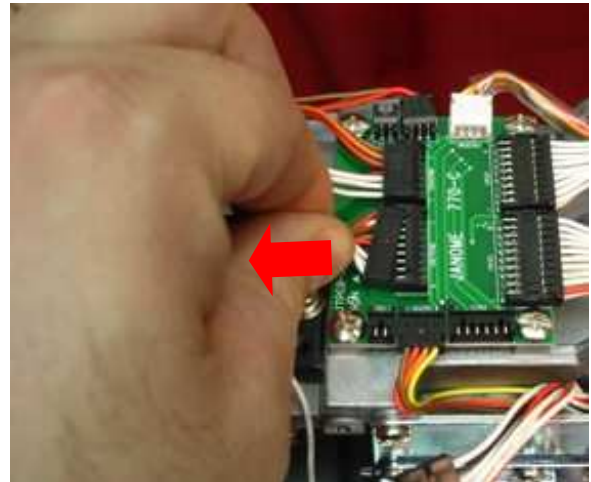


THREAD CATCHER REMOVAL



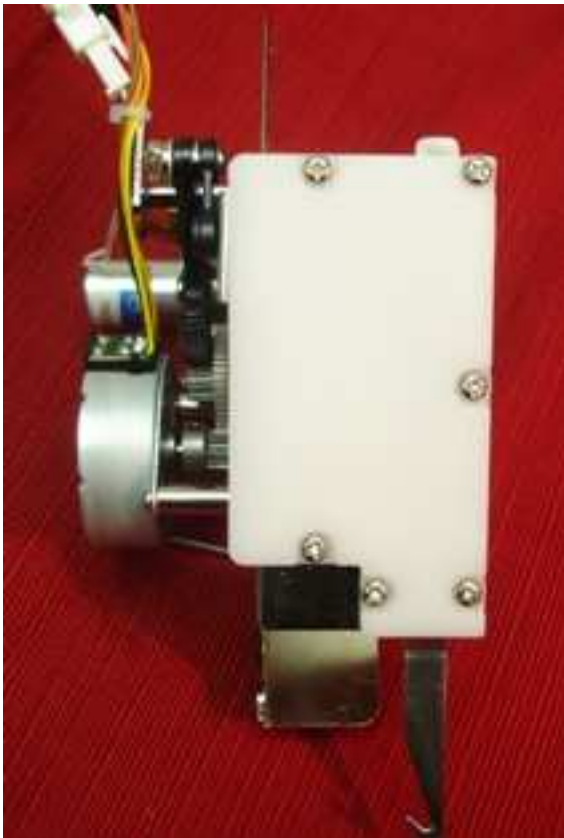
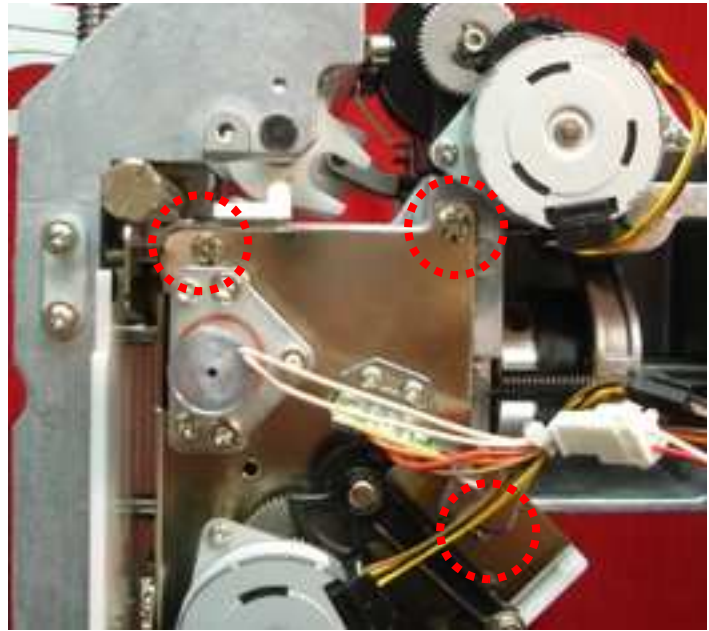
1. Make sure the head is in needle position # 1.

2. Disconnect the thread catcher plug from the C-board.



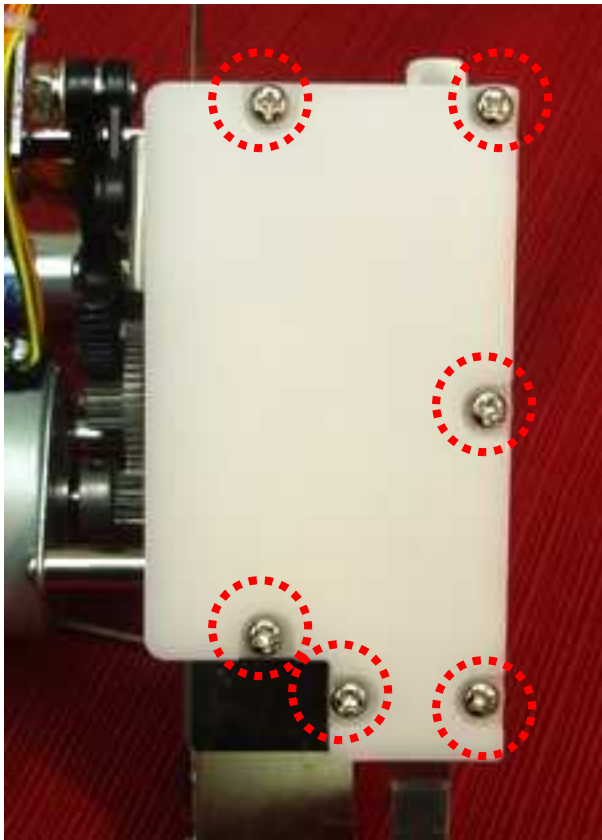
3. Push the thread catcher hook slightly down.

4. Remove the 3 set screws that hold the unit.



5. Push the thread catcher hook back up and remove the unit.

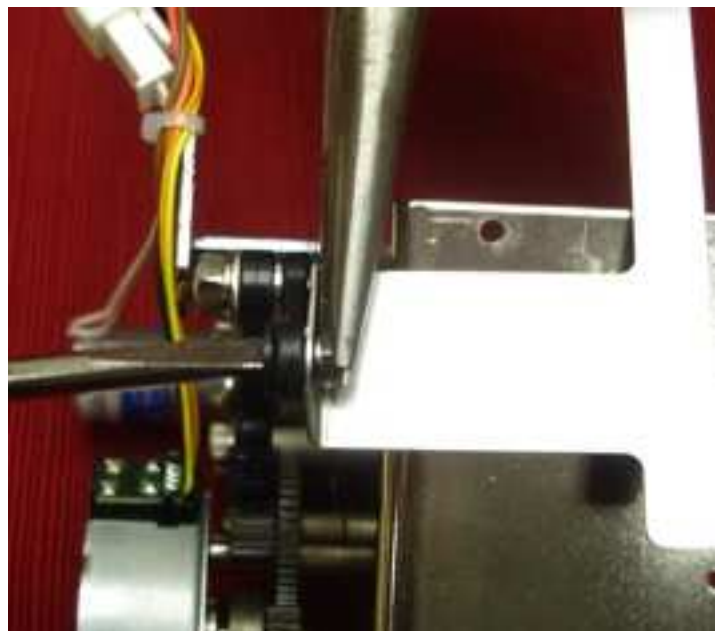
REPLACING THE THREAD CATCHER HOOK



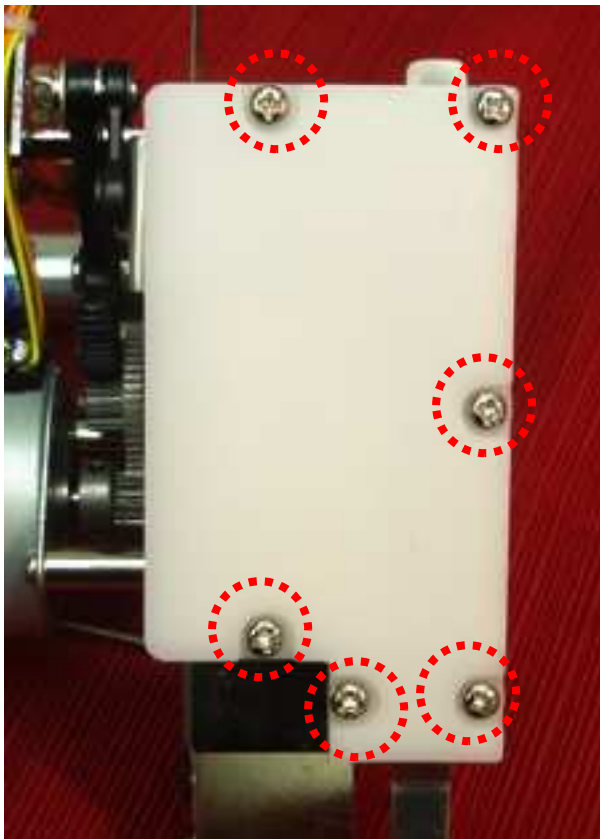
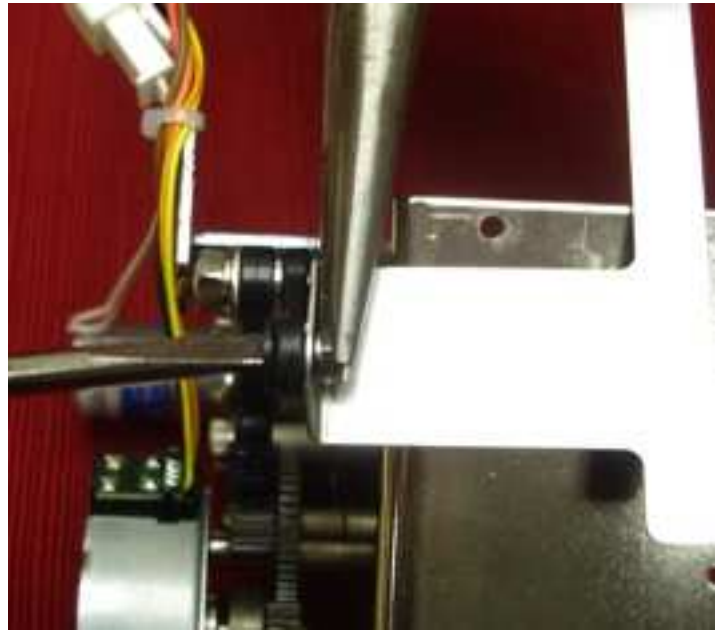
1. Loosen the six set screws that hold the white cover on the unit, and remove the guide.

2. Loosen the thread catcher guide either by using a 5.5 wrench and hold the nut while loosening the screw or use a pair of pliers and loosen the screw and remove the nut and washer.

Remove the thread catcher and replace if necessary.



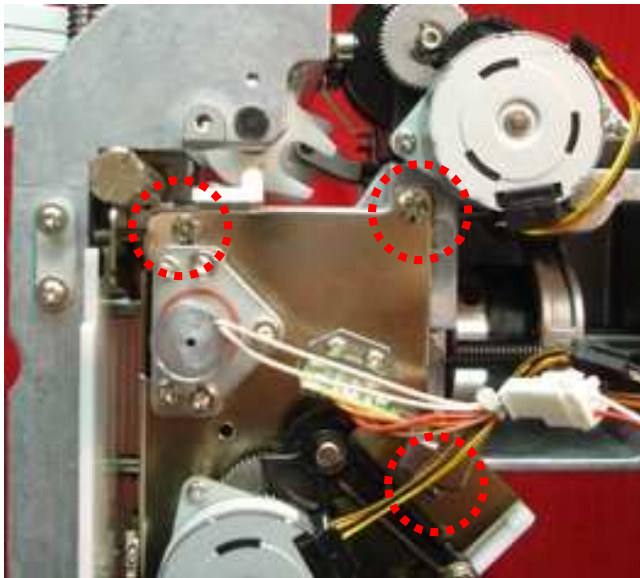
3. Reattach the thread catcher to the unit. Replace the washer and the nut and tighten.



4. Place the thread catcher into position resting against the unit. Take the white cover guide and locate the indented path that will go over the catcher hook. Gently place the guide on and replace the six screws.

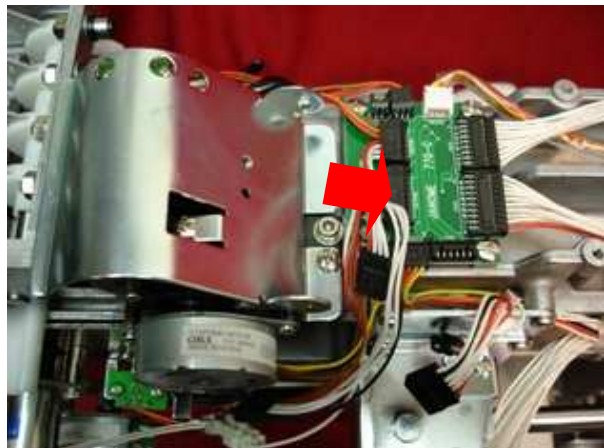
REATTACHING THE THREAD CATCHER UNIT

1. The head should be in position # 1 for the needle.

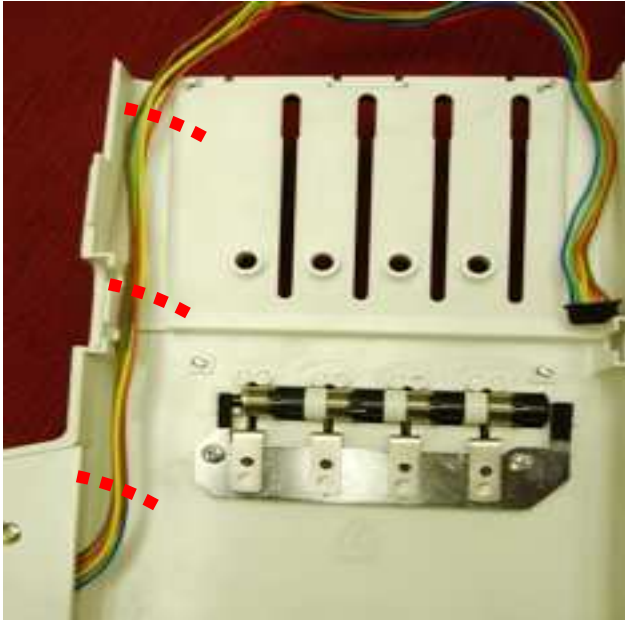


2. Reinstall the unit and attach the 3 screws to hold it in place.

3. Reconnect the wire harness to the C-board.



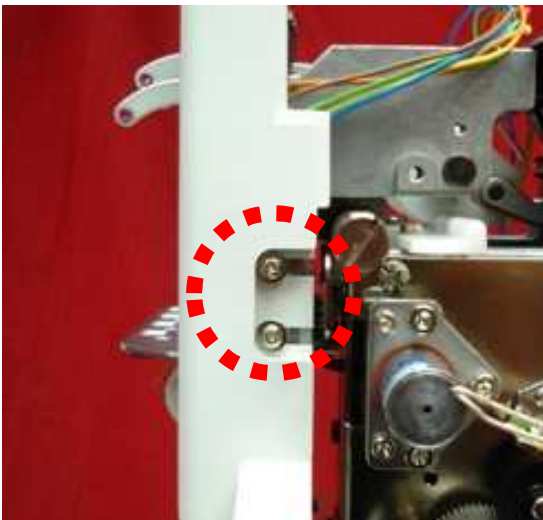
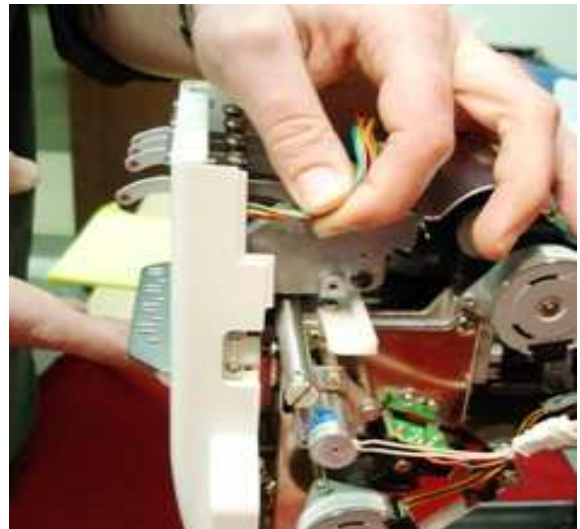
REPLACING THE FACE PLATE



1. Guide the wire along the side of the face plate.

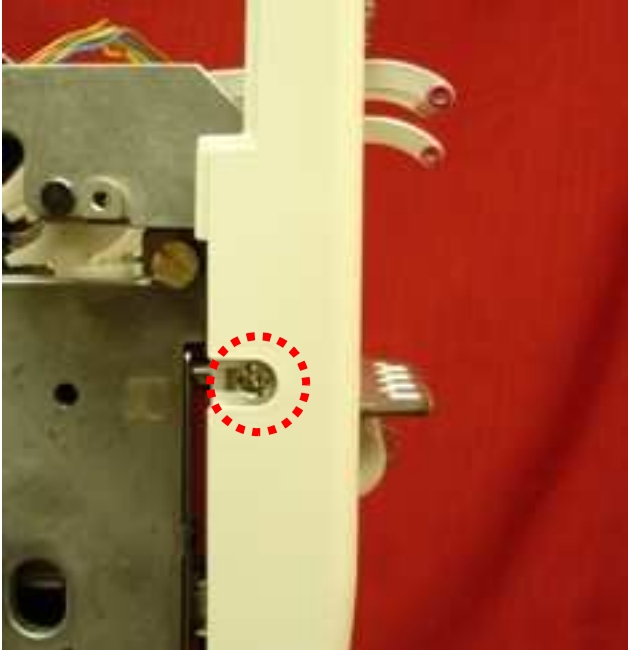
2. Place the face plate onto the head making sure that the take up levers go through their proper slots. Make sure the wire is still along the side of the face plate and start to place it on so it is secure.

** While attaching the face plate make sure not to pinch any wires or get the wires caught in between the casting.***



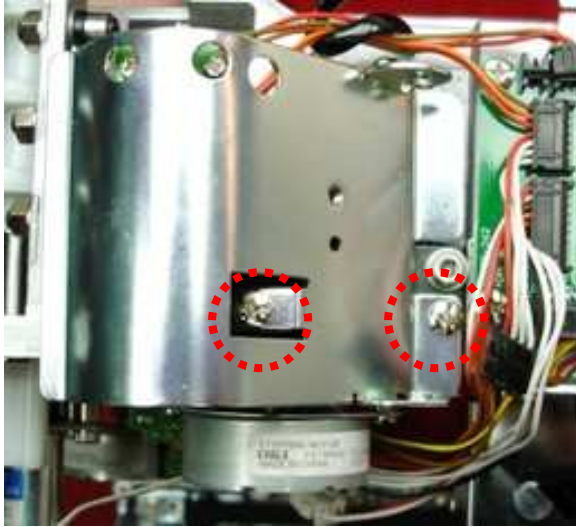
3. Tighten the two screws on the right side.

4. Tighten the screw on the left side.



5. Replace the lower thread guide with the thread holder in the up position. Attach the two screws.

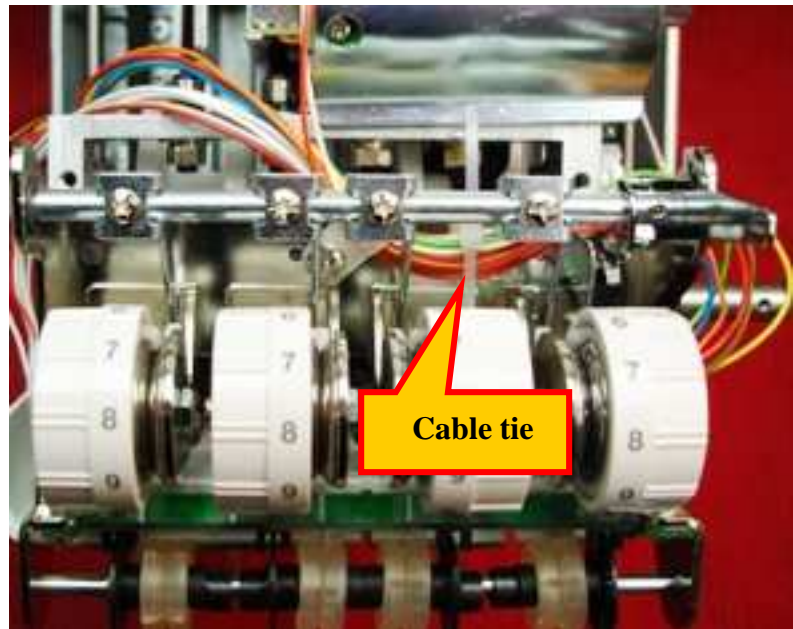
REPLACING THE TENSION UNIT AND HORIZONTAL PLATE



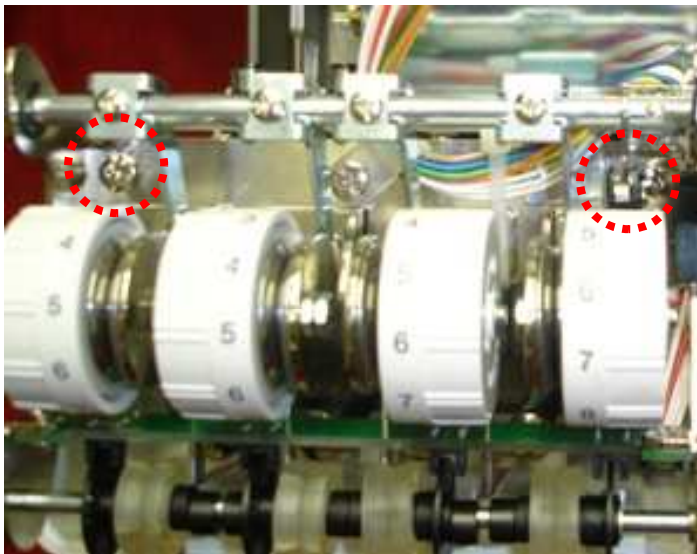
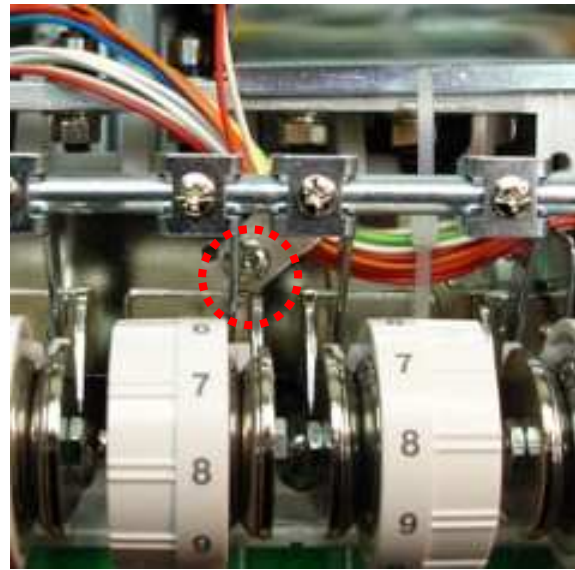
1. Place the plate cover over the horizontal unit and replace the two set screws. *Be sure not to pinch any wires.*

2. Take the tension unit and hold it near its position. Take the two groups of wires coming from the tension unit and the wires coming from the face plate and route them around the side of the tension unit, and in by the lever for the micro switch on the tension unit.

Hold the wires along the back edge of the tension unit and take a tie and wrap it around the 3 groups of wires and the bottom of the tension unit and tie it off loosely. The tie should go behind the second tension dial.



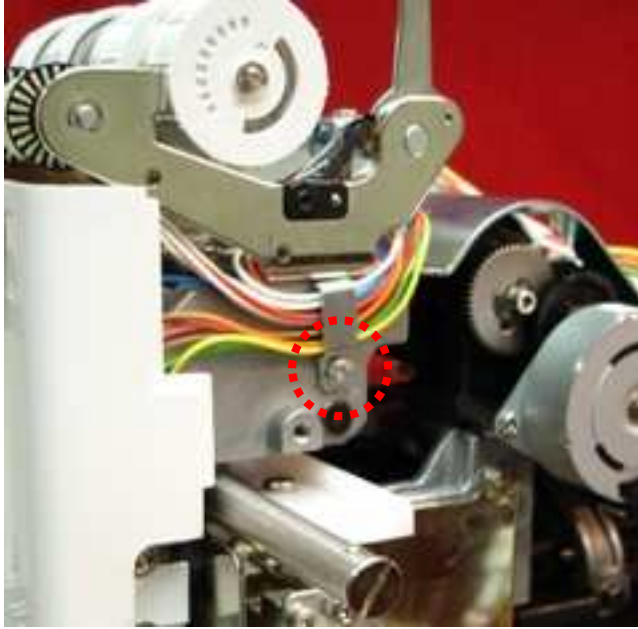
4. Take the white holder clip and place the three groups of wires into it making sure not to pinch any of the wires and connect it to the bottom edge of the tension unit.



5. Place the tension unit into position and replace the two screws.

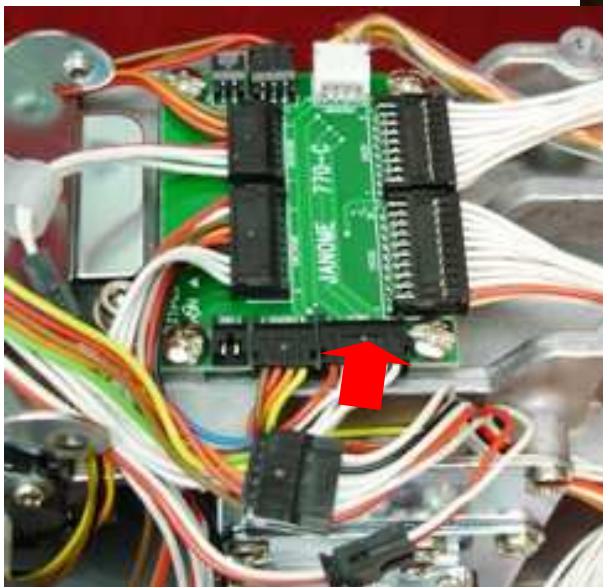
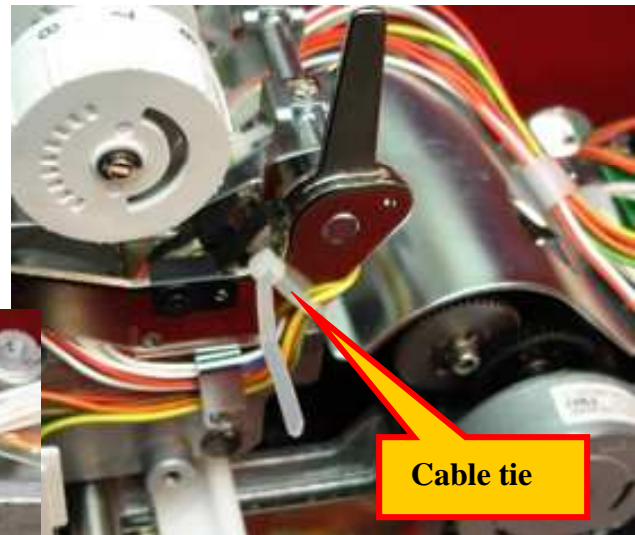
6. Take the three groups of wires coming out from the tension unit area and place them into another white holder clip. Take the wires hanging slightly over the horizontal cover plate and put them into a separate white holder clip. Line both clips up over the threaded hole on the horizontal cover plate, and screw them both in with the same screw. **** Make sure not to pinch any wires. ****





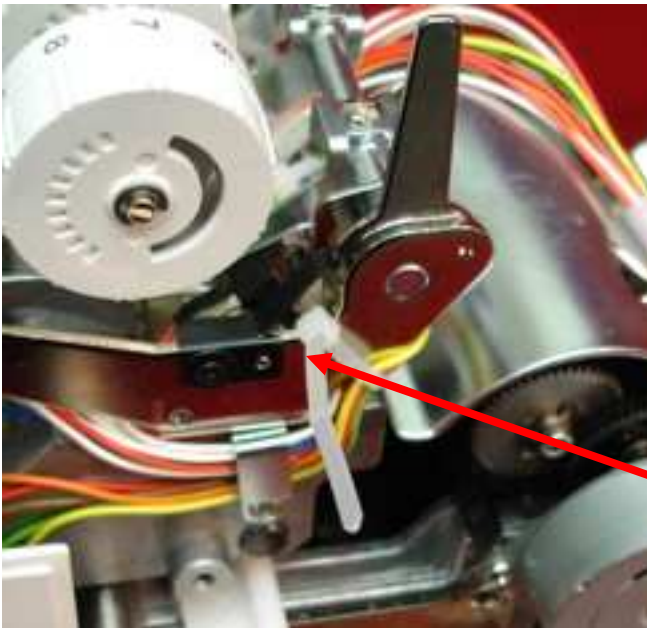
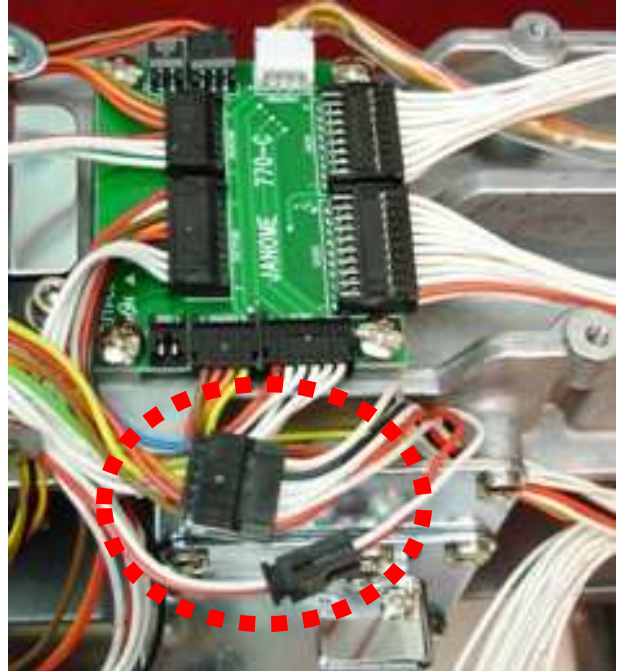
7. Take the silver wire bracket that goes on the right side of the head and neatly place the two wire groups through and attach the screw.

8. Take a tie and tie off the wires hanging by the right edge of the tension unit. Wrap the tie around the edge of the unit to hold the wires close to it.



9. Take the black plug with the white wires and one red wire and plug that into the C-board.

10. Take the two remaining plugs and connect them with the wires coming from the side of the machine. **Note: There will be two empty connectors on the C-board.**



11. After everything is connected tighten the ties up gently and cut off the excess tails.

REPLACING THE DYNAMIC CUTTER BLADE

1. Hold down the start stop button and the thread cutter button on the RCS and turn on the machine. This will bring you into the diagnostic screen.

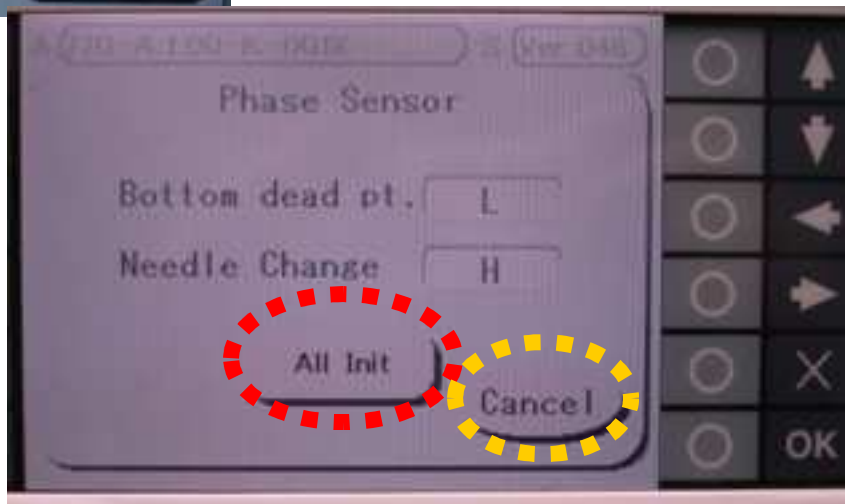


Hold down

2. Press the **PHASE** key to open the adjusting window.

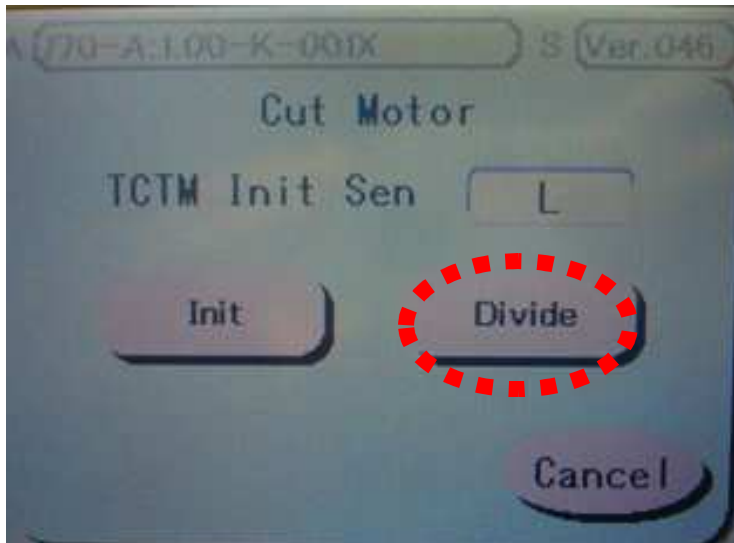
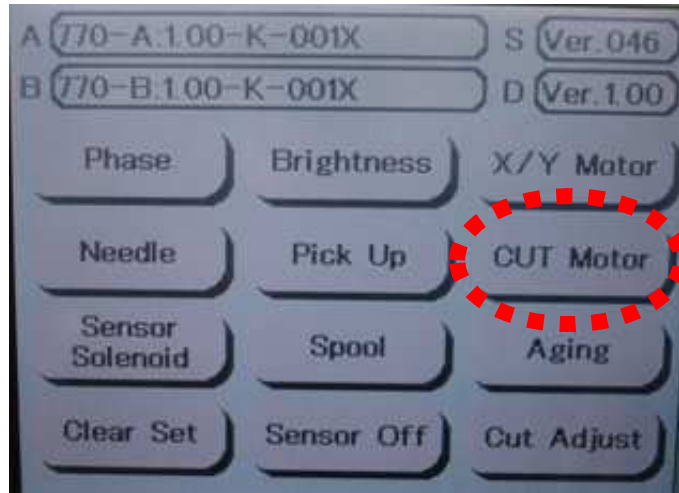
3. Press **ALL INIT** key to reset the machine into home position and then

Press the **CANCEL** key to return to the diagnostic screen.



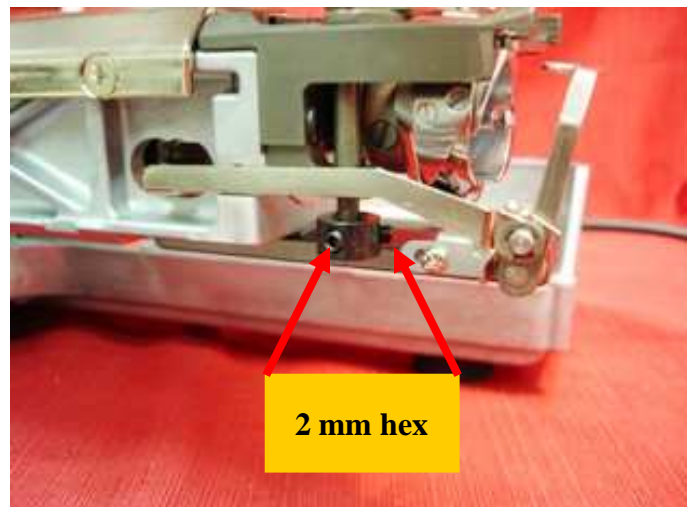
4. Remove the two screws that hold the needle plate and remove the plate.

Press the **CUT MOTOR** key to go into the adjustment.

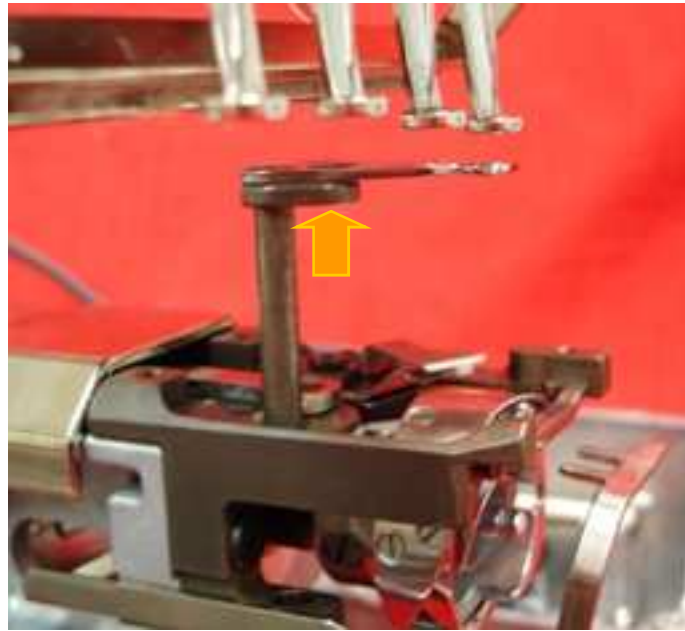


5. Press the **DIVIDE** key to move the dynamic cutter forward.

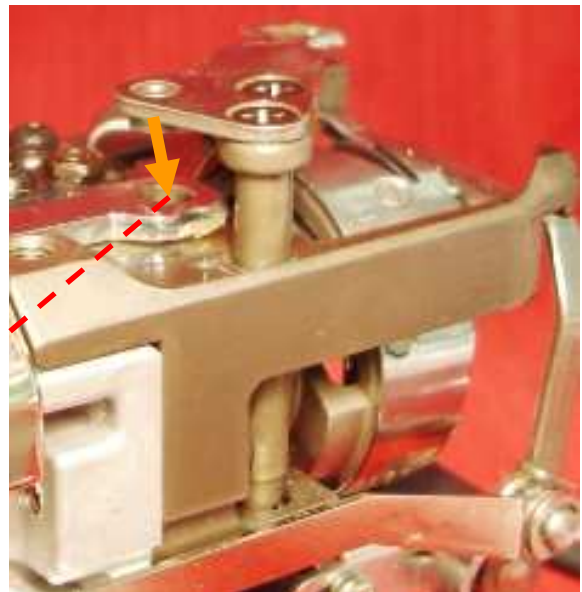
6. Using a 2mm hex driver loosen the two set screws on the shaft ring below the cutter.



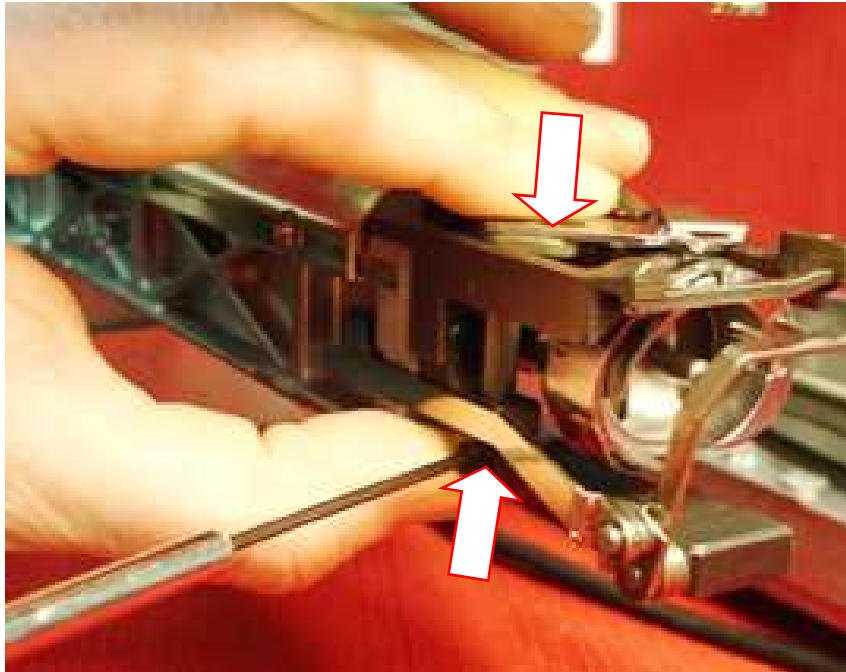
7. Remove the shaft ring and lift up on the dynamic cutter to remove it.



8. If the blade needs to be replaced remove the two screws that hold it and replace the blade.



9. When placing the dynamic cutter back into position line up the link pin on the cutter unit with the hole on the dynamic lever unit.



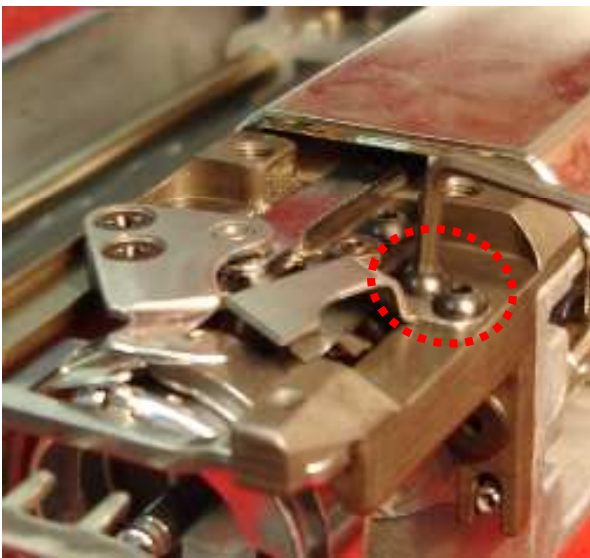
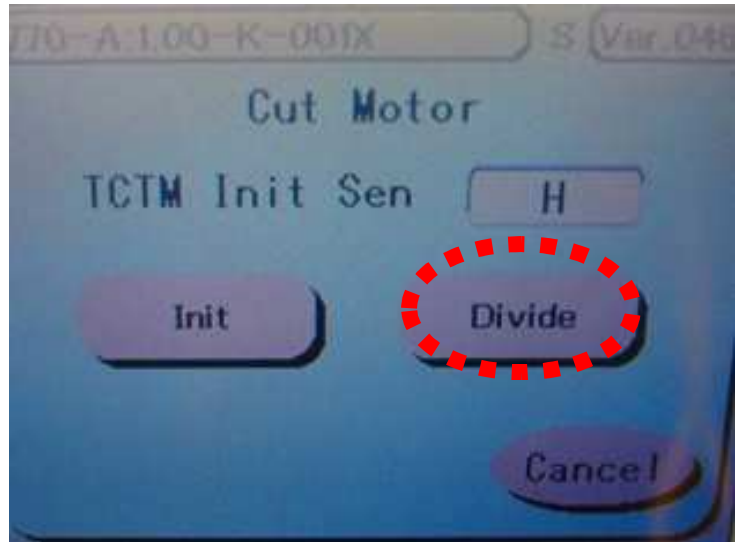
10. Attach the drive shaft ring and hold the top of the cutter down while pushing the shaft ring up.



11. Tighten the two screws and make sure that there is no up or down play.

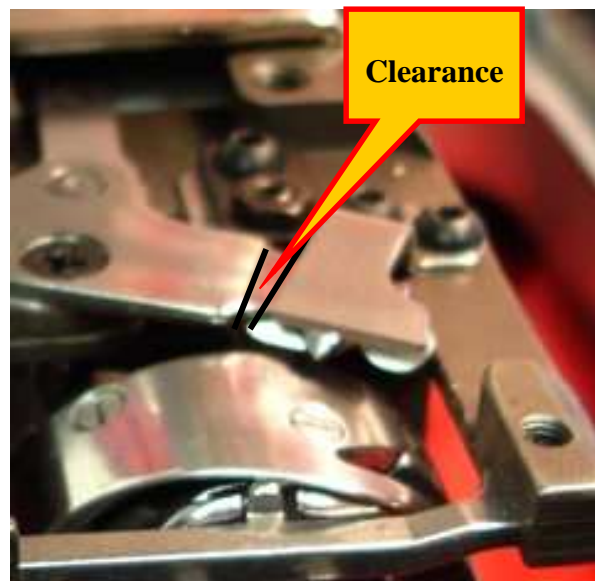
REPLACING THE STATIC CUTTER BLADE

1. Press the **DIVIDE** key.

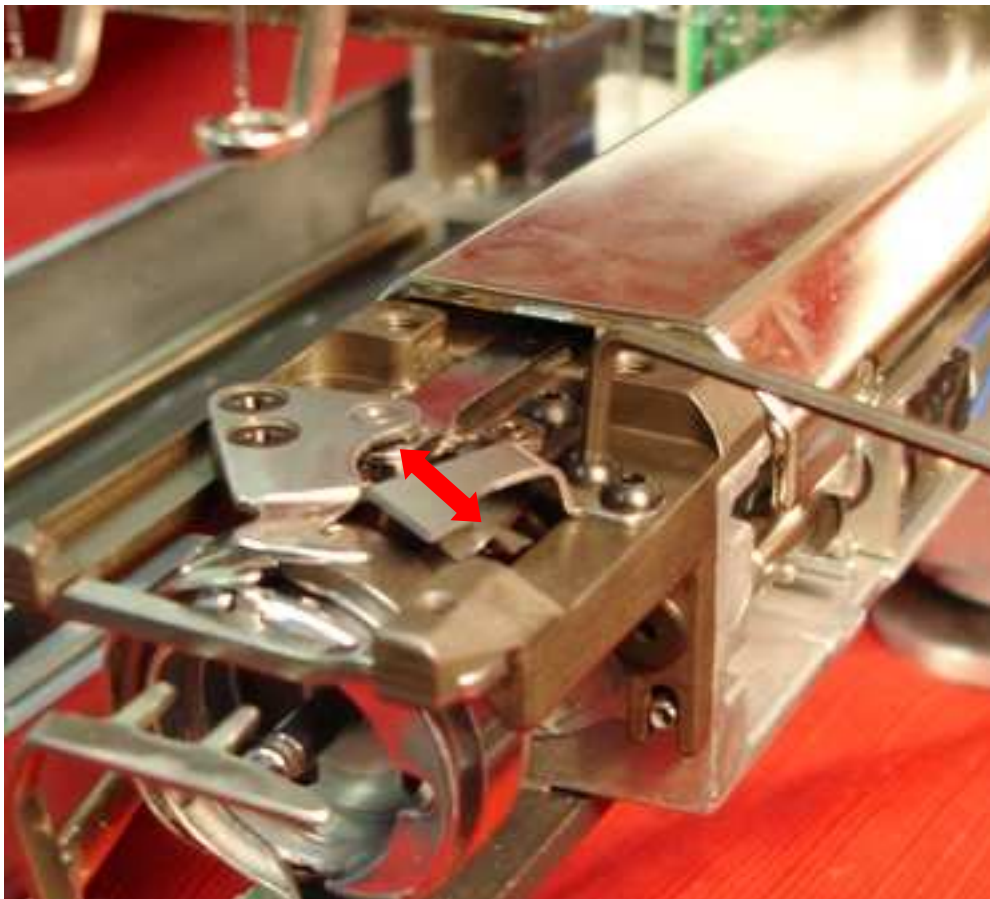


2. Remove the two 2mm setscrews and remove the static cutter blade.

3. When installing the static cutter blade make sure to keep the left side of the static blade away from the raised edge of the dynamic cutter.



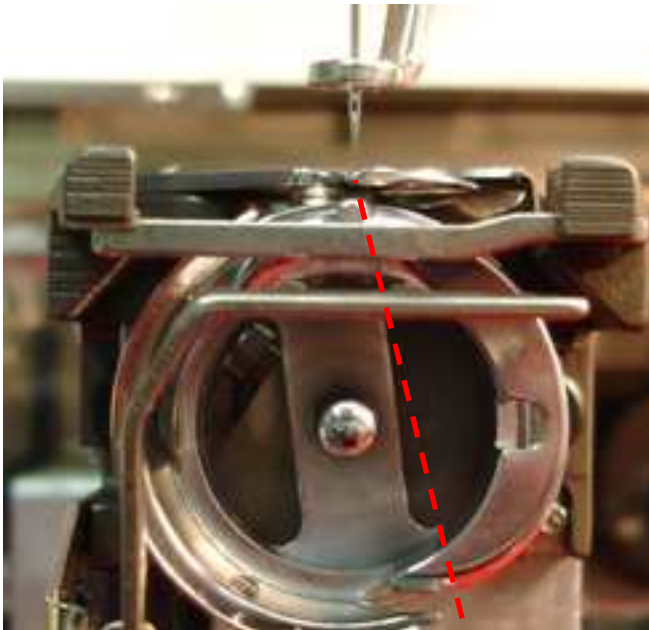
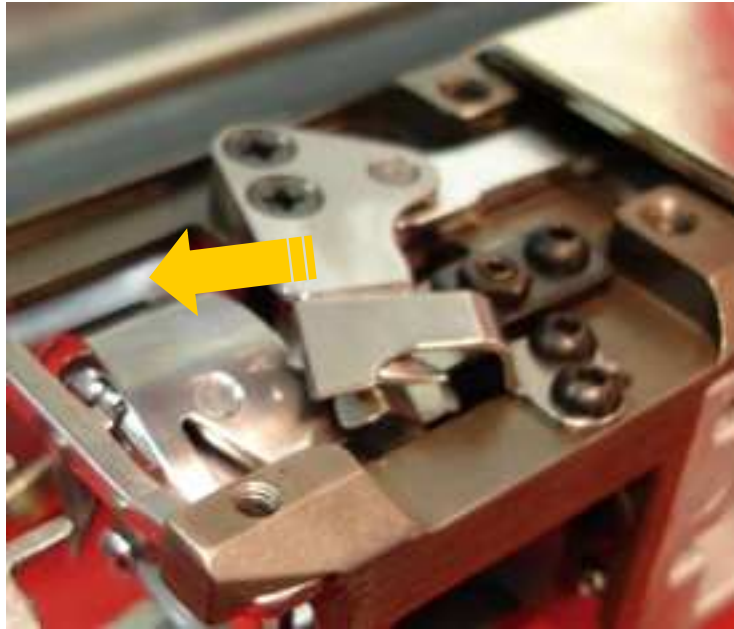
4. Take the 2mm hex driver and lay it between the static cutter and the dynamic cutter to get the correct position.



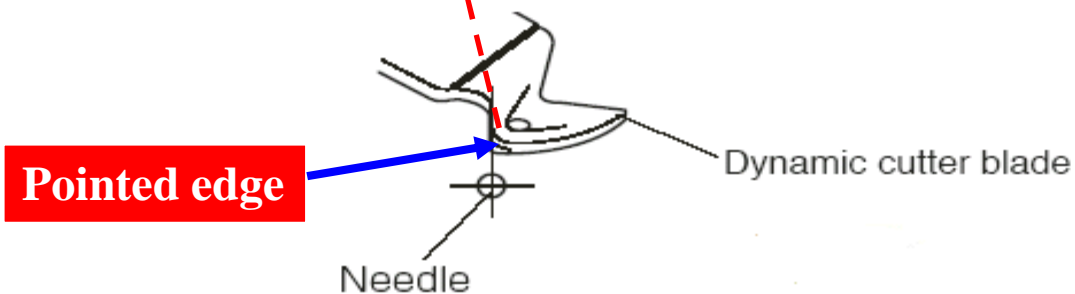
5. If there is a larger gap than 2mm move the static blade closer and keep it pushed towards the front of the machine.

DYNAMIC CUTTER ADJUSTMENT

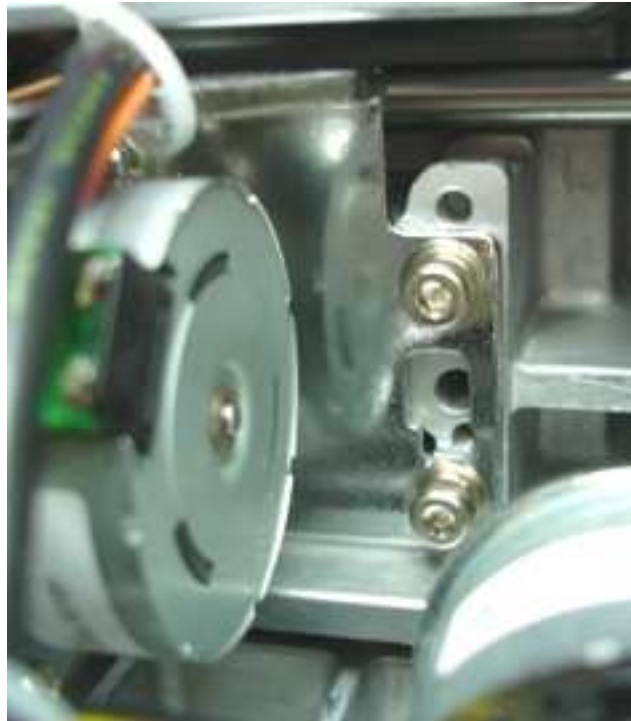
1. Press the **DIVIDE** key to move the dynamic cutter forward if it is underneath the static cutter.



2. Hold the needle bar clamp down and turn the hand wheel clockwise to bring the needle down. Bring the tip just above the pointed edge of the dynamic cutter. At this point the needle will be in line with the pointed edge of the dynamic cutter and in line with the hole on the cutter.

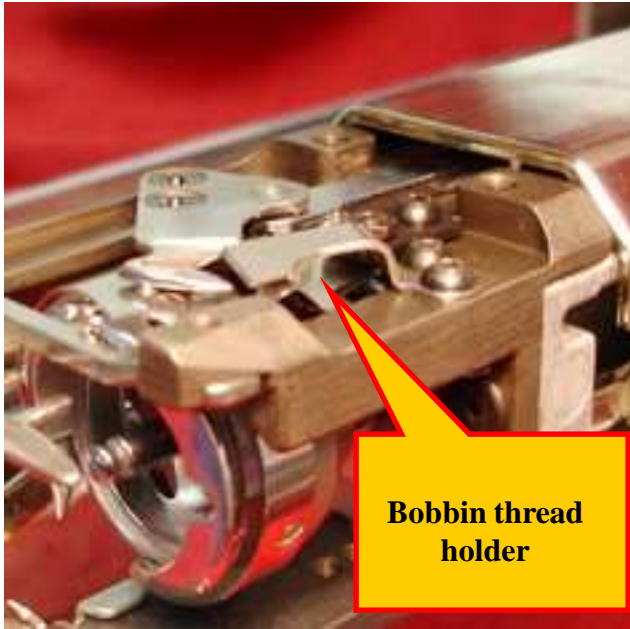


3. If an adjustment is needed, loosen the two 3mm hex screw on the dynamic cutter step motor, and move the entire step motor forward or backwards to put the dynamic cutter into the correct position.



4. When you move the dynamic cutter step motor, the pivot pin in the cam will set the position of the dynamic cutter.

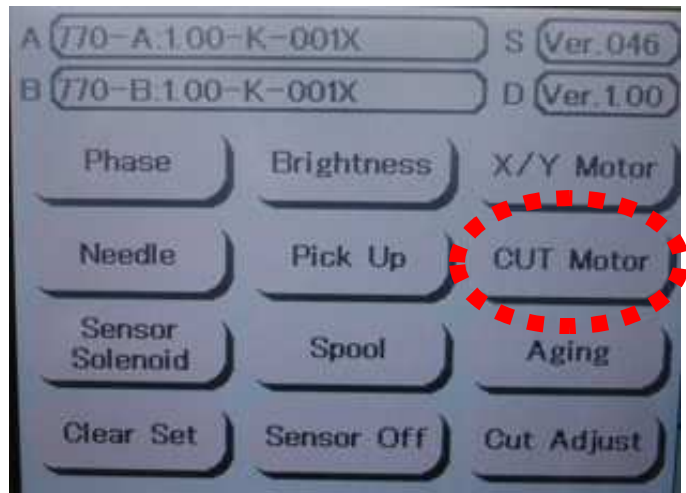
BOBBIN THREAD HOLDER ADJUSTMENT



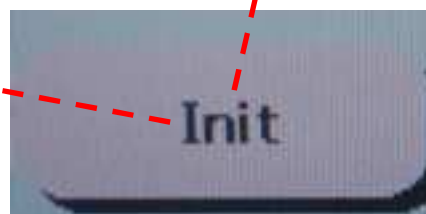
1. When the dynamic cutter is in the forward position look underneath the static cutter to locate the bobbin thread holder.

2. Press the **CANCEL** key, and the screen will change to a window that will allow you to recalibrate the machine.

Press the **CUT MOTOR** key and go into the adjusting window.

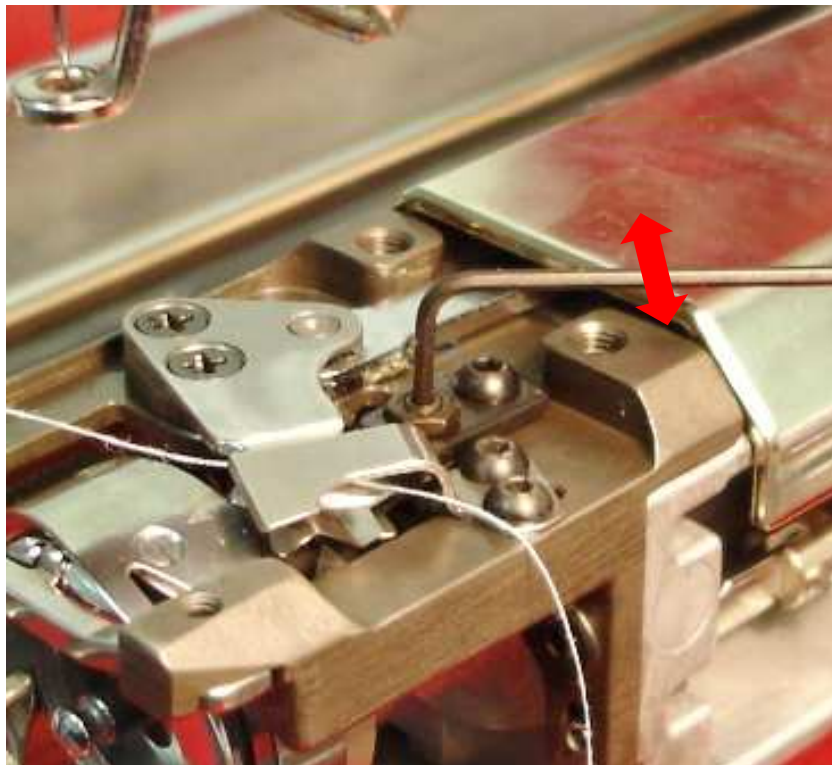


3. If the dynamic cutter is not under the static cutter press the **INIT** key and the dynamic will move under the static cutter.



4. Take a piece of thread and place it under the dynamic cutter and on top of the thread holder. Pull the thread to see if there is tension. If using a tension gauge it should be between 20-25 grams.

If not using a gauge it should feel the same as the thread in the bobbin case when pulling that.



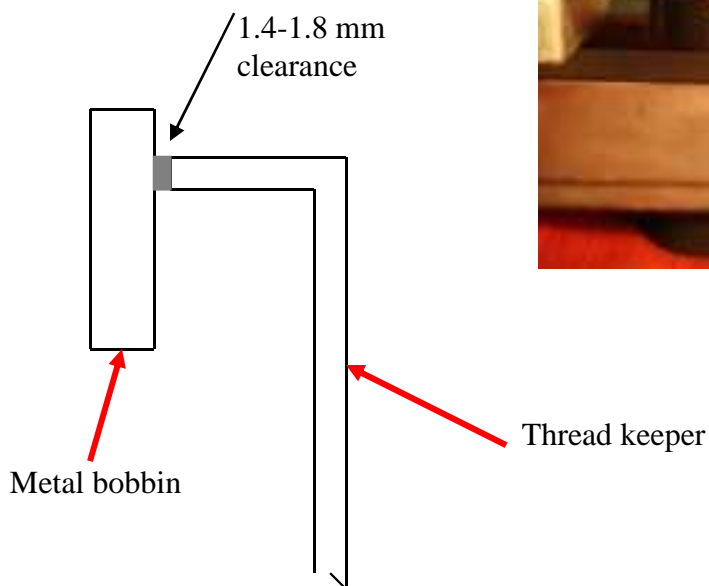
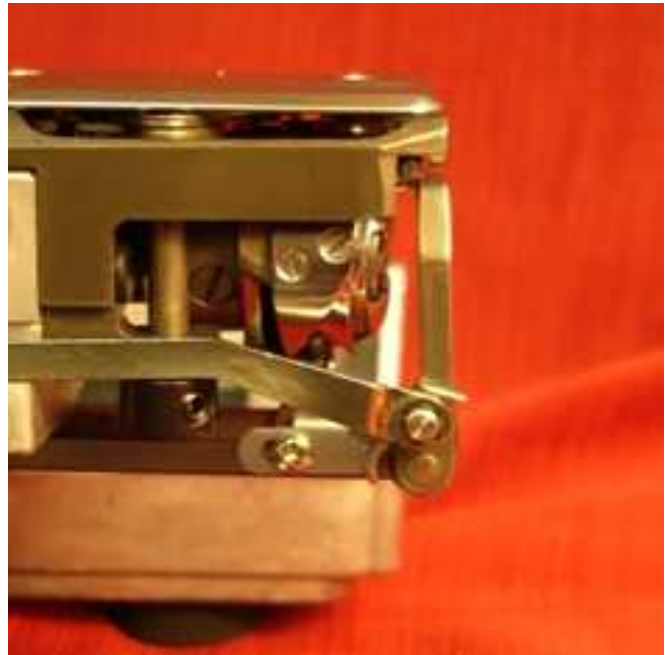
5. If an adjustment is needed use a 1.5 allen key to turn the screw clockwise to decrease the tension or counter clockwise to increase the tension. If the nut around the screw comes loose make sure to tighten it when done.

THREAD KEEPER ADJUSTMENT



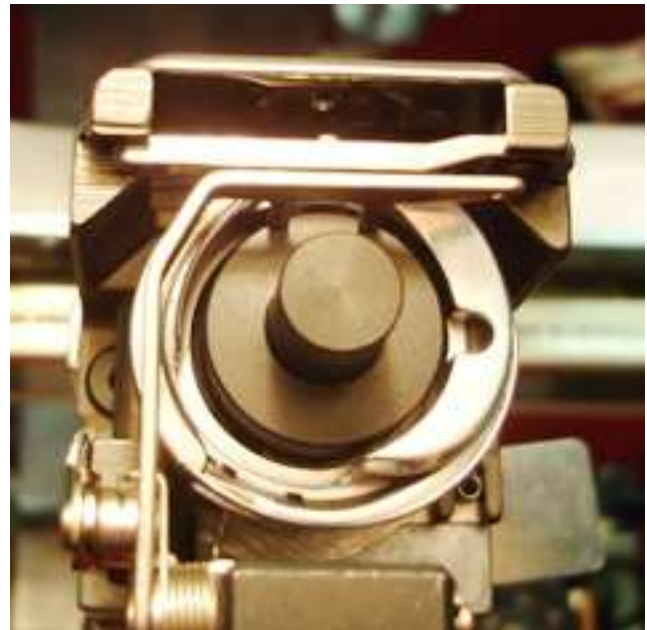
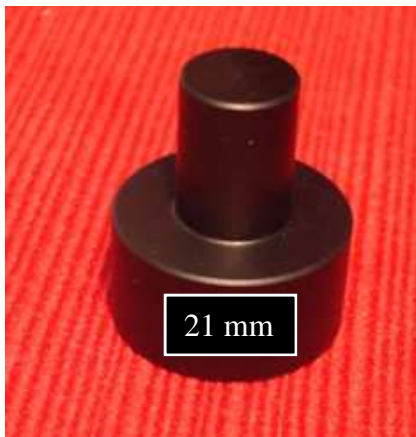
1. To check the proper movement of the thread keeper, reinstall the needle plate and the two set screws.

2. When the thread keeper is activated it should spring forward, but not touch the bobbin case. There should be a 1.4-1.8 mm gap between the tips of the keeper and the bobbin case.

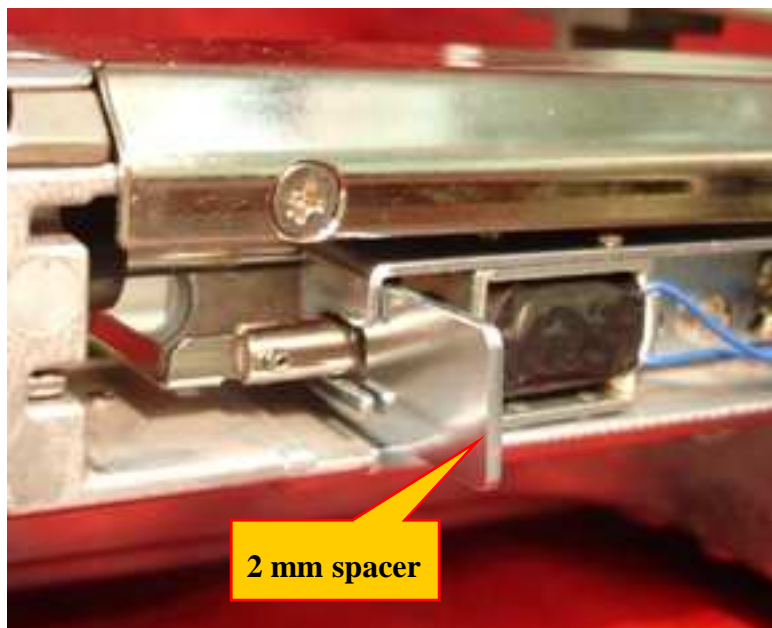


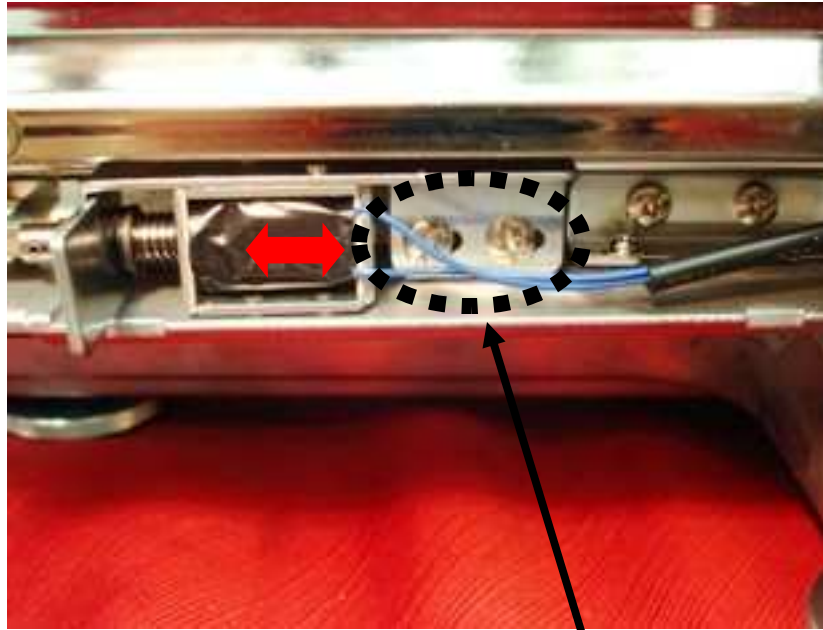
3. If the keeper is not working correctly, or a proper thread tail left after a cut, then two adjustments need to be done.

Take the 21mm black gauge and insert it gently into the hook race, being careful of the thread keeper.

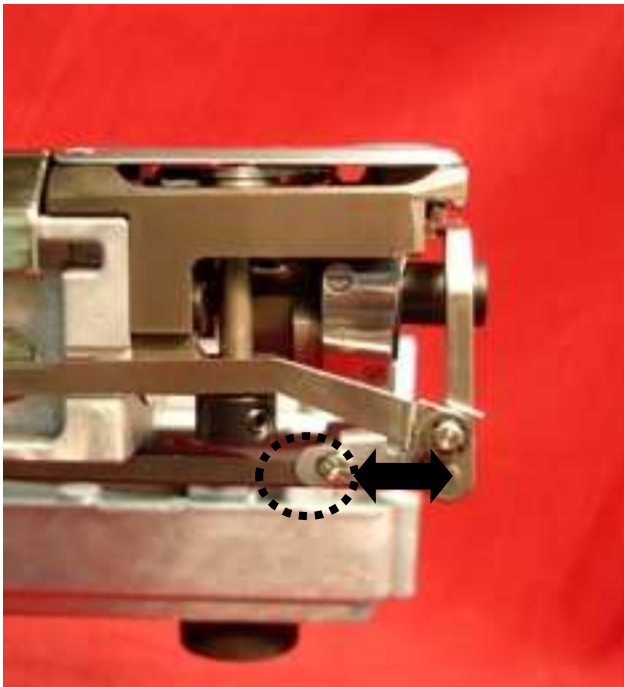


4. Take the 2mm spacer gauge and insert it between the frame of the solenoid and the washer on the plunger.





5. To set the keeper in the correct position loosen the two screws that hold the solenoid frame and either move left or right to set the keeper so it rests against the gauge. Tighten the two screws. Leave the gauge in.

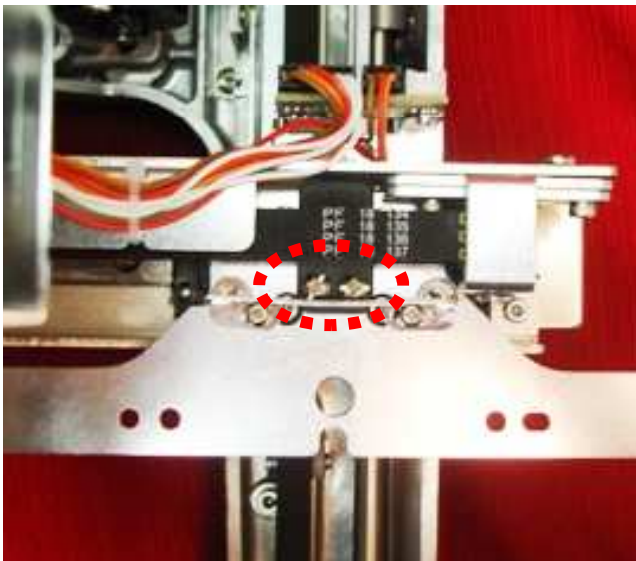
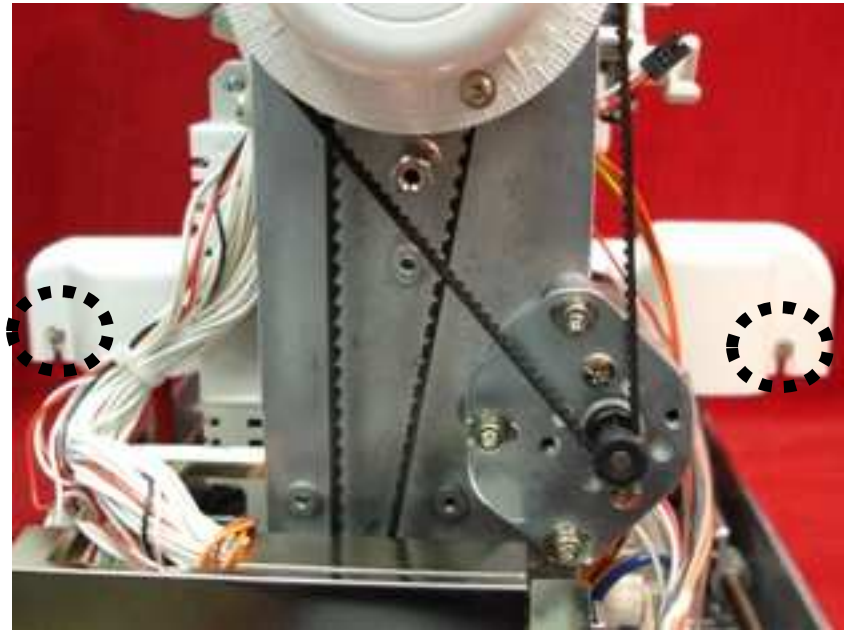


6. Once the proper movement of the keeper has been made look on the left side of the arm underneath the plate. There is a stopper unit held by one screw.

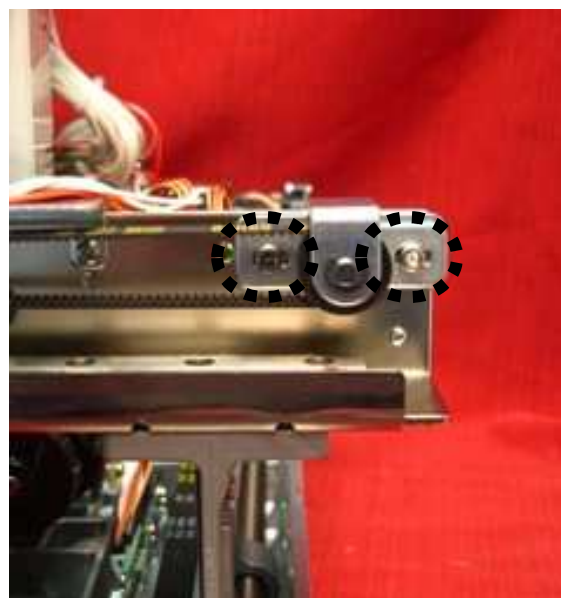
Loosen the screw and gently move the stopper towards the keeper and tighten the screw. This will prevent the keeper from coming to forward and hitting into the bobbin case.

X BELT REPLACEMENT AND TENSION

1. Loosen the two set screws on the back of the x-carriage and remove the cover.

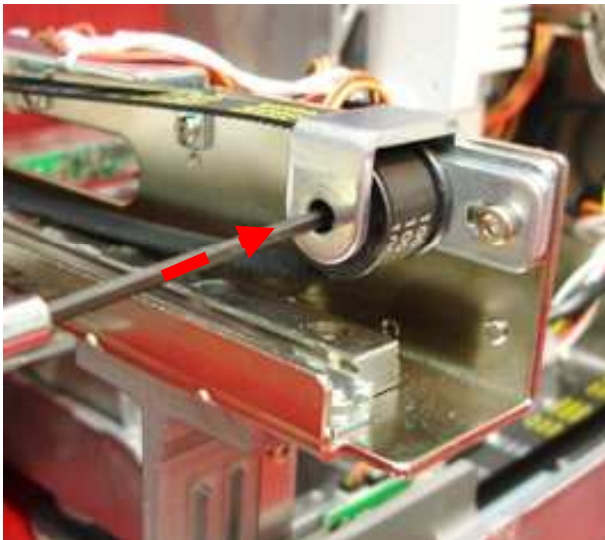


2. Shift the hoop holder plate to the right. Remove the two setscrews on the belt holder and remove the holder.



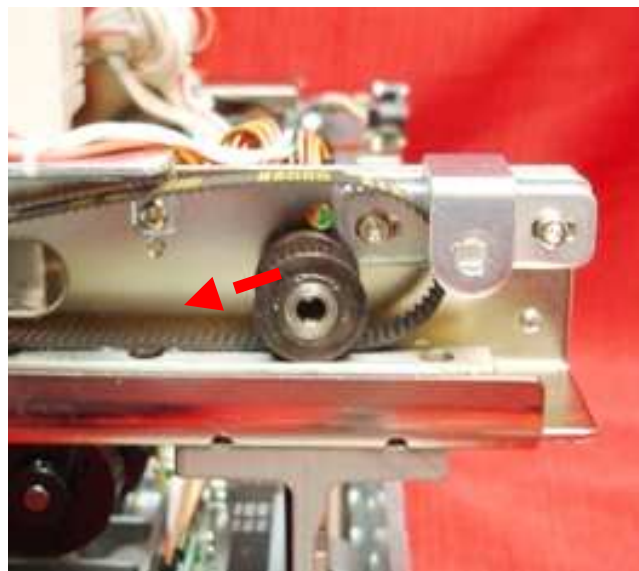
3. Loosen the two 2.5mm hex screws on the X pulley holder.

4. Remove the C-clip from the front of the pulley.

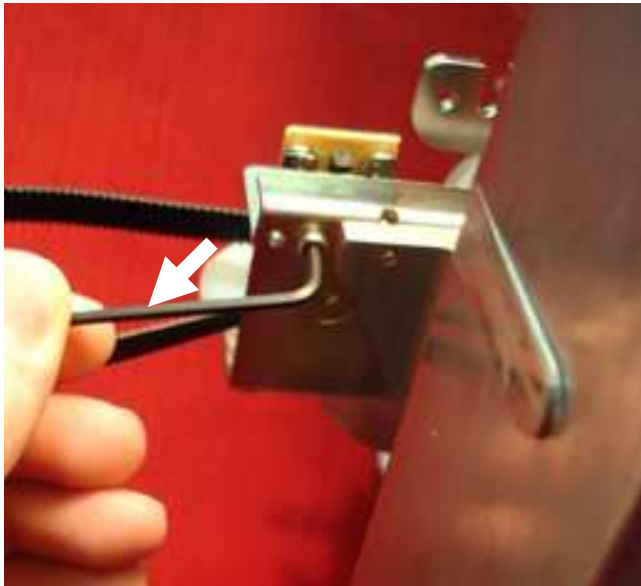
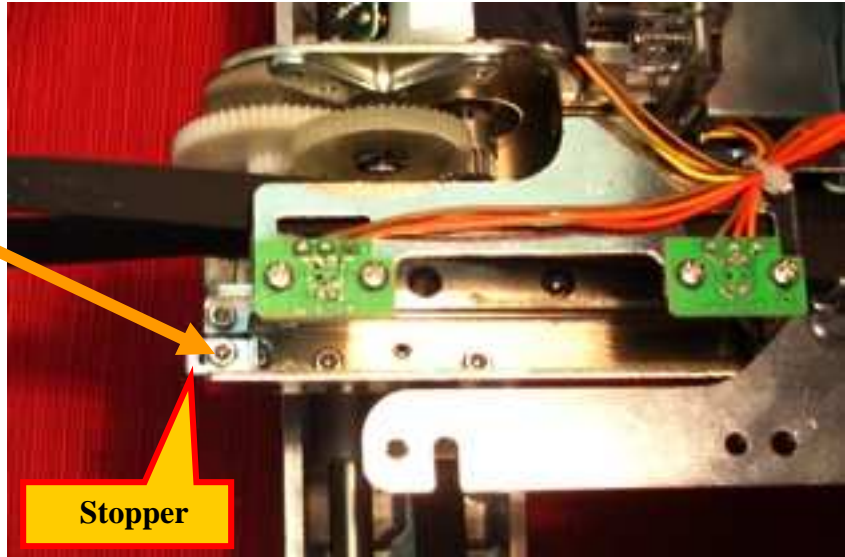


5. Push the pin in through the pulley.

6. Remove the pulley.

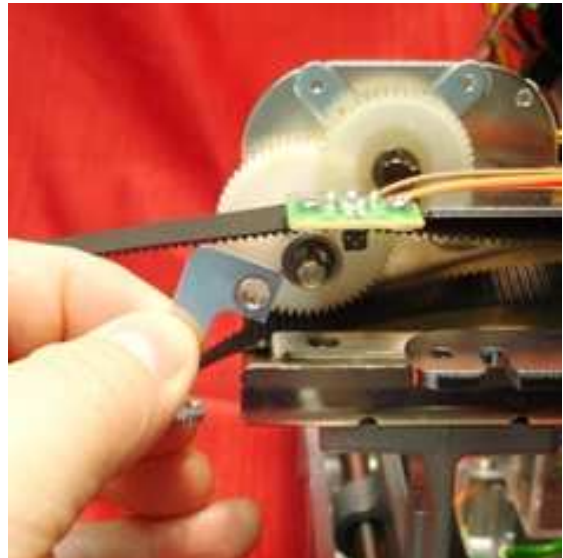


7. Remove the 2.5 mm hex screw from the drive pulley shaft unit and remove the stopper.



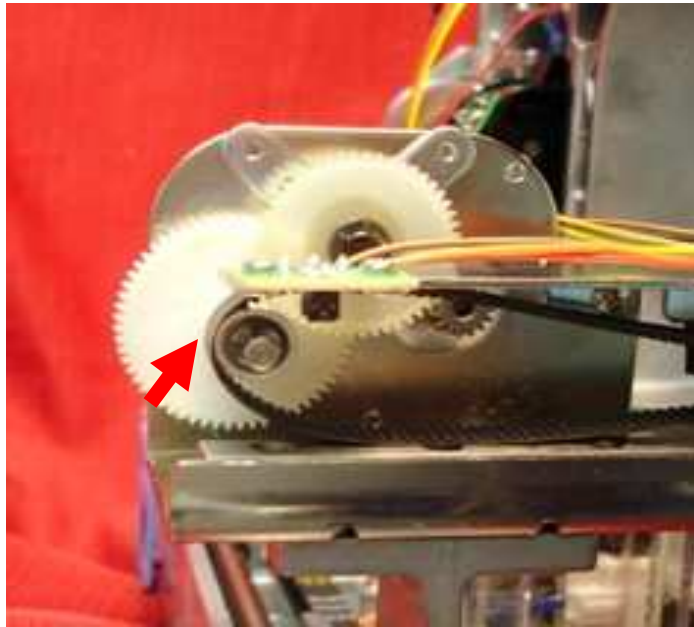
8. Once the carriage stopper has been removed use a 2.5 allen key and remove the other 2.5 set screw from under the drive pulley.

9. Remove the pulley holder and slide the belt off.



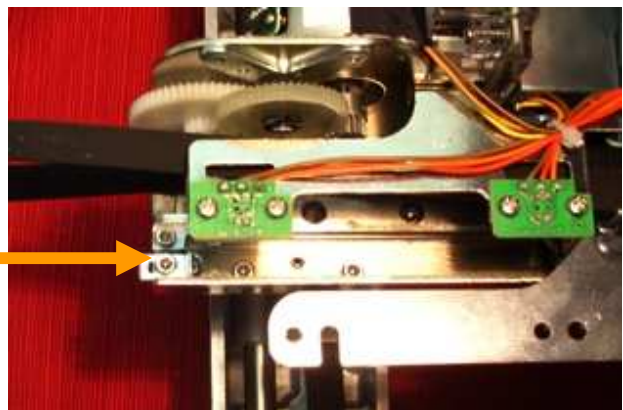
INSTALLATION OF X BELT

1. Place the belt on the white step motor gear first.

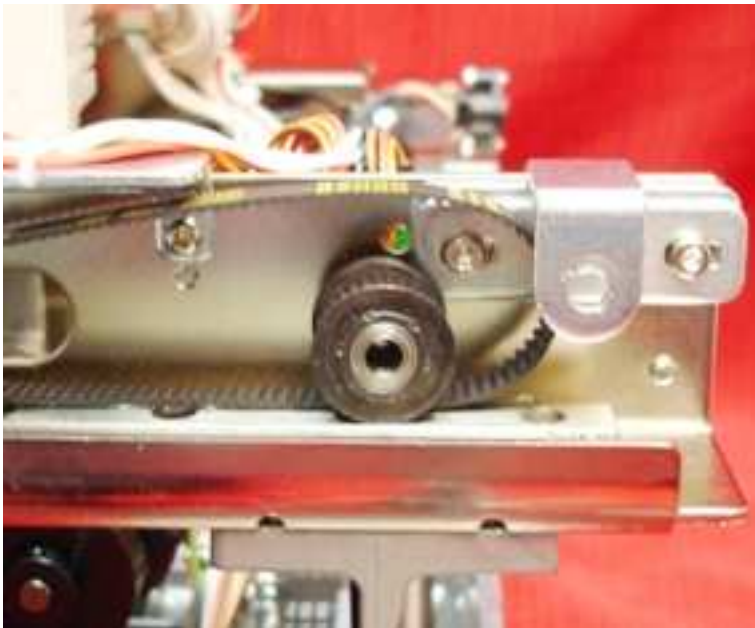
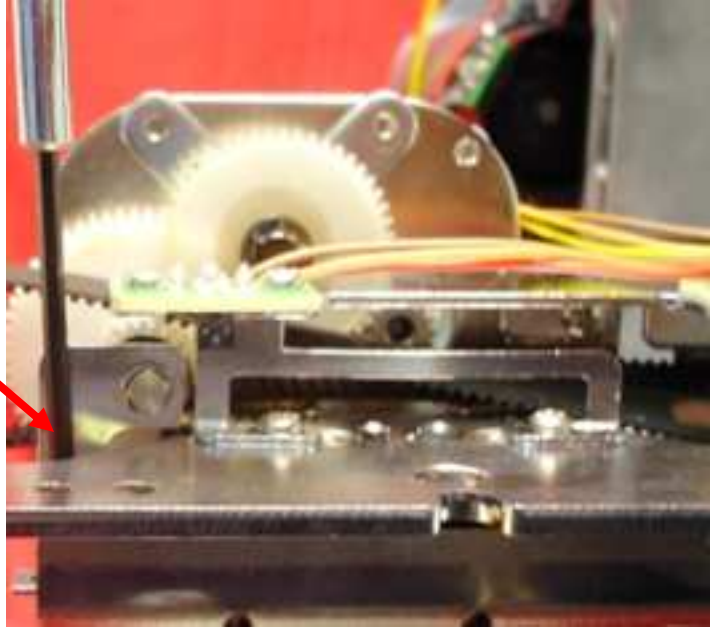
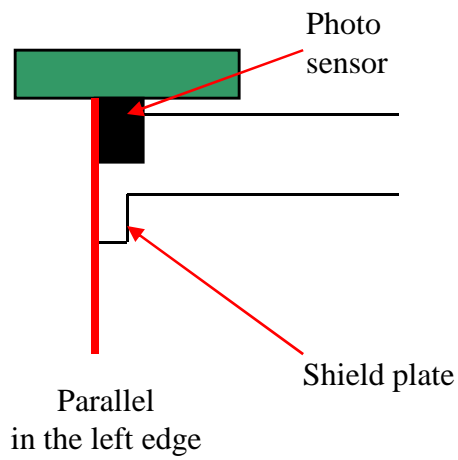


2. Reinstall the drive pulley holder and attach the 2.5 hex screw from underneath and tighten.

3. Then place the stopper on and insert the 2.5 hex screw and tighten loosely.

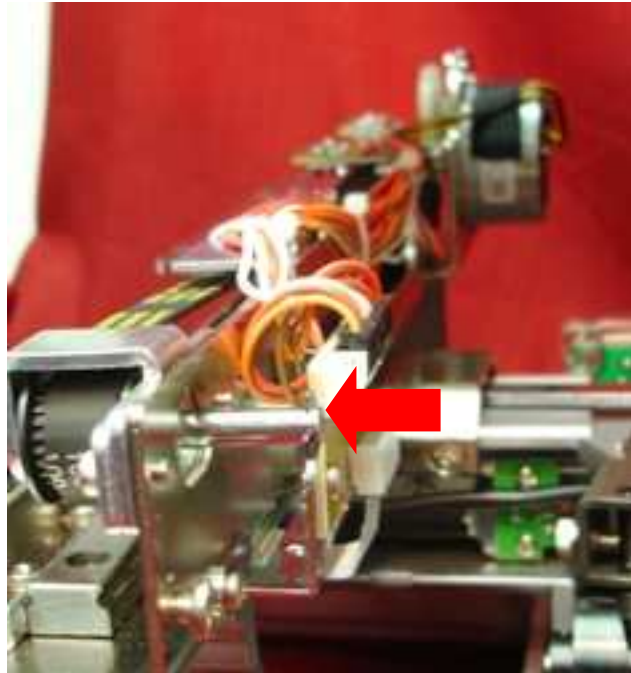


4. When the left edge of the shield plate is in the left edge of the photo sensor, gently push the stopper to the carriage and tighten the 2.5 hex screw firmly. Make sure not to move anything when this is being done.



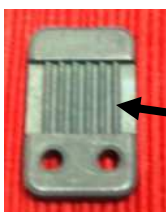
5. Reinstall the X belt pulley with the rough side facing out.

6. Take the pulley pin and insert it from behind the arm and push it through the pulley and through the frame for the pulley.

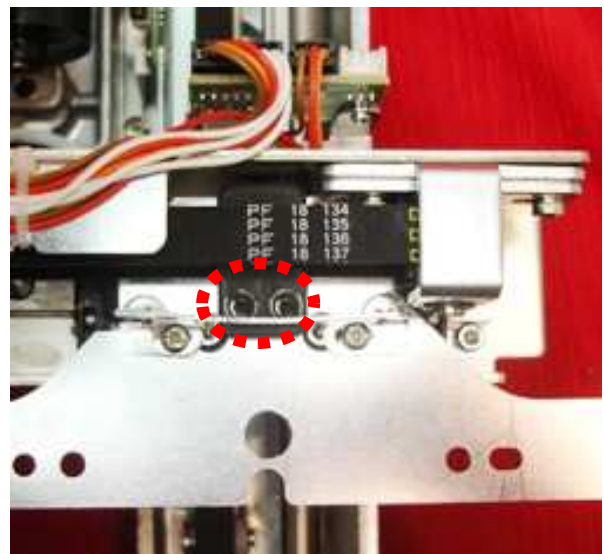


7. Reattach the C-clip to hold it.

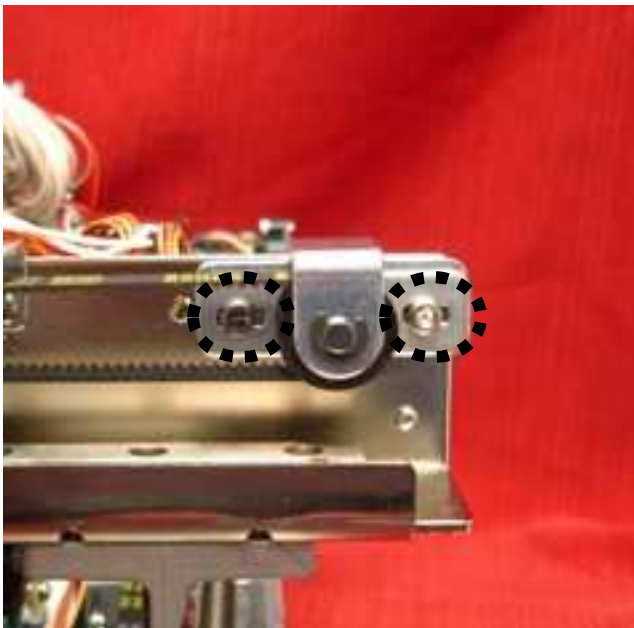
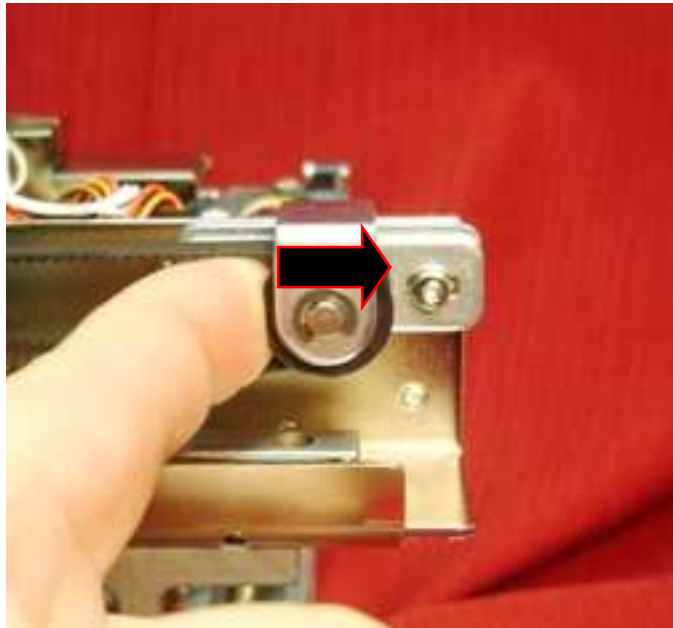
8. Take the belt holder and make sure to put the side with the grooves on it, against the belt and reinstall the two set screws. Make sure the belt holder is not crooked.



← This side against the belt



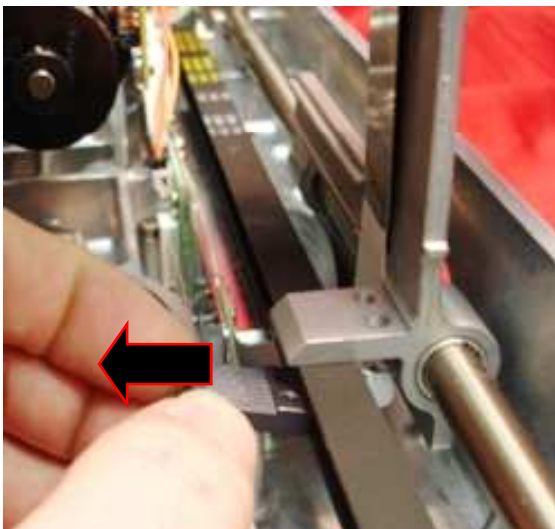
9. Take the pulley and pull it to the right to increase tension on the belt.



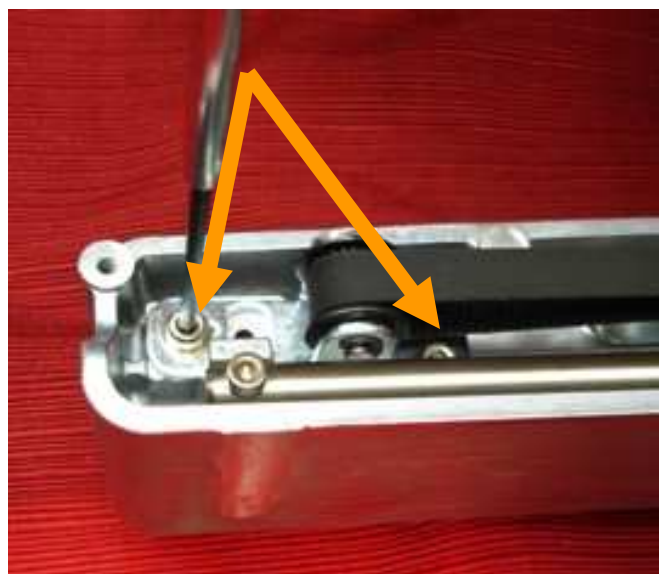
10. Once you have the correct tension tighten the two 2.5mm hex screws firmly.

Y BELT REPLACEMENT AND TENSION

1. Remove the two 2.5 hex screws from the belt holder and lift out the holder from underneath.

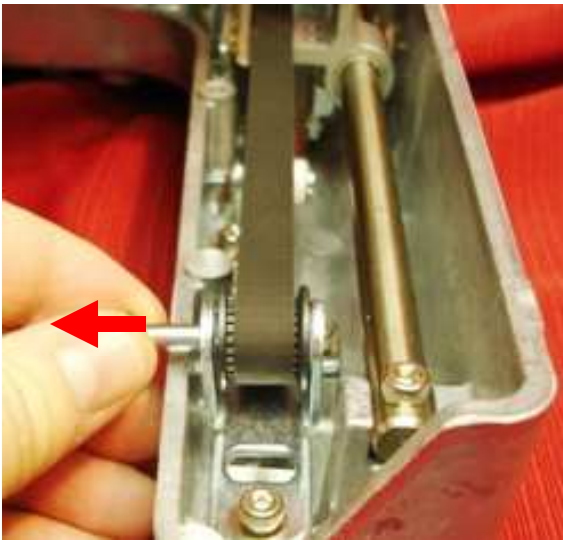


2. Remove the belt holder.

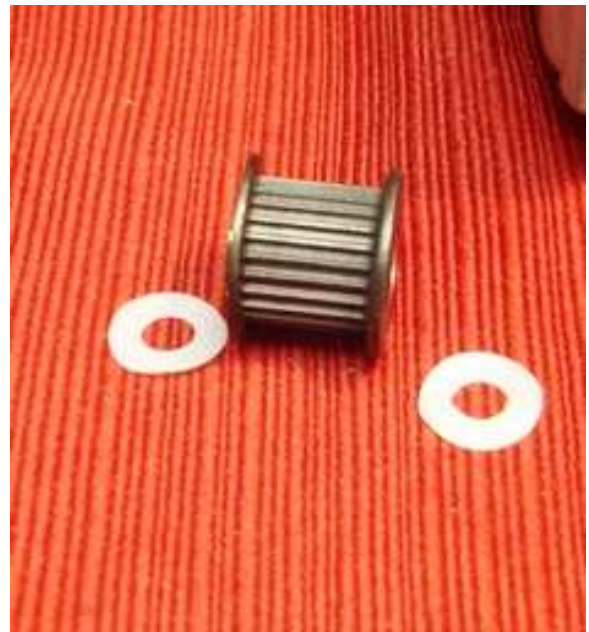


3. Loosen the two 3 mm hex screws on the Y pulley holder.

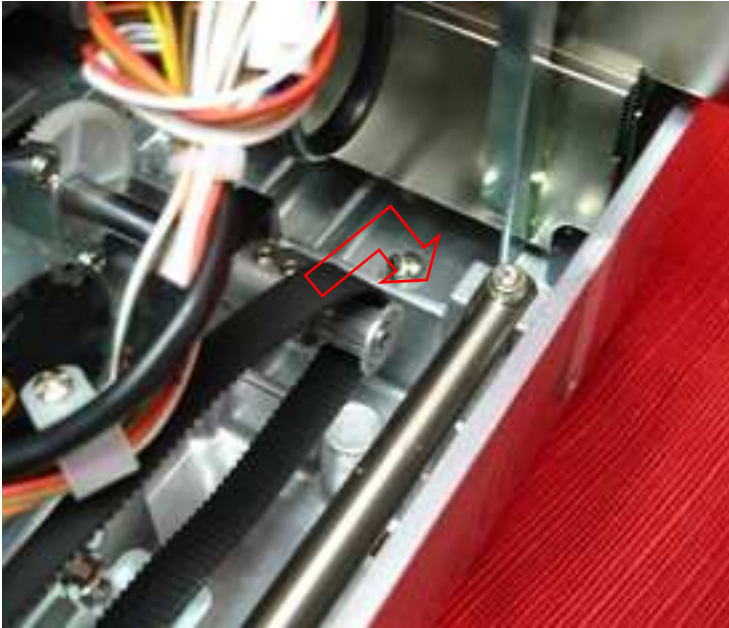
4. Remove the C-clip on the inside of the pulley and remove the pin.



5. The Y pulley will come out and it has a white washer on both sides of it.

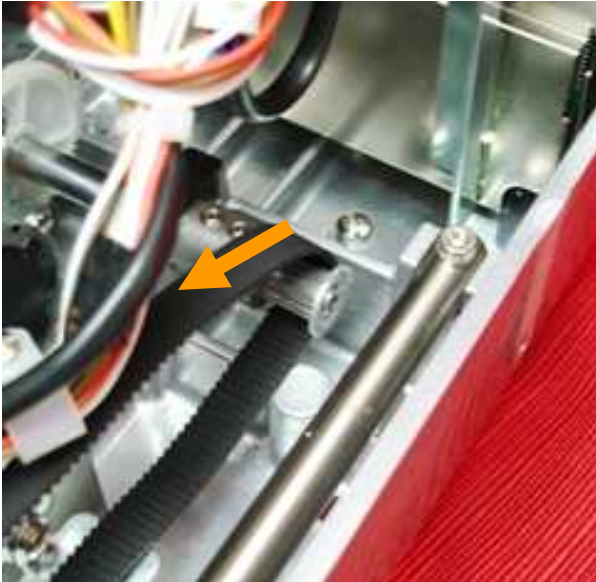


6. Go to the drive gear towards the back of the base and slide off the belt.



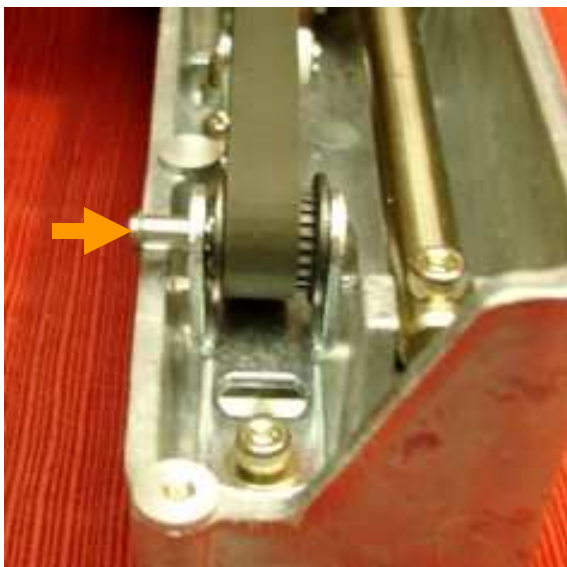
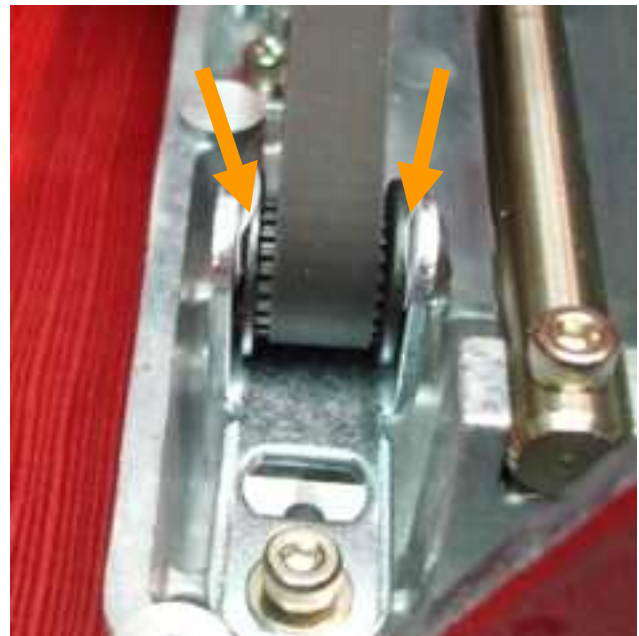
7. Remove the belt.

INSTALLATION OF Y BELT



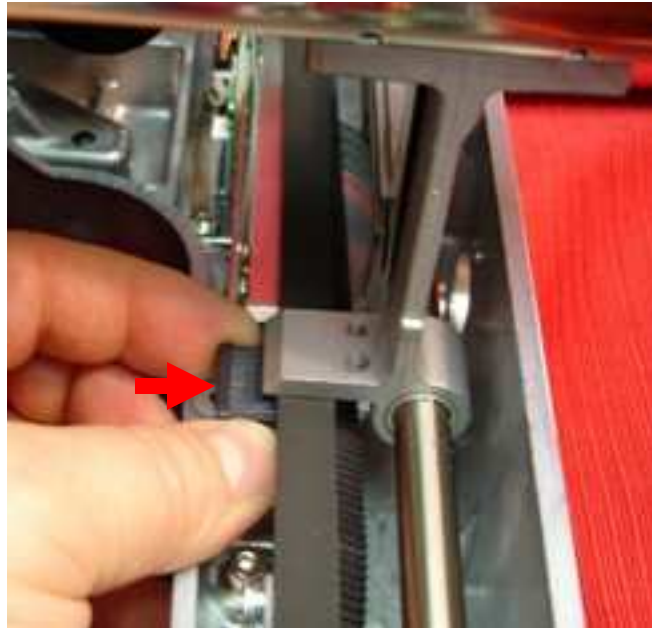
1. Take the Y belt and slide it around the back drive gear.

2. Put the belt around the Y pulley, and line up the white washers one on each side of the pulley.

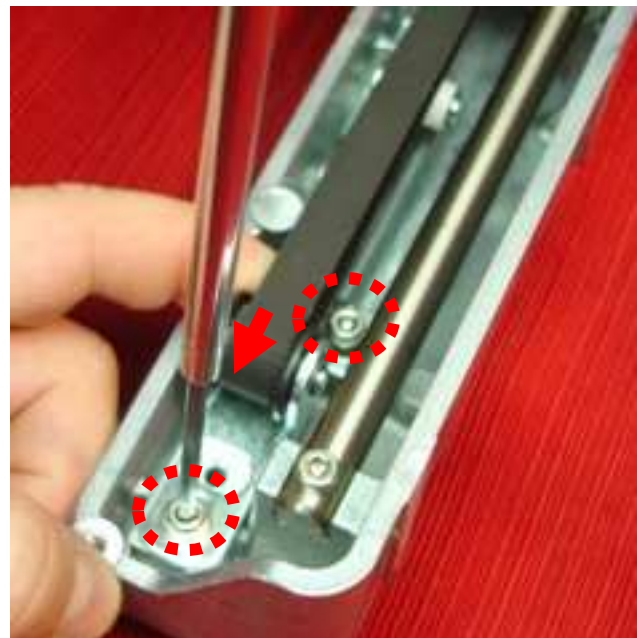


3. Slide the pulley pin in from the left and push it through the pulley and through the frame. Attach the C-clip.

4. Replace the belt holder back underneath the belt.

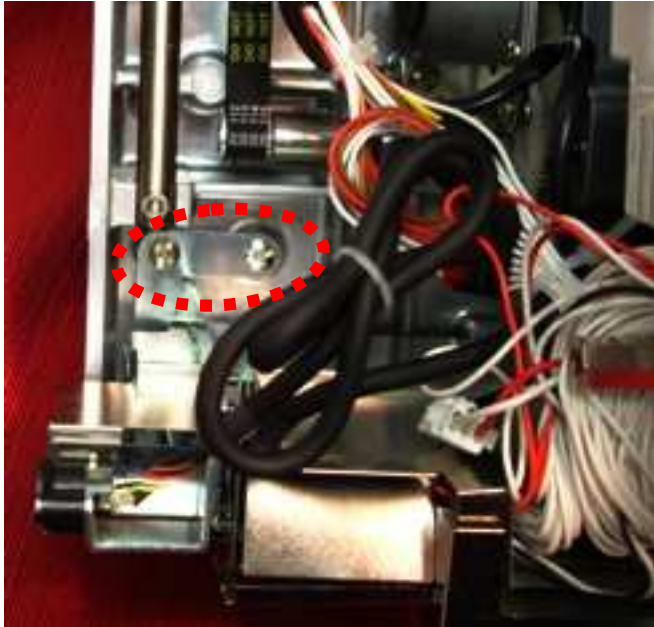


5. Attach the two 3mm screws from the top and tighten.



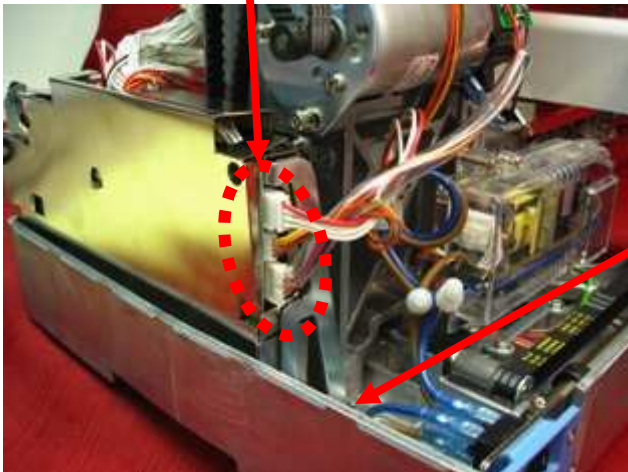
6. To increase the tension on the belt, pull the pulley straight out until the tension is good and tighten the two 3mm screws firmly.

B- BOARD REMOVAL

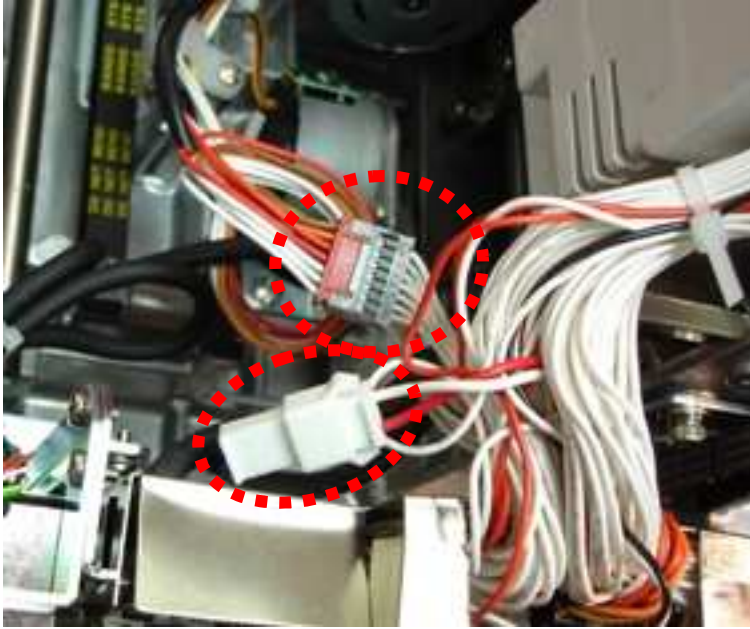


1. Turn the machine around so you can view it from the back. Remove the two screws on the left side.

2. Remove the three wires on the right side from the B-board.

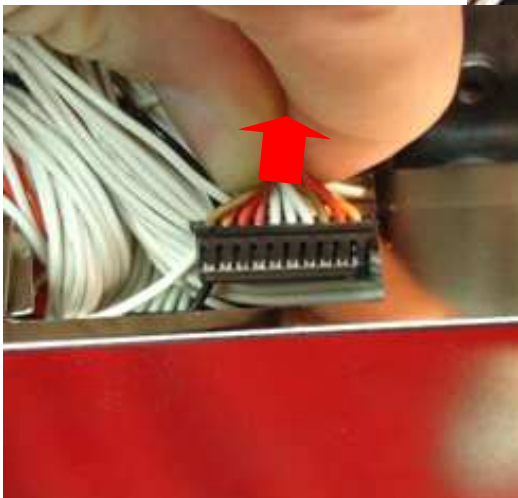
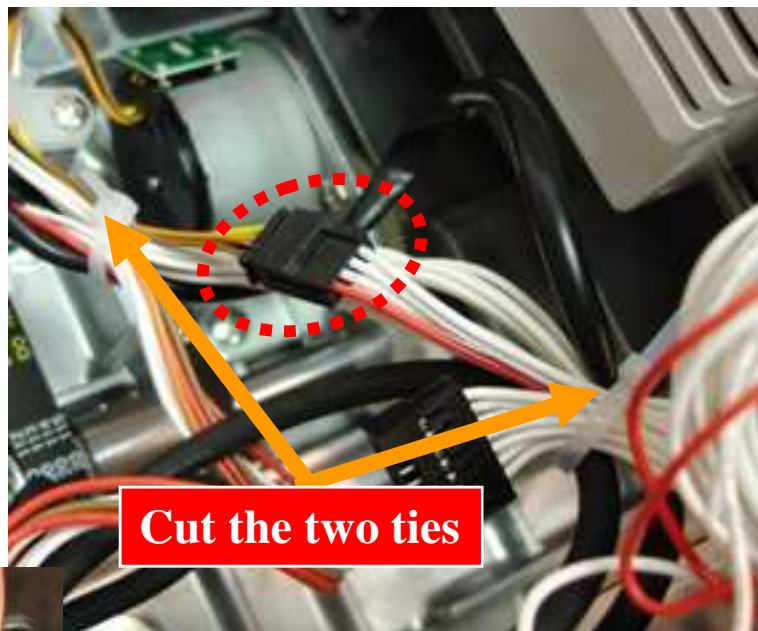


3. Remove the screw on the right side.



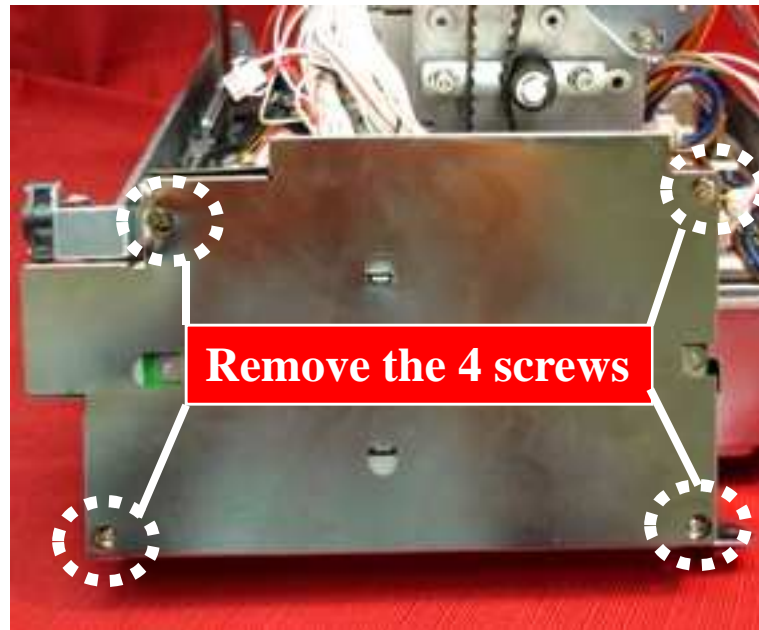
4. On the left side disconnect the red plug from the black harness and the large white plug and black plug from their harnesses.

5. Cut the two ties that hold the wire groupings together. Remember how the wires were grouped.



6. From the top of the B-board remove the black plug with the orange, red, and brown wires and untangle it from the other wires in order to free the B-board.

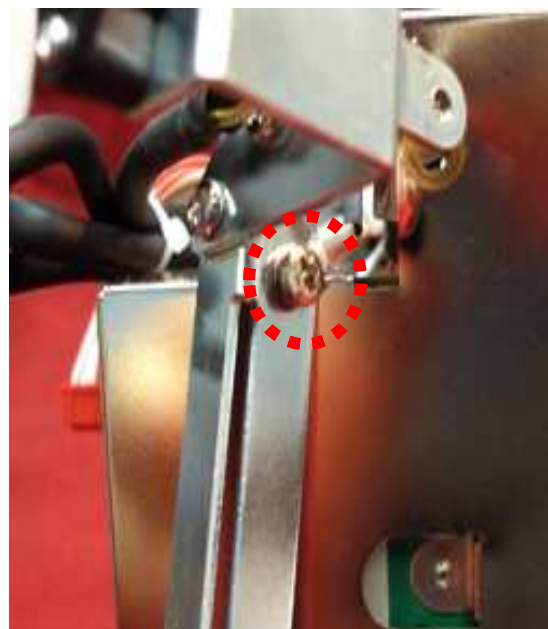
7. Lift the B-board gently out and rest it against the base of the machine. Remove the 4 small Philips head screws on the back of the B-board.



RCS connector



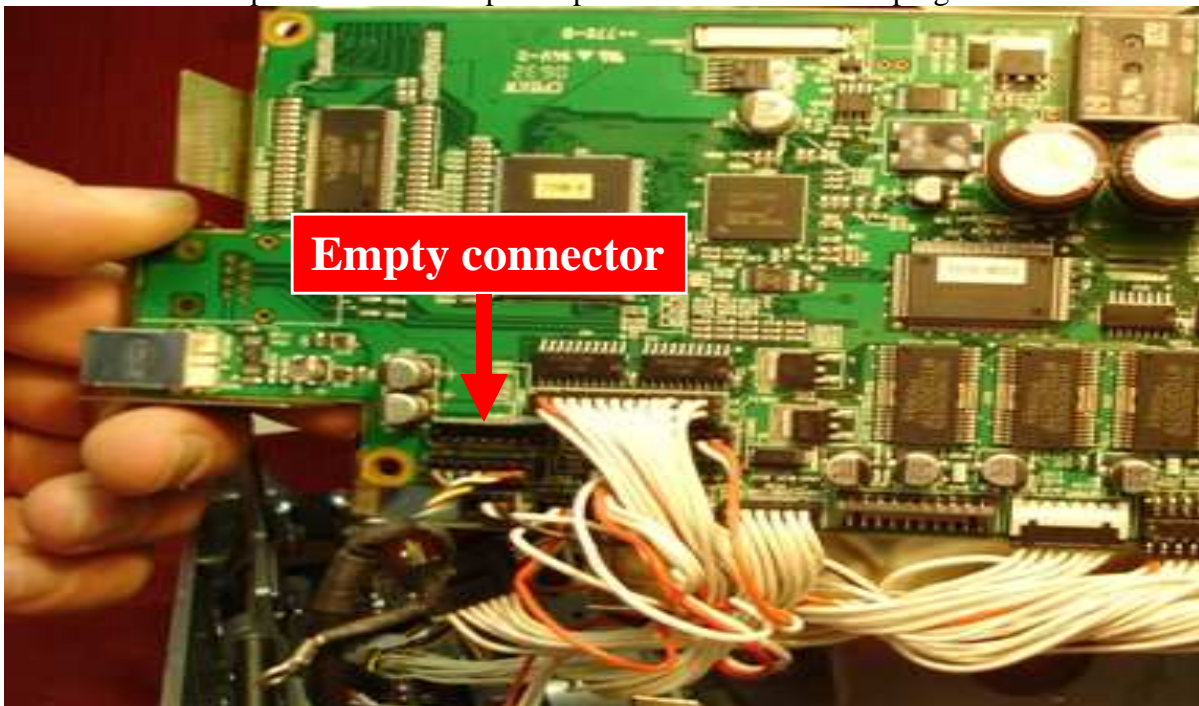
8. The posts on both sides will start to come loose. Be very careful of the post with the RCS connector on it. Do not pull the post away.



9. Remove the screw that holds the grounding wire on the post and gently lay the RCS post down.



10. Flip the back cover up to expose the B-board and its plug connections.

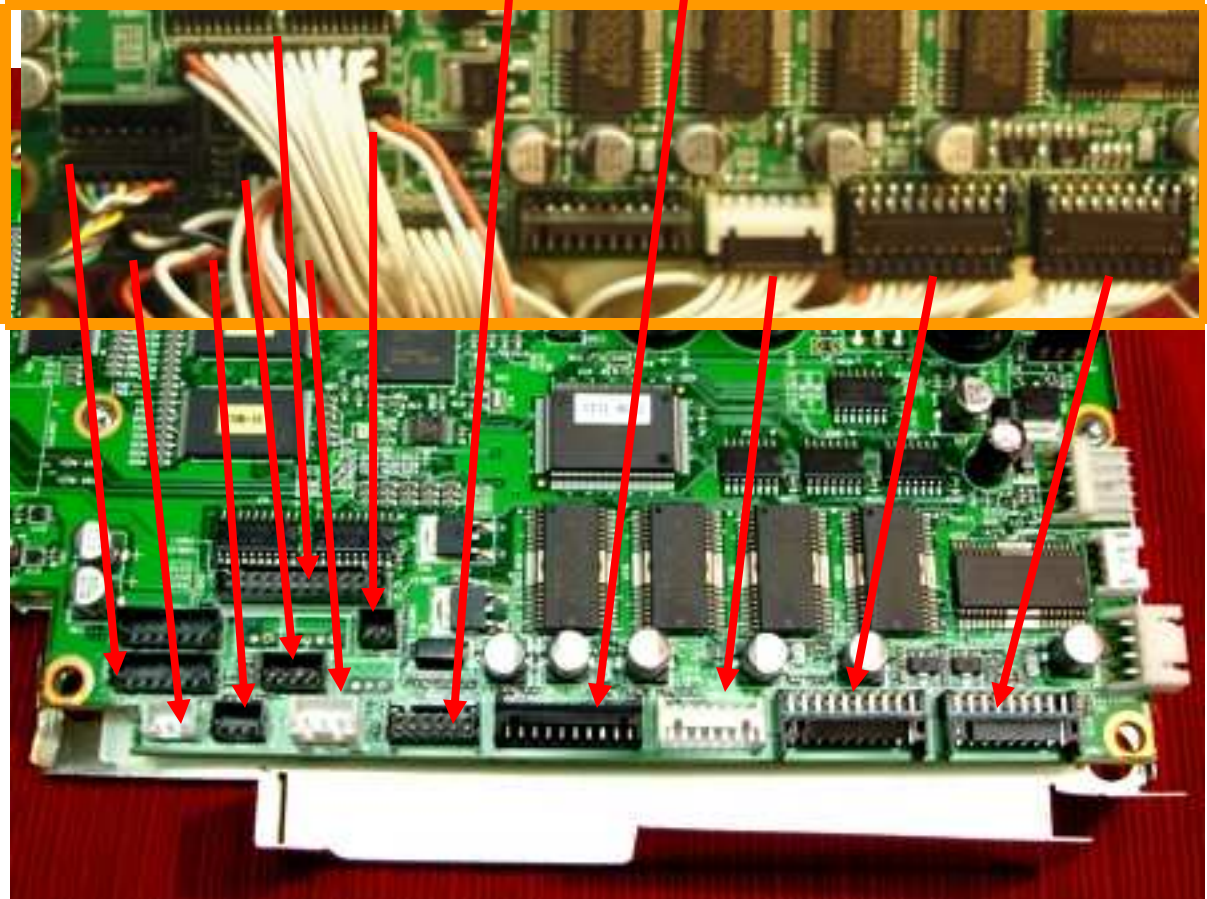


11. There are no color coded connections to use as reference points. Also notice that the outlet above the RCS connector is empty. Make a note of where the plugs go. Start to unplug the connections from the board.

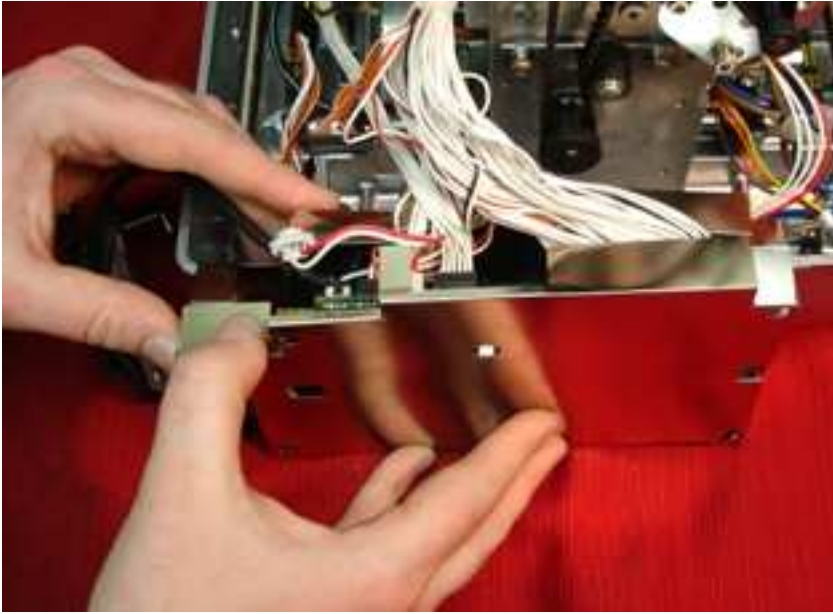
INSTALLATION OF B-BOARD



1. Make sure to run the RCS connector through the back cover and line the post near the board.



2. Hold the B-board above the back cover with the plug outlets facing down. Make sure to match the correct harness with the correct cable.



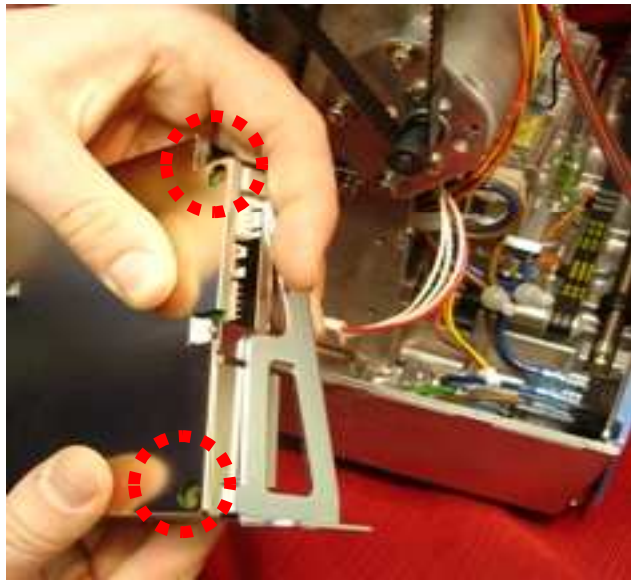
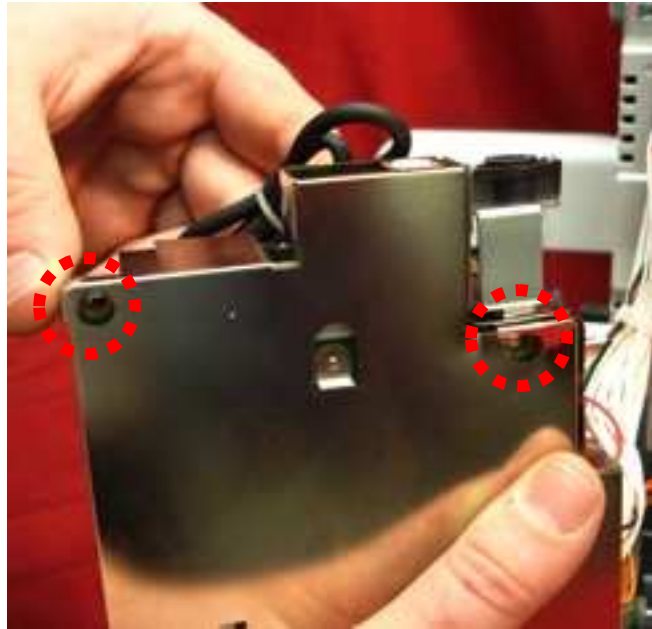
3. Start connecting from the right side to the left. Move the back cover with the RCS connector and plug towards the board. Reconnect the RCS plug. Gently take the back cover and flip it up to meet the board. Do not push the two boards together. Place the board and covers facing up so all the wires at the top are shown.



4. Fish the wires on top to the middle position and take the RCS ground wire and route it out the left side. Place the screw back on the post that holds the RCS grounding wire.

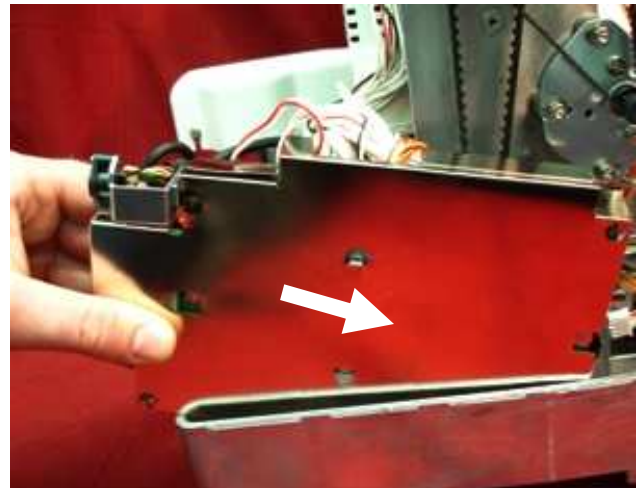


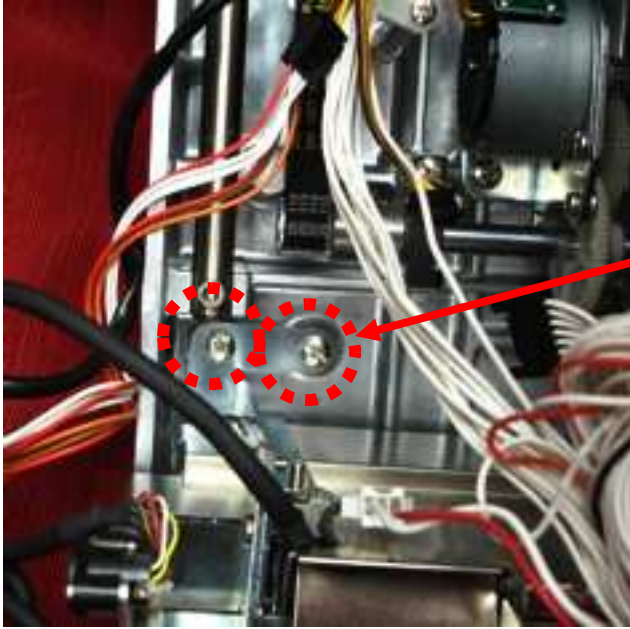
5. Move the left post into position with the RCS connector facing to the left. Reattach the two screws that hold and secure the post and cover to the board.



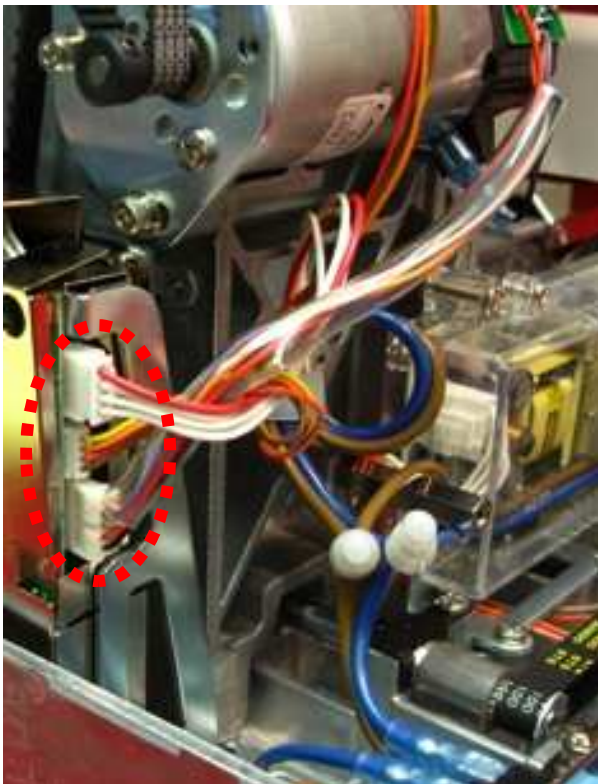
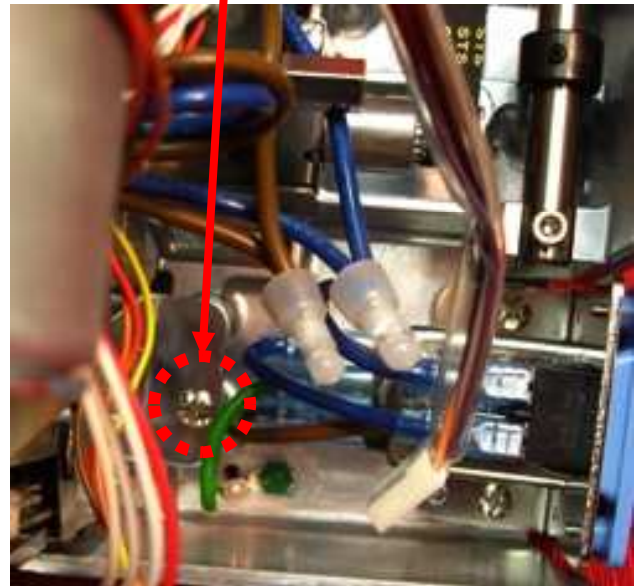
6. Move the right post into position and attach the two screws to hold and secure the right side of the board.

7. Lift the B-board back into the machine being careful not to get any wires caught underneath.



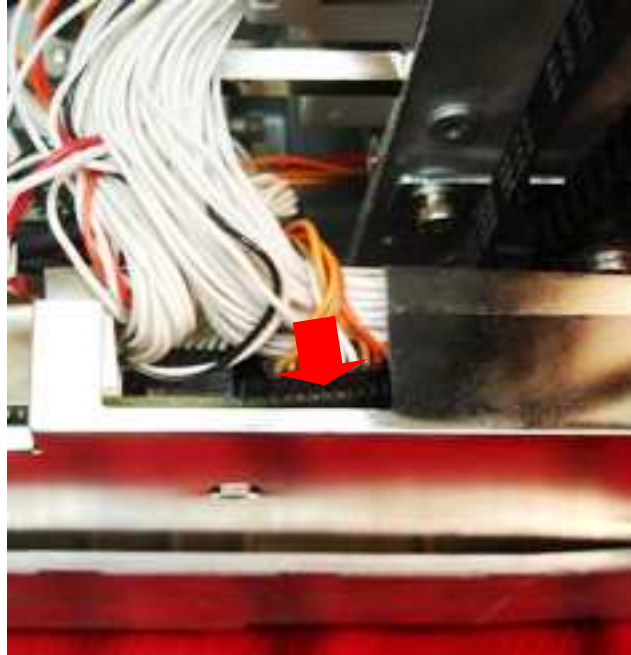


8. Install the three screws that hold the board firmly into the machine.



9. Reconnect the three wires on the right side of the board.

10. Take the wire that plugs in on the top part of the B-board and wrap it around some other wires and plug it in.



Cut excess tails



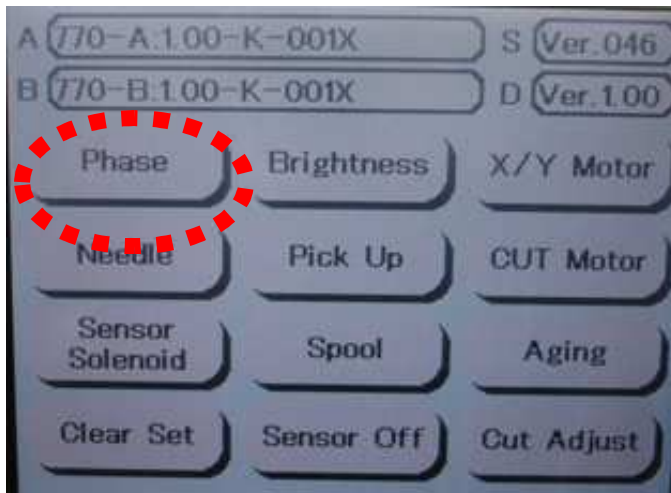
11. Reconnect the three connectors on the left side of the board. Take two ties and wrap it around the groupings of wires to keep them together and out of the way. Cut the excess tails on the ties.

NEEDLE AND HEAD STOP POSITION- PART 1

1. Hold down the start/stop button and thread cutter button on the RCS. While holding the two buttons down turn on the machine.

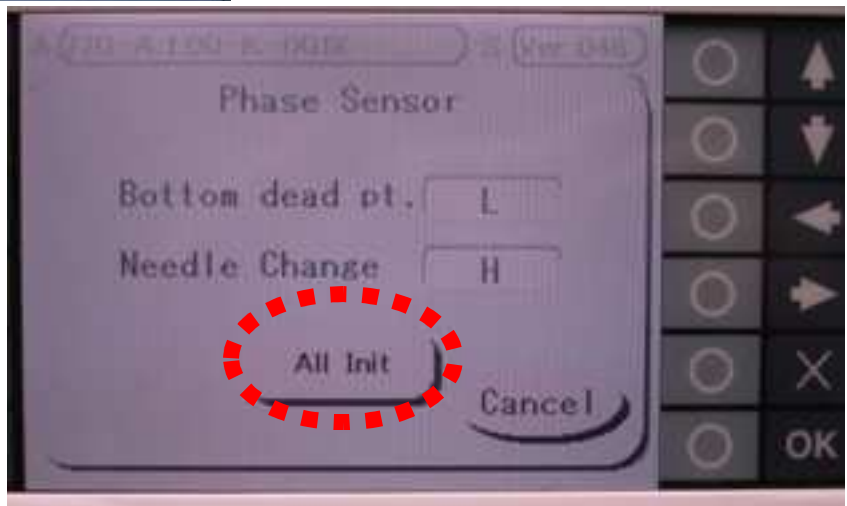


Hold down



2. Press the phase key to open the adjusting window.

3. Press **ALL INIT** key to reset the machine into home position.



4. Locate the shield plate and sensor at the top of the machine.

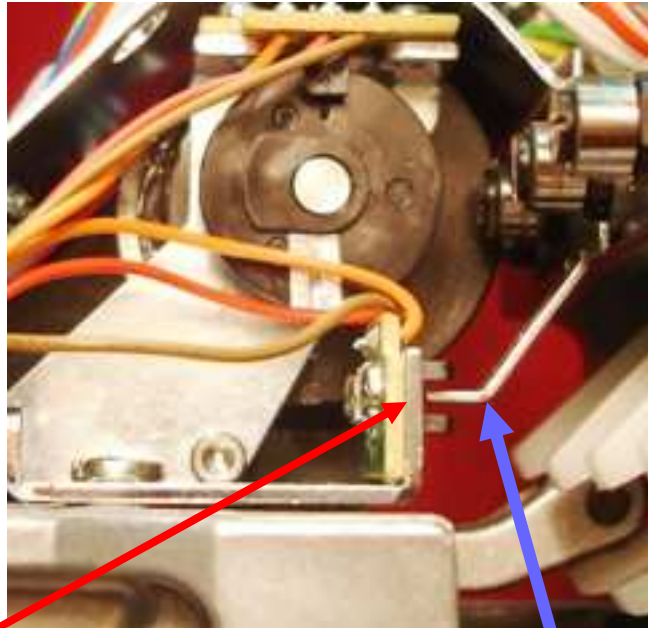


Photo sensor

Shield plate

5. The left side of the shield plate should be on the right side of the sensor.

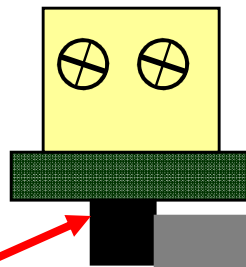
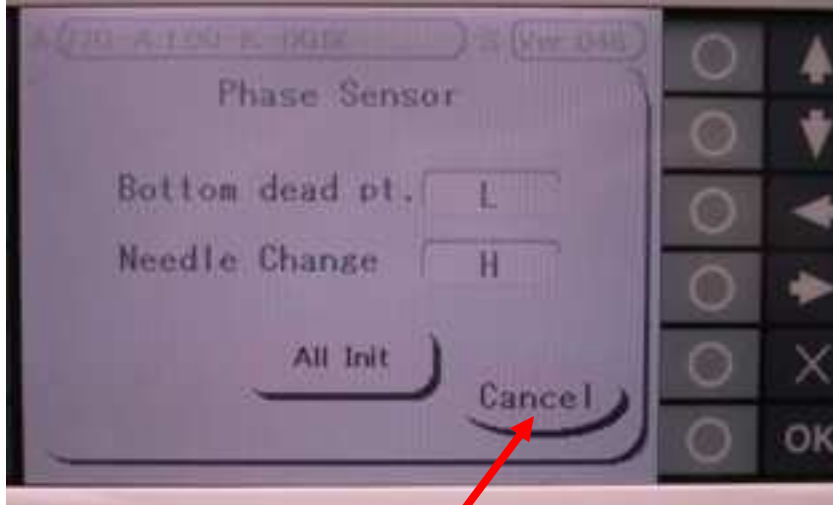
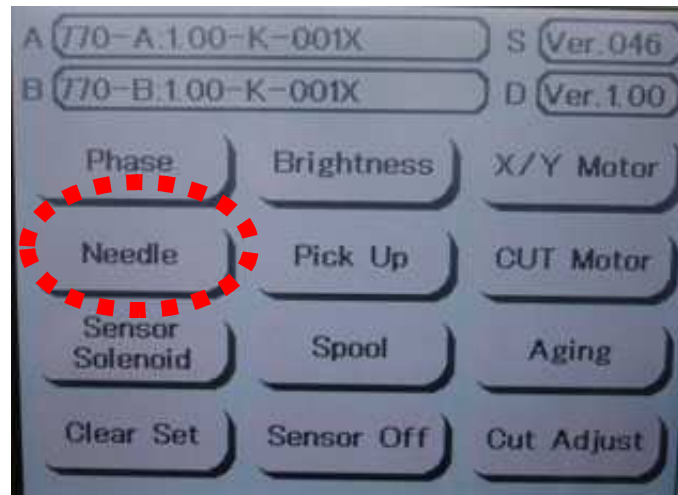


Photo sensor

Shield plate

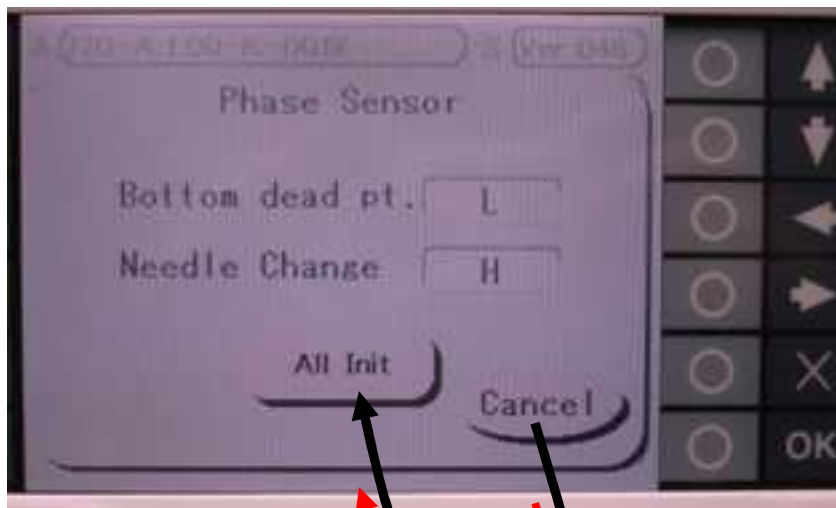
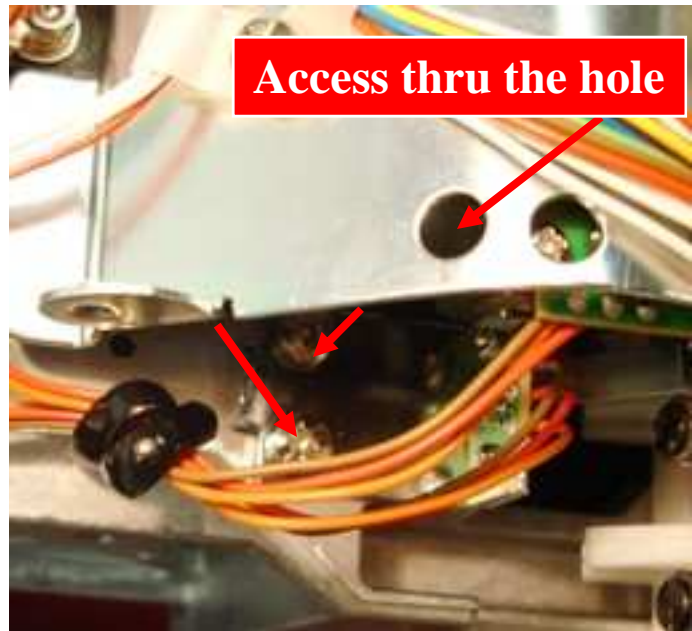


6. Press **CANCEL** on the RCS and go to the **NEEDLE** key.

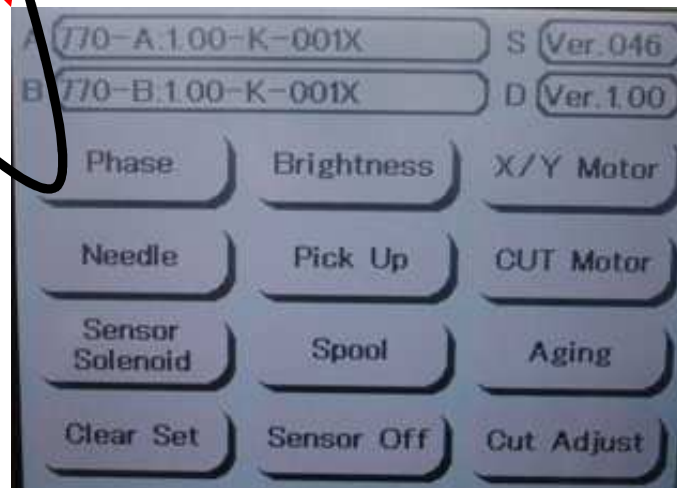


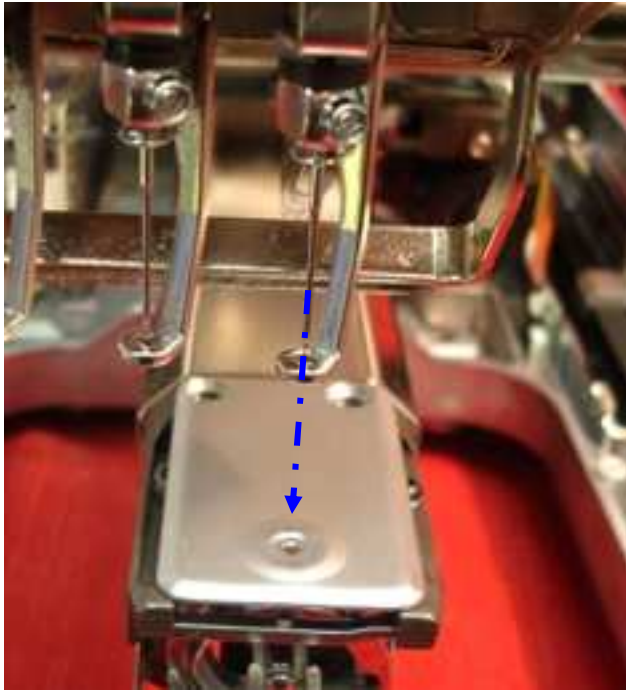
7. Press the jog keys on the RCS to move the head into the different needle positions. If the needles are not lining up or if the RCS shows the wrong needle an adjustment is needed.

8. Loosen the two screws that hold the sensor and move it slightly to the left.



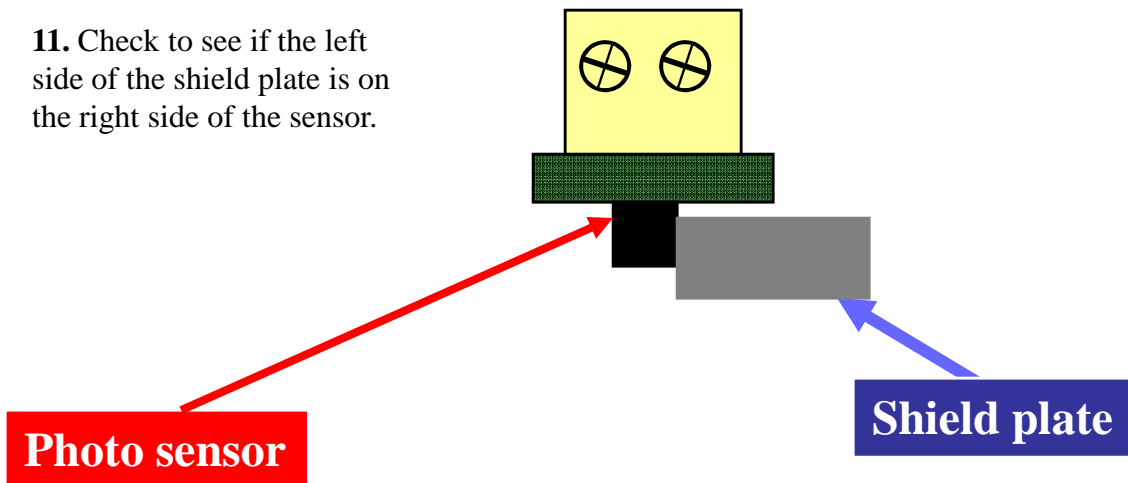
9. Press **CANCEL** and then press the **PHASE** key followed by the **ALL INIT** key. The machine will reset itself into home position.





10. The # 1 needle should be lined up with the hole in the needle plate and the RCS should read the correct needle.

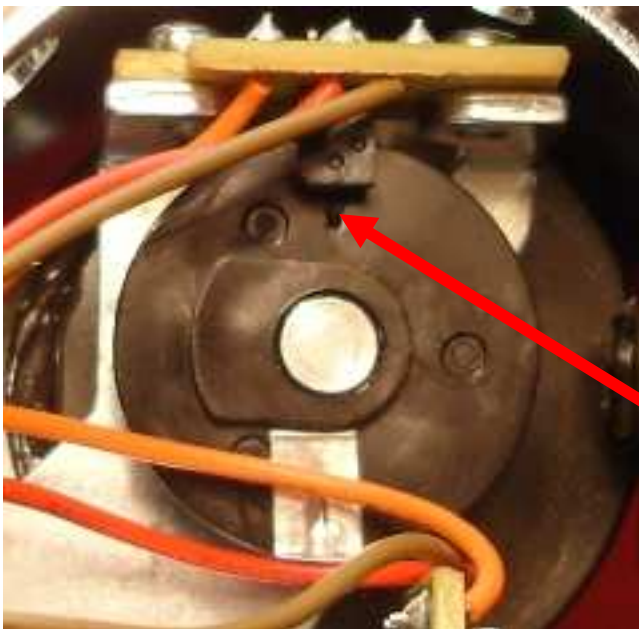
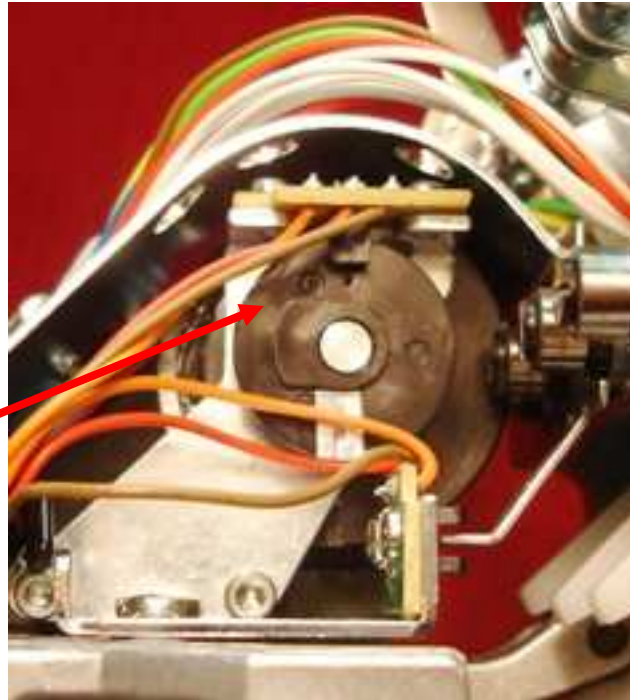
11. Check to see if the left side of the shield plate is on the right side of the sensor.



NEEDLE AND HEAD STOP POSITION- PART 2

1. Locate the stop position shield plate.

Stop position shield plate

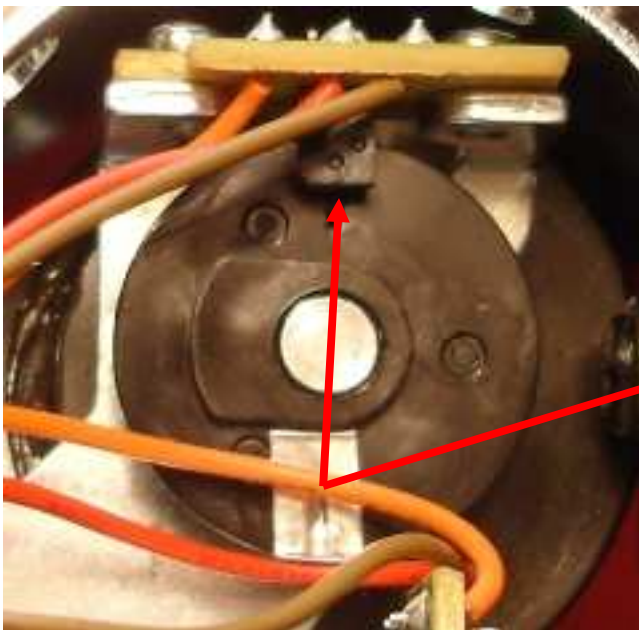
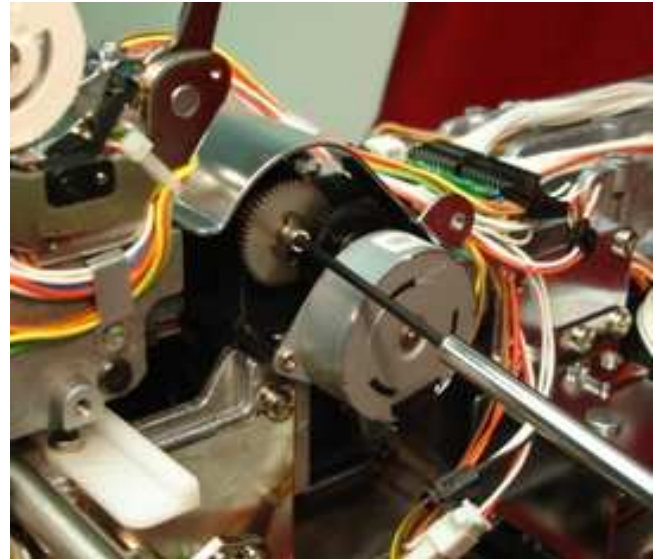


2. The shield plate has a slit in it which should be lined up in the middle of the sensor.

Shield plate slit

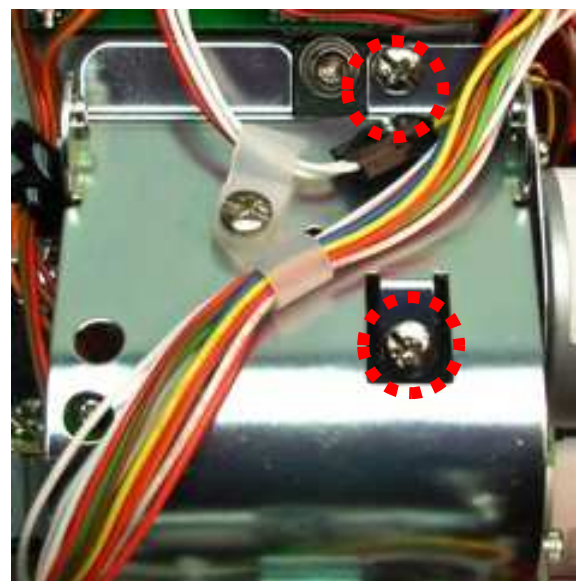
3. If the needles are not lining up and the first adjustment is set right but still it is not correct turn off the machine.

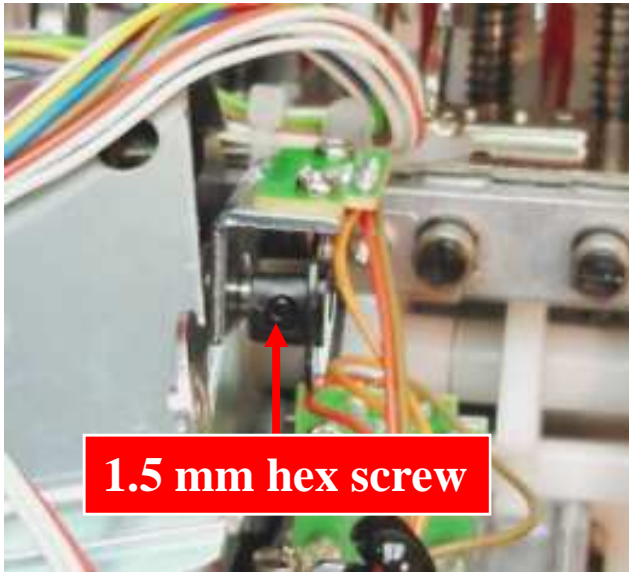
Using a 2.5mm hex turn the lateral gear on the right side of the machine and line a needle so it is centered in the needle plate.



4. At this point the slit in the shield plate should be directly in the middle of the sensor.

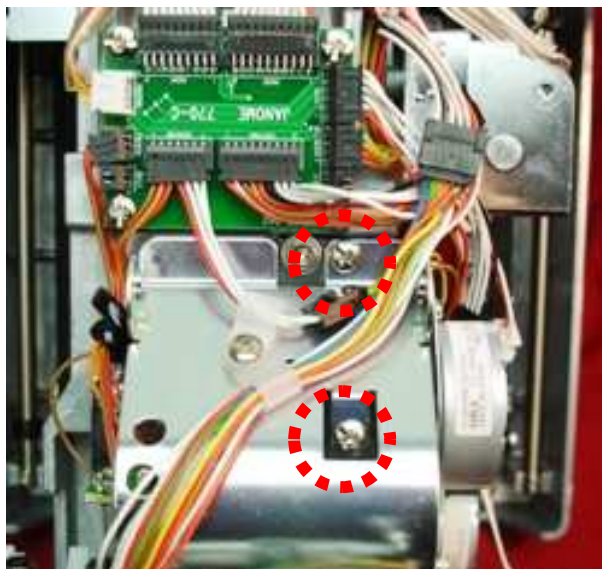
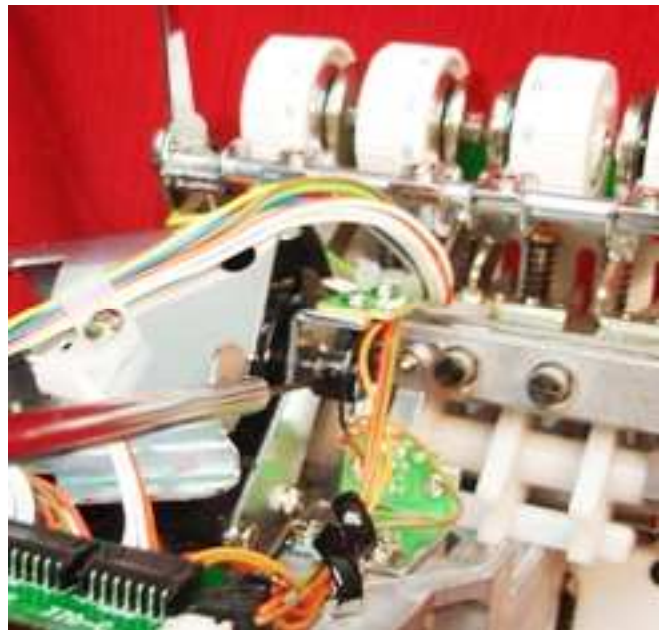
5. If it is not, remove the two screws that hold the silver plate above the lateral unit and slide it to the side slightly.





6. Locate the 1.5mm hex screw on the black shield plate.

7. Loosen it very carefully and turn the shield plate to line up the slit in the middle. When it is lined up tighten the screw very gently or else it will crack from pressure.

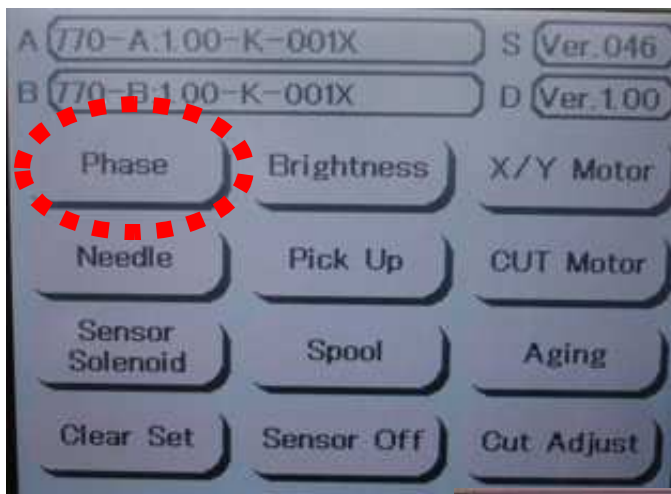


8. Replace the two screws from the silver plate. Go into the test window and check the needle positions.

CARRIAGE ARM ADJUSTMENT FOR X POSITION



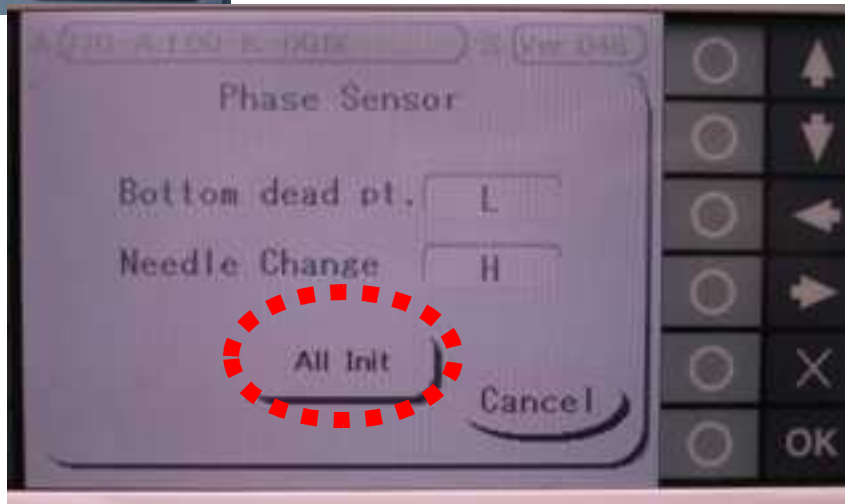
1. If the template is not lining up correctly there are two adjustments that can be made. Hold down the start/stop button and thread cutter button on the RCS. While holding the two buttons down turn on the machine.



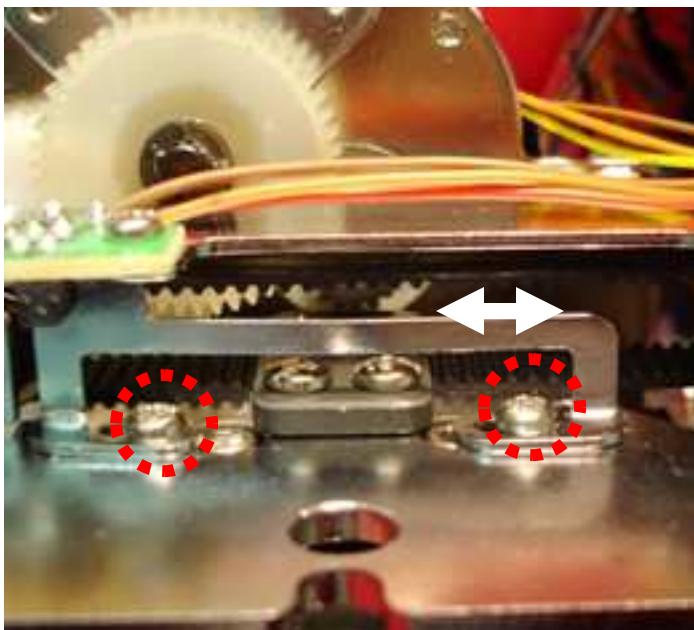
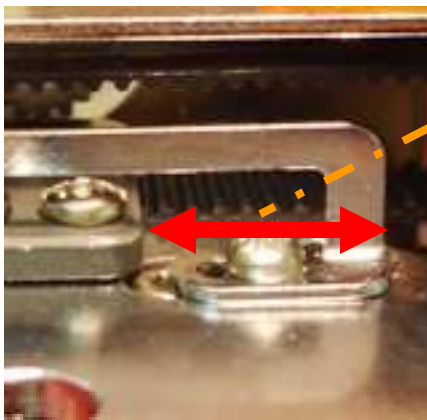
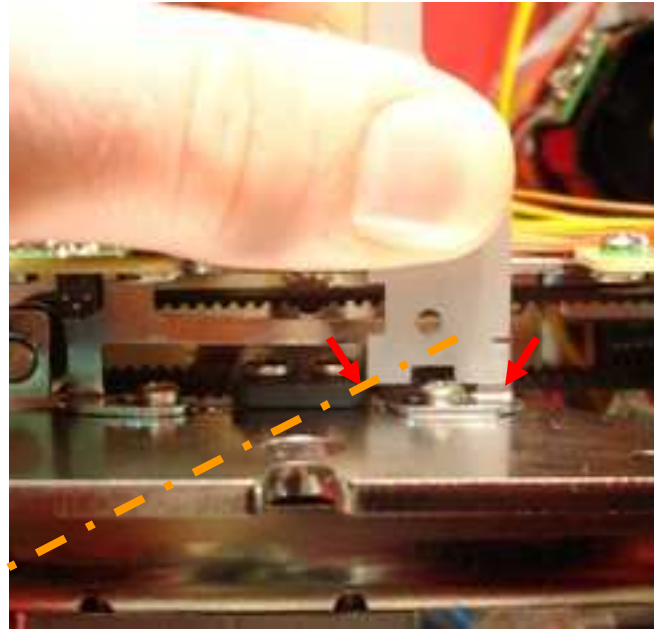
Hold down

2. Press the phase key to open the adjusting window.

3. Press **ALL INIT** key to reset the machine into home position.



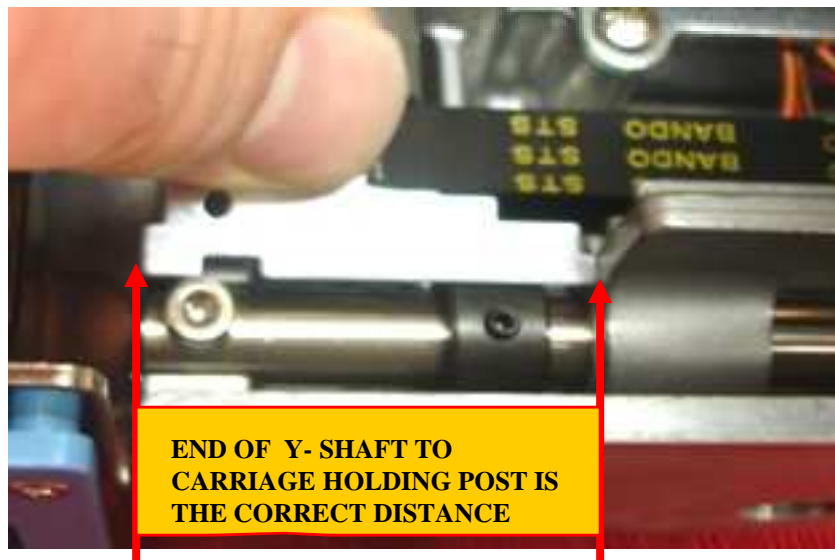
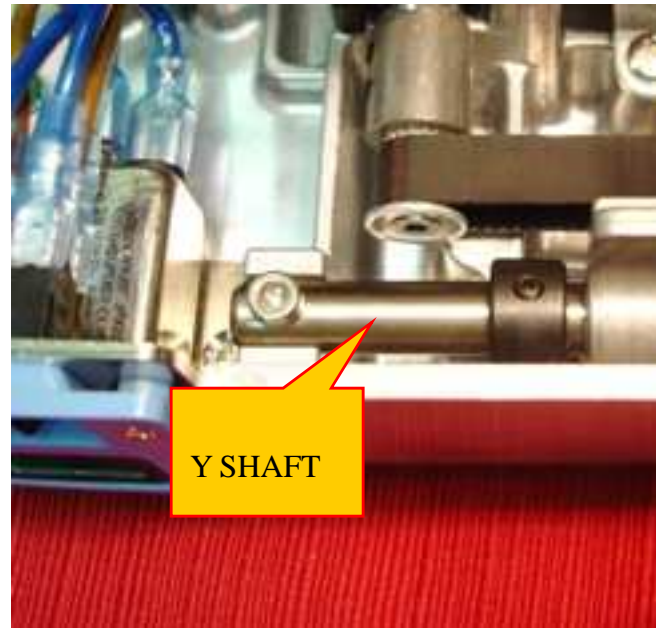
4. Take the gauge and hold it up on the right side of the belt holder on the X-arm. The width of the gauge should be the exact width of the **right side** of the stopper to **the end** of the shield plate. Gauge parts number is **003860G001**



5. If it is not, loosen the two screws that hold the shield plate and move the shield plate to get the proper position

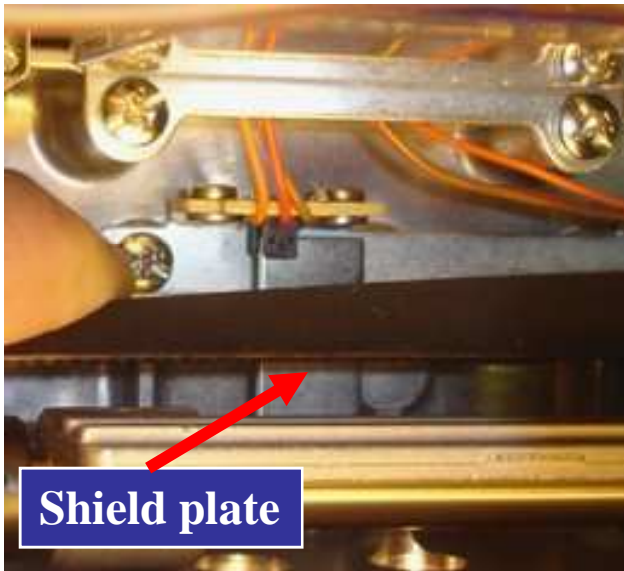
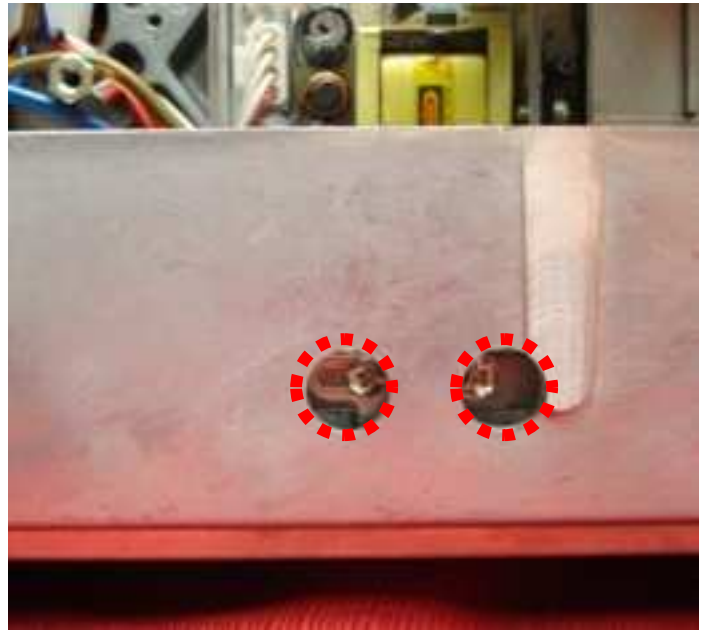
CARRIAGE ARM ADJUSTMENT FOR Y POSITION

1. If the Y arm is not lining up locate the Y shaft near the machine socket.

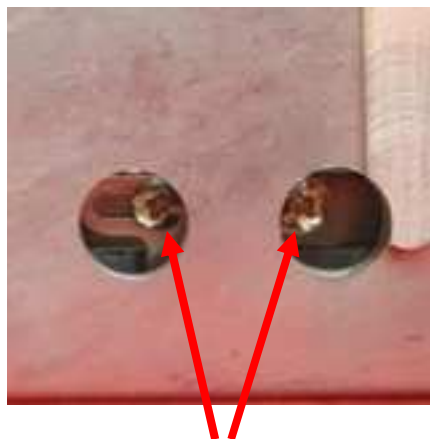
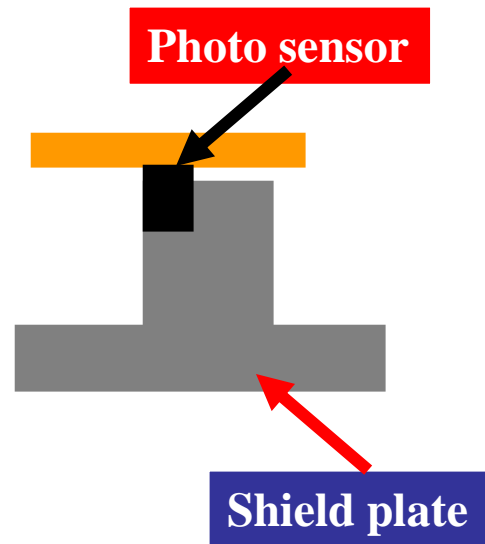


2. When the machine is turned on it will go into home position. Take the gauge and hold it lengthwise from the end of the Y- shaft to the carriage holding post. If the distance is larger or shorter than the gauge the following adjustments need to be made.

3. Turn off the machine. Locate the two holes on the side of the base. Loosen the two screws that hold the silver shield plate



4. Move the carriage holding post to get the correct distance for the gauge. Once you have the correct distance move the shield plate so that the left side edge of the plate is even with the left side of the sensor.



5. Tighten the two screws to hold the shield plate in the proper position.

TEMPLATE GAUGE CHECK



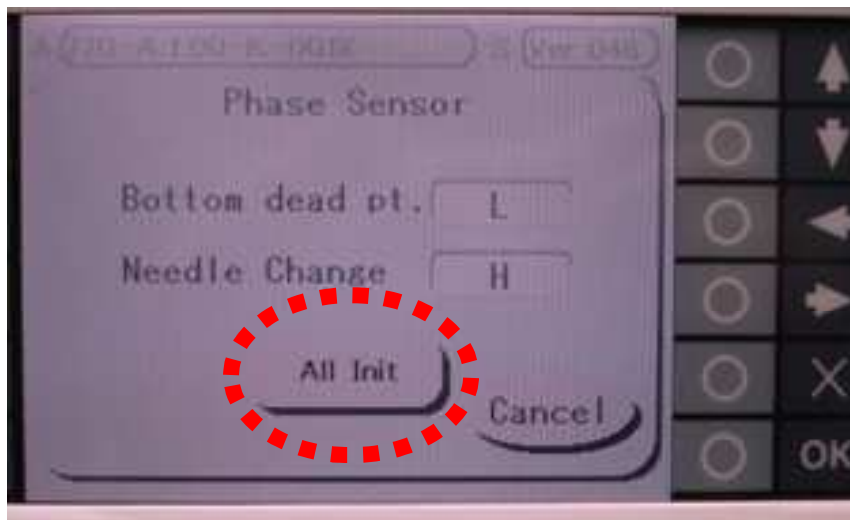
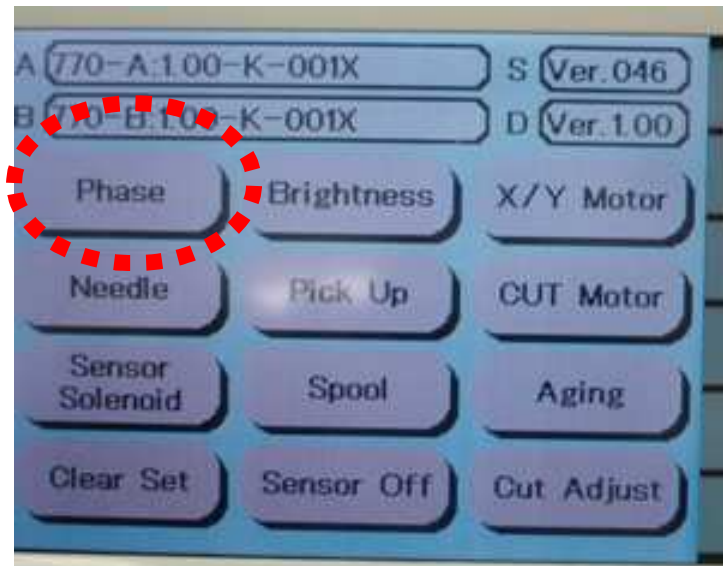
1. To check the X/Y positions take the template gauge and place it into the M-1 hoop. It will fit snug within the hoop.

2. Hold down the start/stop button and the thread cutter button and turn on the machine.

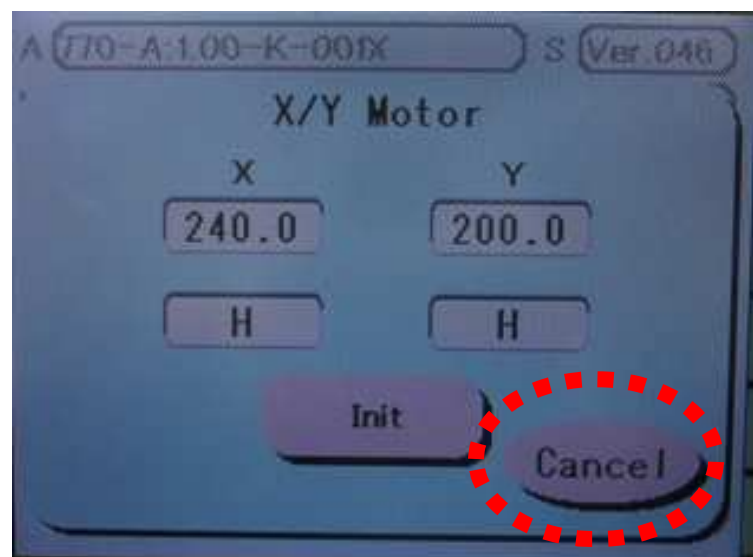


Hold down

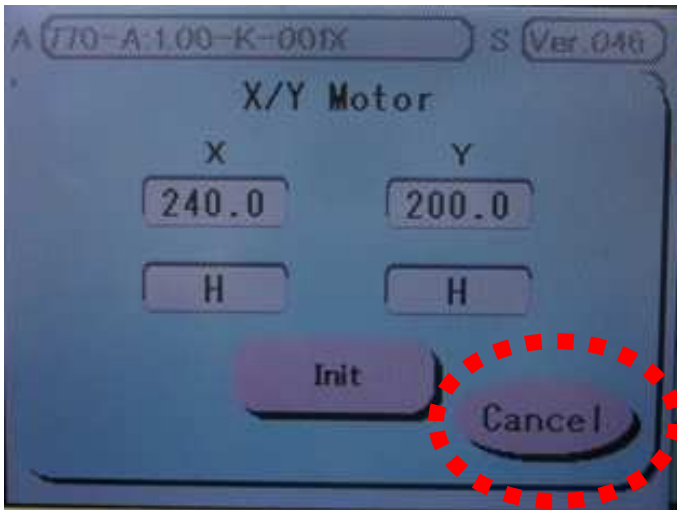
3. Press the **PHASE** key followed by the **ALL INIT** key to calibrate the machine into home position.



4. Once the machine calibrates press **CANCEL** and then press **X/Y** key. The value that will show in the X box is **240** and in the Y box it will read **200**.

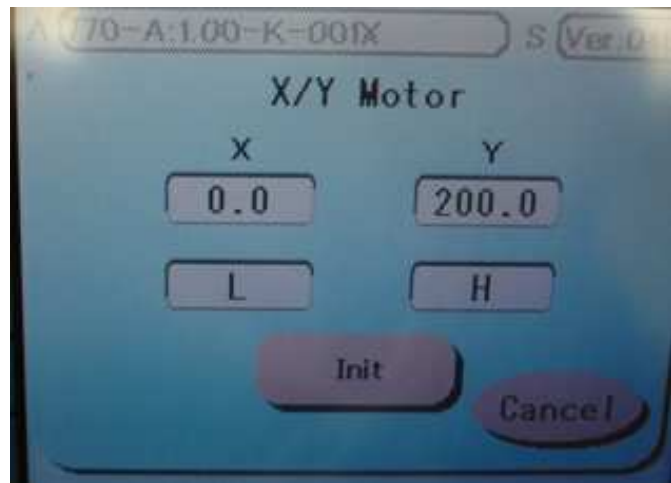


5. Bring the needle down and it should line up with the hole in the template and the needle plate.



6. Bring the needle back up. You might have to press **CANCEL** key to go into a screen to reset the needle.

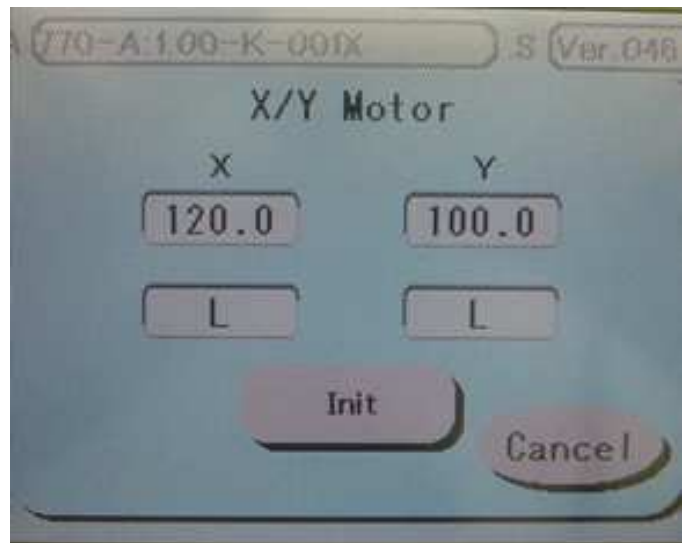
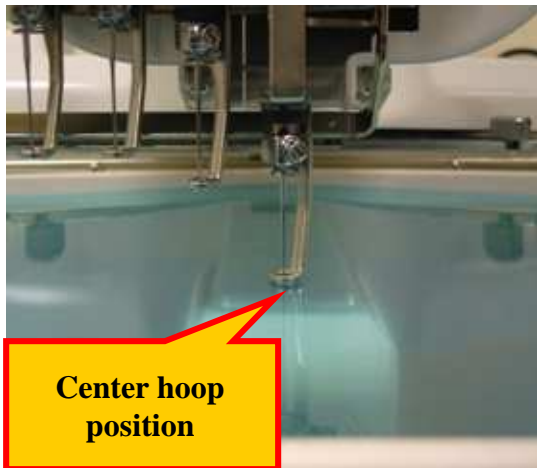
7. If so press the X/Y key again and press the left arrow key to move the carriage arm and hoop. Move the hoop until the X box reads 0.



8. At this point bring the needle down and it should go through the hole in the bottom left corner of the template gauge and into the needle plate.



9. Bring the needle back up and press the center carriage button on the RCS.



10. The carriage will move the hoop to the center position. The X box should read 120 and the Y box should read 100. If everything lines up correctly the adjustment that was made is correct.

SCREEN CALIBRATION



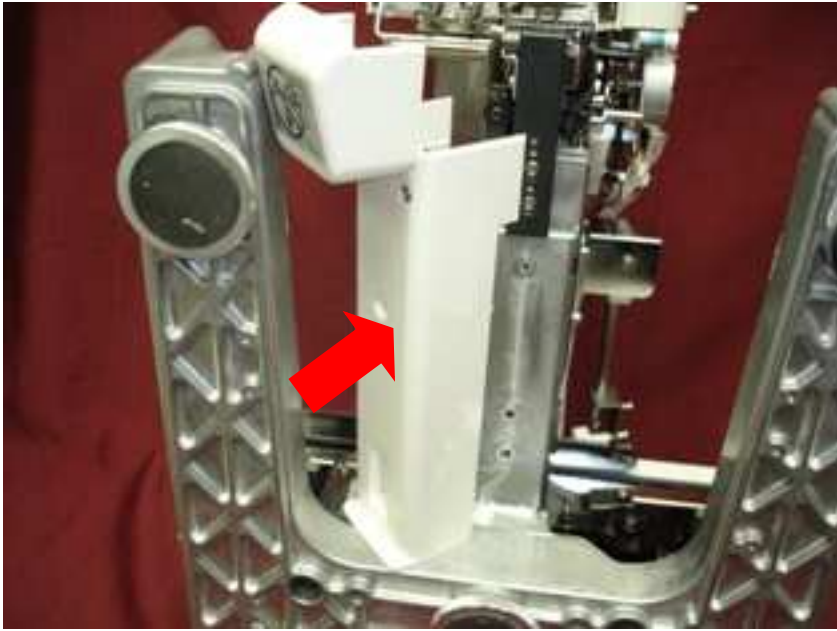
1. When the machine is off hold down the left arrow key on the RCS screen.

2. Turn on the machine and wait until you see a plus mark appear. Release the left arrow key and use a spool pin or something soft, (not sharp) to press the plus marks that appear.

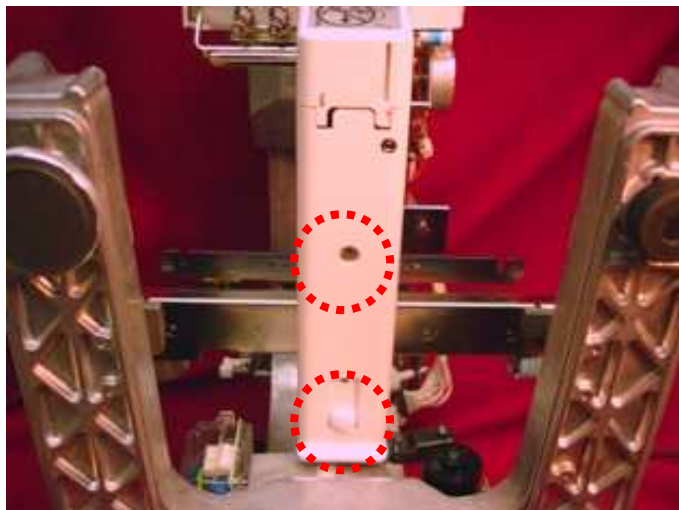


3. When you have gone through the 5 different marks it will say adjustment end. Turn off the machine.

FREE ARM REPLACEMENT



1. Place the cover back on the free arm



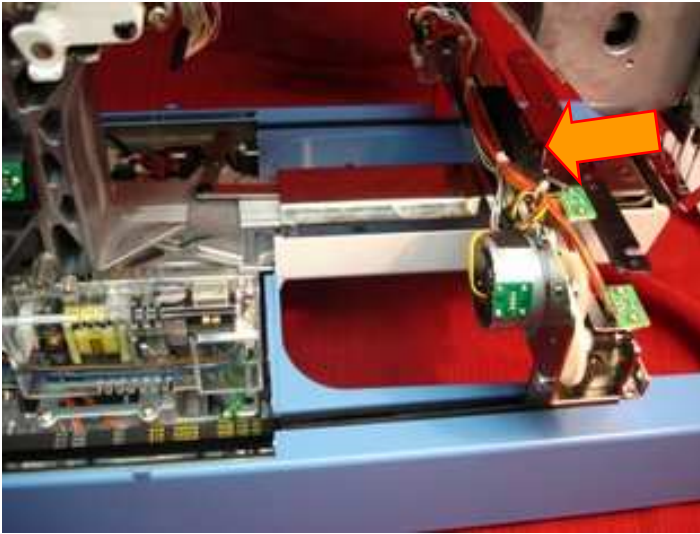
2. Insert the screw and the white turn screw on the bottom hole.

BASE COVER REPLACEMENT

1. Lift up the machine and slide the legs first into the blue cover.

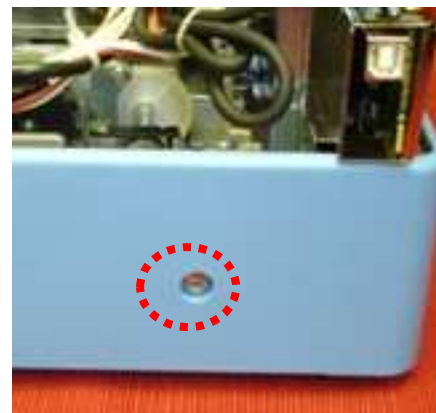
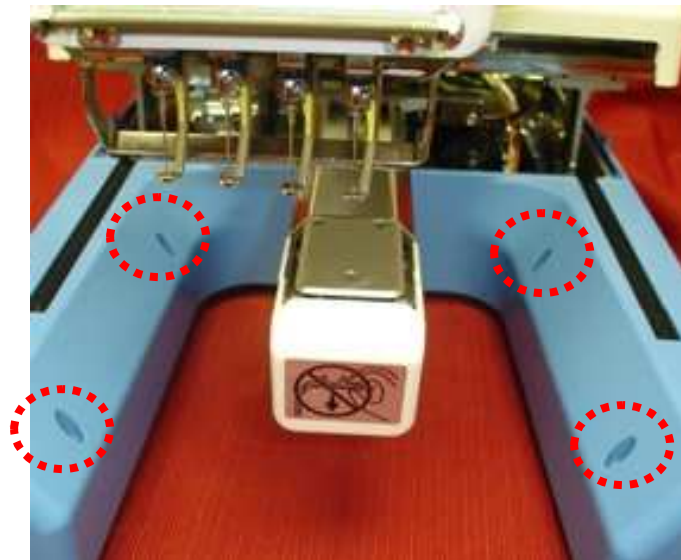


2. As the machine is going in, pull out on the rear to make sure the cover goes around the machine socket.



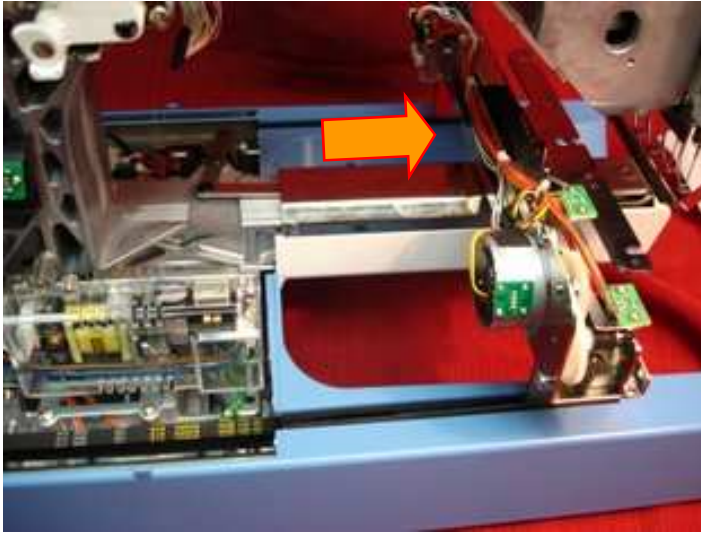
3. Slide the carriage arm all the way back against the machine.

4. Install the 4 screws that are on the inside of the legs.



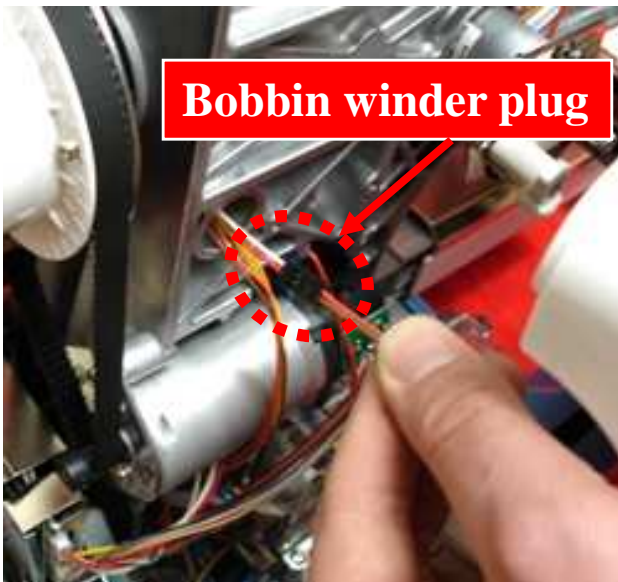
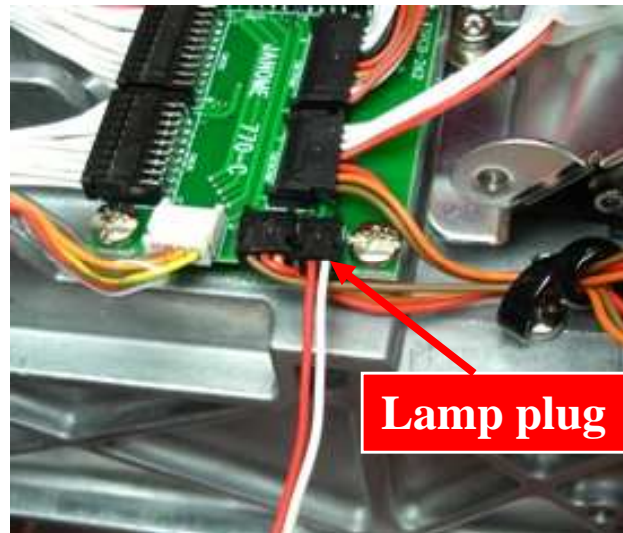
5. Install the screw on the side by the power plug and the other screw on the opposite side.

LEFT COVER REPLACEMENT



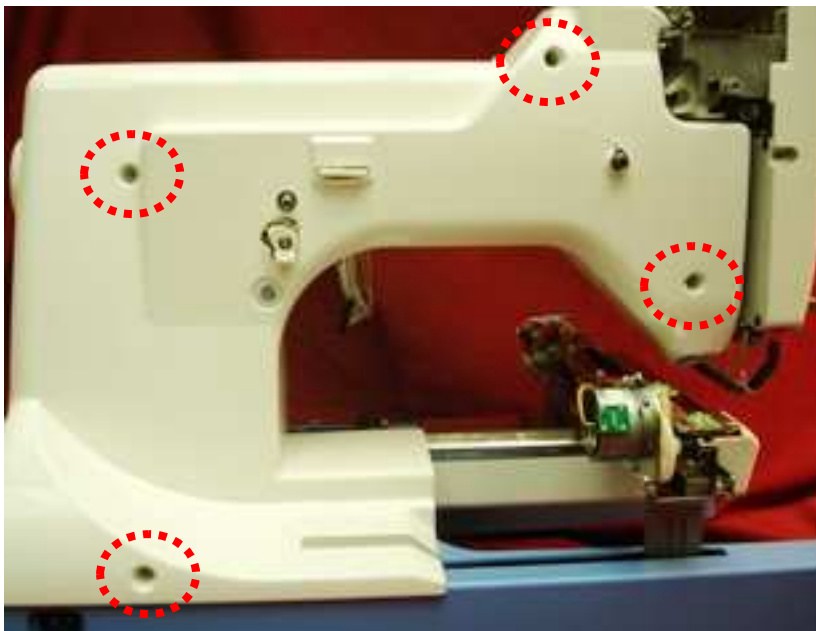
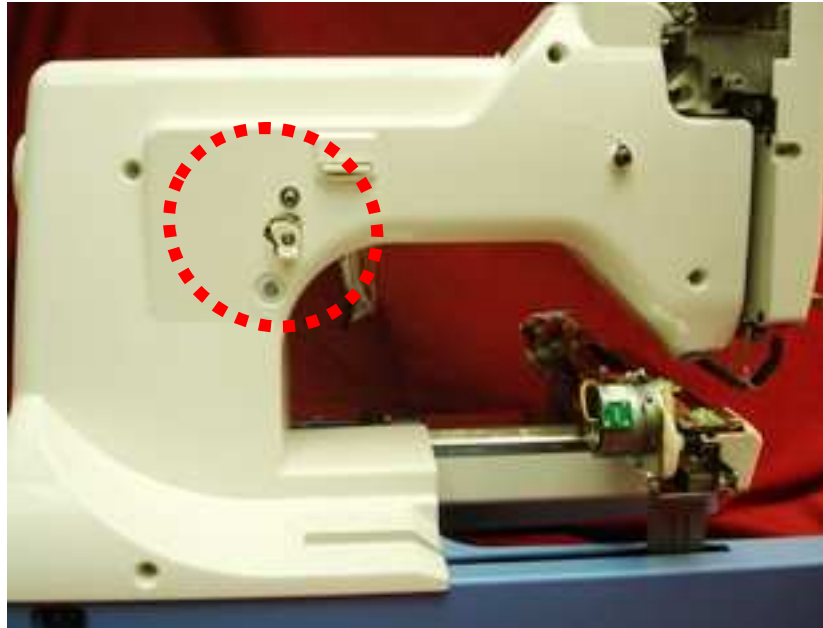
1. Pull the X-arm to the front of the machine.

2. Line up the left cover with the machine. Plug the led lamp plug into the C-board.



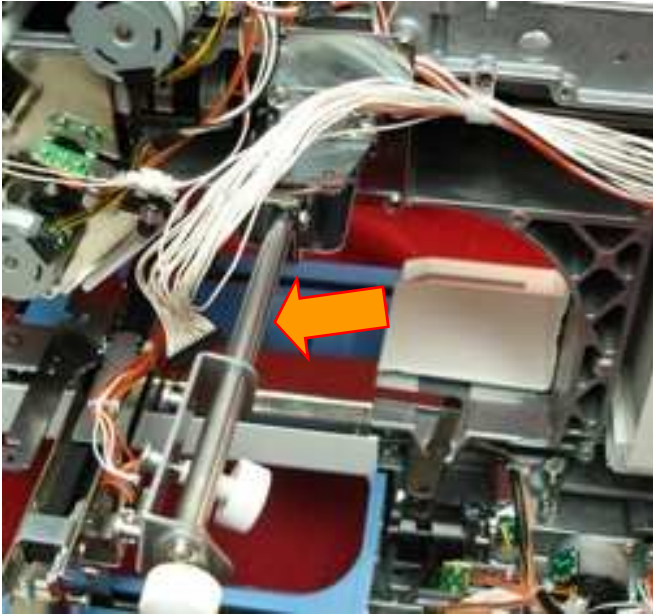
3. Connect the bobbin winder plug.

4. Start to attach the left cover being careful of the bobbin winder switch.



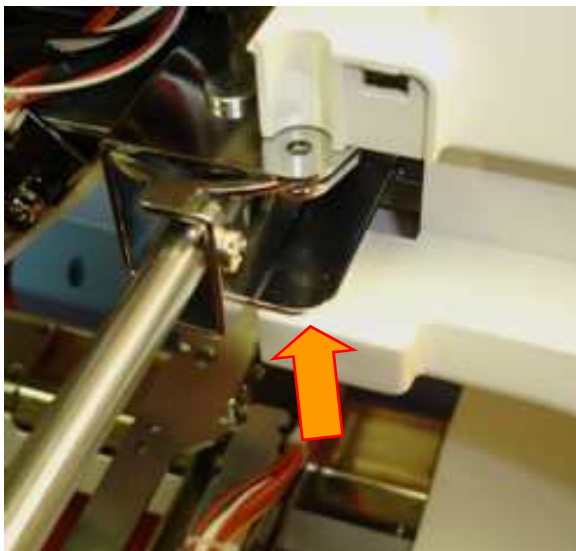
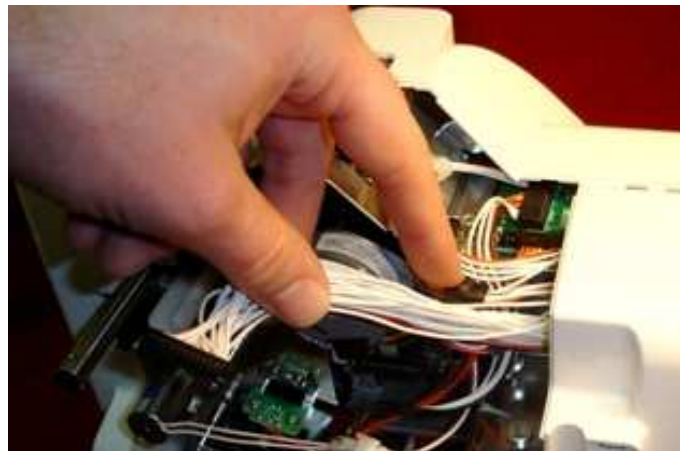
5. Replace the 4 screws on the side and tighten. Replace the 4 white caps.

RIGHT COVER REPLACEMENT



1. Swing open the RCS mounting arm.

2. Line up the right side panel with the machine. Make sure to take the wires and guide them along the side so they do not get pinched.



3. Fit the panel on the machine making sure that it goes under the RCS mounting arm unit.



4. Insert the two screws and tighten them.

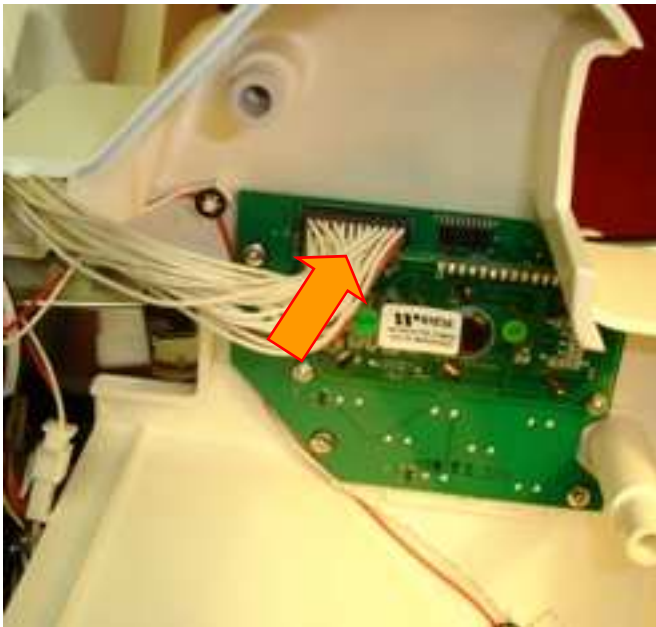
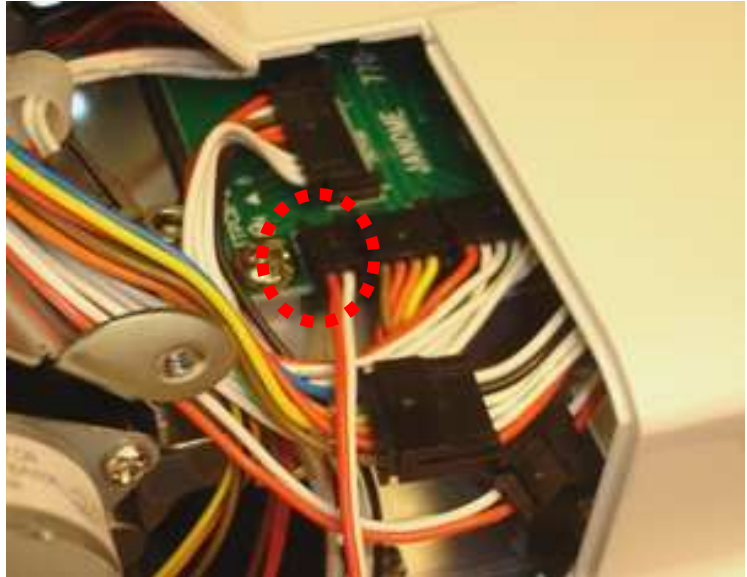
5. Insert the screw underneath the hand wheel and tighten. Install the white cap.



6. Replace the three white caps.

REPLACING THE STATIONARY HEAD COVER

1. Plug the led lamp plug into the C-board.



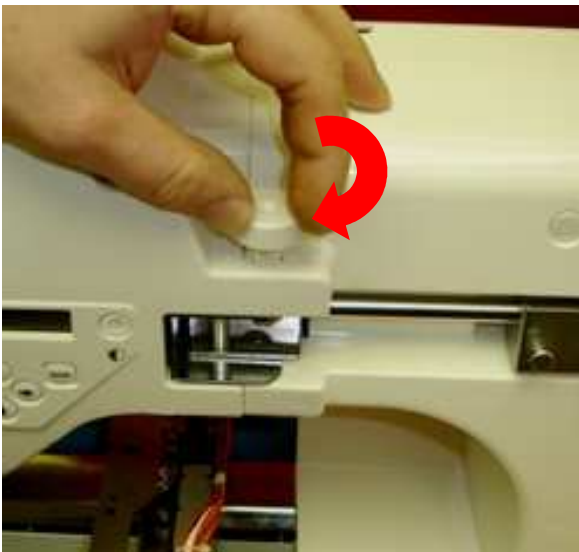
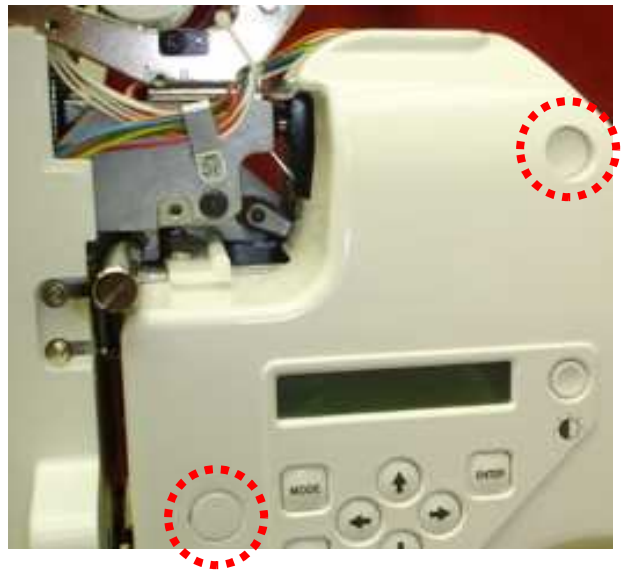
2. Take the black plug coming out of the right side of the right panel and plug it into the K-board inside the stationary cover.

Line up the cover and place it on the machine being careful not to pinch any wires.



3. Install and tighten the two screws.

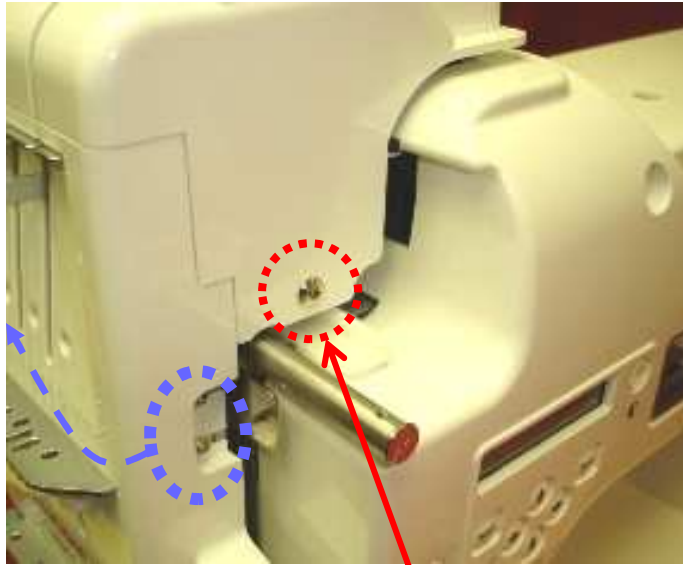
4. Install the two white caps.



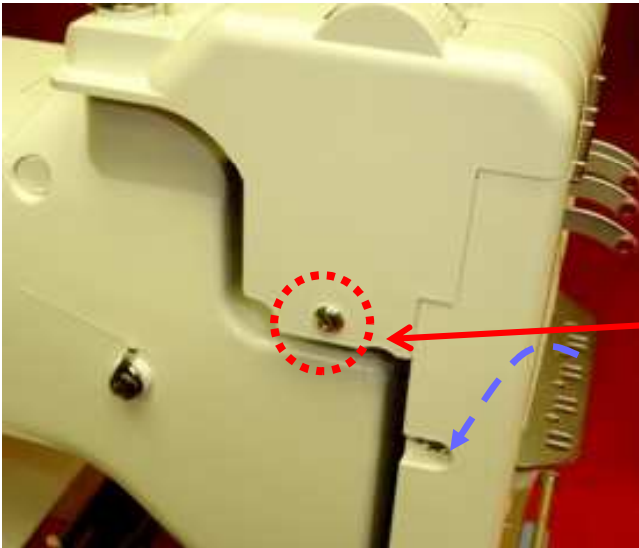
5. Install and tighten the RSC mounting screw.

TENSION COVER REPLACEMENT

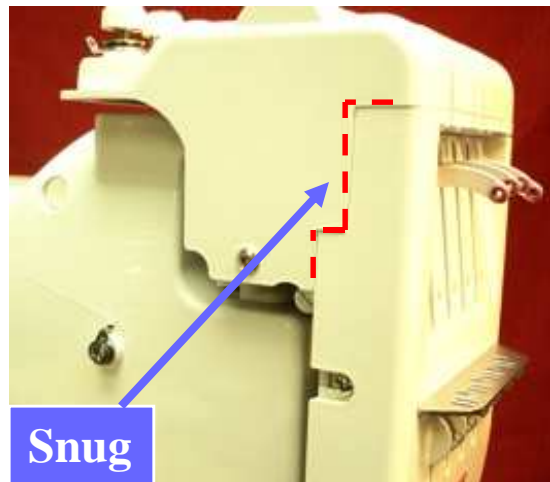
1. Place the tension cover on top of the unit and line up the screw holes. If need be loosen the two sides of the face cover.



2. Place the two screws into position and tighten them.



3. Make sure the cover is snug and in the proper position. Tighten the two side of the face cover.



X-ARM REPLACEMENT

1. Place the X-arm over the arm and lower it down.



Tighten the screws

2. Be careful not to pinch any wires or hurt any sensors.

3. Make sure the arm is all the way down and tighten the two screws.