KNK Force Gantry Realignment

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June 10, 2019

Basic guide to assessment & adjustments for KNK Force out of warranty, proceed at your own risk! This is written with the expectation of the end user accepting the success or failure by following these suggestions that worked on my personal machine.

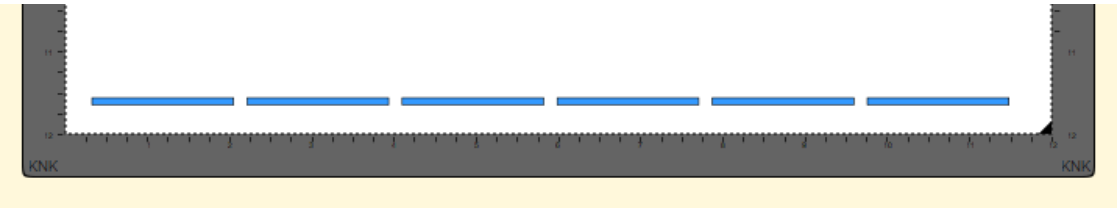
The KNK Force is a unique machine and this isn't a promotion or condemnation of Accugraphic Sales Inc. As with all mechanical objects, issues do come about. If your machine is in warranty contact the company as I'm not, at this date, authorized to repair their equipment. Before attempting the realignment read the information available on the disassembly & removal for the Raspberry Pi 3B+ upgrade and if you haven't done that yet, great way to get some more processing power.

https://www.iloveknk.com/Support/Tutorials/Klic-N-Kut/Force/Upgrading-the-Raspberry-Pi.pdf

First thing, before getting the tools out, is an honest assessment of the Z axis as this article only covers this issue.

Sandy McCauley of I Love KNK uses the thin but wide rectangle method of assessing the cut to establish the Blade Tension (BT). If you have the BT backed out (decreased) as far as it can go to get the best possible cut and have modified your spring tension in the blade holder and your machine is still not performing acceptably proceed as follows.

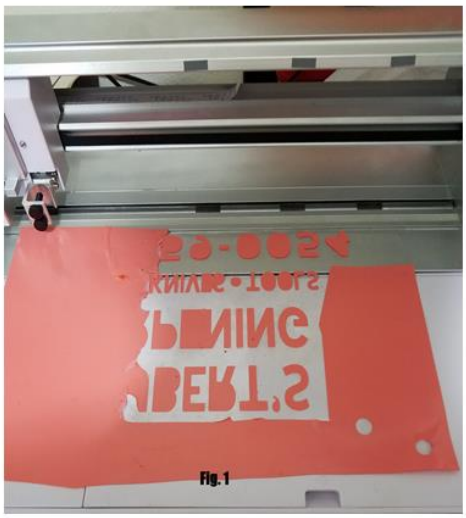
1) On HTV or regular vinyl cut a thin wide rectangle just like Sandy's suggestion, but we are going to make in one line multiple rectangles to see how far from right to left the cuts start to fail.



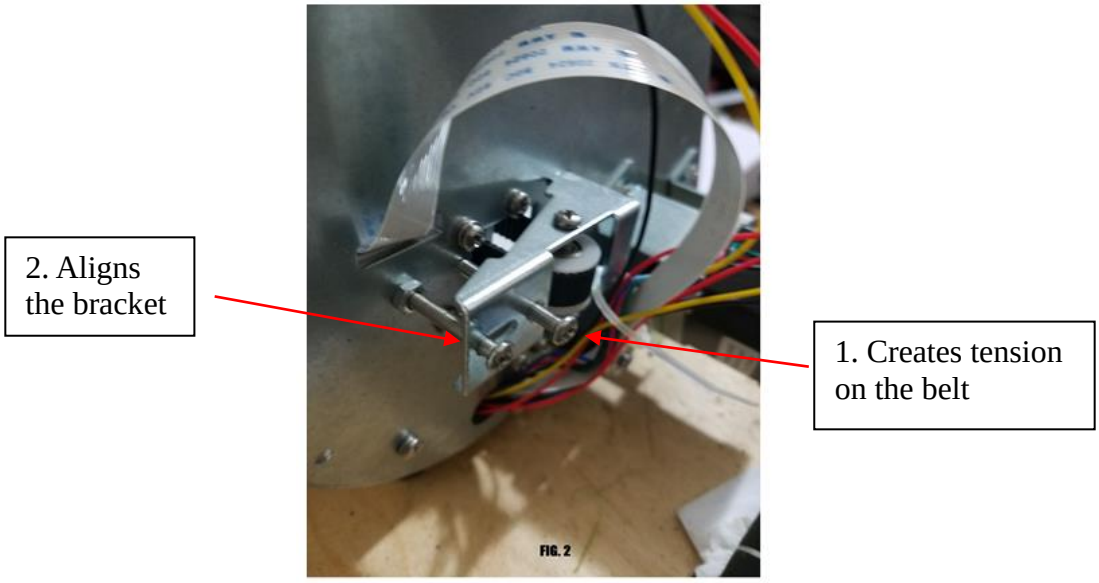
2) Weed the HTV/vinyl inside cuts and determine how far from the pinch wheels the cuts start to fail or improve.

3) The Gantry (the cutter heads travel on it) is made from extruded aluminum and a measurement in a minimum of 3 places from the floor to the underside of the Gantry is needed. I used my Starret telescopic gage part No. 229B and a Brown & Sharpe Dial caliper to obtain the right, center, and left heights which were compared to the cutting error on the sample.

4) The measurements & errors should correlate and establish which side is higher resulting in poor cutting:



5) Very important to carefully measure the extrusion to the floor. Ready to proceed to an adjustment? Disassemble the Force per instructions for Raspberry Pi upgrade. Additionally, remove the left cover. This hardware is non-magnetic stainless so a magnet tray will only work to keep the screws safe(ish).
6) I decided after studying the design of this machine that the adjustments would have to be done without moving the stepper motors avoiding additional alignment issues. Since I'm only working on the left side to adjust, I have the Raspberry Pi still hooked up.
7) Looking at Fig. 2 is an idler wheel for the X axis with 2 screws, 1st creates tension on the belt, the 2nd with nut aligns the bracket:



8) BEFORE loosening the screw: (A) Check the belt tension with the carriage all the way to the right and halfway press to feel how much tension is there. (B) Measure the distance from the head of alignment screw to the nut (just in case).

9) Now remove 1st tension screw and use 7mm wrench to remove 2nd screw and carefully move to access the 3 screws holding the Gantry to the side.

10) Now with the Gantry loose, a stop block created to set the height of the Gantry to floor relationship is used. I used Delrin round stock faced on a lathe to re-establish my Gantry height based on my measurements.

11) Loosen the 3 screws and start with the right side and test the fit from right, center, and left. Keep in mind the carriage will move while doing this adjustment. Once a height is set, carefully tighten the 3 screws (keep in mind steel screws to aluminum, don't overdo it and strip the extrusion) and reassemble the Idler wheel assembly.

12) Since we have the machine apart, another test on the work done. Same test with HTV or vinyl and the small rectangles will determine if the alignment was successful. CAREFULLY plug in machine and run test while covers open. If good, reassemble. If not, measure again and realign until satisfactory. Mine is within 0.0015 which is much more than I started with.

This is a bare bones guide. I repair sewing machines for a living and have a vast life experience behind me. Sandy McCauley of I Love KNK has been a great resource and was instrumental in me tackling this cutting issue. In my humble opinion the KNK Force is more a hands-on machine (like a Linux computer, get your hands dirty and figure it out) unlike the other models out there. I demonstrated the Brother ScanNCut for a shop I worked at and owned a GCC 24LX so my opinions are based on my experiences. If you see the pic with the blue tape, that's for covering the slot right in front of the cutting strip, it keeps rolled goods from getting hung up while moving.

If you have any questions, please contact me: K2@ONEROGUEWAVE.COM