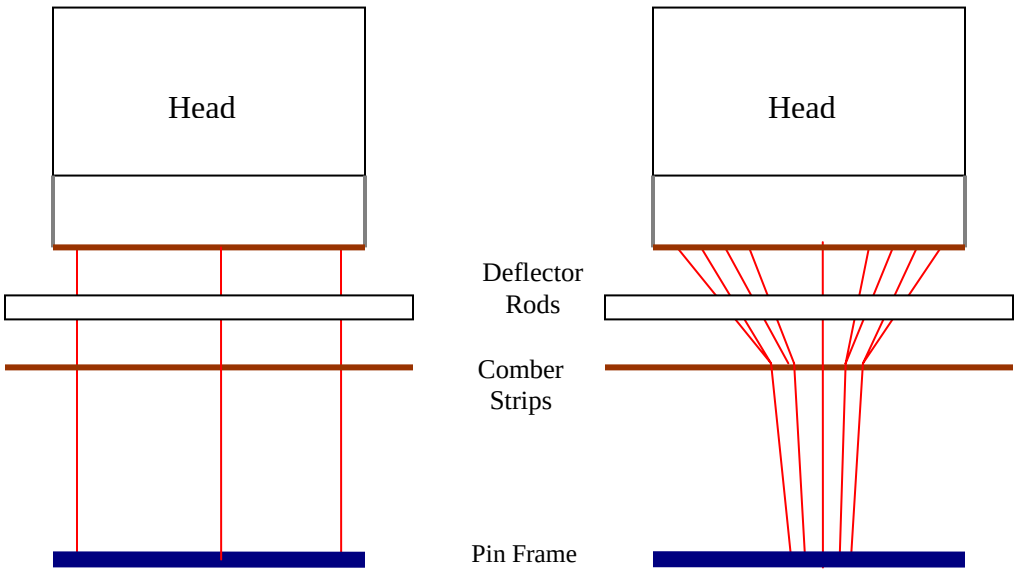
AVL Studio Jacquard Loom
Heddle Tie-Up

Overview

In the process of re-tying a loom for maximum density, you will accomplish the following:

1) Change the heddle anchors, metal slats, comber strips, many of the heddle strings and associated shrink tubing. Currently, 14 heddle anchors are slid onto the metal slats. The new metal slats allow for "hooking" on up to 28 anchors.
2) Re-route the heddle strings through the higher density comber strips. Currently, the comber strips are set at 14 heddle strings per. The new comber strips will allow for 28 heddle strings.
3) Replacement of many heddle strings, as required by the new positioning

PLEASE READ THE ENTIRE PROCEDURE BEFORE ATTEMPTING THIS PROCESS.



Approx. Original Configuration ***Narrow Weaving Configuration***

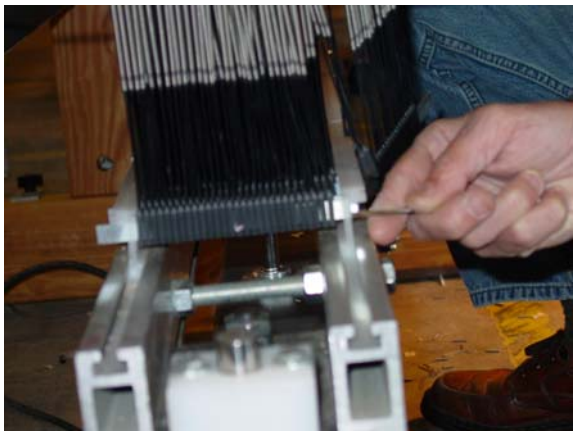
Procedure

1) Remove the deflector rods and raise the Pin Frame (release air pressure) to relieve tension on the heddles. We've found this makes removal of the shrink tube more controllable. Start this step from one side of the loom and move to the other, **skipping rows 11 & 12**. Using a razor blade or other sharp blade, slice upward on the metal heddle edge through approximately half the length of the shrink tube. You want to slice just past the widest part of the hidden structure of the metal heddle. You should now be able to slide the shrink tubing up the heddle string. If not, resume slicing a small amount until you can slide the shrink tubing up. Once you have slid up the shrink tubing for all heddles (**except those on rows 11 & 12**), un-tie the heddle string from the metal heddle by pulling down to un-pinch it. Remove and discard the heat shrink tubing. Slide a new heat shrink tube segment onto each metal heddle.

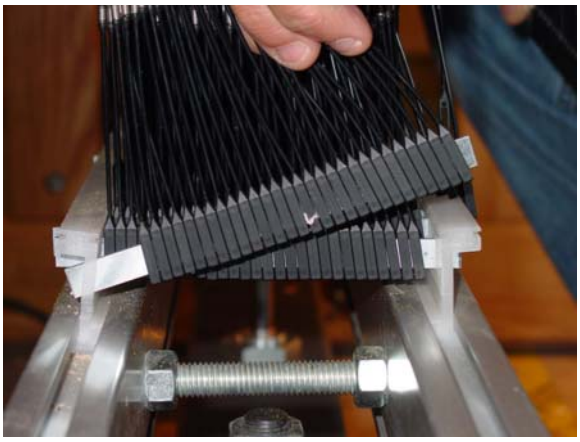
PLEASE OBSERVE: The heddle "tie-up" is a simple pinching of the string at the top of the metal heddle wire. The pinch secures the position of the heddle string, and then heat shrink tubing is used to provide a more secure finish. We can loan you a heat gun for this application, but they are quite inexpensive and it would be less expensive for you to pick one up at your local hardware store.

2) Remove the metal slats rows 1-10 and 12-24 from the pin frame. Slat **row 11** should be in the pin frame position just to the left of center. If it is not, please note the actual position and call me to verify the next step. **This position is important because Row 11 is your heddle height guide.**

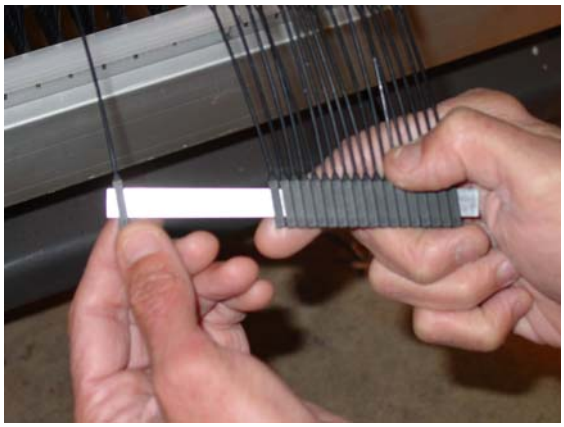
Old Pin Frame Spacing



Removing Metal Slat from the Pin Frame #1



Removing Metal Slat from Pin Frame #2



Removing the Anchors from the Metal Slat

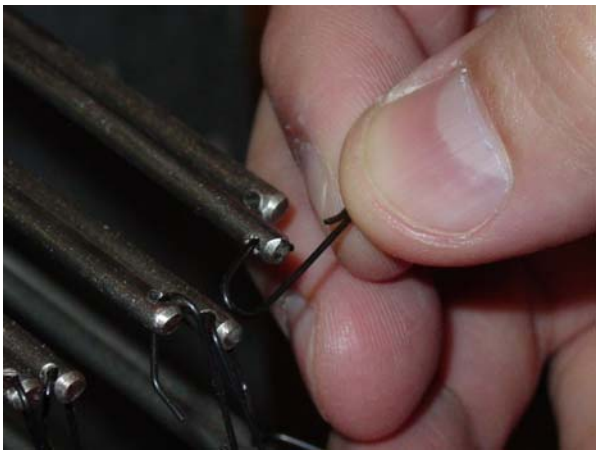
PLEASE NOTE: The 14th heddle height in this configuration (rear most) becomes the guide for the 28th heddle height with the new configuration. This means that you average the position of each of the heights from heddles 2-27 when tying up each row.

For the next few steps we are referring to rows 1-10 and 13-24. **Rows 11 & 12** will be addressed last – so at this time, please suspend row 12 out of the way to ensure it is not confused with the others.

3) Separate the plastic anchors from the metal slats. Unscrew the plastic anchors from the heddle springs. Install the new anchors onto each heddle spring, then hook the anchors to the new metal slats. Row 1 now becomes the last 14 behind row 2's 14 anchors, etc. You may want to secure the anchors to

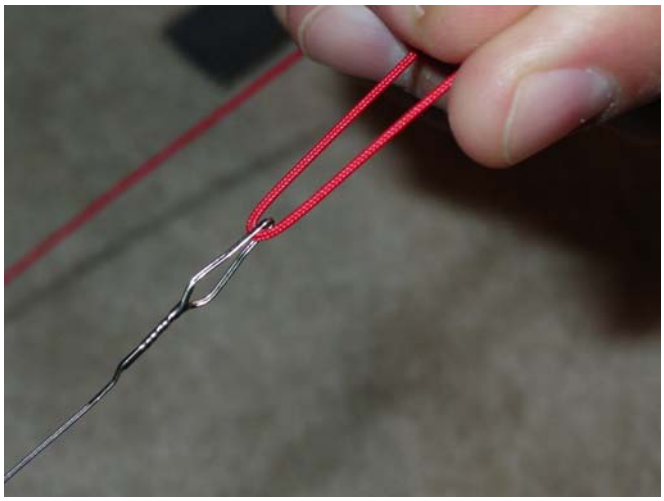
the metal slats with a rubber band or small string to keep them together until your have achieve the final configuration.

4) For the next step you may want to drop the comber board, which is secured to the head via 4 screws. This will grant easier access to the heddle string hooks and make the process much faster. Un-hook the heddle string hooks from the cylinder pins, except for **rows 11 & 12**. Remove the heddle strings from the comber board and re-thread with the new strings. Re-hook the heddle string hooks to the cylinder pins and re-attach the comber board to the head if it was removed.

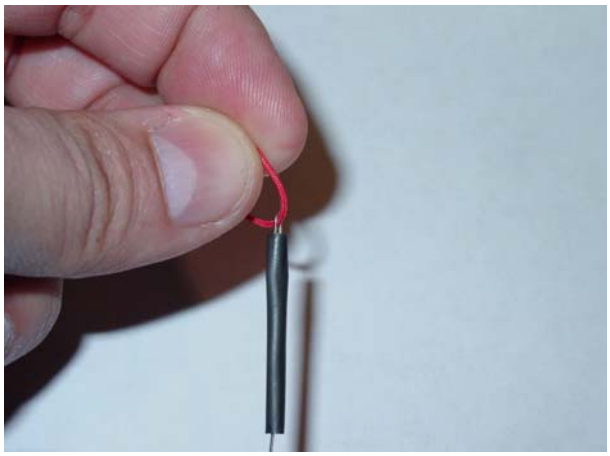


Unhooking the Heddle Strings

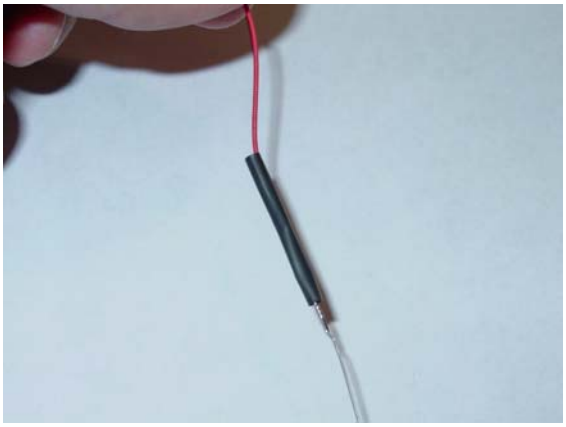
5) Thread the new 28-hole comber strip with the heddle strings. These are threaded the same as with the metal slats where row 9 became the last 14 hooks and row 10 became the front 14 hooks on the new slat. Insert the comber strip in the aluminum channel to secure it. Insert the metal slat into the pin frame immediately to the left of **row 11**. Drop the pin frame to apply tension. Starting with the first hook, thread the heddle string onto the metal heddle and "pinch" it once the heddle height is the same as with hook 1 on **row 11**. To pinch it, you simply pull up on the loose end of the string until it reaches the pinch point in the metal heddle. Cut the remaining loose string leaving approximately ½ inch. Next, follow the same process securing hook 28 matching the heddle height with that of hook 14 on **row 11**. Proceed to fill in the remaining 26 hooks approximating the slope of the heddle heights descending from front to back. Slide the shrink tube up over each heddle/heddle string until its positioning approximates the same coverage as seen on **row 11**. Unhook the **row 11** metal slat from the pin frame and stow it away from the action for now. Being careful not to melt the heddle cord, use the heat gun to shrink the shrink tubing in approximation to its appearance on row 11. Note: An effective technique requires fast passes with the heat gun on both sides allowing time for the heddle strings to cool. Repeat this process moving to the left until you have completed row 1.



Tying/Cinching the Heddle Strings



Securing with Shrink Tubing



Final Look Before Shrinking Tubing

6) Re-attach row 5. Prepare **rows 11 & 12** as you did with the other heddles for the new metal slat, new heddle strings, and the new comber strip. Tie-up rows 11 & 12 (now row 6) as done previously. Repeat this process moving to the right until you have completed row 12.

7) Raise the pin frame and install all the metal slats. Drop the pin frame and you are now ready to weave.

AVL Studio Jacquard Loom
AVL Valve/Cylinder Design
Hook Troubleshooting

There are some primary concerns when a hook on an AVL cylinder bank begins to slow lift or drop, or does not lift or drop. The following are listed in order of least complex to most complex to accomplish:

1) Verify that the hook was intended to be lifted in the design. This is often overlooked due to the high count of hooks in the pattern.
2) Verify that the pin frame is in the down position. A lack of tension on the heddle springs will not allow proper movement and reaction of the system.
3) Verify that the heddles are not sticking on one another. Strumming the heddles will often separate them.
4) Verify that none of the heddle strings overlap on the deflector rods. This added friction can cause poor performance.
5) Either raise the pin frame or unhook the heddle string. Turn the cylinder pin in both directions while pistoning the pin its full extension and retraction approximately 10 cycles. This process re-spreads lubricant within the cylinder and is considered an occasional maintenance activity. All of the cylinders would benefit from this activity every three months or as required.
6) If the hook is still slow in action, the most likely cause is the valve. These are replaceable items. If you find that you are having frequent valve failures, you might consider a fan cooling system add-on for your AVL Jacquard head. This is an upgrade that was not originally offered on these looms, but has proven to greatly extend the life of the valves. To replace the valve, turn off the air supply to the head. Gain access to the problematic valve and remove the 2 screws holding it to the valve manifold. Gaining access may require the removal of the head cooling fan, sheet metal and possibly even the module. Replace the valve with a new one, being very careful to only tighten the retaining screws to a finger tight condition. Over tightening may strip the plastic manifold necessitating R&R of the manifold. Reverse steps to return to a working loom.
7) If the hook is activated but will not rise or will not drop, unplug the data cable and plug in a nearby one with its hooks activated. If the cylinder rises properly, the issue is either with the data cable, the ribbon cable in the control box or on the control board. Perform similar activities troubleshooting back until you have isolated the faulty item and replace it. If the hook still does not rise, the fault is in the valve/cylinder module. This can be replaced as a whole unit or the unit may be repaired. As with step 6, a faulty valve is often a likely cause. Replace the valve and check if the issue is resolved. If not, the next most likely causes in order are the valve wiring, the cylinder, and then the printed circuit board (PCB). The valve wiring and the PCB require soldering knowledge to repair, or, can be sent to AVL for repair. If the cylinder is at fault, it is likely a lubrication issue that can be simply resolved by opening the cylinder module, applying the proper AVL lubricant into the cylinder, and using the cylinder to smear the lubricant around the cylinder walls and onto the seal.

Many replacement parts are available from AVL for your AVL Jacquard head, including valve/cylinder modules, valve modules, cylinder modules, valves and various piece parts. Call AVL for prices at 800-626-9615 or +1.530.893.4915. AVL offers expert repair service at AVL or at your location. Repair services at AVL are $80/hour and provide the most capability of diagnostic and repair. On-site services are $395/day + travel expenses.