

EXTENSION BED

INSTRUCTIONS

Soon after designing the Hand Mill I started making special long beds to make one-piece rods up to 7' 3" in length. They worked but were difficult to process in our shop, a challenge to transport to be chrome plated without damage, and were difficult to set up so I quit manufacturing them. There has been continued interest in longer one-piece rods both for fly fishing and for bait casting rods. Therefore, I decided to see if there was a simple solution to making longer rods on the Hand Mill. The extension bed solves the problem of making one-piece rods up to 7' 6", or slightly longer, in length.

To cut one-piece strips you will use your butt-finishing anvil and tip-finishing anvil. The preliminary cutting on the tip portion of your strips and the rough butt cutting is done with the butt-finishing anvil. Then the tip-finishing anvil is attached. The butt finishing and the tip portion of the strip is finished on it. As you can see cutting a one-piece strip requires using two different anvils and switching the strip back and forth between the two once. This is similar to cutting regular tip and butt strips only it is done on a single strip.

The extension bed unit consists of a 36" chrome plated steel bed similar to the adjustable bed, a short anvil for attaching the bamboo strips with butt strip screws, instructions, and a screw(s) to fasten the extension bed onto the Hand Mill base. The short anvil to attach the strip is held on with three 1" by 8-32 cap head screws. A regular hex wrench is provided to tighten the screws. You are screwing into brass inserts melted into the plastic so don't use excessive force when screwing in the anvil screws.



Mounted Extension Bed
(photo 1)

On the newer Hand Mills the extension bed bolts onto the base using two 1 1/4" by 1/4-20 cap head screws. If you have one of the older units there are two ways to attach the extension. The easiest way, and one that works perfectly well, is

for you to bolt it on with the single 2 1/4" by 1/4-20 cap head screw. This single screw goes through the extension bed in the largest hole on the left end, through the right end base hole, through the right end aluminum angle hole, and is fastened tightly with a nut over a washer (photo 1). When installing the extension make sure it's in alignment with the adjustable bed since the plane must go over it during cutting. Since the plane doesn't run down the extension bed there is very

little pressure on the extension and even though it is only held with one bolt that's enough to securely hold it. For who have an old style base and would prefer to hold the extension with two screws I will provide at a modest price a transfer punch, slightly oversize drill bit, 1/4-20 tap, and a tap handle to tap a second hole into the base. This tapping kit doesn't come with the extension and must be ordered separately. When you purchase an extension bed I will send you the correct bolt(s) to fasten it to your bed.

Strip Cutting

Before you begin cutting your rod strips it's important to have the entire rod taper at 5" intervals. When you make your transition between cutting the tip and butt portions you must know what each station height is in order to properly set the taper in the transition area.

Generally the transition between two-piece rods at the ferrule is fairly even if you take the drop across the ferrule into account. Therefore, you should be able to calculate the entire taper based on two-piece measurements with a minimum of adjustment.

Another option would be to use the Web Interface to the Hexrod program. This program also has an archive of tapers or you can input your own and get readouts at different intervals. This program can be found at the following URL: <http://www.uwm.edu/~stetzer/hexrod.html>

One-piece strips become very fragile when they are near their finished size. It's important to be careful in all of your operations to make sure they aren't damaged during the planing process. Be careful when removing or returning the plane to the base.

I suggest that you go through the entire cutting process only tapering one or two strips to make sure you understand the setup and cutting sequences and that you get the results that you want. We have cut strips using the extension bed and the strips came out perfectly with the correct taper along their entire length.

I am going to give an example of cutting strips for a one-piece rod that is 6' long when finished. I'm a strong advocate of using plenty of bamboo at the tip and butt of a rod. Therefore, I think that you should have 4" extra length at the tip and 5" at the butt of the sections while cutting and gluing. Using this suggestion, a 6 foot rod measures $72" + 4" + 5" + 2"$ for hold down = 83" long for the strips. If you are making the longest rod possible on the extension you could reduce the extra lengths to accommodate the longer strips. There are rod length numbers engraving on the extension bed but they are only rough guidelines for rod length.

The following is a description as to how to lay out the extension bed for a 6' rod using a tape measure and based on my suggestions. Start with the end of the tape 4" past station #12 towards station #13 and extend the tape most of the way down

the extension. If working by yourself it is easiest to tape the tape measure onto the anvil in a couple of places. The end of the rod will be at 76" (4" plus 72") plus the extra 5" at the butt makes it 81" plus the 2" for the hold down screw. Hold the short piece of anvil on the extension with one of the 4-40 screw holes at the 82" mark on the tape measure. If the anvil won't fit on exactly at this point move the anvil to the next set of holes on the right and install it. Whatever the length is to the 4-40 screw hole plus 1" for the hold down screw would be the strip length and would be, in this case, somewhat over 83".

Strip length estimate based on rod length, plus 4" at tip, plus 5" at butt, and plus 2" at butt of strip for hold down screw.

6 foot rod-83"

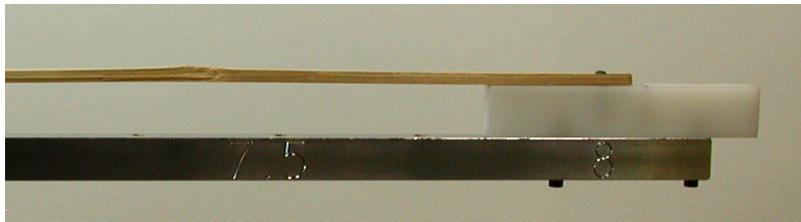
6 1/2 foot rod-89"

7 foot rod-95"

7 1/2 foot rod-101"

In addition to determining the correct strip length you should also determine the butt width of your strip so when you split out your strips they are sufficiently wide.

In the instructions I talk about the butt and the tip but what I am referencing is the butt and tip portion of the bamboo strip.



Bamboo Mounted on Extension Bed
(photo 2)

Before you start any strip layout or cutting make sure your butt finishing anvil is installed.

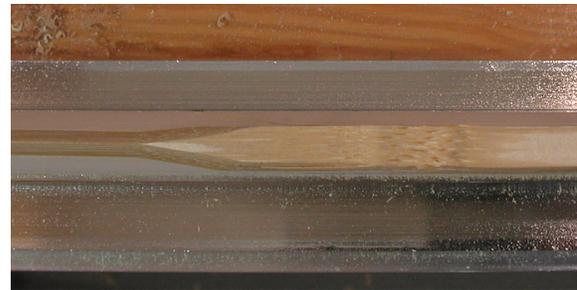
Once you have your strips split out of the culm, the nodes mismatched, the hole drilled for a butt 4-40 screw,

and the node work done you are ready to lay out how you will locate the strips for cutting. **Keep in mind that you want the final cutting to be done at the end of the tip anvil where it is narrowest just like any other tip.** For this example the tip of the strip will extend 4" past the end, or tip top point, of the finished rod. Therefore, the tip top will be placed on the rod where station #12 is on the Hand Mill bed. On your strip, which will be at least 83", mark a spot 4" down from the tip of the strip. Put the strip on the anvil with the 4" mark on station #12 and since it is so long tape the strip onto the anvil in two places. This will leave the butt of the strip hanging over the extension. The short anvil section should already be mounted so that one of the hold down screw inserts is close to the hole in your bamboo. Fasten the strip with a butt screw. The strip may look odd because between your short anvil and your regular anvil it will be hanging in the air (photo 2). However, this won't affect the cutting or accuracy at all. If your tip top mark isn't exactly over station #12 it should be very close. Measure 72" from this mark and that is the butt of your finished rod.

The next step is to set your butt finishing anvil to the correct taper starting at station #1 and continuing to station #13. Since your rod taper is longer than the adjustable bed the top portion of your taper won't be set on the adjustable bed. This isn't a concern because you are only rough cutting the tip and butt portion of your strip. Station #2 should be the actual start of the rod taper with station #1 at the +5" mark as I suggest with all of my taper calculations. You will rough cut the tip and butt of your strips on this anvil. The taper starting at the butt should be close enough to the finished tip taper that you can rough it out and still have plenty of material to properly taper the tip later. Install your plane stop in hole "B".

Before cutting the strip you must determine the width of the anvil tip and how far down you can cut the strip before cutting into your butt finishing anvil. **You must not cut the tip portion of your strip to a finished size on the butt finishing anvil or you will damage it by cutting it too narrow.**

Once you have established how far down you can safely cut the tip strip portion of your strip you can mount your strip. Begin cutting near the tip just as you would with your regular planing and gradually cut your strip down until the plane is against the stop. You will then continue to plane until you are to your predetermined cutting depth. This will leave a severe drop exactly like where you start cutting a regular strip that is held down with a screw (photo 3). This will be your transition point between the tip and butt portion of the rod. Continue to cut all of your strips to this rough size.



Narrow Cut at Transition
(photo 3)

The next stage is to cut the rough portion of the butt on the butt finishing anvil. Eventually the butt will be finished on the tip finishing anvil. The reason for this is to make sure that you don't cut into the butt finishing anvil and make it too narrow. The butt of the tip finishing anvil will provide enough support to finish cut your butt strips. Mount your strip at station #B and observe where the transition point is on the adjustable bed. It should be between stations #7 & #8. Naturally, this is where the transition between cutting the butt and tip portions of your strip will be located. Mark on your adjustable bed with a felt tip pen where this transition point is located.

Rough cut the butt of your strips stopping just past the transition point. In rough cutting the butt of the strips leave them at least .030" above your finished size to make sure you have enough bamboo for final tapering. During the butt rough cutting you will most likely cut into the tip portion of the strip above the transition point but you want to keep it to a minimum.

Once you are through rough cutting you are ready to finish taper your strips. Remove the butt finishing anvil and install the tip finishing anvil.

For rough cutting, the tip portion was cut first and the butt second whereas with finish cutting the butt is done first and the tip portion second.

The first step is to set your tip finishing anvil to the correct taper starting at station #2 and continuing to station #7. Station #3 should be the actual start of the rod taper at the butt with station #2 at the +5" mark as I suggest with all of my taper calculations. Stations #0 and #1 will be pulled tight against the base and the plane stop will be at "B".

You will now want to adjust the anvil for the tip portion below the height at the transition point so you are not cutting significantly into the tip portion of your strip as you cut the butt. Since the transition is between stations #7 & #8 drop station #8 down .015". Go up the anvil at stations #9 through #13 and loosen all of the push/pull screws. Drop stations #9 & #10 down another .015". Set stations #11 through #13 at the same height as station #10. When you cut your strip you will cut some material off the tip portion but not a substantial amount.

Since you will be finish cutting your strips on the tip anvil you may have trouble securing the strip using a tip screw. If this is the case, just drill a smaller tip screw hole towards the butt of the strip.

Start cutting your butt near station #2 and continue cutting it until you are at your correct size. The plane stop should be in "B". When you have cut to the correct depth at station #2 the butt will have the correct taper through station #7. Since you lowered the adjustable bed past station #7 the tip will still need to be tapered in the next step. During the butt cutting process you may want to tape the tip onto the anvil to keep it in alignment and out of the way. Continue cutting all of your strips to the finish butt size.

You are now ready to set the taper for the tip. Since your strip is longer than the anvil, station #7 on the finish butt will now become station #2 on the finish tip. Stations #0 through #1 should still be flat against the base. The reason for doing this is so that you won't cut the butt of your strips changing the taper you have already cut. Set your taper starting at station #2 through #13. Install the plane stop in "A". You are now ready to start tapering the tip portion of your strip.

Attach your strip to the short section of anvil that should already be mounted to your extension bed. Your transition point on the strip should now be very close to station #2. As you start to cut the tip portion of your strip you will have to start out near the tip in order to make cuts that are a reasonable depth. When you are cutting the full length of the strip with your plane against the stop the transition between the butt and tip portion will automatically be cut. Since the strip already has the correct butt taper and height you will automatically blend the two together and shouldn't be able to notice any change in the taper. Finish cutting all of your tip strips.

Since this is a new product if you have any feedback on the instructions or the extension bed use I would appreciate hearing your comments.