

## A Personal Approach to Pen Finishing

By: Gary C. Webster, Sr.

As many turners are involved with making pens and other related items on the lathe, there are many preferences in regards to types of finishes and the methods of application thereof. I would like to briefly share some of my own basic material preparations and finish applications.

There are several things I consider when making and finishing my pens: 1. The environment the pen will endure; 2. The type of material used as pen barrels; 3. The speed of production; 4. Price; and 5. The degree of impression I need to make on someone! First of all, no finish will last forever! All finishes will wear and the buyer of such should be made aware of it! A nice hand-made pen will take a beating in a purse or a construction setting just as much as a store-bought one! Some finishes may last a little longer than others. Typically, a pen in the hand of a teacher or an accountant will last much longer.

Preparation is a key to success. Initially, smooth turning is a big plus! This in mind, I can usually start with a 320 grit on medium density wood. On most woods, I rarely sand higher than 1200 grit; some a little less, depending on the hardness and texture of the grain. Some wood with open grain may require an application of CA glue to fill the valleys. (one or two coats, then sanded with 400 grit and up). I will saturate soft woods with CA glue for hardening purposes, followed by the normal sequence of sanding. (I prefer to keep my mini lathe set at 1800 rpm for turning, sanding and finishing, avoiding belt changes. Higher rpms would be acceptable for turning and sanding, but would cause excessive heat buildup during polish use, resulting in a poor and blemished finish).

Many finishes are on the market that will produce a nice finish with a varying degree of longevity: oils, lacquer based, epoxies, CA glue and friction polishes. Oils, lacquers and epoxies can involve lengthy applications and cut into production time. As most of my pens wind up in the hands of professionals, I have good results with friction polish. It is quick to apply and will give a nice gloss with a fairly good track record of endurance. (once again, in the “soft environment”). This speeds production. I have made approximately a thousand pens in the last 3 years as of this printing, with only one failure/finish complaint I am aware of! Using friction polish is one reason I rarely use over 1200 grit, as the polish may reduce the effectiveness of the higher grits. (the key word here is “friction”). My personal preference is “Shellawax”, shellac based polish from Australia. I have found that some oily woods, such as Cocobolo, may be finished with just a good sanding, followed by buffing with a soft kraft-type paper while still spinning on the lathe. This has a natural look and will be maintained by the natural oils from the user’s hands. (just a suggestion!) Most woods I will top coat with Renaissance Wax, once assembled. I have a tendency to refrain from using CA glue as a total finish. My concerns are of a safety issue. Obviously, the inhalation of the fumes poses a health threat, not to mention the glue being slung off the spinning wood. I have spots on my safety glasses to remind me of that! Application can be a little tricky, as well!

Barrels using acrylics and other plastics require a more lengthy process. Once again, good initial turning is a must, without overheating the material! I may start by touching up the barrel continuity with 320 grit, dry. I progress to 400, dry. With 600 grit, I will begin lubricating with water and continue upward with the finer grits all the way to 12,000. (cover lathe bed to protect from moisture to avoid rust!) This is usually sufficient, but a nice plastic polish will remove any minute swirls/scratches.

In summary, I am not declaring these procedures are the only ones others should use. My needs may differ from others. These are what work best for me, providing quick production and cost effectiveness.

## PEN ANATOMY: CHART ONE



Kit Selection: Many styles are available. How much do you want to spend or whom do you want to impress?



Exterior Selection: Barrels can be made from a variety of materials: ex: exotic woods, laminates & acrylics.



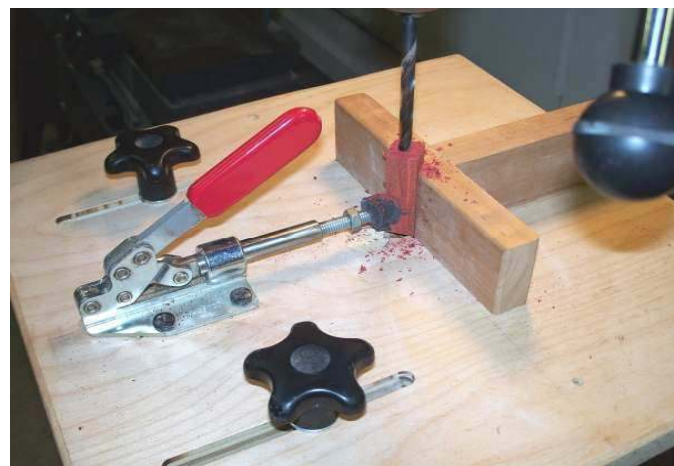
Sizing the blanks: Size & cut the blanks as dictated by pen kit tubes. Allow extra in case of drilling blow out. (1/16" extra on each end is sufficient)



Preparing the tubes for gluing: Sand tube with 80 grit sandpaper. Lightly chucking tube in drill makes it easier!



Drill bit selection: This also is determine by pen kit tubes. Brad point bits cut cleaner, but bullet points seem to wander less. Density and grain of barrel material may influence your decision.



Drilling the barrel blanks: Use a suitable jig that will hold blank steady and perpendicular to drill bit. (Shown: home-made jig. Self-centering commercial units are available for purchase at a nominal price and ease the overall operation).

## PEN ANATOMY: CHART TWO



Glue the tubes into the barrels: Your choice, but polyurethane expands and fills the voids inside.



Allow glue to cure properly: Place blanks on wax paper to prevent bonding to work bench! Match the ends!



Squaring the blank ends. This can be accomplished by using a sander with a suitable homemade adjustable jig that will keep pen tube perpendicular to the disc.



Squaring can also be accomplished by using commercially available barrel trimmers. Cutter diameter must not exceed that of barrel blank or material blowout may occur.



MOUNTING THE BLANKS ONTO THE LATHE: Slide appropriate point bushing onto mandrel first toward headstock. Mount bottom barrel, center bushings, top barrel and then cap bushing. Be sure to orientate grain of blanks for a matching appearance. Loosely place knurled nut onto mandrel. Bring tailstock up to opposite end of mandrel and tighten center just enough to prevent slippage, being careful not to over tighten and bow mandrel. Do likewise with the knurled nut. Some mandrels may require the blanks to be repositioned to obtain a really good balance, thus helping to prevent turning run-out.

## PEN ANATOMY: CHART THREE

**TURNING THE PEN BLANKS:** Each pen kit will come with instructions on turning the barrels of the pen. Different kits require their specific type of bushings. The bushings will serve as a guide for proper removal of material during turning. Although the overall shape and style may be varied by taste, keep in mind that the ends of the barrels must be in very close proximity of the bushing diameters. This will facilitate the proper fitting of the pen components once the pen is assembled. Also keep in mind that the upper barrel must be turned down enough so that the clip will have proper parallel clearance and appearance once pressed into place. It is best to mount the blanks so that the tip end of the pen will be at the headstock end of the lathe. This will be the truest running point of the lathe (less chance of eccentricity) and will help ensure a really good fit at the part of the pen that has the most contact with the writer's fingers, and therefore the most noticeable if there is a flaw in production. The center band area would be the second most noticeable part and the cap end the least. It would be wise to use a digital caliper and check the diameter of the pen components of the kit you are using and then check the diameter of the bushings for the corresponding kit. Bushings wear and occasionally need replacing. If you are using worn bushings and turn the blanks accordingly, then the pen barrels and components will fit poorly once assembled. Once a barrel is overturned, it is pretty much useless. When the turning process is nearing completion, check the barrels near the ends with the caliper. Leave enough material for sanding to obtain a smooth finish. Some materials may require more material to be left due to a greater degree of sanding that may be needed. Coarse-grained woods such as Lacewood fit this category. Few tools are needed for pen turning. A ½ inch spindle gouge and a ¾ round scraper would suffice. A small parting tool would be needed to cut tenons on some upper barrels to meet center band requirements.

**SANDING THE BARRELS:** Methods will vary by the individual and will also differ due to the type of material being used. (tight or coarse grain; hardness of the material; oiliness; and most important of all-the degree of shine desired). Most woods can be started with 180 or 220 grit, progressing up to 800. 1200, 1500 or 2000 can make a difference on some woods and definitely add to the overall appearance. Corian®-type material can usually suffice with 800 grit and be polished up with a strip from a soft paper bag. Acrylics and other types of plastic will require a much lengthier process, depending on how well the barrel is initially turned. 320 or 400 grit can usually start the process, progressing up to 12,000 grit! Lubricate your sanding with water, usually starting around 600 grit and every grit thereafter. Protect lathe bed from moisture to avoid rust. A good plastic polish can usually remove any extremely fine markings.

**FINISHING THE BARRELS:** Although there are varying methods of finishing, it is primarily done with the barrels still on the lathe. Just as with sanding methods, there are just as many, if not more, ways to apply finish to a pen. Some things to consider before applying a finish: will it be a gift or a sale item?; you may put extra time into it if it is a gift for someone special; how fast do you need to produce your product if it is for sale?; who will be the recipient of this item, a school teacher or a construction foreman?; what is the degree of finish you desire, shine or durability?; what type of material did you turn in the first place? These are just some of the things that may influence your decision in regards to applying a finish. Some woods may be soft and require a pre-treatment of CA glue for hardening. Some woods may be naturally oily and require less of a finish than others. Some may be oily enough that they require no finish other than an extremely fine sanding. Some finishes may wear faster than others, but they will all eventually wear to some degree. Hand-made pens will be just as susceptible to damage as store bought ones. A pen in a purse will take a beating no matter where it came from!!! Traditionally, a good quality friction polish with a shellac base will result in a good finish that will wear well in normal use. This finish is easy to apply. Merely apply a small amount to a soft paper towel and first rub well into grain end to end, then turn lathe on and with it spinning at about 1600 rpm, buff, keeping the wet part of the towel on the barrel until warmth is felt from the friction and a shine appears. Move the towel quickly back and forth to bring about a more consistent appearance in the finish. Allow to dry just a few moments before removal from lathe. A paper towel is preferred over a cloth, as it will break away if caught and help prevent operator from being pulled into moving parts of lathe.

## PEN ANATOMY: CHART FOUR

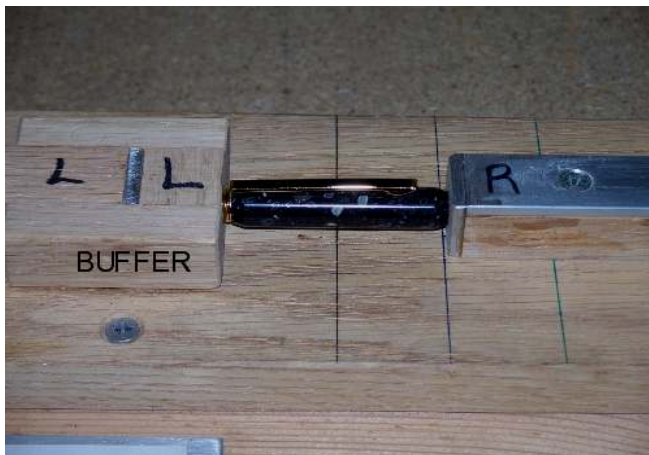
### PEN ASSEMBLY:



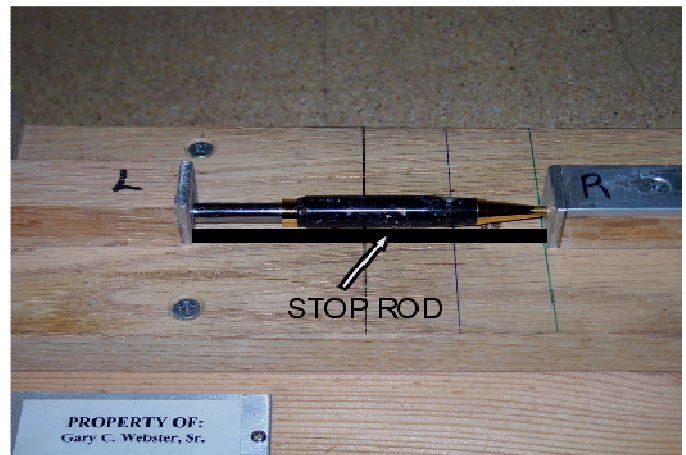
Assembly will require a press of some type. Shown here: a homemade version. Wood components should be hardwood. Sufficient for the occasional pen maker.



Shown here: a commercially available pen press. Very dependable & consistent for the production turner.



Some pens require pressing the cap/clip assembly into the upper barrel. Use a buffer material to protect the cap from damage during the process. Oak buffer shown here.



Many pens require the transmission mechanism to be pressed into the lower barrel. Over insertion of mechanism will prevent proper retraction of writing point. A properly sized stop rod placed between compression points of press will ensure a good fit.