How to Turn a Pen
Comprehensive Instructions

Congratulations! The pen turning bug must have bitten you if you want to read more about the wonderful world of pen turning! Welcome to, at the least, a fulfilling hobby for you and possibly even a new business venture. You are in for a treat learning to design, turn, and spend hours creating beautiful writing pens. You'll also find your pens (and you!) will be the center of attention as family, friends, and colleagues ask to see your latest creations. Birthdays or holidays coming? Your pens will serve as instant gifts for just about anyone in your life. And be ready to make a few pen sales because it's generally guaranteed someone will ask to purchase a pen from you in no time! So let's get started with some of the details and basic information you'll need to succeed at pen turning.

THE BASICS

For our discussion here, we assume that you have a basic understanding of using a band saw, mini-lathe, and drill press—the three essential pieces of equipment you will use making a pen. You will need your choice of turning tools, such as a gouge, a skew, a parting tool for certain pens, or one of WoodTurningz' Easy Wood Tools which doesn't require frequent sharpening. You will need sanding and finishing products which you'll use after turning your pen to give it a velvety smooth feel and glossy, eye-catching finish.

Personal safety should always be your #1 priority when turning pens, bowls, or working with tools and equipment, so be sure you have eye protection and a dust mask for starters. Read all instructions before using any equipment. You may want to purchase a face guard to wear when you begin turning a wood or acrylic pen blank since small pieces of material can fly off during turning as you cut away the blank's squared edges. As further precaution, do not wear long sleeves, jewelry, or loose clothing that might get caught in the mini-lathe. Be sure to keep long hair tied back and away from your work on the lathe.

PEN KITS AND PEN BLANKS

Your pen turning fun begins when you select your pen style and pen blank material. All pen styles have a distinctive weight, feel, and look. As you gain pen turning experience, you'll become more adept at choosing the style and look you want to create. Pen kits are available in various platings, such as 24k gold, platinum, chrome, and titanium, and come in many stylized designs and trims. Some pens have two barrels or tubes while other pens have one barrel. Pen diameter will play a part in your choice as the slimmest pen is 7mm in diameter, a larger Cigar-type pen is 10mm, and a unique lipstick-style pen is as wide as a ½" in diameter. You may also consider the type of refill in the pen, commonly ballpoint or rollerball and sometimes an ink cartridge for a fountain pen.

Once you've selected the pen style and plating finish you like, then add the "wow" factor by choosing a complementary wood or acrylic which will bring your pen to life with color and pattern. Wood blanks are available in a wide range of species, colors, and grain patterns. You can select from a simple hardwood such as cherry, maple, and walnut, to exotic woods such as Bloodwood, Cocobolo, Bocote, and Zebrawood. After sanding and adding a finish to your wood blank, you will be amazed at the natural beauty and depth of color and grain your new pen will possess.

If you are looking for a splash of color, many pen blanks are made of acrylic acetate—a type of plastic—and WoodTurningz exclusively manufactures Inlace Acrylester, also a popular type of acrylic material in over 100 color combinations which polish to a beautiful, high-gloss luster. Also, you may want to try a few

of WoodTurningz' unusual pen blanks made from genuine shredded money, coffee beans, holographic flake, glow stonez, simstone, combz, poly resin. You can even use fordite, antler, horn, stabilized corn cob, laminated wood blanks or hybridz in attractive designs. The sky is just about the limit!

PREPPING YOUR PEN

Before you begin turning your wood or acrylic blanks on the mini-lathe, you have to complete some preparation steps. From your selected pen kit, remove the brass tube(s) so you know how long to cut your pen blank. Lay the brass tube (or tubes for a two-barreled pen) against the blank and measure 1/16" to 1/4" longer than the tube to allow a little extra "working" material while you drill and barrel trim.

CUTTING

Using a band saw, cut the blank(s) where you marked your designated length. With a pencil or marker, draw an "X" corner-to-corner on one end of your blank to indicate the center point of the blank's end. Noting the drill bit size needed for your pen style, insert that drill bit into your drill press. Use a pen vise (which you can purchase from WoodTurningz) that is anchored to your drill press and tighten your pen blank into the vise centered underneath the drill bit.

DRILLING

Use a medium drill speed to drill the blank(s). Raise the bit from the blank every 1/4" to 1/2" to allow the chips to clear from the flutes of the drill bit. Don't force the drill bit; use an even pressure and let the bit do the work. As you drill and get closer to the bottom of the blank, slow up your drilling pressure so you don't blow out the bottom of your blank, particularly when drilling acrylic blanks.

INSERTING THE TUBES

After drilling your blank(s), use a small piece of 80-grit sandpaper and prep your brass tube(s) by sanding the tube's exterior to roughen its surface. Sanding the tube will give your glue a better grip on the inside of your blank as the brass is generally manufactured with an oily, smooth surface. Apply CA glue to your brass tube before inserting the tube into the drilled blank. WoodTurningz sells CA glue in thin, medium, and thick viscosity. The thinner the glue, the quicker it's going to set up. Using medium or thick CA glue will allow you more time to get your tube properly placed. Using thin CA glue is not recommended as its set-up time is seconds, and your glue may dry before your tube is in place.

BARREL TRIMMING

If you have time, allow your glue to dry for at least an hour before barrel trimming your blank. If you need to begin turning quickly, spray the ends of your blank and tube with a glue accelerator to speed the drying time of your glue.

Barrel trimming is an important last step in preparing your pen blank as it "squares up" your pen blank at the ends and readies it for the lathe. Using the WoodTurningz' barrel trimming set, insert the barrel trimmer along with the proper dimension shaft for your tube size into your drill press. Gently pull down and allow the barrel trimming cutting head to cut through your blank material until you see the top edge of the brass tube. Trim until you see the shiny top edge of the tube and that your blank material is completely flush with your tube's end. If even the slightest edge of blank material remains around the top rim of the tube, your pen will not fit together properly when pressed together. Make sure your barrel trimming has created a flat, flush surface with the blank's material and the tube. Repeat this trimming process for each end of the blank.

TURNING AND SANDING YOUR PEN

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With each pen kit, you will receive a set of instructions explaining how to set up the mandrel on your lathe and how to orient your bushings and pen blanks. When turning your pen, you will need a set of bushings specific for the particular pen kit you are turning so you will know the depth of your turning. Set up your mandrel according to your pen kit instructions placing the bushings and pen blank(s) as shown. Hand-tighten the locknut on the mandrel and then lock and tighten the tailstock in place. Do not over-tighten the mandrel set-up as this can warp your mandrel shaft over time and cause your pen blanks to turn out-of-round.

Once you have turned your wood or acrylic to your desired shape with the blank's ends turned down to match the bushing diameters, you can then begin sanding the blank(s). With WoodTurningz' 5-roll sandpaper set, you can use sandpaper in grits of 150, 240, 320, 400, and 600 on wood blanks or change to WoodTurningz' set of Micro-mesh ultra-fine sandpapers in grits of 1500 to 12,000 for acrylic blanks. Slow your mini-lathe as you sand because you will build up heat using faster speeds. As you sand, stop the lathe occasionally to feel the smoothness and texture you are achieving with your sandpaper. Work through the sandpaper grits until your pen barrels are smooth and even to the touch. If the sandpaper does not take out small ridges or high or low spots caused during turning, you may wish to use your gouge or turning tool to make very light cuts to remove these uneven areas. Resume sanding after correcting these spots until you are satisfied with the look and feel of your pen material.

WoodTurningz recommends several finishing products which, when applied to wood, leave a glossy sheen highlighting the natural grains and patterns in the wood. You can use these products for extra durability and a high-build shine in just minutes while the pen is still on your lathe.

You can also use a process using CA glue as the polishing agent which also builds into a high gloss finish. If interested, you can find the detailed instructions for this CA glue process under the *(link)* on this Web site.

If you have turned acrylic pen blanks and have gently sanded the blanks using Micro-mesh ultra-fine sandpapers, you can apply a plastic polish to remove any slight scratches and give a shiny glass finish to your pen. WoodTurningz offers several polishes that are easy to use. Just apply a small amount of polish to your pen blanks with a soft cloth and then use a clean cloth to polish while the lathe is on a slower speed. Repeat the polish process until you have the desired finish you like. Generally two or three times through the process is ample although you can judge this to suit your tastes.

PEN ASSEMBLY

When your pen blanks are turned, sanded, and polished, you are ready to assemble your pen into the finished product! Refer to the pen kit's instruction sheet and lay out your pen parts and blanks as shown in the diagram on the instruction sheet. Carefully identify the pen parts so you are sure you have the parts laid out in the proper order and direction. For example, a "coupler" may have a recessed end facing a certain direction, say, toward the pen cap's end. Or a "clip assembly" may be inserted into the tapered end of the pen's upper blank. Lay out each part according to the instructions before using a pen press to press the parts together.

Note: Once pen parts are pressed together, they have an extremely tight fit and are difficult, if not impossible at times due to potentially damaging the pen, to disassemble. WoodTurningz sells a pen parts disassembly kit for this reason. You may wish to purchase this kit to have the proper tool diameters to tap out pressed-in parts.

BLANK PREPARATION: DRILLING, GLUING, TURNING, and FINISHING

1. When drilling your blanks, if you have trouble with the bottom end of the blank "blowing out" as you drill through the end, here's a suggestion: **Cut your blanks longer than needed** for your tube (more than the custom 1/16" to 1/4"), then drill the blank. Return to the band saw and cut off the excess blank material before gluing in the tube. Barrel trim as usual.

2. Certain acrylic blanks are more transparent than others especially lighter colors or blanks with light colored swirls. When you turn these blanks, you run the risk of having the brass tube show through the pen blank when it's at its finished diameter. You may wish to **paint your brass tubes** white or black depending on your acrylic blank color before gluing them in. We recommend using Rustoleum™ paint.

3. **Sharpen your turning tools frequently** especially with acrylics and hardwoods. As a guideline, sharpening your tool once during a pen turning should be sufficient although some pen turners sharpen their tools more than once when turning one acrylic pen blank.

4. When correctly turning acrylic material, you should **produce cuts of acrylic "ribbons"** that curl away from the blank as the lathe spins. If you seem to be "shredding" or chunking out little pieces of acrylic, sharpen your turning tool again to ensure a clean cut while turning.

5. As you turn your blank to the diameter of the bushing set, you want to turn right up to the bushings but not into the bushings. Over time, however, **bushings do become worn** and may need to be replaced. It's time to replace your bushing set when you literally feel the blank sitting lower than the trim pieces of your pen when assembled.

6. Use **plastic gloves when applying CA glue** to your pen tubes to avoid getting the glue on your fingers and hands. Cover your work area in a kitchen plastic wrap as CA glue will not dry on this plastic film. This will protect your work surface, and your blanks won't stick to the surface as your tubes dry. Always be in a well-ventilated area when using CA glue as it has a powerful odor and may cause throat and eye irritation. Remember to use all safety precautions recommended by the manufacturers.

7. If you choose to use a **CA glue finish on a wood blank**, be cautious of heat build-up with the CA glue, your application rag or cloth, and your lathe speed. This combination can actually be dangerous as it can cause smoke and even fire! Watch how and where you dispose of your polishing cloths when applying the CA glue finish.

8. Acrylics sometimes require just sanding through the Micro-mesh ultra-fine sandpapers, and no plastic finishing polish is necessary. Micro-mesh sanding can be done wet or dry **although wet sanding** works nicely with acrylic materials.

PEN KIT ASSEMBLY

1. As you press on a clip assembly to your pen, place a small scrap piece of plastic underneath the clip so it doesn't scratch your pen barrel.

2. Tiny flaws on a finished pen can be hidden by aligning the pen's clip over the top of the flaw. This works, of course, if the flaw is on the clip-end of the pen barrel.

3. As you press your pen parts together using a pen press, make sure your parts are lined up horizontally. Don't press holding parts at an angle as this may damage the part or put unnecessary pressure on your finished blanks. Fragile pen blank material may crack if too much pressure is applied to a pen part incorrectly in a pen press.

SHOP TALK!

1. Using the correct bushing set with each style of pen is vital to turning the pen blank to its exact size. Keeping track of various bushing sets can be a challenge, so storing them in labeled containers should become a habit for any organized pen turner. Bushings can be stored in small containers. Daily medicine storage boxes are a great way to keep track of different bushing sets.

2. A dust collection system is invaluable for your shop as turning woods or acrylics creates a lot of dust and airborne particles. An industrial dust collection system is ideal; however, the simplest protection is to wear a dust mask while cutting, drilling, turning, or sanding your projects.