

Turning a 7 mm Pen

Objective:

- To learn the techniques for building kit pens
- To further practice careful, detailed turning techniques
- To learn to sand to the finest level of detail

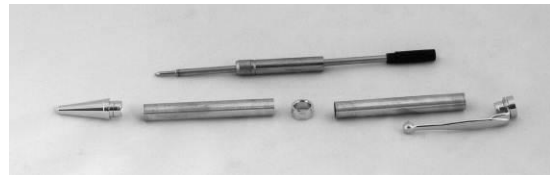


Discussion:

Pen turning requires three separate groups of activities: preparing the blank for turning, turning the pen, and assembling the kit.

There are a number of supply items required:

- Pen blank $\frac{3}{4} \times \frac{3}{4} \times 5$ inches, straight grain hardwood
- 7 mm American Slim pen kit & instruction sheet
- 7 mm brad or bullet point drill bit and drill
- 7 mm pen mill
- Pen mandrel and bushing for 7 mm American Slim pen kit
- Medium thickness Cyanoacrylate glue (& accelerator)
- Fixture for hold blank vertical while drilling
- Pen to mark blank alignment
- Sanding supplies
 - 80-100 grit for roughing brass tubes, 120-600 for sanding finished pen
- Finish
 - Friction polish
 - Cloth to apply polish
- Turning tools
 - Spindle Roughing Gouge
 - ($\frac{3}{8}$ shallow fluted gouge)
 - (Skew chisel)



Part one: Preparing the blank for turning

- Cut blanks to length
 - Measure brass tubes and mark on wood blank
 - Add $\frac{1}{8}$ inch to each length
 - Cross cut blanks squarely
 - Mark mating ends for realignment later
- Insert brass tubes into blanks
 - Rough the surface of each tube with 80-100 grit sand paper

- Coat each tube with medium thickness Cyanoacrylate glue
- Twist the tubes into the wood blanks from the mating (marked) ends
 - Press the tubes slightly below the wood surface
- Allow to dry or add accelerator
- Square blank ends for turning
 - Using a 7 mm pen mill square each end of each blank
 - Assure the blanks are firmly clamped
 - Assure that the brass is exposed and shiny at each end when completed
 - (Do not over cut the ends as the pen length will be affected)

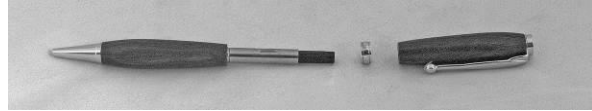
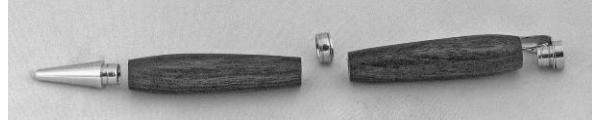
Part two: Turning the pen

- Assemble the blank on the mandrel
 - Place one 7 mm bushing on the mandrel followed by one blank
 - The reference mark should be facing the tail stock
 - Insert a second 7 mm bushing and add the second blank
 - The reference mark to face the head stock (and the other reference mark)
 - Add the third 7 mm bushing and secure in place with the brass end screw.
 - Tighten completely
- Insert mandrel into lathe headstock
 - Clean the lathe's taper and the matching Morris taper on the mandrel
 - Insert into the lathe and bring up the tail stock
 - Tighten the tailstock only enough to engage the live center point into the dimple on the mandrel's end
 - *Over tightening will damage the mandrel and cause the pen to be turned oval*
 - Set lathe speed to 1800 RPM
- Rough turn using the spindle roughing gouge
- Finish turn the pen
 - Reduce dimensions until approaching the diameter of the bushings
 - Leave a small amount of wood proud of the bushing to allow for sanding
 - Sand skipping no grits
 - Keep sand paper moving at all time to minimize circular scratches
 - After each grit, turn lath off and re-sand with the grain
 - Complete sanding with 0000 steel wool
- Apply appropriate finish
 - Friction polishes
 - Use small square of shop cloth or cotton
 - Apply a thin coat allow to dry
 - Increase lathe speeds and burnish until finger get warm
 - Reapply if desired



Part three: Assemble the Pen

- Remove the two blanks from the lathe keeping them in exact order
- Assemble the writing tip
 - Insert the pen tip into the far-left blank end
 - Press into place squarely with pen press or wood-faced vice
 - Insert the twist mechanism into the other end of the same blank
 - Brass end first
 - Press into the blank until the marking band is slightly proud of the blank
 - Test the position by insert the pen refill and twisting to full extension
 - Adjust the fit by repressing the mechanism
 - *(Do not over press as removal is very difficult)*
- Assemble the top section
 - Insert the clip into the cap and press into the far-right blank end
- Complete pen assembly
 - Place decorative center bank over the twist mechanism
 - Press the top portion of the pen into place



Turning Wood Pens

Local Suppliers of pen making parts and accessories

Rockler Woodworking and Hardware

541 Contra Costa Blvd
Pleasant Hill, CA 94523
<http://www.rockler.com/index.cfm>

Mail order only

Packard Woodworks

<http://www.packardwoodworks.com/>
1-800-683-8876

Craft Supplies USA

<http://www.woodturnerscatalog.com/>
1-800-551-8876

Penn State Industries

<http://www.pennstateind.com/>
1-800-377-7297

Pen Making Supplies

<http://www.penmakingsupplies.com/>
1-908-204-0095

Discount kits and blanks

Brea Hardwoods

<http://www.breahardwoods.com/>
1-877-7365487

Woodturningz

http://www.woodturningz.com/Pen_Kits.aspx
1-888-736-5487

Arizona Silhouette

http://www.arizonasilhouette.com/Base_PLate_Wax.htm
1-928-329-9466

Bad Dog Burl Source

<http://www.burlsource.com/burls-pen-blanks.html>
1-413-213-0248

Griffin Exotic Wood

<http://www.exoticwood.biz/>
1-866-518-9663

River Ridge Products

<http://rrpwhite.com/>

1-715-532-3015

Dom-Ex Hardwoods

<http://www.domexhardwoods.com/default.aspx>

1-267-261-0174

Useful accessories

Pen Press for assembly

Live center with hole for mandrel to pass through (Penn State only source)

Special vice grip pliers for holding finished pens tightly (Penn State only source)

Set of fractional and metric drill bits w/ parabolic or brad tip points

Small pipe reamer to clear burrs

Set of drift pins for disassembly (Harbor Freight)

#1 chuck jaws (or long-nosed) for drilling blanks on the lathe

Rack for holding completed blanks before assembly (custom built)

Pen Finishes**Friction Polishes**

Hut Crystal Coat

Shellawax (Liquid, Cream) (Use EEE-Ultra Shine first)

Behlen's Woodturners Polish

PSI Friction Polish (Semi-gloss, Super-Gloss)

Mylands Friction Polish

Mylands Cellulose Sanding Sealer

Mylands High Build Friction Polish

Liberon Finishing Oil

Plastic Polishes

Hut Ultra Gloss Plastic Polish

One-Step Plastic Polish (PSI)

Finishing Wax

Renaissance Wax Polish

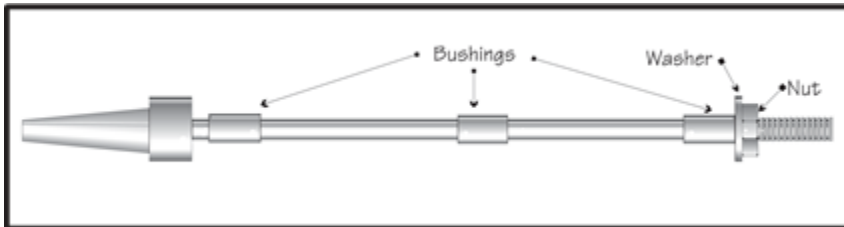
Casting Resins/kits

Tap Plastics

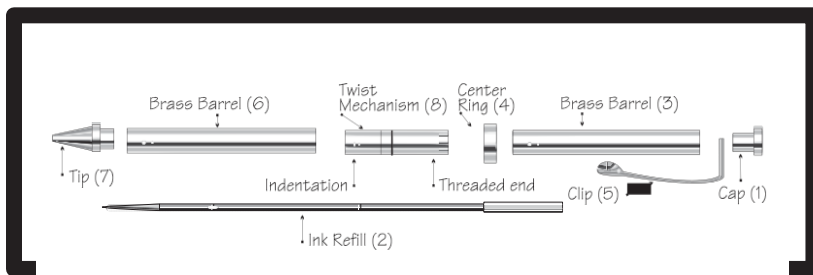
www.bgartforms.com

Pen Kit	Drill bit required
7 mm, American Slim, Slimline	7 mm
Euro Style	7 mm
Patriot, Atlas	3/8
Cigar	10 mm
Classic American	"O"
El Grande	31/64
Sedona	25/64 & 15/32
Triton Rollerball	10.5 mm & 12.5 mm
Wall Street	27/64

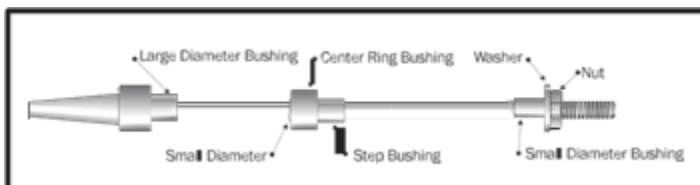
7mm pen layout



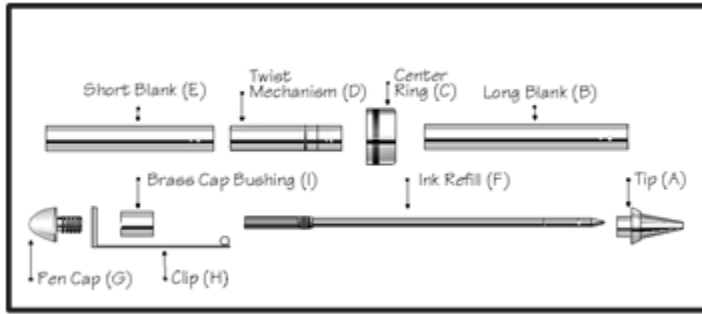
All 7mm pen kits use interchangeable bushings and identical length blanks. Be sure to FIT the twist mechanism to the finished pen by checking the refill tip projection.



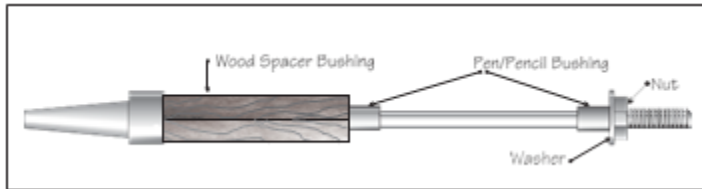
Euro Style layout



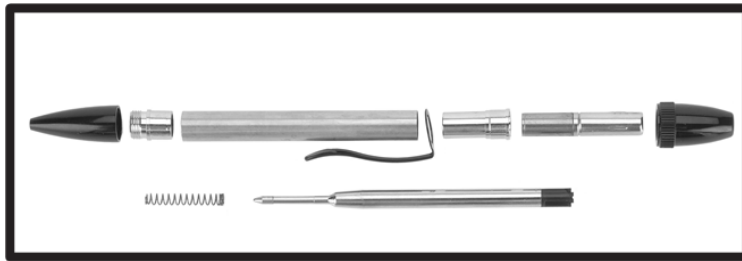
This illustration shows the point of the pen facing to the RIGHT. Note the smallest bushing is the TIP bushing. I cut the tenon about 3/16 long to allow the decorative band to fit over the bottom assembly.



Atlas Pen Layout



The Atlas is shorter and requires a spacer on the mandrel or the use of an adjustable length mandrel. Tip projection is adjusted by pressing retainer into the TOP portion of the tube and checking with the refill.



Some additional handy references

<http://www.kevinsbrady.net/pen.html> A visual reminder of the steps

<http://penmakersguild.com/video/fairfield2.wmv> Russ Fairfield showing how to do a CA finish

A series of articles useful in pen making <http://penmakersguild.com/articles.htm>

You can always Google "Pen Turning"