# IWG News

The Newsletter of the Island Woodturners Guild October 2023

## About the IWG:

The Island Woodturners Guild meets from 1:00 - 4:00 PM on the 4th Saturday of each month (except for July/Aug) at the Central Saanich Senior Citizens' Centre, 1229 Clarke Road, Brentwood Bay, BC.

**Visitors are welcome**.

**Executive Committee**

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**Don Costello**

**Vice President:**
**Don Robinson**

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**Newsletter Editor:**
**John Kilcoyne**

The IWG gratefully acknowledges the support of the following companies:
Artisan Wood to Works
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Industrial Plastics & Paints
Island Blue Print
KMS Tools
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## THE PRESIDENT'S TURN

Happy October!

How did it get to be the end of October already? The weather is telling me it is early September yet the leaves that I am raking up are telling me otherwise.

This past month has been a great one for me. I had the opportunity to do one of my favourite things which is to get out in the workshop with someone and introduce them to woodturning.

My brother and his wife came to town this month and were excited to hear my offer of them taking a piece of seasoned wood and turning a bowl. So much fun watching their expressions change from trepidation, as they put tool to wood for the first time, to the look of pure joy as they found the bevel and were getting nice big curly shavings coming off the tool. The laughter and joy as they pulled the bowl off the lathe and signed their name on the bottom was blissful to me. I love sharing our hobby.

It did not matter what the final piece looked like (although it was pretty darn good) or how much sandpaper was harmed in the process (though I may need to restock my 80 grit!) The bottom line is that everyone had fun, nobody was injured, and they took away a beautiful and functional bowl.

I take a great feeling of accomplishment and pride from these types of experiences and hope that it prompts others to embrace turning. I encourage all of you to share your hobby and give someone a chance to turn a piece in your workshop.

Happy turning and hope to see you on Saturday.

Don Costello

## NEXT MEETING: SATURDAY OCTOBER 28: 1:00 p.m.

This meeting will feature a remote presentation by Mike Peace on **Texturing and Spiralling**. He will offer a demonstration of various tools including those from *Sorby* and *Crown*, a knurling tool, a mini-texturing tool using rotary burrs and a chatter tool. For each tool, he will explain the when, why, and how!

Mike has demonstrated at clubs throughout the U.S., Canada and Great Britain as well as many regional and AAW symposia. He has also taught at the *John C. Campbell Folk School* and maintains a popular YouTube channel where he regularly posts turning videos. He has also published articles in *American Woodturner, More Woodturning, Woodturning Design, and Woodturning FUNdamentals.*

You can see more of Mike's work as well as a link to his YouTube channel at his website. (https://www.mikepeacewoodturning.com/)


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## MEMBERSHIP: LAST CHANCE

The deadline for renewal has passed. If you have not renewed your membership by October 31st, you will be removed from the Membership List. This means that you will no longer receive notice of meetings or the Newsletter and will no longer be eligible to attend meetings.


For those who are leaving, we are sorry to see you go and wish you well.

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# SEPTEMBER RECAP

The September meeting featured a discussion and demonstration of various hollowing tools and techniques. While the session considered only a few of these tools, the following note considers some others.

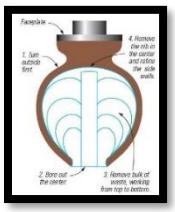
## A. INTRODUCTION

### 1. The Basic Process

Once the outside of the form is completed, a hole is drilled to the intended depth using either a bit secured in a Jacobs chuck or a morse-tapered drill bit.

Needless to say, the hole must be larger than the diameter of the shaft or cutter of the hollowing tool. If the diameter of the hole is "aesthetically" too large, you can reduce the opening by inserting a collar after the hollowing is completed.

The vessel is first turned to the desired wall thickness at the mouth. The hollowing then proceeds in steps along the sides to the bottom. Retaining mass at the base until the very end serves to minimize vibration.



**Reverse Hollowing:** Hollowing with the lathe in the forward rotation often means that your tool arm is "hanging out in space" which means less control. Accordingly, John Gayfer typically hollows with the lathe in reverse. In addition to providing greater control as the tool handle is secured to your body, it may also provide you with a better "sight line". However, he emphasized that you must engage the set screws to secure the chuck to the spindle. Otherwise, the chuck may "unscrew" with potentially catastrophic results.

**Note:** While most chucks have set screws, Vicmarc chucks do not. They have a collar which is designed to fit into a V-groove on the spindle. **Hence, this will only work on a Vicmarc lathe.**

Typically, a straight or in-line tool (top) is used to enlarge the drilled hole and hollow the bottom. The angled/bent tool (middle) is used to hollow the side area and the swan neck tool (bottom) is used to hollow the shoulder area.

**2. Tool Diameter**

The further a tool hangs over the tool rest, the greater the required thickness of the tool bar. While the precise amount will vary depending upon various factors (e.g. user skill, wood density, lathe speed), the general rules of thumb are as follows:

| Hollowing Depth | **Minimum** Diameter |
|---|---|
| 4” | 3/8” |
| 6” | 1/2" |
| 8” | 5/8” |
| 12” | 3/4" |

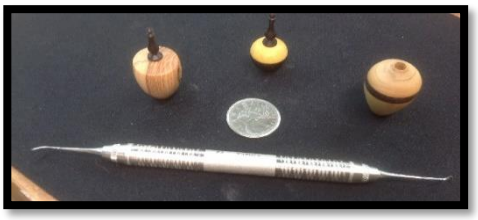
**3. Chip/Shaving Removal**

If allowed to build up inside, the shavings will compact and produce a potentially destructive catch. Accordingly, as Tim pointed out, you must stop regularly and remove the shaving. This is particularly the case if hollowing green wood. While you can use a bent coat hanger in a pinch, the most popular methods are either a shop vac or compressed air.

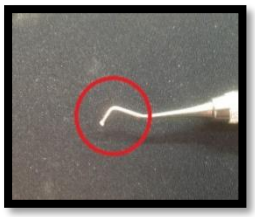
## B. CUTTERS

There is a wide array of “cutters” that can be used for hollowing, most of which are scrapers.

**1. Micro-Hollowing Tool**



For turning micro-hollow forms, Tim uses a stainless-steel dental scaler with a fine bevel ground on the tip.



If you cannot get these from a dentist, you can purchase them on Amazon for a few dollars.

**2. Mini-Hollowing Tool: Hex Wrench**

One of the most popular tools for use on small vessels (2" depth) such as ornaments is a reground hex wrench (aka Allan wrench).

Most hex wrenches are made from chrome vanadium steel which will hold a surprisingly sharp edge. You can use these to create a range of different sized hollowers in a straight or 90-degree configuration. The latter is particularly effective at hollowing the shoulder area of a small vessel.

The further away the cutting edge is from the handle centre axis, the greater the torque which may lead to a catch. The most common response is to cut off a portion of the "short arm" which brings the cutting edge closer to the centre. A bevel is then ground around the tip.

However, cutting away a portion of the foot means that you will lose some depth in hollowing the side. If you want to retain the full length of the short arm, you may want to consider mounting the wrench in a wide flat-bottomed handle (left). The increased surface area on the tool rest not only helps to counteract the torque it also makes it easier to sharpen as the tool will sit flat on a grinder platform.

**3. HSS Cutters**

**a. Bars**

HSS bar cutters are a popular choice for deeper hollowing with the most common sizes being 1/8" – 1/4" square. They are also the least expensive: a 4" length (KMS: $6) will produce at least 3 cutters.

There are a number of ways to secure these cutters to a tool bar.

One method, developed by Lyle Jamieson, is to secure the cutter in a slot in a round housing (left). The housing (and thus the cutter) can be rotated which increases its versatility. However, given the diameter of the housing (3/4”), it does require a relatively large access hole.

A simpler method is to insert these cutters in a hole drilled in the tool bar. While the cutter can be held in place with grub screws, this is a relatively expensive option in terms of manufacture. Accordingly, most turners opt for the simpler method of using CA glue.

The cutter can be sharpened “in place” or removed using a propane or butane torch to dissolve the CA glue. They can then be sharpened on the grinder platform. (Acetone can be used to clean off any glue residue.) For instructions see:
https://www.youtube.com/watch?v=A928UJyOOcE

**b. Tear Drop**

This is another form of a HSS cutter which is typically used when the inside of the form is visible. While they can be used for rough hollowing, they are more commonly used for finishing cuts to provide a smooth surface. They do require a relatively large access hole.

*While there are a number of commercial sources, if you are interested in either type of HSS cutter and bar, you may want to first contact Mike Neal (mikeneal4347@gmail.com)*

**4. Kelton Hollowers**

Made in New Zealand, these are very popular one-piece hollowing tools. They have an integral cutting tip which is made of a special HSS alloy and are available in 3 configurations: straight, gentle, and acute. A favourite of Tim Soutar, they offer good edge retention and can be used for both rapid wood removal as well as smooth finishing cuts.

They are available in three sizes. (There is also a fourth (large) size but the only sources I could find are in New Zealand or Australia).

| | | |
|---|---|---|
| Miniature | 10" long x 5/16" shanks | (LV: $53 each or $139/set of 3) |
| Small | 13.5” long x 1/2" shanks | (LV: $58 each or $155/set of 3) |
| Medium | 14.5” x 5/8" shanks | (LV: $71 each or $195/set of 3) |

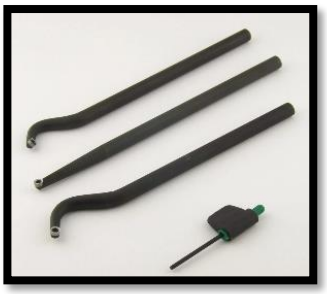
Although written in 2004, this short note contains some good tips on using these tools: http://www.woodcentral.com/woodworking/forum/archives_turning.pl/bid/2104/md/read/id/29831/sbj/tips-for-kelton-hollower-use-early-draft/

**Caution**: You must only sharpen these using a **diamond hone on the bevel only!** Using a grinder will remove too much of the special alloy and will ultimately render them ineffective.

**5. Carbide Cutters**

The popularity of carbide cutter tools has prompted the adoption of these cutters in a variety of hollowing tools.

One of the first manufacturers was Hunter Tools which currently offers an (absurdly) large array of (similar) hollowing tools with carbide cutters.

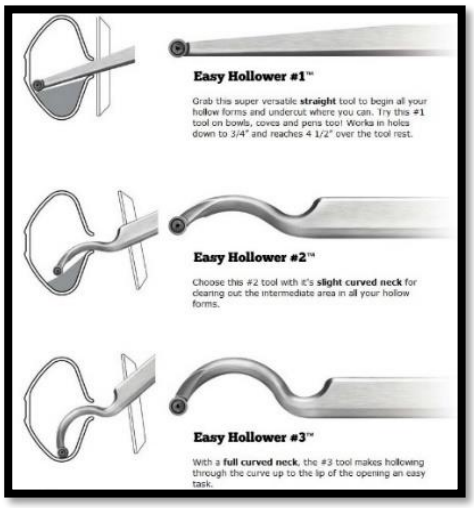


One of the most popular is the Hunter #1 Tapered Tools (Set of 3: 3/8” shank) for US$280. Replacement cutters are US$23.

For those who have a stabilizing rig, Hunter also offers square or round shank tools (3/16” or 1/4”) to replace HSS cutters (US$78).

Trent Bosch also offers carbide hollowing tools. With a 1/2” shank, a set of two is US$140 and a set of three is US$220.

Finally, Easy Wood Tools also offers handled hollowers in the 3 conventional profiles. The tools have a flat shank which serves to minimize twisting. However, as the following shows, they are comparatively very expensive.




The prices for the Pro-Size version at KMS are as follows:

#1: $305 #2: $315 #3: $230

## C. STABILISING RIGS

While you can use handheld tools for relatively small turnings, for larger (and deeper) hollow forms, you will need a stabilising rig in which the cutting tool is secured in a metal frame.

There are many different forms of these rigs including articulating arms, rollers and mini bars.


However, the most popular form by far is the one that was designed by Lyle Jamieson.

The cutter is held in a boring bar and a wide D-handle which, in turn, is "captured" in the backrest slot. This configuration serves to absorb virtually all the twisting force when turning and enables one to hollow using mere finger pressure on the handle. (Basic Package including Laser: US$500).

**Note**: The simplicity of this design makes it easy to create a homemade version and there are literally thousands of turners who have done just that. To his immense credit, for years Jamieson even included instructions on his website on how to build your own! (These were removed some years ago, presumably for liability concerns.)

**Mike Neal Again:** If you are interested in a captured rig system, you should contact Mike Neal *(mikeneal4347@gmail.com)*. He makes these for both midi and full-size lathes.

# D. MISCELLANEOUS TOOLS

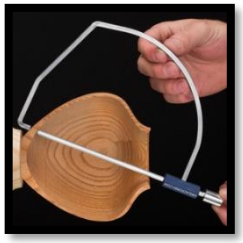
### 1. Tools for Measuring Wall Thickness

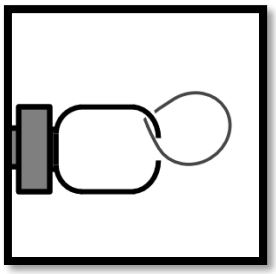
One of the crucial requirements in hollow forming is the ability to measure the thickness of the turning to avoid breaking through the side wall. There are three tools which are commonly used: calipers, laser, and camera.

### a. Calipers

Depending upon the shape of the form and the size of the opening, you may be able to use a conventional thickness caliper. (Left: LV $77).

Alternatively, you might want to purchase a caliper designed specifically for hollow forms such as the Mike Jackofsky Hollow-Pro Calipers (Craft Supplies: US$74)

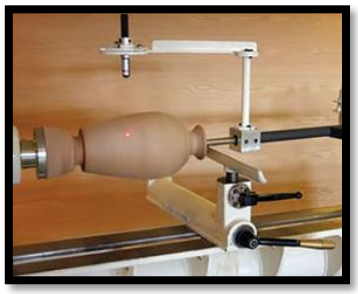




However, the cheapest and most flexible tool for measuring the thickness of the walls of a hollow form is simply a bent piece of 16-gauge wire or a clothes hanger. Popularized by David Ellsworth, this “tool” relies on eyesight to determine thickness by comparing the gap on the outside with the overall size of the gap.


The ends should be rounded to avoid scratching the wood and must be in line with one another and perpendicular to the surface to get an accurate reading.

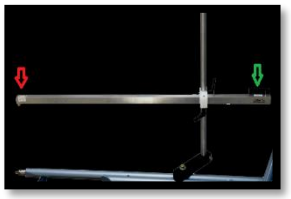
**b. Laser**



A second tool for use with a stabilising rig, is a laser pointer. Suspended above the boring bar, the unit is positioned such that the beam is offset from the cutting edge to the desired wall thickness.

As the vessel is hollowed, the light moves to the outside of the form. And as Tim discussed, when the laser light "falls off" the turning, the desired thickness is reached.

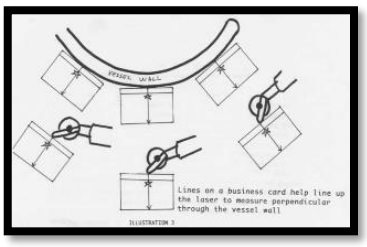
Most laser rigs use an inexpensive laser pointer with an internal battery. Most of these have a push button on the side which activates the light. However, the vibration that these units are subject to causes the battery contacts to fail frequently.



A preferred configuration is one that has a laser diode (red arrow) wired to a "remote" battery (green arrow) at the end of the laser bar. Laser diodes, which can be purchased for a few dollars on the internet, also have a focusing ability which means a smaller and more accurate "pinpoint".

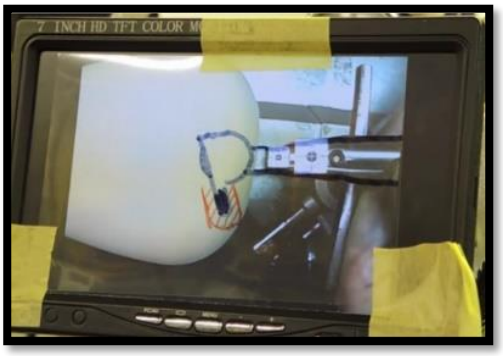
**c. Camera System**

In a laser system, the laser must be frequently repositioned as the curvature of the turning and thus the location of the cutter changes. To avoid this, many turners have opted for a camera system.




While the concept was first developed commercially by Trent Bosch, the relatively high cost for his Visualiser tool (US$695), has prompted many turners to make a homemade version for a fraction of the cost – as low as $60 if you have access to a used computer monitor.

The system consists of a small camera that is located on a bar above the turning and is connected to a computer monitor. A clear plastic overlay is attached to the monitor screen and a felt pen is used to outline the desired thickness around the cutter edge.



As Tim demonstrated, when the cutter "disappears" inside the hollow form, the pen outline on the monitor enables the turner to identify its location and when the desired thickness is achieved.

For a video on how the system works see: https://www.youtube.com/watch?v=pidLwThKHSw

There are many Guild members who have built a camera rig, and they would be happy to provide more information.

**2. Steady Rest**

A steady rest is an essential tool if you are going to do deep hollowing. Typically located at the mid-point of a turning, it serves to minimize vibration or movement of a blank using 3 skateboard wheels in a circular frame.

However commercial units are expensive (upwards of US$500) plus shipping costs. There are many on-line sites which provide detailed instructions on how to make your own. One of the better ones is: http://www.tnvalleywoodclub.org/plans/Steadyrest%20by%20JDC.pdf

# A *POTPURRI* OF TOPICS

## 1. WHY YOU ARE NOT SHARPENING AS OFTEN AS YOU SHOULD!


*Consider a 10" bowl blank rotating on the lathe at a modest 600 RPM. The rim of the blank travels at 1,570 feet per minute or about 18 miles per hour. …that's the same as powering the sharp edge of a gouge through almost a quarter mile of wood* ***every minute!***

*(AAW, Sharpening Turning Tools)*

## 2. EPOXY PUTTY

While there are a variety of uses for epoxy in woodturning, there may be circumstances where a two-part liquid epoxy is not feasible or appropriate. In such cases, you may want to consider using epoxy putty. Parts A (resin) and B (hardener) may come in separate tubes or as a single tube with both parts (right).

Equal sized parts are kneaded together until they form a consistent colour (anywhere from 30 seconds to 6 minutes) and the putty is then applied to the turning. There are literally dozens of brands available with different working times (3 to 20 minutes), set times (6 to 25 minutes), and full cure times (30 minutes to 24 hours).


While it can be used for structural purposes, many turners also use it for decorative applications. The most extensive range of colours and the one that appears to be most popular with turners is *Milliput* (https://www.milliput.com/).

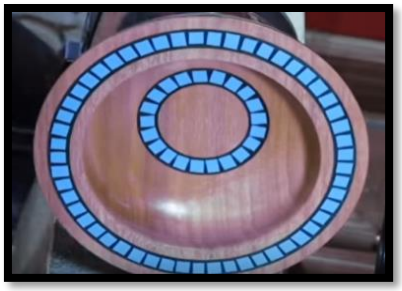

It is available in 6 colours: Standard (Yellow/Grey), Terracotta, Silver Grey, Turquoise, Black and Superfine White. While there are a few sources in Victoria, the least expensive price appears to be from *B.C. Hobbies* in the Hillside Mall ($13 vs $19.80 at *Opus*).

Different colours can also be obtained by adding a colourant such as mica, metallic or pigment powders as well as oil and acrylic paints. While some online sources suggest that the colourant should not exceed 5% of the putty by volume, others report success beyond this limit.

The steps are relatively simple. First, take a piece of Part A (resin) and knead it until it is pliable. Then add the colourant to this Part **only** and continue to knead it until the colourant is dispersed throughout. Then add Part B (hardener) and knead for the recommended time before application.

Needless to say, you should experiment with a small sample before application.

The following are a few examples of decorative applications.

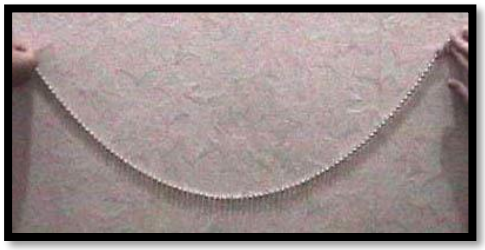


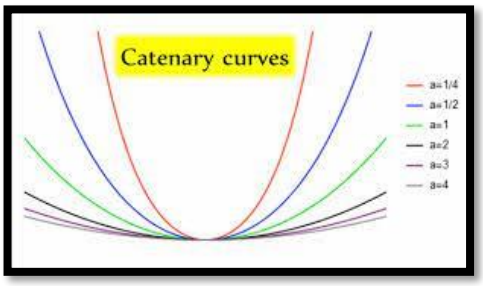
And the following are a few videos of the process.

https://www.youtube.com/watch?v=vAyxbfEGQ8U
https://www.youtube.com/watch?app=desktop&v=U7HCg7NkwBs
https://www.youtube.com/watch?v=dQNRiZsKb7g

## 3. DESIGN: CATENARY CURVES

One of the most widely used profiles for bowls (and deep platters or vases) is the catenary curve. While the form can be expressed mathematically, it can be understood more simply as the curve that occurs when a light chain is hung from 2 horizontal points.






Changing the distance between the two ends produces a range of catenary curves that can be used in a variety of turnings.

Used for centuries in architectural contexts, its current popularity amongst turners can be traced to its endorsement by Richard Raffan in his book *Turned-Bowl Design*. The aesthetic appeal arises from the fact that the curve is symmetrical on either side with no abrupt changes in direction and the result is a pleasant and flowing arc.

*Stephen Sanders*


For new turners, a simple drawing and light chain can be used as a guide. With practice, the form will become familiar to the eye.

Obviously, this is not the only attractive bowl profile. However, it does provide a useful starting point from which to explore alternative forms.

## 4. BASIC LATHE MAINTENANCE

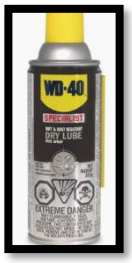
The following provides some general information and advice on basic lathe maintenance. This is intended to supplement the most important source of information which is your lathe manual. Most of these tasks are simple and will take only a few minutes to complete.

### a. CLEANING THE BEDWAYS

There are many products that will do a good job of cleaning and lubricating the bedways and everyone appears to have their favourite product.


One of the most popular is the basic WD-40. It is inexpensive and can be used for a variety of other tasks in the shop (Cdn Tire: $10).

It is marketed as both a cleaner and a lubricant. As for the former, it works very well and when used with a 3M abrasive pad (maroon (360X)), does an excellent job of removing the heaviest buildup. However, it is a relatively weak lubricant and does not stand up well to the friction of the tailstock or banjo.




Accordingly, many sources suggest that after cleaning, you should use a higher-quality lubricant such as *WD-40 Specialist Dry Lube* (Cdn Tire: $14) or *Boeshield T9* (LV: $32). While neither of these products will attract dust when dry, they are not particularly effective at removing buildup. The basic WD-40 does a much better job.


**GREEN WOOD**

Turning green wood – especially those which are high in tannins such as oak, cherry and walnut – is a primary cause of dirty/sticky bedways. At a minimum, you should clean these as soon as possible when the turning is done. You might also consider applying a fresh coat of lubricant before turning.

**b. BANJO AND TAILSTOCK**

It is easy to see when the bedways require cleaning, and it only takes a few seconds. However, it does not make much sense to clean these if you do not also clean the contact surfaces of the banjo and tailstock which can be done in as little as 5 minutes.

To reduce the number of times you need to do this, you may want to use one of the higher-quality lubricants noted above.

In addition, the castings on the underside of these two pieces of equipment are often quite rough. If so, use a machinists file to relieve any sharp edges which will minimize subsequent buildup of "gunk".

**c. TAILSTOCK QUILL**

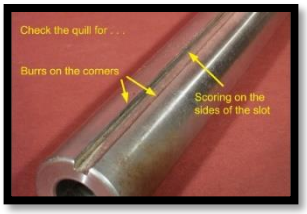
The handwheel on the tailstock should turn freely to advance or retract the quill. If you find that it is becoming stiff before you do anything, check whether the quill locking nut is engaged! (Yes, it has happened to all of us!)

Otherwise, simply extend the quill, wipe it clean and apply one of the dry lubricants noted above.

If the problem persists, you may need to remove the quill for inspection and maintenance. Your owner's manual should provide instructions on how to do this.

For additional information and assistance, you might want to read the following article at: http://www.docgreenwoodturner.com/pmtailstock.html. While the first part discusses how to remove the quill on a *Powermatic,* the latter portion discusses potential quill problems and solutions which are common to most if not all lathes.

These include cleaning the quill and the bore with mineral spirits, checking the threads for any damage and, most importantly, filing any burrs at the top corners of the slot on the quill.




**d. MORSE TAPERS**

Tapers are secured by surface friction on the bearing surfaces which provides torque transmission. Any dirt, scratch or burr will reduce this causing them to either slip or worse yet bind.

**i. FEMALE TAPERS (HEADSTOCK AND TAILSTOCK)**

It is a simple matter to clean these tapers and it is particularly important for the spindle (headstock) taper as the cyclonic action when turning will draw dust into it.

In most cases, a scrap of cloth with mineral spirits wrapped around a small dowel will be sufficient.

For those looking for a simple spindle project, you can easily make a homemade taper. For instructions, check out the following video: https://www.youtube.com/watch?v=7C7eia5WzZI

**Note: Never use any oil or wax on a taper as this will reduce friction which is the whole point of the design.**

**ii. MALE TAPERS (TOOLS)**

There are a variety of tools with a male taper including spur drives, live centers, and drill bits.

Before using any of these, quickly run your finger over the taper to check they are clean and free of burrs. Otherwise you run the risk of them binding and/or scoring the inside of the female taper.

To remove a burr use a **fine** file or a small diamond hone and file it away **gently**. All you need to do is get it smooth.

**Note**: Under the heading of prevention, avoid tossing tapered tools into a drawer where they may bang into one another. All it takes is one burr to damage a female taper and then you may be looking at a taper reamer or worse!

**e. TOOL REST**

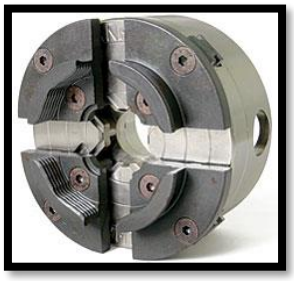
Having a smooth tool rest is essential to effective tool use. While some manufacturers include rests with a hardened steel rod welded to the top, most rests are made from cast metal which is softer than the steel in your turning tools. The result will be nicks and scratches in the rest which need to be removed.

You can clean up the rest by running a fine machinists file lengthwise along the top. You may want to add a slight rocking motion to maintain the curvature of the rest.

Use a straight edge ruler to check that there are no dips or hollows. Then use 220x sandpaper wrapped around a flat piece of wood to "sand out" the file scratches. Use a cloth to wipe off any metal filings and then apply a **light** coat of wax (a candle is a handy source) to ensure a slick surface.

**Note**: Many turning tools including skews, scrapers, bedans, parting tools and carbide cutter tools have relatively sharp edges on the bottom. These will quickly cause an indentation in the event of a catch or simply aggressive use. The sharp edge will then find this nick and cause even more problems. A simple solution is to use a file or a belt sander to create a small radius on the bottom edges of these tools.

**f. CHUCK**



In most cases, the only maintenance that should be required on a chuck is to brush it clean.

In a 2015 on-line forum on chuck maintenance, noted professional turner Al Hockenberry posted the following:

> *I maintain all my chucks with ample doses of neglect…I don't clean any of them intentionally or oil them and they work just fine. I have never taken any of them apart.*

| | |
|---|---|
| *Strongholds (3)* | *Oldest 1995 Newest 2000* |
| *Talon* | *2000* |
| *Vicmarc* | *2007* |

However, if you find that the base jaws are getting stiff, a light coat of dry lube is recommended. And if your chuck is sticky or covered in gunk, *Oneway* recommends mixing a small container of varsol or mineral spirits and 10% oil. Allow the chuck to soak for 30 minutes and then wipe off and blow clean.

For more extensive cleaning which involves disassembly of the chuck (horrors!), you **must** consult your owner's manual, check for on-line videos, and take a valium!

**g. DRIVE BELTS**

Whenever you change speeds, take a moment to inspect the drive belts. In particular, you should check both sides for any cracking.

## OPTIONAL FORMAT FOR DEMONSTRATIONS

We face a number of limitations in terms of what topics we can offer at our monthly meetings.

Some of these are based upon the limitations of our meeting hall (e.g. sanding or pyrography will set off the smoke alarms) while others reflect the time-consuming nature of the process (e.g. epoxy, segmenting, pen turning). The latter often require members to invest a great deal of time preparing multiple turnings showing the various stages.

Moreover, even conventional topics can pose a challenge for demonstrators who must turn on an unfamiliar lathe and often without all of their familiar tools and jigs. (And sometimes without an essential tool!!!)

Accordingly, Don Costello has proposed that we consider an optional format for some demonstrations.

This would involve making a videotape of the member turning in his/her shop using the Guild's cameras and tripods. (While this could be done by the member, both Don and Hovan have indicated that they would be willing to attend a member's shop to handle the camera work.) The tape would then be edited (again by Don or Hovan) for presentation at a meeting with the demonstrator in attendance. S/he would be able to pause the video at any time to offer explanations or to answer questions.

This is a great idea, and we anticipate trying it out for at least one of the demonstrations in the spring.

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## 2024 AAW SYMPOSIUM

The 2024 Symposium will take place from May 23 – 26 in Portland, Oregon. If you have never attended one of these (and even if you have), you are encouraged to consider attending.

It will feature in-person demonstrations by more than 80 professional turners from around the world as well as a unique opportunity to buy all those tools you have dreamed about!

For more information, visit: https://www.aawsymposium.org/about

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## IN MEMORIAM

Long time member Peter Robin has passed away. A meticulous turner of miniatures and an outstanding photographer, Peter generously served for many years as our Librarian and Guild Photographer. Our condolences to Kathleen and the family.

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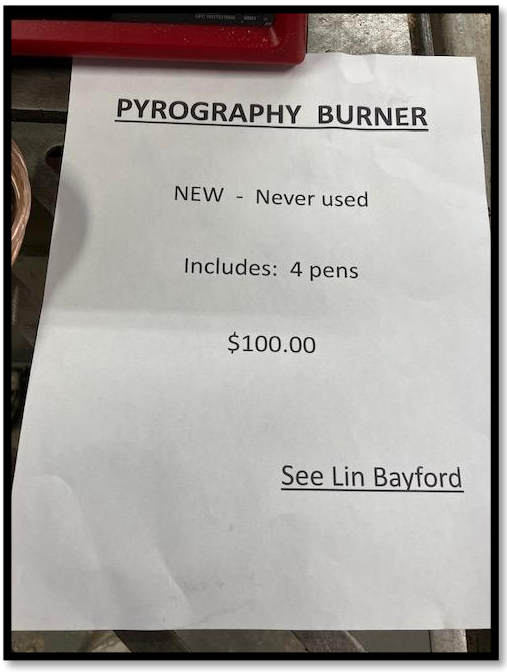
## FOR SALE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## PARTING OFF

Thanks to the member of the Executive and, in particular, Don C for a successful application to the Microsoft Non-Profit Grant Program (details forthcoming) and Hovan for extensive research on how to improve our A/V setup. And a special thanks to Tim Soutar and John Gayfer for their demonstrations on hollowing.

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## CONCLUDING THOT