

Accessible Lathe Manual

This manual is aimed primarily at helping those who are blind or visually impaired.

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1. Preface

Woodturning is enjoyed by people all over the world. It is a method for creating art and functional objects. For the most part, woodturning is enjoyed by people who can hold their tools with two hands, stand, see, and hear during the process of turning. Most of the instructions found in books, on the web, and on video assume the student has all of these capabilities. What happens when one or more of these capabilities do not exist?

People with all types of disabilities have safely enjoyed woodturning despite their disabilities. The key is to identify alternative approaches or adaptations for accomplishing the functions described or demonstrated by most instructors.

For clarification and the purpose of this manual, blind and visually impaired mean that the student has vision that ranges from not seeing at all to sight that prevents the student from conducting normal visual functions like reading a book or newspaper with standard print. There is no effort here to provide strict definitions of blindness. The point is that the student will not be able to clearly see the tools or materials while in the process of turning, sharpening, or any other related turning activities.

For simplicity, people who are blind or visually impaired will be referred to as a person who is blind or as a blind woodturner. Also for simplicity, the woodturner will be referred to as “he.” but that certainly does not imply that there are no female turners.

2. Introduction

This manual is focused on describing the process of woodturning for a person who is blind or visually impaired. The instructions provide alternative approaches to some of the techniques that traditionally have been described only in terms of seeing. There is not only one way to do anything in turning, whether the turner is sighted or not. The descriptions in this manual are only suggestions on how a person who is blind would turn. It is hoped that a larger discussion would occur to describe alternative methods and the person who is blind would have various techniques to try.

This manual is designed to focus on adaptive approaches for woodturning. In most cases, there is not an attempt to teach woodturning. The basic techniques for turning would be the same for anyone, sighted or not.

The manual is divided into several sections. The first several are intended to describe some of the set-up techniques, such as sharpening and organizing a workstation. The later sections focus on basic skill-building and then putting the basic skills into practice to turn one or more functional pieces.

Woodturning is a safe and enjoyable activity. Safety for all turners is the first consideration. Everything done in woodturning must take safety into consideration. Throughout this manual,

safety considerations and tips will be included in addition to having a safety section near the beginning.

This manual is intended to be used by both a blind woodturning student and the instructors or mentors who will be assisting the blind student.

Woodturning for a blind person is safe and enjoyable, although some of the turning techniques will need to be altered. The fundamentals of woodturning do not change, no matter the disability. You will get a catch if you do not anchor the tool on the tool rest and sometimes even while the tool is anchored. You get good cuts while rubbing the bevel of the gouge and when you understand the grain patterns of the wood being turned. The difference is the approach to the lathe and wood. A blind woodturner sometimes will need to touch the wood while it is turning on the lathe. Of course, there is no touching unless the wood has been roughed to a round and fingers are away from the tool rest. When demonstrating cuts, for example, the student may place his fingers on the wood while opposite from the demonstrating instructor. Cuts are described and cuts are made. The blind student hears the instructions and feels the cuts as they are being made.

Another important part of teaching a blind student is to be verbal. The blind student may be holding a sample piece in his hands while the instructor describes the process of creating the finished product. Descriptions should be directed to what is felt, heard, and smelled and not focused on what is seen. For example, while making a cut, the turner will hear a sound that indicates the bevel is rubbing and the wood is being cut. Various lathe speeds will create a sound and vibrations. You can smell burning wood if you force the tool. The spindle or bowl gouge will bounce if the bevel is not rubbing. Notice what the student is doing correctly and try to identify key touch, sounds, or smells associated with a good cut and a bad cut. If it helps, close your eyes and try to identify the nonvisual way to describe an event.

As in any good trusting instructor-student relationship, listening is important. The instructor must listen to questions to ensure that the student understands what is to be done. The student also must listen. For any good communication to occur, the instructor must confirm that the message is received and understood.

3. Safety

Safety should be the first and most important consideration for any woodturner. Instead of listing all of the safety considerations in this section, hints and tips for safety will be inserted throughout this manual. Safety must not be just something to perform. It must be part of everything you do before, during, and after turning.

One item to note here is that the teacher constantly must be aware of any possible hazards in the room or shop where instruction is taking place. Are there pieces of wood or other items sticking out at eye level? A white cane would not help the blind turner with overhanging objects. Is there clutter on the floor? Are there glass jars sitting on the edge of a bench or shelf that could be easily knocked off and broken? If you think about it, most safety considerations are true for all turners, blind or not. Take a moment before a blind student arrives to make sure any

possible hazards are removed. During the turning session, look around for possible hazards. When cleaning up, take a last look around for any other possible hazards.

One other safety and functional consideration is to put items back where you found them. A tool or other item put down a few inches from its original position may not be found by a blind person. The object may be an inch or a mile away, and the student will not see it or know where it has gone.

Awareness of finger placement while turning is vital for safety and success. During the process of turning, placing the hand on the turning wood is essential for making accurate cuts for blind turners. It is important to understand where the hands are at all times. The hands should never be placed on a rotating piece of wood that has not been turned to a cylinder. Once the rotating wood is a cylinder, make sure fingers are positioned a safe distance away from the toolrest when the wood is rotating toward you while you are turning. Also, be careful to avoid receiving a pinch between the wood and the toolrest at any point.

Safety hints will be highlighted as part of the instructions. Most often, the term “considerations” will be used to point out some of the specific safety actions.

Many times the talk about work on a lathe concerns the tools and the accessories. Just as important is the clothing appropriate for turning. The subject of attire is not specific to a blind turner. It is important enough to remind all turners of some basic clothing considerations.

Starting at the top, if you have hair that is long and may get caught in the lathe, tie it back. Or wear a hat with the hair tucked into the hat. Protect your eyes and face. No matter if you are blind, make sure you are protecting your face with a shield and your eyes with impact resistant eyewear. During normal turning, shavings will be flying at your body and face. In some cases, wood can launch into your face and body. Make sure your body is covered, especially your face and eyes.

For the shirt, make sure it is a close fit, keep it tucked into your pants, and make sure the sleeves do not extend past your elbows.

For pants or skirts, short or long, make sure they do not restrict your movement. Most of the movement during turning occurs with your legs. Make sure your pants or skirt fit well and allow for fluid movement.

The shoes should be closed-toed and made of a sturdy material with rubber or other non-slip soles. During turning, make sure your footing is solid without slipping. When wood or tools fall to the floor, your feet may be hit, so they should be covered with shoes at all times. Protect your feet and ensure solid footing throughout the work area.

4. Tools and Materials

There has been no attempt to recommend or endorse any specific tools or suppliers in this manual. For practical purposes and ease of start-up, some brands and suppliers are identified in Appendix A (page 40). By providing specific names and sources, each person reviewing

these instructions can see exactly what is being referenced. As new tools become available and current ones are discontinued, there will be an attempt to update the list of current tools. Each person is encouraged to find tools and suppliers that are the best for his use.

When a turning tool is mentioned in this manual, the reference most likely will be to a high-speed steel tool. The most common alternatives to high-speed steel tools are carbide-tipped tools. In some sections in this manual, references to carbide-tipped tools may be made. In Appendix A (page 40), there is a list of some of these carbide-tipped tools and high-speed steel turning tools.

5. Sharpening

One of the most important and scary functions in turning for a blind person is sharpening. It is the most basic and usually the first activity a turner will perform when turning. This section will address a sharpening approach for the blind woodturner.

There are many types of woodturning tools, and most need to be sharpened. One type of tool that usually is not sharpened is the tool with a carbide tip. With this type of tool, the tip is either rotated to expose a new sharp edge or the tip is replaced. Carbide-tip turning tools can be found for almost any type of project, from spindle turning to faceplate turning, hollowing, and more.

The advantage of the carbide-tip tool for any turner is that there is no need for the expense of acquiring a sharpening system. For a blind turner, this advantage may be greater because the process of sharpening may be as difficult as turning. There will be many opinions about the merits of a carbide-tip tool over high-speed steel turning tools. Every turner should try different types of tools and determine what works best for him. This section reviews the sharpening of high-speed tools.

One point not usually debated is that, if the tools are not sharp, then turning becomes difficult or even impossible. For a blind turner, as for most other turners, a consistent angle on the bevel of the high-speed steel tool provides a constant for repeating cuts.

Although there are many tools and methods for sharpening, the most common device for sharpening is the bench grinder. Turners learn to look at the tool as it touches the grinding wheel. When sparks appear over the top of the tool as it touches the grinding wheel, the tool has become sharpened. A person who is blind would most likely not be able to see this.

Often in a first experience with sharpening on a bench grinder, one is not able to match the bevel to the wheel. A jig system might be used and still multiple bevels might be created on the tools.

A. Sharpening – Grinders

The most common tool for sharpening is the bench grinder. A common type of grinder is a variable speed with an 8" wheel. For this manual, this is the type of grinder that will be used.

Make sure the protective guards are in place and not removed. The guard protects the user from sparks and inadvertent touching of the turning grinding wheel, and it provides a tactile reference for the location of the grinding wheel.

Figure 1 - A man demonstrating the safe way to grind a tool. The grinder's guards are in place, the turner is wearing eye protection and a smock with short sleeves and clothing out of the way. His hands are firmly holding the tool against the grinder's support to prevent kick-out. The man also is wearing no jewelry and does not have long hair to get caught during the process.



Consideration - During sharpening, the tools will become very hot. Make sure not to grab the steel of the tool immediately after sharpening.

Another consideration with the grinder is that the wheel will continue to turn after the grinder is turned off. The wheel will be silent and cause injury if it is touched while spinning. Wait at least 3 to 5 minutes or more for the wheel to stop.

Safety Consideration - To reduce the possibility of your hands coming in contact with the grinding wheel, especially when turning the grinder on, one may wish to use a foot-actuated switch. By using the foot switch, both hands can stay on the tool.

Figure 2 - Foot switch to activate the grinder so both hands can be placed safely on the grinder and stay in place until the grinding is completed. The foot switch has limited cords that are pulled out of the way so tripping hazards are minimized. It is placed on a padded safety mat so it won't slip and will help avoid foot and back strain. It will not slide around and easily can be located. This foot switch activates the grinder only while it is depressed.



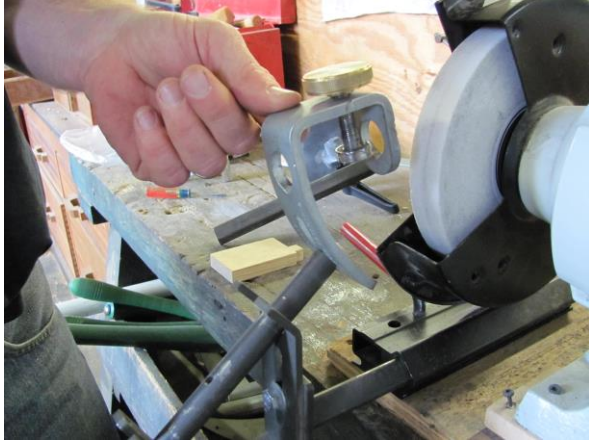
These instructions for using the grinder will assume a foot switch is not being used. When using a foot switch, you can disregard any directions for turning the grinder on and off by hand.

A friendly tool sharpener is the Tormek T7 Sharpening System, which is a wet wheel, slow-speed sharpener. With the touch-n-turn template and other jigs, it becomes safe and easy for a blind turner to create razor-sharp tools. Some of the Tormek tools and accessories are listed in Appendix A (page 40).

B. Sharpening – Jigs

An experienced turner is able to sharpen his tools on a grinder without the use of jigs, but many turners use some type of jig system. One example, and the one used in this manual, is the Wolverine Jig with the associated Vari-Grind 2 Jig attachment.

Figure 3 - The Wolverine jig bolted tightly to the edge of a workbench. The jig has a bracket that comes from the base. The bracket can be moved in and out, allowing for a tool to be held closer or farther away from the grinding wheel. The upright that comes from the bracket is at an angle, so the edge of the tool is held at the proper plane to the grinding wheel for the correct degree of angle when sharpening. A clamp in the top-most portion of the upright holds the tool securely so it won't slip. The top-most portion of the upright swivels so the tool is cut uniformly from edge to edge.



The key is to match the bevel of the tool to the wheel. There are two grinding wheels on the grinder we are using. The right grinding wheel is for the bowl and spindle gouges, and the left grinding wheel is for the scraper, parting tool, and the spindle roughing gouge. The Wolverine jig has a set-up for each side. The right set-up holds the Wolverine Vari-Grind 2 jig that will hold the gouge in place at a constant angle. For each side, two variables need to be accommodated – the distance from the wheel and the angle of the tool.

C. Sharpening – Gouges

Note - The formulas used in the sharpening preparation are matched to a particular bevel angle. You may need to modify the dimensions of the jigs to match your bevel angle preference. This is a starting point ... not the only way to do it.

With the Vari-Grind 2 Jig, there are two measurements that must be set each time – the amount of steel that comes out of the jig and the distance the jig arm is set from the wheel. The Vari-Grind has two parts, a base that slides into the Wolverine jig under the grinder and the Vari-Grind 2 that holds the gouges and fits into the base.

To measure the distance that the steel protrudes from the jig, we made a block of wood cut to 1-3/4" and drilled two holes into it – 3/4" and 1/2" to accommodate different size gouges. We attached the block to the workbench with screws. It is recommended that a piece of steel or aluminum is inserted between the block and the workbench to act as a stop that will not be nicked during repeated use.

Figure 4 - A man demonstrating the Vari-grind jig by holding a spindle gouge against the grinding wheel.



Figure 5 - A man demonstrating how to use the wooden block to determine the correct length that the tool should be protruding from the jig. Instructions follow.



Once the block is in place, secured to the workbench:

1. Remove the jig from the grinding wheel and insert the tool into the Vari-Grind 2 Jig.
2. Insert the tool into the block of wood
3. Push the Vari-Grind 2 jig up to the block and tighten the screw. By doing this, you will ensure the steel coming out of the Vari-Grind 2 jig is the exact same distance each time.

For the right side of the grinder used for sharpening gouges, the distance from the wheel is accomplished by using a $\frac{3}{8}$ " dowel with a $\frac{1}{8}$ " dowel as a cross bar. The angle was accomplished by using the Wolverine Vari-Grind 2 Jig.

Figure 6 - A man demonstrating how to use a homemade dowel jig to set the distance between the base of the Vari-grind jig and the grinding wheel. Instructions follow.



To create the accommodating jig that would set the exact distance between the jig that holds the gouge and the stone, a dowel is used. One reason for the dowel is to accommodate the grinding pattern on the stone. With the Vari-Grind 2 Jig, the gouge is set in one spot on the stone, creating a valley on the wheel. To take the distance to the lowest point in the valley into consideration, a dowel is used to sit in the lowest part of the valley.

A 3/16" hole is drilled perpendicular to the 1/2" dowel to create a positive stop. The dowel is then set in the u-shaped portion of the base of the Vari-Grind with the 3/16" cross bar between the wheel and the jig and the other side of the dowel resting on the wheel, where the tool will touch.

Jig Dimensions - The rod is from a 1/2" dowel with a 3/16" dowel intersecting at 4-5/16".

1. Insert the dowel jig into the base of the Vari-Grind where the cross bar is between the jig and the wheel.
2. Place the other side of the dowel on the stone where the gouge will touch.
3. Loosen the arm to the jig.
4. Slide the arm forward until the base is stopped by the 1/8" cross dowel.
5. Lock the base arm.
6. Pull the dowel jig up and out.
7. Insert your gouge into the Vari-Grind 2 jig and place that into the base.

You can tell if the gouge is sharp by running your finger across the edge, not along the edge. You should feel a slight stubble at the edge. This is called the burr, a thin curl of steel that forms at the very edge of the tool during sharpening. Make sure to wait until the steel has cooled before touching the steel. The burr will usually break off when turning.

Safety Considerations - The Vari-Grind 2 jig is designed to hold the tool in place during sharpening. Make sure your right hand is on the gouge and your left hand is free to turn the grinder on. Make sure you can find the on-off switch by feeling at the bottom of the grinder. This way, you will ensure that your hands will not come into contact with the wheel. After the grinder is turned off, the wheel will continue to spin for up to 3 or 4 minutes. Lift up on the gouge and stay back from the wheel for at least 5 minutes.

Do not touch the steel immediately after sharpening. The friction of sharpening will cause the end of the tool to become very hot.

During the sharpening process, make sure your stance is comfortable and balanced. As when you are turning, a balanced and comfortable stance will reduce the possibility of slipping, causing injury. Make sure the sharpener is placed on a secure and solid stand or a workbench that is at a height that allows for easy sharpening. As a rule your arms should be close to your sides with your elbows bent at right angles.

D. Sharpening – Other Tools

This section discusses sharpening a scraper, parting tool, and spindle roughing gouge.

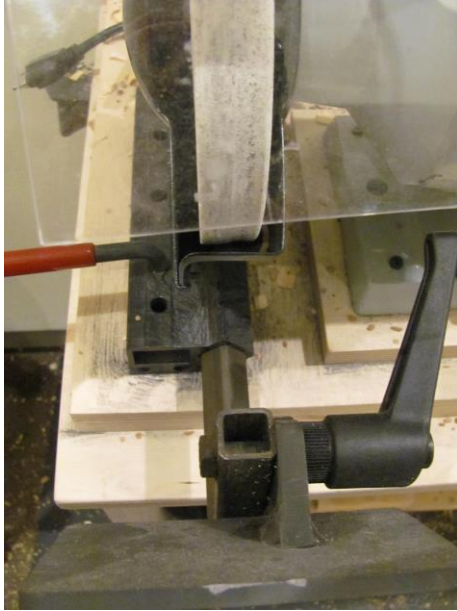
On the left side of the grinder is another wheel with a Wolverine platform. This platform comes as part of the original Wolverine jig system.

Figure 7 - The left side of the grinder and the Wolverine jig platform. A homemade jig is set against the platform. It is described below.



Again the key is to set the platform at an exact distance from the wheel and set the angle of the platform. To accomplish these two measurements, a homemade wooden jig is created to fit into a square hole at the top of the post that holds the platform.

Figure 8 - The square hole at the top of the left hand Wolverine jig.



Jig Dimensions - The jig used on the left side of the grinder is a rectangle $\frac{5}{8}$ " thick and $3\frac{1}{8}$ " by 2" with a tab that extends from one side of the rectangle.

To make positioning the jig easier, mark the sides as follows. With the tab facing up and closest to the left, the block is $\frac{5}{8}$ " thick.

Side 1, from left to right is $\frac{3}{16}$ " to the tab, the tab is $\frac{5}{8}$ ", the remainder is $1\frac{3}{16}$ ".

Side 2 is $3\frac{1}{8}$ ".

Side 3 is 2".

Side 4 is $3\frac{1}{8}$ ".

1. On the left side of the grinder, there is an arm used to hold the sharpening platform in place. Loosen the platform and position it so you can have access to the hole at the top of the arm.
2. Insert the tab on Side 1 of the jig into the hole at the top of the arm holding the platform with Side 2 of the jig facing the wheel.
3. Loosen the arm that holds the platform.
4. Draw the arm toward the wheel until the jig lightly touches the wheel.
5. Lock the platform arm.

Now you have set the distance of the platform to the wheel. Next set the angle of the platform.

1. Loosen the screw that holds the platform.
2. Place the jig on the platform so Side 3 is even with the platform edge that is away from the grinding wheel and the tab on Side 1 is touching the side of the grinding wheel.
3. Lower the platform down toward the wheel until the jig lightly touches the wheel.
4. Lock the platform with the screw.

At this point, the angle of the platform is set for the scraper, spindle roughing gouge, and parting tool. The angle of the platform may be different from your preference. Make any adjustments to the jig as necessary. The key is to provide an exact distance and angle so sharpening can be performed without the use of sight.

1) Sharpening - Scrapers

The scraper used in our set-up has a rounded portion on the left side as you look down on the tool. The sharpening process would be to touch the far left side of the scraper and then swing the handle to the right to sharpen the full sweep of the scraper. Mount the jig on a platform to make this as simple and safe as possible.

1. Secure either Side 2 or Side 4 of the jig on the right side of the platform, using a clamp, with the edge of the jig flush with the right side of the platform.

Figure 9 - A jig mounted to the platform, being held by two pressure clamps.



2. Place the scraper on the platform with the far left side of the edge near the grinding wheel against the jig, holding it with one hand. This way there is no doubt that the tool will touch the wheel when pushed forward.

Figure 10 - A scraper placed on the platform against the jig.



3. With the free hand, turn the grinder on.
4. Move the scraper forward until it touches the wheel.
5. With the scraper always in contact with the platform and the jig, swing the handle to the right until the shank of the scraper is flush against the side of the jig.
6. Pull the tool toward you and off the platform.
7. Turn off the grinder.

The key to sharpening a good scraper is to raise a burr. The burr is a thin curl of steel at the sharpened edge of the tool. The burr will create the scraping action when used correctly. The burr usually will not last long. Between sharpenings, it is good to take a diamond card sharpener or stone along the top of the scraper to remove excess steel and prepare for the next burr. You can tell when a burr is created by moving your finger across the edge, not along the edge.

Safety Considerations - The entire movement of sharpening the scraper should be practiced with the grinder turned off. This way, you will be able to gauge where to start the tool for sharpening. By practicing while the grinder is turned off, you can put your hands on the tool and the wheel to see exactly where the tool is during the sharpening process. It cannot be said enough times – the grinder wheel will continue to spin at least 3 to 4 minutes after it is turned off. You will not hear the wheel moving. Do not attempt to touch the wheel until at least 5 minutes have passed after it is turned off.

Do not touch the steel immediately after sharpening. Sharpening creates friction and will heat up the steel.

2) Sharpening - Parting Tools

A parting tool has two bevels. The key is to keep the tool exactly perpendicular to the wheel during sharpening. The way to ensure the exact position of the tool is to use your jig as a guide.

1. Mount the jig, using clamps, on the right side of the platform with side 2 or 4 flush to the platform edge (Figure 7, page 12).

2. Place the parting tool on the platform flat against the jig, holding it in place with one hand. With the other hand, turn on the grinder.
3. Using both hands, push the parting tool straight forward until it comes into contact with the wheel. Make sure the parting tool is touching the jig to ensure that the tool is in proper alignment with the wheel.
4. Pull the parting tool back away from the wheel and turn it over to sharpen the other bevel side.
5. Push the parting tool flush against the jig to ensure proper alignment of the tool to the wheel.
6. Push the tool forward until it contacts the wheel. To make sure each bevel stays the same length, you may want to count up to a number that is the same for each side.
7. Pull the parting tool straight back, still in full contact with the jig until no longer in contact with the wheel.
8. Lift the parting tool back and up off the platform.
9. Turn off the grinder.

You can check for the sharpness of the parting tool. After the tool has cooled, rub your finger across the edge from both sides. If you can feel the burr on either side, then it is sharp. The burr is a thin curl of steel at the end of the edge. Do not rub your finger along the edge.

Safety Considerations - The jig is set up to ensure the parting tool is perpendicular to the wheel and that the tool will come in contact with the wheel. Once the grinder is turned on, you cannot move your hands close to the moving wheel. It is always good to have the hands in contact with the back portion of the platform to ensure that they are away from the moving wheel. Again, the wheel continues to spin after the grinder is turned off. Wait for at least 5 minutes before coming close to the wheel.

3) Sharpening - Spindle Roughing Gouges

The roughing gouge has a bevel that is the same the entire length of the tool end. Once the platform has been set, bring the gouge up to the wheel and rotate it side to side to sharpen.

1. Mount either Side 2 or Side 4 of the jig flush on the right side of the platform (Figure 9, page 14).
2. Place the roughing gouge on its side in the center of the platform and up against the jig, holding it with one hand.

Figure 11 - A man holding a roughing gouge on the platform of the sharpening grinder. The flute faces 3 o'clock in the center of the platform and up against the jig.



3. With your free hand, turn the grinder on.
4. Using both hands, push the tool forward until it comes into contact with the wheel.
5. Rotate the roughing gouge counterclockwise, rubbing the bevel on the wheel, until the flute of the gouge is facing 9 o'clock.
6. Pull the roughing gouge back until it is not in contact with the spinning grinding wheel.
7. Pull the roughing gouge back and away from the platform.
8. Turn the grinder off.

You can check for the sharpness of the roughing gouge. After the tool has cooled, rub your finger across the edge. If you can feel the burr, then it is sharp. The burr is a thin curl of steel at the end of the edge. Do not rub your finger along the edge.

Safety Considerations - The jig is set on the platform to ensure that the roughing gouge will be perpendicular and in full contact with the wheel during sharpening. Wait until at least 5 minutes after turning the grinder off before attempting to touch the wheel.

6. Workstation

As in any workshop, an organized workplace is more efficient and promotes a safe work environment. Having everything in its place and a place for everything should be the goal of every woodturner. The workstation described here is a basic set-up that will provide a workplace to support the lessons in this manual.

As with all recommendations found in this manual, there is not just one way to accomplish a task. The workstation described is a suggestion. As turners begin experimenting, it is envisioned that different workstation designs will be developed to meet the individual needs of

various turners. The workstation described in Appendix C (page 44) is not a “blind workstation” but a workstation for turners that can be used effectively by a blind turner.

Figure 12 - Tools and equipment laid out on the top of a workstation. Included are a face shield, mask for dust protection, earphones to minimize noise, a depth gauge, a chuck, and various small tools in a shallow tray so they won't roll around.



The workstation is designed to hold the five turning tools most used by beginners. There is an open space for project set-up and a parts tray. There is also a place to hold some centering templates on the side of the workstation. Underneath is an open space to store safety glasses, a face shield, turner's smock, dust mask, and other items.

On the top right side, from front to back, are 5 holes approximately 1-1/4" in diameter to hold each of the five tools described in this manual. The order of the tools is set to match their sequence of use:

1. Spindle roughing gouge
2. Parting tool
3. Spindle gouge
4. Scraper
5. Bowl gouge

Note – The alternative to the tools listed above is a set of carbide-tipped tools that could be used in addition or as a replacement.

Many turners will mark the woodturning handles with a number of coves or V-grooves to identify the tool by touch. We created a number of coves in the handle to match the sequence of the tools in the workstation – 1 cove for the roughing gouge, 2 coves for the parting tool, and so on.

Figure 13 - Five turning tools, showing coves cut at the end of each tool to identify it, in order of use.



The rest of the workstation top is open for project set-up and the small-parts tray.

Figure 14 - A close-up of the small-parts tray at the workstation. This one holds a nail, a live center used in the tailstock, a drive center used in the headstock, and a chuck wrench.



At the back of the workstation, there is a small back-stop to reduce the possibility of parts and wood rolling off the back of the workstation.

On the side of the workstation, a finishing nail is attached to hold the centering templates. The centering templates and process of centering are described below.

A simple box could be used to hold various items under the workstation. See Appendix C (page 44) for construction diagram.

Dimensions of the Workstation – 18” wide, 36” long, and 30” high. The wood at the back of the work station is shifted up a couple of inches to allow for a backstop. The entire work station is assembled by using wood screws. The wood is 3/4” Baltic birch plywood.

7. Centering

A basic task of any turner is finding the center of a wood blank, whether it is faceplate work or spindle work. The typical turner will find the center of a square by drawing a diagonal line from one corner to the opposite corner. The center is the point where the two diagonal lines intersect. This technique usually does not work for a blind person.

An alternative method for finding a center on a wood blank is to use round templates. By having a round flat plate with a small hole, no more than 1/8”, centering becomes very easy and accurate. The centering template is something that will probably need to be made, because no templates of this type are known to be commercially available.

The template should be made of a material that is stable and durable for repeated use. Some possible materials are plywood, hardboard (Masonite), aluminum, or plastic. The sizes of the template would depend on the size of wood being measured. For a starting point it is recommended that a series of round templates be created from 2” to 10” in diameter, in increments of 1”. The advantage of using these round templates is that the wood blank does not need to be square to find the relative center. There are wood blanks that have been rounded or come in odd sizes freshly cut from a downed tree that are not square. The round template would aid in finding the center on these pieces as well.

Figure 15 - A homemade round template set against the end of a blank with a nail inserted through its middle hole.



To find the center of any piece of wood, use a template that is a bit smaller than the wood blank.

1. Place the template over end of the wood to be centered.
2. Insert a finishing nail in the center hole of the template, driving it into the blank far enough so it will not pull out when removing the template.
3. Lift the template up, leaving the nail in the blank.
4. Rotate the nail to enlarge the hole slightly to provide a mark that can be found by touch. Sometimes the wood is pitted, which may make feeling the center mark difficult to impossible.

At this point, you can use the center mark to mount the piece of wood on the lathe or drill a hole for a screw chuck.

When mounting the wood blank on the lathe, it may be difficult to insert the live center from the tailstock into the center mark. Most live centers have a ring that would block the fingers from feeling the mark and the center point. An alternative live center is one in a cone shape, allowing for your fingers. Oneway makes a live center in a cone shape.

8. Measuring

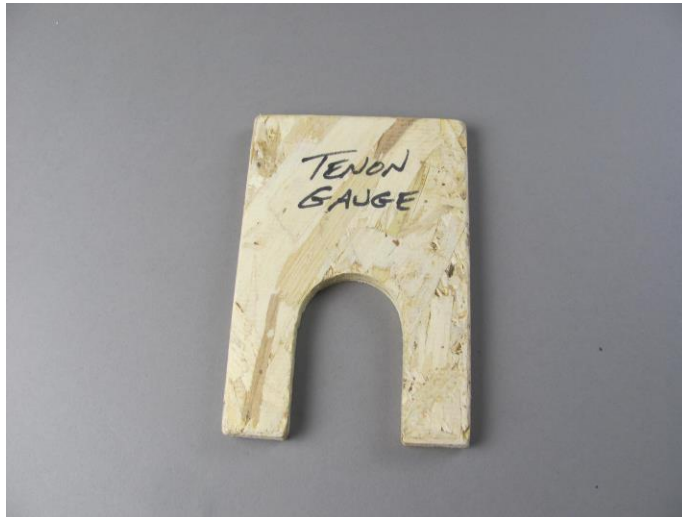
For the most part, measuring is not as important in woodturning as it would be in cabinet making or other woodworking construction. Measuring is used in several turning operations, such as creating a tenon to mount your blank on a chuck, measuring the thickness of a tenon for a finial, creating a set of similar turned items, fitting a lid on a box, or checking the depth of a hole.

For most measuring operations, a blind turner could use the same tools as any other turner. For example, a vernier caliper can be used to measure the size of a box lid. The key thing to avoid is the use of a digital readout or other types of visual requirements to use the caliper. The

rule of thumb is that, if you need to look at something, then it will not work. Simple calipers without a digital readout will work just fine and are less expensive.

In those cases where you need to measure the diameter of a circle or the length of a tenon, you could use some pre-cut stock. For example, if you want to make sure your tenon is the correct diameter to mount on your 4-jaw chuck, you may want to create a u-shaped template that can be used to check the diameter of the item being turned.

Figure 16 - Chuck tenon gauge. In a rectangle shape, the short end has a horse-shoe shape cut-out that can be fitted around a tenon. When the tenon fits snugly into the gauge, it has been turned to the correct diameter.



A click stick is a tool that is used to measure the length of wood or the depth of a hole with accuracy down to 1/16". It is used similar to a depth gauge.

Figure 17 - A click stick resting alongside the end of a wood blank. The end of the click stick is flush with the opposite edge of the blank, and its metal stop has been moved up flush with the near edge of the blank.



The click stick is about 7" long collapsed and about 13" long fully extended. A metal stop will allow a 6" measurement when the click stick is fully retracted. There is a thumb screw at the top of the tool. Loosen the screw and start to extend the click stick. Each click is 1/16". Once you have extended the stick to the desired length, then lock down the stick with the thumb screw.

If you want to measure the depth of a hole that is 3/8" in diameter or larger, such as a hole for an ice cream scoop, then push the extension of the stick into the hole until the bottom is touched. Lock down the stick with the thumb screw and then determine the depth.

Information about where to buy a click stick is included in Appendix A (page 40).

9. Skill-building (Day 1)

As the student stands in front of the rotating wood on the lathe, he can think of the positions of the wood like positions on a clock face. The toolrest is usually positioned at 9:00, the top of the wood is at 12:00, and the location of the wood opposite from the toolrest is 3:00 (the tailstock). Given these positions, the tool cutting the wood is usually placed approximately between 9:00 and 10:00. The thumb would usually be on the flute of the tool while it is cutting the wood. The fingers of the same hand would be positioned at approximately 1:00 to 2:00. This will allow the blind turner to feel the cuts as they are being made, keeping them a safe distance from the toolrest.

The lessons for Day 1 are targeted for the beginning turner. The information described in the previous sections of this manual are intended to provide the turner and the instructor with skills and techniques to assist in Day 1 lessons.

The techniques described in previous sections of this manual will be referenced during the descriptions below. It is expected that the previous sections have been read and understood.

The intent of the instructions is to provide the mentor/instructor with information about how to teach a blind turner. The instructions will be limited to approaches and techniques for the blind turner. Detailed instructions for turning will not attempt to describe turning techniques that are not specific for the blind turner.

For each exercise, high-speed steel tools are referenced in the descriptions. An alternative tool is one with a carbide tip. Whatever tool used, the objective of Day 1 lessons is to provide the new turner with techniques that are used to gain basic spindle-turning skills and prepare the student for Day 2 projects.

The Day 1 lessons are the same classes used by Jim Sannerud for all turners, blind or sighted. The difference is the approach. In the prior sections of this manual, you will find several adaptive techniques that can be used to accommodate the blind turner. For example, in mounting the blank on the lathe for roughing, the centering template will provide a quick method for centering the ends of the blank. The sharpening techniques will be used over and over during the entire day, unless a carbide-tipped tool is used.

During a lesson, the instructor will demonstrate the cuts and shapes to be performed later by the student.

Figure 18 - The image represents a demonstration stick, a useful tool for helping the any turner understand the types of cuts and shapes. It is an oversized large spindle with straight cuts, beads, coves, flat surfaces, V-cuts, and rounded corners.



The blind student will not be able to see the instructor as he demonstrates, of course. A couple of techniques can be used during the instruction process. One approach is to have a sample of the completed projects available for the student to touch as the instructor describes what is being demonstrated. During the demonstration, the instructor can turn the lathe off at key points and have the student touch the blank on the lathe.

One technique used, after the blank is roughed-turned to a cylinder, is to have a student touch the blank as it is being turned. This way, the instructor can describe the cuts and the student can immediately feel what is being done. The student will not be in any danger of harm if he is wearing protective gear and is on the opposite side of the lathe and touches the wood lightly ONLY after it is roughed-turned to a cylinder.

The blind turner will know his positions primarily by touching something. The toolrest is a safe place to touch before turning the lathe on. During the process of turning, the tool will need to be in constant contact with the toolrest before, during, and after the lathe is turned on. To accomplish this, the student should anchor the turning tool on the toolrest before turning the lathe on. This way there is no guessing about where the tool is located while the wood is spinning.

An alternative process for turning a lathe on and off is the use of a foot switch. Two types of foot switches are available – one that turns on or off with each press and another that stays on only when depressed. Some lathes, especially those that are electronically controlled, cannot be used with foot switches unless the lathe is modified. The drawback to using the type of foot switch that needs to be continually depressed to remain on is that it may restrict movement. One foot will need to stay in the same spot to keep the lathe running.

During beginner sessions, the question seems to always arise concerning the speed of the wood rotation. Most newer lathes have a digital readout that cannot not be seen by the blind turner. A blind turner will be judging the speed of the lathe by sound, and it may take a few tries to match the sound of the lathe to the desired speed for the particular cuts. Before each session, the instructor may want to spend a few minutes during the demonstration time focusing on the desired rotation speed with the associated sound. This would include rules for speeds based on size of wood and wood types.

It is advisable to practice adjusting the lathe speed. Each lathe has some form of speed adjustment. Usually there is a belt and pulley system. It is important to acquaint the turner with the speed adjustments before turning begins.

Consideration – Some lathes continue to turn after the power has been shut off. Some lathes will not make a sound while the wood continues to rotate. Be aware of this and provide guidance to the students about when it is safe to touch the wood on the lathe with hands or tools. This is most important if there are corners or rough spots on the wood. By touching the handwheel, the student could confirm that the lathe has stopped.

A. Skill-Building – Roughing

For almost every project, the turner will need to rough a blank down to a round cylinder. At the end of this lesson the student will be able to:

- Center a spindle blank
- Mount the spindle stock on the lathe
- Rough the square spindle into a cylinder

The tools needed for this process are:

- Spindle roughing gouge
- Centering template
- Live center
- Drive center
- Face shield
- Dust mask
- Eye protection

The materials needed are:

- Spindle blank approximately 2" square by 12" long

This is the first experience for most beginning turners. The instructor will go through the steps from start to finish, describing as he goes. Because the blank is not rounded for most of this lesson, the student should not touch the blank when it is turning on the lathe.

As the instructor demonstrates the process of roughing, it is important to focus on what the student will feel and hear during the roughing exercise. At the beginning of the roughing process, the student will need to start with light cuts while feeling the vibrations caused by cutting and air. As the blank becomes a cylinder, the vibrations will reduce and the sound will be more like a hiss rather than a series of clicks. Demonstrate the test of whether the blank has become a cylinder by placing the shank of the tool on the turning cylinder and listen for the clicking of the tool as it runs over the flats on the cylinder.

Note – If the tailstock is not secured properly, it may slip. As a practice, it may be helpful to place a finger on the bed of the lathe, touching the tailstock. As the tailstock holding the live center is tightened down, your finger will detect whether the tailstock is slipping.

Here are the steps in roughing a blank into a cylinder:

1. Use the centering template to find the center point on both ends of the blank. Make sure the hole is deep and broad enough so it can be felt with your fingers.
2. Move the tool rest away from where the blank will be mounted and mount the blank between the drive center on the headstock and the live center in the tailstock.
3. Adjust the lathe speed to a desired rate.
4. Turn off the lathe.
5. Bring up the tool rest parallel with the blank as close as possible. Raise the tool rest so the roughing gouge edge would be cutting at the center line of the blank.

6. Turn the blank by hand to ensure the toolrest is far enough away from the blank so the wood won't hit the blank while the wood spinning.
7. Place the roughing gouge on the toolrest with the handle pointing down and cutting end clear of the wood.
8. With a free hand turn the lathe on.
9. Position your hands and body and begin roughing. Safety – Until the blank is a cylinder, do not place your hands on the blank.
10. After the blank is getting close to becoming a cylinder, place the shank of the roughing gouge on the spinning wood cylinder to determine if the wood is round. If you continue to hear clicking or thumping while the roughing gouge is resting on the spinning wood cylinder, then more roughing needs to be performed.

B. Skill-Building – Coves

In spindle turning, there is a limited number of shapes that can be created to form an unlimited number of designs. Usually the first shape taught is a cove. At the end of this lesson, the student will be able to use the spindle gouge to create a cove. It is assumed the spindle stock has been centered and roughed to a cylinder. The wood is mounted on the lathe ready for this lesson.

The tools needed for this process are:

- Spindle gouge
- Face shield
- Dust mask
- Eye protection

The materials needed are:

- A wood cylinder approximately 2" in diameter and 12" long already mounted on the lathe

During this lesson, the student will be learning the skills to create a cove. Before this lesson starts, the wood on the lathe has been roughed to a cylinder. As in each lesson, the instructor will demonstrate and explain the cuts to be learned. The student, while on the opposite side of the lathe from the instructor, can place his fingers on the wood to feel the coves as they are being cut. If there are many students, it may not be practical to have everyone touching the wood. In this case, samples of a cove can be distributed among the students so they can feel the shapes of the cove while the instructor demonstrates and describes the process of cutting a cove.

As the instructor demonstrates the process of making coves, it is important to focus on what the student will feel and hear during the exercise. When the gouge begins to cut, the turner will hear a hissing sound, indicating that the cutting has begun. If the tool begins to bounce, then the bevel is probably not rubbing. When the tool reaches beyond the bottom of the cove, the tool will begin to chatter. It is difficult to know when the tool is at the bottom of the cove. Focus on the sound and feel that the tool is making during the process of cutting a cove.

For some blind turners, one hand holds the tool and the other hand is placed with the thumb on the flute and the fingers on the opposite side of the blank. This provides a method for knowing exactly the position of the gouge and feeling the cuts as they are being made.

Figure 19 - This image shows the hand placement on the wood spinning on the lathe, with the thumb anchored on the toolrest and the fingers wrapped around the wood cylinder. The thumb feels the recess of the cove, and the flute of the turning tool is against the thumb to follow along while making the next cut.



The steps in turning are:

1. With the lathe turned off, adjust the toolrest so it is parallel with the wood cylinder.
2. Rotate the wood by hand to ensure that the blank will not touch the toolrest when it begins to rotate. If the wood blank touches the toolrest, move the toolrest farther away. Test again.
3. Adjust the toolrest up or down so the spindle gouge is touching the wood approximately at the center line. Test again.
4. Turn the lathe on and adjust the lathe speed to the desired rate. Reminder – do not touch the blank until it has been turned into a cylinder.
5. Place the spindle gouge on the toolrest with the handle pointing down and the cutting part of the tool pointing up and away from the wood.
6. Place both hands on the spindle gouge and adjust your body in preparation to make the cut.
7. Place the shank of the spindle gouge on top of the spinning wood cylinder so you can feel the rotation of the wood while there is no cutting.
8. Anchor the end of the tool handle against your body.
9. If you are right handed, place your left hand so your thumb is on the flute of the spindle gouge and your fingers are touching the opposite side of the wood as it is rotating.

Figure 20 - A blind student is at the lathe, holding a spindle gouge, ready for a cut. His left hand is on the wood and the gouge flute. His right hand is holding the spindle gouge, the handle of which is resting against the student's hip.



10. Raise the handle slowly so the bevel of the spindle gouge comes into contact with the wood at the proper angle to start one side of the cove.
11. Continue through the exercise of cutting a cove while your fingers feel the cuts at the back side of the wood cylinder.

C. Skill-Building – Parting Tool

The next shape in the spindle turning lesson is a straight portion that can be used to provide a transition between a cove and a bead. At the end of the lesson, the student will be able to use a parting tool to create straight shapes on spindles, such as shoulders and tenons.

The tools needed for this process are:

- Parting tool
- Face shield
- Dust mask
- Eye protection

The materials needed are:

- Wood cylinder approximately 2" diameter and 12" long. The wood cylinder is already mounted on the lathe before the lesson.

The parting tool is used for several cuts, including creating a straight cylinder shape and parting the wood off the lathe. In this lesson, the focus is on using the parting tool to make a straight area on the cylinder.

As in other lessons that start with a wood cylinder, the student can place his fingers on the wood while the instructor demonstrates the cuts. The student is on the opposite side of the lathe

while the cuts are demonstrated and described by the instructor. During the lesson, the student will be able to touch the wood while it is spinning.

Caution - The parting cut will create a right angle in the wood that can cut your fingers when the wood is spinning. As you turn, use light touches when feeling the cuts.

In the beginning of the exercise, the instructor should describe the sound and feel during the process of making a parting cut. During the parting cut, the blind turner can hold the tool with one hand and place the other hand with the thumb on the tool and the fingers on the opposite of the wood. The thumb will feel the placement of the tool and the fingers will feel the cut.

The steps in turning are:

1. With the lathe turned off, adjust the toolrest so it is parallel with the wood cylinder.
2. Rotate the wood by hand to ensure that the blank will not touch the toolrest when it begins to rotate. If the wood blank touches the toolrest, move the toolrest farther away. Test again.
3. Adjust the toolrest up or down so the spindle gouge is touching the wood approximately at the center line. Test again.
4. Turn the lathe on and adjust the lathe speed to the desired rate. Reminder – do not touch the blank until it has been turned into a cylinder.
5. Place the parting tool on the tool rest with the handle pointing down and the cutting edge up and away from the wood.
6. Place both hands on the tool and place the end of the tool handle against your body.
7. If you are right handed, place the thumb of your left hand on the parting tool just below the cutting edge and your fingers on the opposite side of the spinning wood cylinder.
8. Raise the handle so the parting tool is parallel with the floor.
9. Push the tool straight into the wood to make the cut. Repeat this action until the cuts are wide and deep enough for the desired shape.

Caution – Ensure the parting cut does not go too deep or it may weaken the blank to the point where the piece might break and fly off.

D. Skill-Building – V-Grooves

At the end of this lesson, the student will be able to make various sizes of V-shaped groove cuts using a spindle gouge.

The tools needed for this process are:

- Spindle gouge
- Face shield
- Dust mask
- Eye protection

The materials needed are:

- Wood cylinder approximately 2" diameter and 12" long already mounted on the lathe during previous exercises

As with the other lessons, the instructor will demonstrate the cuts to be learned by the student. The student will be on the opposite side of the lathe, feeling the wood cylinder as the cuts are made and described. With the V-groove cuts, there are sharp edges that would cut fingers if too much pressure is placed on the wood while turning. Use light pressure if touching the V-grooves. The instructor should help focus on the sound and feel that the student will experience during the exercise. The cutting process creates a hissing sound. If the bevel is rubbing, the tool will feel solid and not be bouncing on the wood.

The steps in turning are:

1. With the lathe turned off, adjust the toolrest so it is parallel with the wood cylinder.
2. Rotate the wood by hand to ensure that the blank will not touch the toolrest when it begins to rotate. If the wood blank touches the toolrest, move the toolrest farther away. Test again.
3. Adjust the toolrest up or down so the spindle gouge is touching the wood approximately at the center line. Test again.
4. Place your free hand on the spindle gouge. Position your body and place the end of the gouge handle against your body. Turn the lathe on.
5. If you are right-handed, place the thumb of your left hand on the flute of the spindle gouge and your fingers on the opposite side of the spinning wood cylinder.
6. Raise the handle to place the shank of the spindle gouge in contact with the spinning wood cylinder without the cutting edge in contact with the wood.
7. Raise the handle of the spindle gouge to begin making the V-groove cuts.

E. Skill-Building – Beads

At the end of this lesson, the student will be able to make one-half of a bead using the spindle gouge.

The tools needed for this process are:

- Spindle gouge
- Face shield
- Dust mask
- Eye protection

The materials needed are:

- Wood cylinder approximately 2" in diameter and 12" long. The wood is already roughed to a cylinder and mounted on the lathe from previous exercises.

The last of the shapes in the spindle turning session is the bead. During this lesson, the student will learn to make only one side of the bead.

As in previous lessons, the instructor will demonstrate and describe the process of making a bead. The student will be on the opposite side of the lathe, feeling the cuts as the instructor demonstrates and describes the cuts. For the exercise the instructor should focus on the sound and feel during the process of turning the bead. When the tool begins to cut, a hissing sound will be made. If the tool begins to bounce, then the bevel is probably not rubbing.

The steps in turning are:

1. With the lathe turned off, adjust the toolrest so it is parallel with the wood cylinder.
2. Rotate the wood by hand to ensure that the blank will not touch the toolrest when it begins to rotate. If the wood blank touches the toolrest, move the toolrest farther away. Test again.
3. Adjust the toolrest up or down so the spindle gouge is touching the wood approximately at the center line. Test again.
4. Turn the lathe on and adjust the lathe speed to the desired rate. Reminder – do not touch the blank until it has been turned into a cylinder.
5. Place your free hand on the spindle gouge. Position your body and place the end of the gouge handle against your body. Turn the lathe on.
6. If you are right-handed, place the thumb of your left hand on the flute of the spindle gouge and your fingers on the opposite side of the spinning wood cylinder (Figure 20, page 29).
7. Raise the handle to place the shank of the spindle gouge in contact with the spinning wood cylinder without the cutting edge in contact with the wood.
8. Raise the handle of the spindle gouge to begin making the bead cuts.

10. Projects (Day 2)

So far, we have been working on basic skills like sharpening, centering, roughing, cutting coves and beads, and other fundamentals. Now it is time to make something functional. The exercises during Day 1 focused on spindle turning, so the projects selected for Day 2 will allow the student to practice his spindle-turning skills.

As in Day 1, these projects are not designed all turners, not just for blind or low-vision turners. On Day 2, it is not important to finish all the projects. Some students may finish only one of the three projects, while others will complete all three. If a student finishes all three exercises, then he could repeat one or all of the projects as time and materials permit.

The objective of Day 2 is to increase the student's basic spindle-turning skills. This is achieved through the three projects outlined below. A secondary objective is for the student to learn how to turn some basic functional items.

If the student has practiced spindle-turning techniques with a high-speed steel tool, then Day 2 should be performed with those same tools. Alternatively, if the student has practiced Day 1 techniques with carbide-tipped tools, then the student should perform Day 2 with those same tools.

On Day 2, the student will use all the skills practiced during Day 1. As in any beginner class, the student is learning something, which usually results in mental fatigue in a relatively short period of time. Ensure a comfortable environment with frequent breaks. It should be emphasized that the objective for Day 2 is to practice the skills learned during Day 1 and not to complete all the projects. Most likely not all the projects will be completed. Also it is more important to practice the spindle-turning skills rather than to make a perfect product.

A. Projects - Dibble

A dibble is a garden tool used gauge the depth for planting bulbs or seeds in the ground. One end is cone-shaped with 1" marks for gauging depth into the dirt, and the other end is a handle with an end broad enough to be held comfortably.

Figure 21 - A garden dibble to measure the depth of dirt for planting bulbs. V-cuts are at 1/2", 1-1/2", 2-1/2", 3-1/2", 4-1/2", and 5-1/2". The top end is a handle, contoured for comfort.



The cone-shaped end to be pushed into the ground is approximately 6" long and about 2" diameter at the widest point near the top. Its point should be narrow enough to enter the ground and wide enough to allow for repeated use without breaking.

During this project, the student will utilize all the cuts practiced in Day 1. To make the handle, the student will practice roughing, parting, beads, and coves. For the cone-shaped end, the student will practice roughing, parting, and cove cuts.

The tools needed for this process are:

- Spindle roughing gouge
- Spindle gouge
- Parting tool
- Live center
- Drive center
- Centering jig
- 80-grit sandpaper or rasp
- Eye protection
- Dust mask
- Face shield

The materials needed are:

- Spindle blank 14" long and 2" square

This project will have the student work from centering the spindle blank to the finished product. The key is to make sure the length of the cone-shape is at least 6" long. The handle should be long and thick enough for a comfortable fit. The ends of the handle are beads. The end of the handle should be broad and flat to enable one hand to push the dibble into the ground.

The steps for preparation are:

1. Mark the center point of each end of the spindle blank using the centering jig.
2. Mount the spindle blank on the lathe using the drive center on the headstock side and the live center on the tailstock.
3. Adjust the toolrest so it is parallel with the spindle blank.
4. Raise or lower the tool rest so the roughing gouge will touch the center line of the spindle blank.
5. Make sure the toolrest and the banjo (the part of the lathe that slides along the bed and support the T-rest) are firmly locked in place.
6. Spin the blank by hand to ensure it does not touch the tool rest. If the wood does touch the toolrest, then make adjustments to the toolrest and try rotating the spindle blank again. Test again.
7. With hands and tools away from the spindle blank, turn the lathe on and adjust the speed to the desired rotation. This way, you are not adjusting the lathe speed while focusing on the cut in later steps.
8. Turn the lathe off.
9. Place the roughing gouge on the tool rest with the handle pointing downward and the cutting edge away from the wood. Hold the roughing gouge with one hand.
10. With your free hand, turn on the lathe.

At this point, the student is ready to start turning a dibble.

1. Use a roughing gouge to rough the blank into a cylinder.
2. Use a parting tool and turn off about 1/4" of wood on each end of the spindle blank to about 3/4" in diameter, so there is enough clearance from the drive and live centers.
3. With the lathe turned off, mark the length of the cone-shaped end by using a 6" ruler or a click stick (the click stick is described in Appendix A, page 40). The mark can be made by using a rasp to remove some of the wood to feel the mark.
4. Turn the lathe on and use the parting tool or spindle gouge to remove some material just beyond the 6" mark.
5. Turn the lathe off and measure to make sure the 6" mark is accurate.
6. Place the spindle gouge on the toolrest and prepare to make additional cuts.
7. Turn the lathe on.
8. Use the spindle gouge and start at the tailstock to begin turning the handle. Use the 6" mark created for the cone-shape to gauge the length of the handle. Make the handle with a large bead on either side. Turn the lathe off frequently to gauge the proper size of the handle diameter and length.
9. After the handle is completed, start on the cone-shape end, using the roughing gouge.
10. After the cone-shape is completed, mark the cone at approximately 1" lengths. Place the tip of your index finger at the smallest point of the cone and mark the wood at the first joint of your finger. This could be done using a spindle gouge or the point of the center punch.
11. Turn the lathe off.

12. Move the tool rest away from the wood.
13. Turn the lathe on and adjust the speed to a slower rate to prepare for sanding.
14. Use sandpaper in progressively fine grits to smooth the surface and remove tool marks.
15. Turn the lathe off.
16. Adjust the toolrest back in position. Test - rotate the wood by hand to ensure it is not in contact with the toolrest.
17. Continue to finish the project with the gouges.
18. Place the parting tool on the toolrest with the handle pointing down and the end up and away from the wood.
19. With your free hand, turn the lathe on.
20. Turn the spindle blank off the lathe by starting at the tailstock side. Using the parting tool, turn the end down to about 1/8" diameter.
21. At the headstock end, use the parting tool to turn the dibble off the lathe. Use one hand to hold the parting tool and the other hand lightly touching the wood to catch the dibble as it comes off the lathe.
22. Smooth each end of the dibble by using a rasp and some sandpaper.

B. Projects - Spurtle

During this project, the student will practice all the cuts made in Day 1. To make the handle, the student will practice roughing, parting, beads, and coves. For the cylinder-shaped end, the student will be practicing roughing, parting, and cove cuts.

Figure 22 - Image of a finished spurtle, a Scottish kitchen tool used in stirring porridge, oatmeal, grits, polenta, or similar dishes. Its shape allows for smooth stirring and getting into the corners of a saucepan.



The tools needed for this process are:

- Roughing gouge
- Spindle gouge
- Parting tool
- Live center

- Drive center
- Centering jig
- Center punch
- 80 grit sandpaper or rasp
- Eye protection
- Dust mask
- Face shield

The materials needed are:

- Spindle blank 14" long and 1-1/2" square

This project will have the student work from centering the spindle blank to the finished product. The key is to ensure the length of the handle is comfortable for holding while stirring. The stirring portion of the stick should be an even width over the entire length.

The steps for preparation are:

1. Use a centering jig to mark the center point of each end of the spindle blank.
2. Use the drive center on the headstock and the live center on the tailstock and mount the spindle blank on the lathe.
3. Adjust the toolrest so it is parallel with the spindle blank.
4. Raise or lower the toolrest so the roughing gouge will be aligned with the center line of the spindle blank.
5. Make sure the toolrest and the banjo are firmly locked in place.
6. Slowly spin the spindle blank by hand to ensure it does not touch the toolrest. If the wood does touch the toolrest, move the toolrest farther away and test again.
7. With hands and tools away from the spindle blank, turn the lathe on and adjust the speed to the desired rotation. This way, you are not adjusting the lathe speed while focusing on the cut in later steps.
8. Turn the lathe off.
9. Place the roughing gouge on the toolrest with the handle pointing downward and the cutting edge away from the wood. Hold the roughing gouge with one hand.
10. With your free hand turn on the lathe.

At this point, the student is ready to start turning a spurtle.

1. Use the roughing gouge to rough the blank into a cylinder.
2. Using the parting tool, turn off about 1/4" of wood on each end of the spindle blank to about 3/4" in diameter, so there is enough clearance from the drive and live centers.
3. With the lathe turned off, start at the tail stock and mark the length of the handle end by using the width of your hand as a guide for proper fit. Make the handle length about 1" on either side of your hand width. The mark can be made by using the rasp to remove some of the wood to feel the mark.
4. Turn the lathe on and use the parting tool or spindle gouge to remove some material just beyond the mark.
5. Turn the lathe off and observe the cut to make sure the mark is accurate.
6. Using a spindle gouge, start at the tailstock and begin turning the handle. Use the mark created for the handle to gauge the length of the handle. Make the handle with a bead on

either side and a cove between the handle and the stirring portion of the stick. Turn the lathe off frequently to gauge the proper size of the handle diameter and length.

7. After the handle is completed, use the roughing gouge and start on the stirring end.
8. Turn the lathe off.
9. Move the toolrest away from the wood.
10. Turn the lathe on and adjust the speed to a slower rate in preparation for sanding.
11. Use the sandpaper to smooth the surface and remove tool marks.
12. Turn the lathe off.
13. Adjust the toolrest back in position to finish the project with the gouges.
14. Rotate the wood to ensure it is not in contact with the toolrest.
15. Place the parting tool on the toolrest with the handle pointing down and the end up and away from the wood.
16. Turn the lathe on with your free hand.
17. Turn the spindle blank off the lathe by starting at the tail stock side. Using the parting tool, turn the end down to about 1/8".
18. At the headstock end, use the parting tool to part the spurtle off the lathe. Use one hand to hold the parting tool and the other hand, lightly touching the wood, to catch the spurtle as it comes off the lathe.
19. Finish each end of the spurtle by using a rasp and some sandpaper.

C. Projects - Honey Dipper

A honey dipper is a simple project that is functional and fun to make. The "honey catcher" end is a series of ring shapes and the other end is a handle long enough to reach the "catcher" end into a honey jar.

Figure 23 - Example of a honey dipper.



During this project, the student will practice all the cuts made in Day 1. To make the handle, the student will practice roughing, parting, beads, V-cuts, and coves. For the ring-shaped end, the student will practice roughing, parting, and cove cuts.

The tools needed for this process are:

- Roughing gouge
- Spindle gouge
- Parting tool
- Live center
- Drive center
- Center punch
- 80-100 grit sandpaper or rasp
- Eye protection
- Dust mask
- Face shield

The materials needed are:

- 1 spindle blank 1" square by 7" long

This project will have the student work from centering the spindle blank to the finished product. The key is to make sure the rings that catch the honey are close together and roughly equidistant. Make at least 3 or 4 rings.

The steps for preparation are:

1. Use the drive center on the headstock and the live center on the tailstock and mount the spindle blank on the lathe. The blank is small enough that centering may be easier by mounting the blank on the lathe and rotate to see if the blank is centered. If not, then adjust until close. There is enough material that an exact fit is not necessary.
2. Adjust the toolrest so it is parallel with the spindle blank.
3. Raise or lower the toolrest so the roughing gouge will align with the center line of the spindle blank.
4. Make sure the toolrest and the banjo are firmly locked in place.
5. Slowly spin the blank by hand to ensure it does not touch the toolrest. If the wood does touch the tool rest, then move the toolrest farther away and test again.
6. With hands and tools away from the spindle blank, turn the lathe on and adjust the speed to the desired rotation. This way, you are not adjusting the lathe speed while focusing on the cut in later steps.
7. Turn the lathe off.
8. Place the roughing gouge on the toolrest with the handle pointing downward and the cutting edge away from the wood. Hold the roughing gouge with one hand.
9. With your free hand, turn on the lathe.

At this point you are ready to start turning the honey dipper.

1. With the roughing gouge, rough the blank into a cylinder.
2. Using the parting tool, turn off about 1/4" of wood on each end of the spindle blank to about 1/2" in diameter, so there is enough clearance from the drive and live centers.
3. With the lathe turned off, start at the tailstock and mark the length of the honey catcher end by using your thumb as a guide. Measure from the tip of your thumb to the first

- knuckle or about 1-1/2". The mark can be made by using the rasp to remove some of the wood to feel the mark.
4. Turn the lathe on and use the parting tool or spindle gouge to remove some material just beyond the mark.
 5. Turn the lathe off and observe the cut to make sure the mark is accurate.
 6. Using a spindle gouge, start at the tailstock end and begin turning the honey catcher portion of the honey dipper. The shape should be a cylinder that is larger in the center than the ends. Play with various shapes to find your preference.
 7. Turn the lathe off.
 8. Raise the toolrest up to above center of the blank, preparing to make the honey catcher rings.
 9. Mark the center of the coves for the honey catcher rings using the center punch. Keep the handle up and the point of the punch pointed down.
 10. Turn the lathe on.
 11. Press the point of the punch into the spinning blank firmly enough to mark the wood. A sighted turner may use a pencil for this mark, but this would not work for a blind turner. Another option is to use a sturdy divider to make even marks.
 12. Turn the lathe off.
 13. Adjust the toolrest back to a proper turning position.
 14. Rotate the wood by hand to make sure the blank is not touching the toolrest.
 15. Turn the lathe on.
 16. Use the spindle gouge to make small coves or V-grooves at each marked spot.
 17. After the honey catcher end is completed, use a spindle gouge to start on the handle portion. At this point, it is up to each turner to fashion a handle with coves, beads, and other designs. The suggestion is that the handle should not have too many facets to trap honey.
 18. Turn the lathe off.
 19. Move the toolrest away from the wood.
 20. Turn the lathe on and adjust the speed to a slower rate in preparation for sanding.
 21. Use sandpaper to smooth the surface and remove tool marks.
 22. Turn the lathe off.
 23. Adjust the toolrest into position to finish the project with the parting tool.
 24. Turn the lathe on.
 25. With the parting tool, part the spindle blank off the lathe by starting at the tailstock side. Turn the end down to about 1/8" diameter.
 26. At the headstock end, use the parting tool to part the honey dipper off the lathe. Use one hand to hold the parting tool and the other hand, lightly touching the wood, to catch the honey dipper as it comes off the lathe.
 27. Finish each end of the honey dipper by using a rasp or sandpaper.

Appendix A - Tools and Equipment List

While the AAW will attempt to update these links, they may become outdated. If that is the case, navigate to the site's home page and do a search for the product.

A. Miscellaneous

Click Stick - <https://mail.google.com/mail/ca/#drafts/1382e1195cb27517>

Diamond Wheel Dresser - <http://www.woodcraft.com/product/2000223/2793/wheel-dresser-diamond-tip.aspx>

Magnetic Tray - <http://www.jegs.com/i/JEGS-Performance-Products/555/80081/10002/-1?parentProductId=>

Rare Earth Magnets - <http://www.woodcraft.com/product/2081312/30206/rare-earth-magnet-34-x-18-19mm-x-3mm-6pcs.aspx>

Slow Speed Grinder - <http://www.woodcraft.com/Product/2080939/29437/8in-Slow-Speed-Grinder.aspx>

Spring Loaded Center Punch - <http://www.harborfreight.com/spring-loaded-center-punch-621.html>

Vari-Grind 2 Jig - <http://www.woodcraft.com/Product/2001998/26298/Oneway-Wolverine-Vari grind-2-Jig-Only.aspx>

Wolverine Grinding Jig - <http://www.woodcraft.com/Product/2001998/2509/Oneway-Wolverine-Grinding-Jig.aspx>

B. High-speed Steel Turning Tools

3/4" Roughing Gouge -

[http://www.woodturnerscatalog.com/store/Turning_Tools Bowl and Spindle Tools Hamlet Hamlet M2 Roughing Gouge m2_roughing?Args=](http://www.woodturnerscatalog.com/store/Turning_Tools_Bowl_and_Spindle_Tools_Hamlet_Hamlet_M2_Roughing_Gouge_m2_roughing?Args=)

1/4" Parting Tool -

[http://www.woodturnerscatalog.com/store/Turning_Tools Bowl and Spindle Tools Hamlet Hamlet M2 Beading Parting Tool m2_bead_part?Args=](http://www.woodturnerscatalog.com/store/Turning_Tools_Bowl_and_Spindle_Tools_Hamlet_Hamlet_M2_Beading_Parting_Tool_m2_bead_part?Args=)

1/2" Spindle Gouge -

[http://www.woodturnerscatalog.com/store/Turning_Tools Bowl and Spindle Tools Hamlet Hamlet M2 Spindle Gouge m2_spindle?Args=](http://www.woodturnerscatalog.com/store/Turning_Tools_Bowl_and_Spindle_Tools_Hamlet_Hamlet_M2_Spindle_Gouge_m2_spindle?Args=)

1/2" Bowl Gouge -

[http://www.woodturnerscatalog.com/store/Turning_Tools Bowl and Spindle Tools Hamlet Hamlet M2 Bowl Gouge m2_bowl?Args=](http://www.woodturnerscatalog.com/store/Turning_Tools_Bowl_and_Spindle_Tools_Hamlet_Hamlet_M2_Bowl_Gouge_m2_bowl?Args=)

1/2" Scraper -

http://www.packardwoodworks.com/Merchant2/merchant.mvc?Screen=PROD&Store_Code=packard&Product_Code=100127&Category_Code=tools-pkrd-hdbs

C. Carbide-tipped Tools

Mini Easy Finisher - #845746 – Estimated \$92 - <http://www.woodcraft.com/product/2080216/29203/mini-easy-finisher.aspx>

Mini Easy Rougher - #845506 – Estimated \$92 - <http://www.woodcraft.com/product/2080216/29202/mini-easy-rougher.aspx>

Mini Easy Detailer - #150886 – Estimated \$92 - <http://www.woodcraft.com/product/2080216/29889/mini-easy-detailer.aspx>

D. Personal Protection Equipment

Face shield
Protective eyewear
Dust mask
Ear protection

Other useful safety equipment

- Dust collection system
- Air filter
- First-aid kit

E. Wood and Other Materials for Building a Work Station

- 4' x 8' Baltic Birch plywood sheet (makes two stations)
- Screws and other hardware
- Wood glue
- Castors or wheels, if desired

Tormek sharpening system (alternative sharpener)

- Tormek T7 wet slow speed grinder - <http://www.sharpeningsupplies.com/Tormek-T7-P363C101.aspx?UserID=24466396&SessionID=FgQQS9ski79hhisFFpSv>
- Turning Tool Setter TTS-100 - <http://www.tormek.com/en/accessories/tts100/index.php>
- Tormek Universal Gouge Jig SVD185 - <http://www.highlandwoodworking.com/tormekuniversalgougejig.aspx>

Sandpaper Organization - <http://www.organizeit.com/black-mesh-stackable-paper-tray.asp>

Appendix B - Wood Requirements and Tactile Aids

If birch is not available, maple, cherry, or poplar may be substituted.

- 7 each - 2" x 8" birch turning blanks for practicing cylinders, coves, beads, parting cuts, V-cuts, review, play
- 1 each - 2" x 14" birch turning blank for garden dibble
- 1 each - 1-1/2" x 14" birch turning blank for spurtle
- 1 each - 1" x 7" birch turning blank for honey dipper

Tactile/Visual Aids per station

- A demonstration stick of birch, maple, cherry, or poplar, turned to demonstrate a cylinder, cove, bead, V-Cut, Parting Cut (Figure 18, page 24)
- 1 Set of Center Finders (1/4" Baltic birch)

Appendix C - Dimensions for Jigs and Workstation

A. Spindle and Bowl Gouge Jig

The rod is from a $\frac{1}{2}$ " dowel with a $\frac{3}{16}$ " dowel intersecting at $4\text{--}\frac{5}{16}$ ". Figure 6 (page 11) shows how this jig is used.



B. Scraper, Spindle Roughing Gouge, and Parting Tool Jig Dimensions

The jig used on the left side of the grinder is a rectangle $\frac{5}{8}$ " thick and $3\text{--}\frac{1}{8}$ " by 2" with a tab that extends from one side of the rectangle.

To make positioning the jig easier, mark the sides as follows:

With the tab facing up and closest to the left, the block is $\frac{5}{8}$ " thick.

Side 1, from left to right is $\frac{3}{16}$ " to the tab, the tab is $\frac{5}{8}$ ", the remainder is $1\text{--}\frac{3}{16}$ ".

Side 2 is $3\text{--}\frac{1}{8}$ ".

Side 3 is 2".

Side 4 is $3\text{--}\frac{1}{8}$ ".



C. Work Station

18" wide, 36" long, 30" high.

The wood at the back of the work station is shifted up a couple inches to allow for a backstop.
The entire work station is assembled by using wood screws.

The wood is 3/4" Baltic birch plywood.

