Woodturning Info Sheet-

blackcatsystems.com

Graphic Programs- Graph paper maker
Polar Graph Paper-
Scroll down-
Free to try-
Download Options- Mac or PC
Open Download-
Graph Paper Maker-
Polar Graph-
Change circles and spokes- as desired-
Print

McMaster-Carr.com

Nuts-
Thread size- on left side
1 1/4 x 8
Steel ASTM Grade 2- Cheapest ones-
Stock Number #90521A275 $6.81 ea

bestwoodtools.com

Woodturning tools and accessories-
T-bar modular Rest System-

Jerry Bennett- Segmented Turnings-

segeasy.com
Videos-
1- Segmentology- The Basics-

2- Segmentology- Beyond the Basics-

3- Segmentology-Tilt-

4- Making the Wedgie Sled-

Woodturning Chuck Dimensions

	Tenon		Recess	
	Minimum	Maximum	Minimum	Maximum
Pin Jaws	1"	2 1/4"	5/16"	1 7/8"
Standard Jaws	2"	3 1/4"	1 5/8"	2 3/4"
Large Jaws	3 3/4"	5 1/4"	3 1/4"	4 5/8"
Cole Jaws	4 5/8"	12 1/8"	2 5/8"	10 1/4"

Inch to Decimal Conversion

1/32	0.0313	17/32	0.5313
1/16	0.0625	9/16	0.5625
3/32	0.0938	19/32	0.5938
1/8	0.125	5/8	0.625
5/32	0.1563	21/32	0.6563
3/16	0.1875	11/16	0.6875
7/32	0.2188	23/32	0.7188
1/4	0.25	3/4	0.75
9/32	0.2813	25/32	0.7813
5/16	0.3125	13/16	0.8125
11/32	0.3438	27/32	0.8438
3/8	0.375	7/8	0.875
13/32	0.4063	29/32	0.9063
7/16	0.4375	15/16	0.9375
15/32	0.4688	31/32	0.9688
1/2	0.5	1	1

Project: Segment Turning Date:

Ring #	Wood Type	Ring Radius	Ring Diameter	Number Seg	Seg Length	Seg Height	Seg Width	Plank Length	Misc
15									
14									
13									
12									
11									
10									
9									
8									
7									
6									
5									
4									
3									
2									
1									

Woodturning Seminar

This is my second time giving this presentation before you.The previous time was just before Covid in November 2021. Since then a number of our members have asked for a rerun. For those who heard it the first time, pay attention, Theres new stuff. For those new here today. Enjoy! The things I will show you today are my way of doing things. If you accomplish the same task a different way, that's great. I have a lot to cover today. So, if you have a question, jot it down and I will answer any and all at the end.,

Powermatic 3520 Jigs, Fixtures and Ideas

1 - I give this the heading of Powermatic 3520 because that is the lathe I have. But most of what I will be showing you can be adapted to any size or manufacture of lathe.

Type of turner

2 - I am not really confident speaking in front of most of the people in this room who are much better turners then I am. There are those who see the art in a piece of wood and those who see the function better in that same piece of wood. I am a function type of turner.

My Shop

3 - Those here who have been to my basement shop will tell you that there is very little unused space. Floor, walls and ceiling hold multitudes of tools and stuff. Anyone taller then 5'-8" is positively in jeopardy. When I retired years ago, Bonnie, my wife, knew I needed something to keep me out of her way. So she gave me her blessing to get the lathe I wanted. That was the Powermatic 3520. In the time since, I have developed, and/or stolen, jigs and fixtures and ideas that make working the machine easier and more functional. Many of these ideas are what I will present today. All of these ideas can simply be adapted to any

size or type of machine. There won't be a lot of chips flying today, but maybe there will be an idea or two that you can adapt for your own use.

Lathe position. Photo #1

4 - When I first set up the Powermatic, with the spindle height at elbow height, I found that, after an hour or so, my back & shoulders would ache badly. By simply raising the machine 3/4", the discomfort was gone and I could work at it for hours.

Moving the Machine

5 - In a crowded shop you have to make good use of all the space available. Behind the lathe is where I store sheetgoods. This means that occasionally the machine must be moved. To do this a set of four skates and an old automotive scissor jack does the job. It takes only a few minutes to raise and move the machine on wheels.

Clean Bed Rails-(Photo #2)

6 - During the sailing season I find I get very little time on the machine. The bed rails are protected by a couple of covering boards between the headstock and the tailstock. The

smaller of these covering boards will be discussed along with an indexing system later on. To protect the bed rails from spills and rust, I find the product "Flitz" and a scrubby pad to be an excellent choice.

Tool Rack (Photo #3)

7 - The Powermatic come with a metal tool rack on the headstock side. It didn't take long to realize that there weren't enough slots and holes for all the gizmos and gadgets that needed slots. A bolted on piece of 3/4" ply, with many more holes and slots fills the bill.

Other Uses

8 - The machine can also be utilized to perform other kinds of work other then turning. Making a disk sander is an easy conversion. A 12 inch circle of 3/4" plywood mounted on a face plate or with a glue block with a tenon. A formica face on the ply makes the replacing of the sandpaper very easy. I use sheet sandpaper attached with spray photo mount glue. When the paper is due for a change it is easy to peel off the old, respray the glue, and apply new paper, then trim the excess. To make a platform in front of the disk, I ordered a 1" steel rod from "McMaster-Carr", turned a socket, and mounted it to a square of

3/4" ply, and placed it in the banjo. This allows the work piece to be held square to the sanding disk. A smaller disk sander can be made in the same way by using 5" palm sander disks. A 5" ply disk with a glue block is covered with the self sticking hook part of a hook & loop system The sanding disks are then easy to remove and replace

Rolling Cart (Photo #4,#5,#6)

9 - To work at the lathe efficiently you need to reduce the amount of body movement you are subject to. If you have to walk across to shop to change to a different tool, or to sharpen the tool you are using, you are wasting time and energy. In my

small shop the best solution is a rolling cart. Mine is a Rubbermaid industrial model. Vertical PVC tubes glued together store the tools with the pointy ends up. (you must be very careful reaching over for a sharp tool) A scalloped rack held high with threaded rods gives me a spot to rest the tools I am using at the moment. The cart also provides storage for lots of handy stuff. When not using the lathe, the cart is rolled away into a corner.

Reverse Chucking

10 - The question is: How the hell do I reverse the project to finish the foot or bottom. If you have a vacuum chuck, and the Powermatic can be fitted with one, the decision can be easy. For the rest of us, there are a number of different options. When I first came to the Club, Bob Brady invited me to his shop. He was very patient with me and taught me how to use his "Brady Jig". A series of graduated donuts fitted with rods to hold an upside down bowl. Another method is to use cushioned jamb chucks. These are padded blocks in the chuck where the tailstock is required to keep pressure on the

block. When remounting with a jamb chuck, it is advisable to maintain the small pin hole at the center of the piece to hold the center with the tailstock.

Offset Chuck

11 - There are times when a rough turned piece drys to an oval or an irregular shape. Or you may need to mount a piece to turn an off center detail.To do this I use a sliding jaw jig. The jig has four stops that slide into position to be locked down to hold the piece. This jig is used to turn an oval tendon back to round.

Cole Jaws

12 - Of course, if the piece is concentric, Cole Jaws in a four jaw chuck is the way to go. Sometimes the shape of the piece doesn't allow the small feet of the jaws to grab the piece. To help with that I have made feet for the jaws that are extended out from the plate to grab the body of the piece at different heights. My Cole Jaws are made in Canada so the threaded bolt holes are metric, requiring different size metric bolts to adapt turned dowels to fit. Cushioned chair leg tips, from the hardware store, help to grab the sides of the bowl.

Steady Rest

13 - At times, when working on a long thin piece, you may need to provide support in the center of the piece to prevent a whipping movement. It may be a long piece that needs to be supported so you can drill, hollow or finish the end. A steady rest is the answer. There are many on the market to buy. But they are fairly easy to make using rollerblade wheels. If you can't steal your Grandkids rollerblades, try a thrift store. Also, there is a roller hockey store near Roosevelt Field that will gladly sell you what you need.

Indexing System

14 - The Powermatic doesn't have a good system for indexing. While watching a seminar at Saratoga one year, Harvey Meyer, showed a system for fairly easy indexing. Go online to the website: blackcatsystems.com. From them you can download polar graph paper sheets in any amount of segments. Turn round pieces of 1/4" masonite to fit the graph paper, drill an 1 1/4" hole in the center to fit your spindle. Glue the graph paper to the masonite with Photo Mount Spray. Lock the masonite ring to your spindle using your chuck. With the smaller of your covering boards in place under your chuck,Use two preset vertical

pieces and two spring clamps to lock in the segments you need. A pencil set in a preset PVC holder can then mark your piece. I have used this system to Recreate Beth Irelands pencil box design. With the proper index points, a trim router was used to cut away the hex shaped sides of the box

Sanding (Photos #7,#8,#9,#10)

15 - As the old saying goes: There are two kinds of Woodturners, those that sand and those that lie. I sand! To do this I use a system of 1/4 size sheets of the various grits from 100 to 600. I buy full sheets of Norton paper by the box. The boxes are stored in a cabinet. I then use my jig

to cut up the sheets as I need them. A sharpie pen is used to mark the grit size on the back of each 1/4 sheet. The cut sheets are clipped up on a rack over my table saw. As I am sanding, the assorted sheets are lined up along the table saw fence ready to use. A soft piece of foam, packing material, is used behind the sandpaper to protect your hand. My shop is set up with a vacuum system, a compressed air system, and a ceiling mounted air filtration system. The best system for sanding a piece while on the lathe is a small fan mounted just above the work area that blows the sanding debris down and away.

Segmented Turning

16 - Segmented turning has always been a mystery to me. All that MATH!! No Way!! Until John Kowalchuk told me about 4 utube videos by Jerry Bennett that describes the process in simple terms without all the high end math. He shows how to make a simple wegie sled and sells plastic wegie angles that insure that your cut pieces are perfect. Some people cut their segments on a band saw. The wegie sled is set up for work on a table saw. Doing segmented turning is a whole lesson better taught by someone with more experience then me. I'll just

show a couple of fixtures that help to make the process easier.

A- A square flat mounted sanding board with glued on full sheet of sandpaper.

B- A pressure press to insure that the glued up rings dry flat.

C- A 3/4" plywood board with a faceplate and with drawn on concentric rings. This is used on the tailstock, with an adapter, to press the glued up rings together.

Miscellaneous Goodies

17 - The rest of my ideas are a bunch of random items that have made my working on the lathe easier and/or more efficent,

1 - Flitz -

To clean and protect the lathe bed rails.

2 - Rare earth magnets-(Photo #11)

Glued to a pencil and stuck to the headstock. Attached to a steel ruler to have it handy. To hold a piece of waxed paper under the work while coating to project.

3 - Waxed Paper-

Never apply a finish, paint or glue to a piece in the lathe

without covering the lathe bed with waxed paper.

4 - 12" steel rule- (Photo #12)

Mounted to the front of the lathe with double stick tape. Makes it easy to set calipers using one hand.

5 - Hanging spray shield-(Photo #13)

Hung behind the lathe spindle to absorb all the overspray. Mine is a 30" x 36"rotary cutting board that Bonnie no longer needed.

6 - PB Jar for finish-

A sash brush with a turned handle mounted to the cover of the jar. I keep wipe-on lacquer as a sealer. It is always handy and ready.

7 - Golf ball-

A 5/8" hole drilled into it becomes the perfect protection for the point of the live center. Your elbow will thank you.

8 - Face plate center finder-

Turned to fit into a faceplate with a point of a nail imbedded in the center.

9 - Fixture wire sanding rods

Suggested by Rudy Lopez. 3/8" armature wire available at art supply stores.

10- Sacrificial Piece on tailstock-

Used when using the tailstock to keep pressure on apiece while finishing the bottom.

11- Burning wire with toggles-

Stainless steel wire (different

sizes) held in a groove until it begins to smoke.

12- 3/4" drill bit-

Comes with a #2 morse taper. Be sure to drill slowly and clean out often.

13- Short tool rests-

6" - 4" - 2" round tool rests allow for tight speces and angles.

14- Lazy Susan-

For spraying a finish or paint.

15- Grinder platform- (Photo #14)

Build a raised cover behind the grinder so the long end of the Wolverine arm doesn't hit anything.

16- Large circle compass-

13" to 14" legs.

17- Depth gauge-

Homemade and stores flat.

18- Chuck to tailstock adapter-

Allows a chuck to be spun onto the tailstock live center.

19- 1 1/4" x 8 Nuts-

Purchased from McMaster-Carr for under $7 each are epoxied into poplar for glue blocks and faceplates.

20- Small Hammers-

Leftover 1" round stock was made into small very handy hammers.

21- Masonite Circles-

For rounding out bowl Blanks. A jig for the bandsaw that will cut perfect circles.

22- Center Punch- Turn a wooden ball to protect your palm.

23- Dovetail Scrapers- Two old Craftsman scrapers that have been repurposed to cut a dovetail shape on tenons and recesses. A 5-7 degree angle from straight.

24- Strap Wrench- To remove a stubbron piece from the machine without doing damage.

25- Tailstock removal(Photo #15, #16)

Powermatic has a wonderful mechanism that will swing the tailstock out of the way when you need have room to work on a bowl. Of course that item is very expensive and swings it down and to the rear of the lathe. I have neither the money or the room behind the lathe. So to remove the tailstock I built a cabinet, on wheels, that has rails that mate with the lathes rail bed. The tailstock slide onto the rails and is rolled out of the way.

26- Mickey Mouse-(Photo #17, #18)

My new band saw has a tension bar to tighten the blade. The first time I turned the saw on I forgot to raise the bar. The saw went into self-destruct mode. I then tied a small Mickey Mouse toy to the bar with fishing line. Now, if Mickey is standing on the saw table, I know the bar is down. There is now a sign on the front of the saw, at eye level, that says "Where's Mickey".

Thank you for listening!

WOODTURNING PHOTOS

1- LATHE FEET-

2- FULL LATHE-

3- TOOL SIDE RACK-

4- ROLLING CART-

5- PVC TOOL HOLDERS-

6- ROLLING CART- SIDE VIEW-

7- SANDPAPER BOX-

8- SANDPAPER OVER SAW-

9- SANDPAPER ON SAW FENCE-

10- FAN OVER LATHE-

11- RARE EARTH MAGNETS-

12- STEEL RULE-

13- BACK SPLASH-

14- GRINDER BACK COVER-

15- TAIL STOCK RAILS-

16- TAILSTOCK MOVER-

17- BANDSAW MICKEY MOUSE-

18- MICKEY ARTICLE-