

An Introduction to **Woodturning**



The Heart of England **Woodturners**



The Heart of England Wood-turners meets at The Scout Hall in Tiddington at 7.30pm on the second or third Friday of the month, plus two Saturdays a year when we hold an all day demonstration / meeting. Contact any of the following for more information.

Mike Donovan (Chairman)	01789 204513
David Palmer (Membership)	01789 772088
Clive Partridge (Vice Chair)	01789 269946
David Pledge (Treasurer)	01926 492253

Contents

An introduction to Woodturning	2
Lathes	4
Tools	5
Sharpening System	6
Other Essentials	6
Wood	8
Learning to Turn	9
Turning	9
Adhesives	10

An Introduction to Woodturning.

So you are thinking about taking up the art of woodturning!

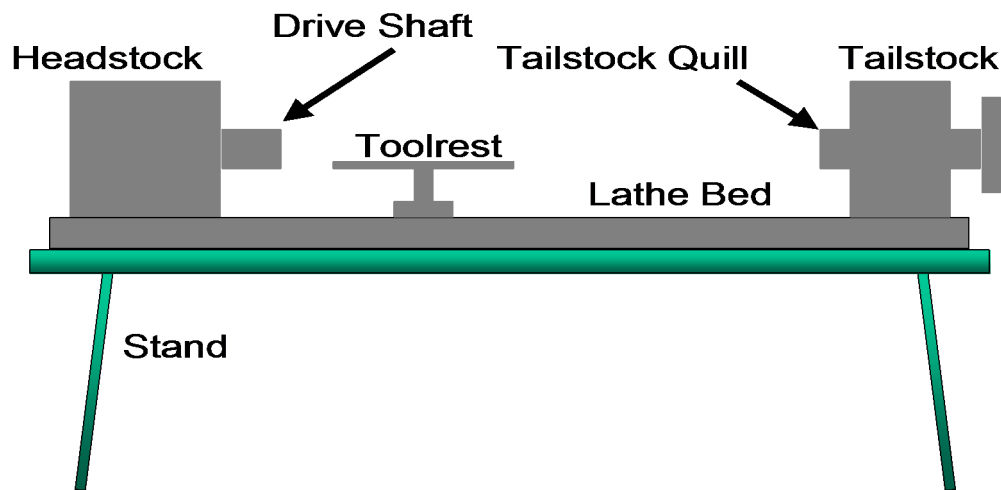
This booklet is a guide to the equipment required, the materials used and where these can be obtained. Guidance is also given regarding safety and how and you can learn to turn. It is not intended to be a detailed manual to describe how to turn, or to be an exhaustive list of the items you should consider. What we have tried to produce is a short précis of the main points that we believe you will need to consider if you take up this fascinating and engrossing hobby.

We have no connection with any manufacturer or supplier but we are indebted to our sponsors who

have supported its production. There is no substitute for practise and joining a club is the best way of improving your skills. There are many companies and professional turners who offer courses of instruction and associations that can help to find you a club in your locality. The cost of a course may seem high but offset against the saving of wasted wood and the improved end-product it is money well spent. Many clubs have libraries of books and DVD's which can be borrowed for a nominal charge. Magazines will give further assistance.

The space you have available will affect what you spend. Do you have a dedicated workspace or will you be limited to a corner of the garage? Have you space for a shed in the garden? The range of equipment available is huge and obviously the budget available will determine what you choose. You should, however buy the best that you can afford.

Before we go on to discuss the make up of the lathe, tools and so forth please read the advice regarding safety at the lathe. Considering that you will be poking a piece of sharpened steel into a piece of wood revolving at anything between 300 and 3,000 rpm, turning is a surprisingly safe occupation. However, like any activity accidents do happen and most are avoidable by observing simple guidance.



Lathes

Lathes come in a wide range of sizes all with different facilities. However, the basic architecture is the same. The lathe consists of a headstock which is where the motor will be located connected to the central drive shaft or spindle by pulleys or directly via an induction motor (this type of drive is usually at the more expensive end of the market). The spindle is threaded and common thread sizes are $\frac{3}{4}$ " x 16 TPI, 1" x 8 TPI, and M33 x 3.5 TPI (TPI = Teeth per Inch).

At the opposite end of the lathe is the tailstock which supports the other end of the timber when turning spindles or "between centres" projects. The tailstock contains a quill which is moveable to enable the spindles to be firmly gripped between centres. The head and tail stocks are mounted onto the lathe bed which is usually made up of two bars or solid cast iron construction. The lathe will be mounted onto some form of stand, either a bench or a free standing structure specially made for the lathe in question.

Prices start at a little over £100 for a bench top model, through the mid-sized lathes on their own stand to models costing £2000 or more. Motor size is a consideration. A minimum of $\frac{3}{4}$ hp is ideal. Though there is a large second-hand market it might be safer to buy new as it will come with a warranty.

It is better to buy a branded product as it will be easier to sell when the time comes to upgrade. There is a constant supply of second-hand items on the market and many offer good value but only buy second-hand if you have the expertise to check out parts such as bearings, the electrics and other features.

Remember that you should think carefully before purchasing. Many turners start with a small lathe but quickly find that the size limits the items which can be produced. This involves replacement and the attendant costs and in some cases the accessories accumulated may not be compatible with the new lathe. If you

can afford to, it is better to buy a mid-sized model which will be adequate for some time. Reassessment will then be a number of years away.

Most lathes have a pulley drive system offering a number of running speeds but a variable speed option allows a seamless increase in speed which is useful when the work piece is out of balance or being turned off-centre. A swivelling headstock enables larger items to be turned than would be possible over the bed of the lathe. An outrigger is needed to hold the tool rest to work on the larger pieces.

The most important and expensive item needed is the chuck to hold the wood in the lathe. The chuck is mounted onto the central drive spindle of the headstock. Most chucks come with basic essentials such as centres and simple screw chuck fittings but there is a variety of jaws, each with special function for different items to be held.

Tools

Today most British brands are produced in HSS (high speed steel). These will keep their edge and last for years, depending of course how much turning you do. Recently, new technology has been introduced using extremely low temperature treatments which it is claimed further extends the life of the tool. These tools are expensive and the advantages are unlikely to be appreciated by the beginner. Cheap imported tools should be avoided as the steel can be of doubtful quality.

Most manufacturers produce boxed sets of their basic range, consisting of 6 or 8 of the most popular tools. These contain the essential items for beginners and include:

A roughing gouge for taking square stock to round between centres.

(NB Never use this tool on a bowl)

A $\frac{3}{8}$ " or $\frac{1}{2}$ " bowl gouge for shaping bowls

A $\frac{3}{8}$ " spindle gouge for working on spindle work between centres. (Bowl gouges usually have deep flutes and long handles, whilst spindle gouges have shallower flutes and shorter handles)

A parting tool for making shoulders on spindle work or cutting off a piece of timber held in the chuck.

A scraper for smoothing the outside or inside of a bowl.

All tools have a bevel - this is the area between the cutting edge and the main shaft of the tool. It is important that this bevel is in contact with the wood at all times whilst cutting, except for scrapers, which are used differently. Like most

things there are exceptions to this rule but they should be left until you gained some experience.

There is a wide range of other tools for special purposes such as swan-necked hollowing tools for reaching into narrow necked items, texturing tools providing special finishing effects and thread chasers for producing screw threaded boxes. Specialist items should be approached with caution by the beginner and considered only after the basic skills have been mastered. Many turners have an array of 20 or more gouges many of which rarely if ever see the light of day. Some professional and experienced turners claim to use a maximum of only 6 or 8 gouges to produce everything.

Sharpening System

Having bought some tools one of the most important things is to keep them sharp. One thing that surprises many newcomers to turning is the fact that they require sharpening before they can be used successfully. Once sharp they will require regular attention as you work on your projects. How do you know your tool needs sharpening? The answer is easy - it stops cutting properly. Try to get into the habit of sharpening your tools regularly as you turn.

To sharpen your tools you will need a basic grinder with a white wheel. There are specialist machines such as the Tormek, but these are expensive and whilst those who have them tend to use nothing else but they are very expensive. One essential is a grinding jig, particularly for the gouges. Again several are available at reasonable prices but get one which will allow you to create a fingernail profile, which most turners have on their spindle gouges and many also use the same profile on their bowl gouges.

Other “Essentials”

Eye and Lung Protection

Eye and lung protection is essential. At the basic end at least a dust mask and safety glasses. Another option is a full face visor and simple dust mask neither of which is expensive. The ideal solution is a full face mask with powered airflow. If you need reading glasses get bi-focal safety glasses.

Dust

Dust is major problem for turners and some form of extractor/chip collector is a good idea. If you buy an air filter such as one from the Microlene range then attach it to a timer, so you can set it running as you leave the workshop and it will filter the air whilst you are out. Timers that run for a maximum of 45 minutes can be obtained from B&Q Warehouse.

Lighting

Make sure your work area is well lit, daylight bulbs are very popular and many turners have some form of angle lamp attached to the lathe so that the light can be focused onto the work in progress. Try IKEA for reasonably priced lights.

Cleaning

Make sure you clean up the work area both as you go and after you've finished. Wood shavings can present a slip/trip hazard and it's also very difficult to find things dropped in the shavings! A magnet makes a useful accessory.

Smock

Most turners wear a smock to prevent shavings going into every item of clothing. Their big advantage is they fasten up to the neck, the cuffs are closed and the pockets are at the back so they don't fill full of shavings. They are not essential, just desirable.

Bandsaw

Not strictly essential but very, very useful. It's useful for cutting your bowl blanks into a circle, cutting planks into squares for spindle turning and many other aspects of timber preparation. Again there is a huge variety available on the market so the same advice must be given, ask yourself what sort of timber you want to cut, what's your budget and buy the best you can within budget. If you go for second hand make sure the bearings are sound and that you can purchase replacement blades. When you buy a bandsaw be prepared to buy a decent quality blade, as the ones supplied with the machine are often poor quality. Make sure you set it up carefully making sure the blade guides can't foul the teeth. If they do the set on the blade will be knocked off and then it won't cut a straight line for toffee!

Wood

Every wood turner we know has more wood than they could ever use! Once people know you turn wood they will offer you all sorts of timber from their gardens and most of us never refuse. Wood can be split into two main categories: prepared blanks bought from suppliers and local timber we prepare ourselves.

Prepared Blanks

These can be bought from specialist timber suppliers, many of whom advertise in publications such as "Woodturning" or members at your local woodturning club will be able to advise you. Blanks are usually supplied in circular or square forms for making bowls or in square lengths for spindle work such as boxes.

They are often sold as “part-seasoned” which means they still contain some moisture and will move when turned, or as “kiln-dried” which means the bit drier but they may still contain some moisture.

Perhaps the best advice is to buy the timber and then either rough turn it to shape and then let it dry and re-turn, or buy the timber and store it somewhere away from direct light and airflow so it can dry slowly over a period of months (we have some that we have stored for years!). If you are happy for the finished item to move, such a bowl tending towards an oval shape as it will do inevitably then you can use it straight away.

Many suppliers sell a range of timber from native species such as sycamore, ideal for beginners, ash, oak to the more exotic timbers from overseas. Most suppliers buy their timber from sustainable sources. Be aware that some people have allergic reactions to certain timbers, even the more common native species such as beech and ash, although this is more prevalent with the exotic woods such as rosewood, padauk etc. You can lessen the risk by wearing appropriate protection.

[Preparing Your Own Timber](#)

There are lots of options here. Fruitwood from the garden is always worth keeping. Cut small branches into suitable lengths and seal the ends with glue, old paint or wax, or one of the commercially available preparations. This reduces the drying rate and helps to prevent the timber splitting. However, be prepared for such events and keep the pieces in long enough sections that the splits can be sawn away before use. These logs can be turned into natural edged goblets and bowls and many other items, or if you’re new to turning they make excellent pieces upon which to practise, especially spindle turning.

Reclaimed timber from old furniture can also be used, as can off-cuts of solid timber kitchen worktops.

As a guide to drying time, a piece of timber 25mm (1”) thick will take about a year to dry and this figure can be multiplied up. However, be aware that large timber sections are unlikely to dry fully and will always retain some moisture. Many turners use green wood and allow it to distort as it dries. Pieces are usually turned to a thickness of around 2mm so that the wood can move without splitting or cracking. It’s not always successful but a joy when it is.

[Learning to Turn](#)

Many people learn by themselves from books and DVDs. There are many of these available but probably the most widely recommended book and DVD for the beginner is “Woodturning - A Foundation Course” by the late Keith Rowley and this is available from all good stores and Amazon. There is also a DVD available to accompany the book.

Otherwise many courses are available and these are advertised in Woodturning among other magazines and on the website of the AWGB (Association of Woodturners of Great Britain). Joining a club is a must if there is one in your area. You will find the members only too willing to share their knowledge and expertise. You could also consider joining one of the on-line forums where the members will give freely of their knowledge and if you are local many will offer to meet and help you out.

Another source of teaching comes from watching demonstrations either at the club, at shows or at your local turning shop, such as Craft Supplies, Turner's Retreat or Snainton Woodturning Centre.

Turning

Turning between centres

Turning between centres is often referred to as spindle turning, its roots being in turning spindles for chair backs and the legs themselves. The wood is fixed between the drive centre at the headstock and (usually) a revolving centre in the tailstock. Often the blanks are square and must be taken to round. This is normally done with a roughing gouge. After that the shapes are turned. There are only four basic shapes from which all others are derived.

These are:

A bead (a round "hump")

A fillet (a square shoulder)

A cove (a round "dip")

A "V" shape (either upwards, or downwards)

Many turners would suggest that you should master spindle turning before making a bowl. Does it matter? No - it's a hobby, but there is no doubt that skills learnt from between centres work will stand you in good stead with all other aspects of turning.

Boxes

Boxes come under the heading of spindle work as they are started between centres and then finished off in a chuck. It is possible to make chucks to hold boxes whilst they are being finished. They are called "jam chucks" because the wood is "jammed" in or onto another piece of wood held on the headstock spindle by a faceplate for example.

Faceplate Work

This term refers to work completed whilst the timber is held onto a faceplate - most lathes will come with one of these as standard. The blank is fastened onto

the faceplate via screws and then the faceplate is usually screwed onto the drive spindle.

Most faceplate work relates to bowl turning of which there are an almost infinite variety of shapes and sizes. You will only be limited by the capacity of your lathe and the timber available.

Most turners use a chuck as described earlier and this opens up many areas of turning by making it simpler to attach timber to the lathe. Many operations can be completed without one using jam chucks or other similar means. Many articles have been written about this and these will not be covered here.

Golden Rules

There are a few golden rules which must be applied:

Make sure the lathe is secure

Check the wood is secure before you turn it on

Always make sure the lathe speed is set to a low speed until you are happy the blank is in balance and the speed can be increased.

Check all the levers are tight

Check the blank will rotate fully without fouling anything
(particularly the tool rest)

Make sure the tool is on the rest before you bring it into contact with the wood

Unless you are scraping make sure the tool handle is low then raise it gently to bring the bevel of the tool into contact and then slightly higher until it starts to cut.

Getting Started

Start with simple exercises in spindle turning or bowl turning and make shavings! The main joy of turning is making shavings. So practise, practise, practise, get used to your tools, keep them sharp and don't be afraid to make mistakes and learn from them. Just make sure you do it safely.

Finishing

Finishing your work is one of the most important aspects of turning and a poor finish spoils many otherwise excellent pieces. Often the process is rushed and this always leads to problems.

Sanding

Sanding is a necessary evil but as your turning improves and the finish "off the tool" improves you won't spend as long with the abrasive. However, sand we

must and the rules are simple - start at a low grit - say 120 (maybe 80 on occasion) and work through the grits - 120, 180, 240, 320, 400 and sometimes 600, 800 and 1200.

Spindle work is usually sanded by hand and bowls using some form of power sanding - often a 2" arbour and sanding pad in an electric drill. Whatever method you use turn the speed down and don't let the wood get hot. Heat leads to cracks appearing, especially in the end grain of some hardwoods, yew for example. Always give a final sand with each grit along the grain before moving to the next grit. The first grit you use is to get rid of your tool marks, subsequent grits get rid of the scratches made by the previous ones.

Many different types of abrasive are available but generally speaking one that is flexible is best. Don't be tempted to use the "decorator's sandpaper" from the DIY sheds though.

[Making it Shine \(or Not\)](#)

Whether you want a matt, gloss or satin finish to your work is largely a matter of personal preference. The main concern again is safety. If you are going to use your turning for food then the finish must be food safe. Generally, anything that's safe for food will also be safe for children as well and finishing products that comply with standard EN71 fall into this category.

Typically the work is usually sealed with either an acrylic or cellulose based sanding sealer and then a polish is applied. As an alternative your work can be oiled. Again make sure that the oil is suitable for the intended use, for example avoid oil with a nut base if the product is to be used for food.

Your local supplier will be able to advise you on the main products and their use.

[Adhesives](#)

One of the most popular adhesives used by turners is superglue because it sets quickly. (If you use superglue make sure it has cured before you turn on the lathe, being sprayed with superglue is not recommended!). Otherwise any wood working adhesive can be used.

[Health and Safety](#)

Please be aware that a woodturning lathe can be a dangerous piece of workshop equipment in unskilled hands. With attention to the following basic guidelines and careful, methodical, and tidy workshop practice, the incidence of accidents can be drastically reduced. If in doubt about the safety of any procedure, please seek experienced, or better yet, qualified advice.

Safe, effective use of a wood lathe requires study and knowledge of procedures for using this tool. Read and thoroughly understand the label warnings on the lathe and in the owner's/operators manual.

Always wear safety goggles or safety glasses that include side protectors and a full face shield when needed. Wood dust can be harmful to your respiratory system. Use a dust mask or helmet and proper ventilation (dust collection system) in dusty work conditions. Wear hearing protection during extended periods of operation.

Tie back long hair, do not wear gloves, loose clothing, jewellery or any dangling objects that may catch in rotating parts or accessories.

Check the owner/operator's manual for proper speed recommendations. Use slower speeds for larger diameter or rough pieces and increased speed for smaller diameters and pieces that are balanced. If the lathe is shaking or vibrating, lower the speed. If the work piece vibrates, always stop the machine to check the reason.

Make certain that the belt guard or cover is in place. Check that all clamping devices (locks), such as on the tailstock and tool rest are tight.

Rotate your work piece by hand to make sure it clears the tool rest and bed before turning the lathe "on". Be sure that the work piece turns freely and is firmly mounted.

It is always safest to turn the lathe "off" before adjusting the tool rest.

Exercise caution when using stock with cracks, splits, checks, bark, knots, irregular shapes or protuberances.

Hold turning tools securely on the tool rest and hold the tool in a controlled but comfortable manner. Always use a slower speed when starting until the work piece is balanced. This helps avoid the possibility of an unbalanced piece jumping out of the lathe and striking the operator.

When running a lathe in reverse, it is possible for a chuck or faceplate to unscrew unless it is securely tightened on the lathe spindle with a locking machine screw.

Know your capabilities and limits. An experienced wood turner may be capable of techniques and procedures not recommended for beginning turners.

When using a faceplate, be certain the work piece is solidly mounted. When turning between centres, be certain the work piece is secure.

Always remove the tool rest before sanding or polishing operations.

Don't overreach, keep proper footing and balance at all times.

Keep lathe in good repair. Check for damaged parts, alignment, binding of moving parts and other conditions that may affect its operation.

Keep tools sharp and clean for better and safer performance. Don't force a blunt tool. Don't use a tool for a purpose not intended. Keep tools out of reach of children. Do not be tempted to use modified tools, such as converted files.

Consider your work environment. Don't use lathe in damp or wet locations. Do not use in presence of flammable liquids or gases. Keep work area well lit.

Stay alert. Watch what you are doing, use common sense. Don't operate tool when you are tired or under the influence of drugs or alcohol.

Guard against electric shock. Inspect electric cables regularly for damage. Avoid the use of extension cables. The power outlet supplying the lathe should, for safety, be fitted with RCD protection.

Remove chuck keys and adjusting spanners. Form a habit of checking for these before switching on the lathe.

Never leave the lathe running unattended. Turn power off. Don't leave the lathe until it comes to a complete stop.

GMC Publications.

GMC Publications has a full range of books covering all aspects of Woodturning from basic turning to specialist skills and projects such as puzzles and decorative pieces.

They also publish 'Woodturning' Magazine, which is a 'must' for any beginner. Not only does it have articles covering all aspects of turning with projects for all skill levels but has an advertising section giving details of all the major suppliers and professional turners offering tuition. Buy a copy and then take advantage of the cheap subscription offer which ensures it arrives on your doormat every month.

'Woodturning' Magazine also hosts the 'Woodworkers Institute' a forum for all wood enthusiasts. A free book is currently available when you register.

Tel: 01273 488005

www.thegmcgroup.com

www.woodworkersinstitute.com

Useful Websites

www.getwoodworking.com This is the website associated with "Good Woodworking" and "The Woodworker". It has sections on Tools and Workshop, Projects and Techniques, a Gallery, Forum and Magazines. The Forum gives you the opportunity to read what your fellow woodworkers and woodturners have to

say, and you can also join in the discussions, ask questions and give/receive advice.

www.awgb.org.uk/phpBB3/index.php The online forum hosted by the Association of Woodturners of Great Britain (AWGB). This is the direct link to the forum where you can browse people's opinions and advice. If you want to join in, simply register. Membership of the AWGB is not required to be a member of the forum.

www.woodturners.co.uk The website of the AWGB. You can get to the forum from here as well as many other topics. There is also a register of professional turners and links to other web sites related to woodturning.

www.rpturners.co.uk This website contains, amongst other things, a listing of the Register of Professional Turners. You can spend many happy hours here browsing the websites of the famous and not so famous turners.

www.turnedwood.com If you are interested in segmented work then this is the site for you

www.screwfix.com

www.woodturningonline.com Lots of interesting articles and projects on this site.

www.woodturns.com Lots of interesting articles, reviews and projects.

www.toolstation.com

www.axminster.co.uk

www.robert-sorby.co.uk This site contains useful information about Sorby products, manuals etc.

www.hegner.co.uk If you can afford a expensive lathe!

www.chestnutproducts.co.uk A full range of finishes.