BEFORE YOU START

Safety:

-Do you have goggles?
-Are you clothes and hair not loose?
-Are you fit to turn some wood?
-Is the floor clear?

Gear box set up:

-Is the speed appropriate?
You should always start at low speed:

-Are the pulley's screws properly fastened?

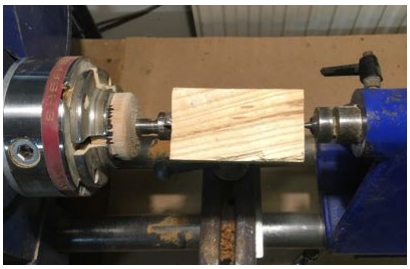
-Is there enough tension in the belt?

-Is the gear box guard close and secured?

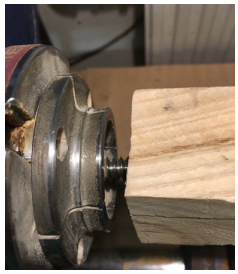
Wood blank set up:

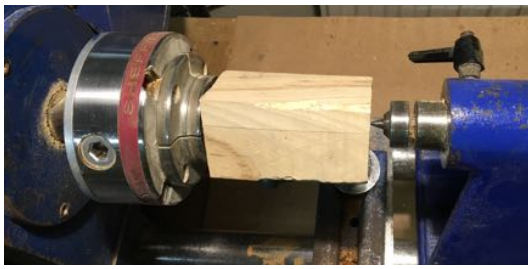
-Is the blank knot and crack free?
-Are the chuck's screws properly fastened?
-Is the blank properly fixed?

Live points



screw chuck





chuck

-Is the tool rest in good position and correctly fasten? The top of the tool when resting on the tool rest should be a the level of the lathe's axe, the distance between the blank and the tool rest should be 2-3 cm. (make sure the blank can turn without touching the tool rest)

Wood blank stock: If you're not using your own wood, please pay for the one you're taking from the shelf.

WHEN YOU TURN

Safety:

-Always have your goggles on

-Wipe the floor on a regular basis

-Be aware that the blank can be ejected

-When increasing the speed, always start the lathe when you're out of the line of potential ejection.

-if you feel something is not right, stop the lathe and check the set up

Tools:

-Always stop the lathe before moving the tool rest, and make sure it is secured before turning it on again

-Use preferably the Easy tools (other tools need regular sharpening)

-The Easy tools should always be horizontal (other tools require specific angle)

-Always rub the wood laterally with the tool

Progress:

-stop the lathe on a regular basis to check the progress

Changing speed:

- If the blank is well balance, you might increase the speed. Higher speed don't necessary means better quality work.

- If there is a lot of squishing, it might be that you're not rubbing the wood or that the speed is to high.

Enjoy yourself:

- make sure you to enjoy what your doing

WHEN YOU'RE DONE

Put the gear box to the lowest gear

Clean and tidy up the space the space:

It should look like this:

Operating Precautions:

- **Do not use stock/blank that has splits, cracks, or knots.**

- **Allow glued joints to dry before working on stock/blank.**

- Hold tools firmly in both hands.

- Keep all cutting tools, blades and cutters sharp for the best performance. (no sharpening necessary with the EasyTools we bought last year)

- Keep the EasyTools horizontal, other tools shouldn't be kept horizontal.

- Make sure the tool rest is set close to the stock.
  Work only in the area covered by the tool rest;
  do not attempt to support the tool with your hands.
  Adjust the tool rest when the lathe is not running.

- Check that all locking devices on the tailstock and tool rest assembly (rest and base) are tight before operating the lathe.

- Make sure the blank is securely fastened.

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

- ALWAYS CHECK THE SPEED OF THE LATHE BEFORE TURNING IT ON. **Use slower speeds for larger diameters or rough pieces, and higher speeds for smaller diameters and pieces that are balanced**.

- **Always start a piece at a slower speed** until the workpiece is balanced. If the lathe is shaking or vibrating, lower the speed. If the workpiece vibrates, always stop the machine to check the reason. As a starting point, consult your operator's manual for recommended speeds for a particular lathe. Make sure the lathe speed is compatible with the size of the blank.

- Never make any adjustments while the lathe is turning. **Never adjust the tool rest or tailstock while the lathe is turning.**

INTRODUCTION TO WOODTURNING

Extracted from:
INTRODUCTION TO WOODTURNING
Brian Clifford

Chapter 0: Intro

1.2 People have full induction?

Ask people to swap their keyfob at the entry of the workshop

1.1 Safetty equipment

People should grab gogles.

1.2 Quick presentation

Who you are, what you do.
who has wood work experience? Who is train to use the circular saw.

1.3 Quick summary

General intro
Safety
Actual woodturning ☺

Chapter 1: Learning to turn

1.1 The art of woodturning

Woodturning is an art not a science. Each skilled practitioner has his own particular way of doing things.

The reason for this is that wood unlike, say, metal or plastic, is not an homogeneous substance. No two pieces of wood are identical even when cut from adjacent positions in the tree. In contrast, consider a piece of steel to be used in a motor car. Numerous metallurgists, and other specialists, will have been employed in the production and testing of the steel, to ensure that it has the required characteristics, and that these will be consistent from one batch of material to another. This means that properties such as its granular structure, its hardness, its elasticity and its tensile strength will be the same for every sample.

Wood is not at all like that. Adjacent pieces will exhibit differences in such features as fibre structure, grain pattern, hardness and elasticity. As each unique work piece spins on the lathe and is traversed by the tool the turner has to make subtle adjustments to his technique as he is presented with a stream of changing information. To add to the choices which have to be made a variety of tools can be used to achieve the same basic forms and these tools can be ground to a variety of shapes and bevel angles. Even the lathes that turners use can affect their style. As turners develop their skills so they find their own solutions to the problems they encounter, and blend together the various tools and techniques they have at their disposal in their own unique ways.

One unfortunate result of the development of individual styles is that beginners can be confused by an apparent conflict in instructions in teaching manuals, methods used in demonstrations, and even in techniques shown in woodturning videos. The beginner should not be upset by this. Underlying this variety there are certain principles which are followed by all successful turners and which enable the novice to experiment and to explore different techniques with confidence and without danger. These principles and the way they can be applied to different situations and different tools are set out in the following chapters.

However, because there are a variety of ways to tackle problems, I, like everybody else, have my favourite way of doing things. As a consequence the views I will be putting forward may differ from those of other instructors. They are an amalgam of the things I have found to work for me and my own particular attitude to woodturning.

1.2 The basic principles

It must be noted, however, that although skill can only be acquired by practice, by “making shavings” as the saying goes, it is futile practising unless the basic principles are being applied. The basic principles are comprised of four main elements:

-The choice of the correct tools (easy with the easy tools)

-The use of properly sharpened tools (no problem with the easy tools)

- A good stance

-The use of correct cutting techniques (simple, always horizontal tools)

Consideration must also be given to safety. Safe working habits should become habitual and are as much part of basic principles as the four points covered above. Unsafe practices may not prevent good turning but they may cut short a turner’s career.

Much of this book is devoted to these basic principles. However, before he can practise the basic principles the prospective turner must provide himself with a certain amount of equipment. At the very minimum this will be a lathe, a grinding machine and a set of tools. He will also need somewhere to keep it and somewhere to work; usually, of course, these are the same place, namely the workshop. The question of a workshop and equipment is discussed in the next chapter and tools in the one after that.

1.3 The pleasure of woodturning

Some of the comments made above may make learning to turn seem daunting but it is not intended to put people off. Anyone, from nine to ninety, male or female, with a modicum of manual dexterity, can learn to turn successfully. Given a reasonable degree of application it will only take most beginners a few hours of practice to learn to make simple but attractive objects which provide immense satisfaction. Many of these objects only take an hour or so to make.

The great pleasure which can be derived from wood turning stems from two things. One is that, whilst very satisfying results can be obtained with relatively little experience, learning and improvement can go on for the rest of a lifetime. The other source of pleasure is that hand turning brings the maker into a very close and intimate relationship with his material. Turners get to know wood as few other people can.

Chapter 2: Safety

2.1 Introduction

We are getting near the point when we can put a piece of wood in the lathe, switch on and start practising. But before we do that there are a number of important points regarding safety which need to be considered. It should be noted, however, that serious accidents from woodturning activities are relatively rare. Nonetheless, very few human activities are completely risk free and it is sensible to obtain as complete an understanding as possible of where possible dangers may lie in woodturning. What we need to be concerned with principally are those accidents which can cause serious hurt or disablement. In the following I will look at those areas where there is potential danger.

2.2 Clothing

The danger with clothing lies in the possibility that it might be caught in the lathe or the work-piece at it revolves. As a consequence all clothing should be relatively tight fitting. Ties should not be worn, and there should be no loose cuffs, or anything of a similar nature, which might get caught up. Unless watches are covered by clothing they should be removed, as should rings, necklaces and other items of jewellery. There is also the possibility of injury to the feet. Since I dropped a large bowl blank on my toes I have thought it a good idea to wear safety shoes. Sandals and even trainers are inadvisable.

2.3 Hair

Long hair should be kept carefully under control when near any machinery. I have never heard of it happening to a woodturner but in engineering workshops people have been scalped because their hair has been caught in machinery.

2.4 Eyes

Some sort of protection for the eyes is desirable, at the very least safety glasses should be worn. As I normally wear glasses with plastic lenses I tend to rely on these under most circumstance. However, if, when turning, I think there is particular danger of a loose piece of wood or bark flying off I put on a full face mask. As an extra precaution I also stand out of the firing line. Eye protection is also very necessary when using the grinder. There is always a possibility that a fragment of metal or other debris may be flung off the wheel. This is particularly likely when dressing the wheel.

2.5 Wood dust and toxicity

As far as woodturning is concerned wood dust is mostly produced by sanding, particularly power sanding, on the lathe, as well as by cutting wood on the band-saw. Dust is also raised by sweeping and cleaning-up. Any turner who wears glasses will know that when these operations are taking place the lenses quickly become covered in dust. This is what one is breathing unless precautions are taken.

The most dangerous dust is the finest dust. This fine dust is so light it will hang in the air for a long period after the activity which produced it has ceased. Ideally an efficient dust extraction system which will remove the smallest particles should be fitted. But many amateurs, and those who spend only a limited amount of time turning, will be not be able to justify such expense. In that case some form of dust mask,

or a battery powered respirator, should be worn.

2.6 Physical fitness

It is advised to never to work when tired, hangover …. This really is a counsel of perfection. Only in an ideal world would it be possible to follow that advice. The use of alcohol is another matter. Using any machinery after drinking should be avoided.

2.7 Guards

Guards, particularly those over pulleys on the lathe and on band-saws, are fitted not only to protect the operator from an absent minded action, or slip, but also to protect other people who may come into the work shop. They should be used.

2.8 Turning speeds

If the turner is in any doubt about which speed to use the lower option should always be selected first. The danger from excessive speed is that the work-piece, or bits of it, may be flung from the lathe. The biggest danger is from a work-piece that is badly split or is built up from glued up pieces (such as stave work). I once had an extremely painful blow on the arm from a large oak platter which split into two pieces as I was taking a cut. I was lucky - a piece might have hit me in the face or some other vulnerable area. I have also heard more than one story about the disintegration of built-up work. Where any danger of such mishaps is perceived a low speed should be selected.

Quite frequently pieces of scrap wood are glued to the work-piece as a means of mounting it on a face plate, or chuck, to prevent screw marks appearing in the finished piece. It is tempting to use plywood or MDF (medium density fibreboard) for this purpose. This should be avoided if the work-piece is of any size. Both of these materials tend to be very weak across the layers and may split under load. The use of paper in the glue joint is often recommended for the reason that it makes it easier to separate the waste piece from the finished work. For that very reason this technique should be used only be on relatively small jobs.

2.9 Checking the work-piece

When starting a new piece of spindle turning care should be taken to ensure that the work-piece is held firmly. Subsequently, the work-piece should be checked from time to time to make sure that it has not worked loose.

2.11 Adjustment of the tool rest

Whenever a new work-piece is fitted to the lathe it should be rotated by hand before switching on to ensure that any projections will not catch on the tool rest. Whenever adjustments are to be made to the tool rest the lathe should be switched off. Before switching the lathe back on the work-piece should again be rotated by hand.

applying finish and polishing. It is readily available, cheap and, above all, safe. If it does catch on the wood

it just tears.

When turning, always stay away from the chuck, to avoid contact with the tools.

2.12 A clear floor space

Wherever there is machinery there is the danger that someone will trip up and put their hand on moving parts. Because of this the floor of a work shop should always be kept clear.

2.13 Fire

Fires do occur in work-shops.They may not be a source of personal danger but they are a hazard which could result in damage to property and equipment. Particularly in timber work shops naked lights and inflammable materials should be handled with care. An eye should also be kept open for the possibility of electrical faults. Cloth or paper soaked in finishing materials such as cellulose or oil can ignite by means of spontaneous combustion if collected together in sufficient concentration. I make sure that each piece has thoroughly dried out before binning it.

Chapter 3: Making the cut
3.1 General introduction

This present chapter is concerned with the factors which are common to all cutting operation.

In considering these factors we will start with the position of the body and end with thoughts on the direction of the cut in relation to the grain of the wood in the following progression:

! the position of the body (the stance)

! the way the tool is held in the hands (the grip)

! the attitude of the tool (the rubbing bevel)

! the way the correct attitude of the tool is maintained

This analysis will focus on the use of cutting tools, eg chisels and gouges. Some thought will be given to the use of scrapers in a later chapter

3.2 The correct stance

When first learning to turn it is vital to adopt the correct stance. There are two main reasons for this. One is that the turner will be standing at the lathe for long periods - the adoption of the correct stance will help to reduce the fatigue that this entails. The other, with which we are particularly concerned here, is that much of the control of the turning tools comes not only from the hands but also from body movements. Often, when making a cut, the body and the hands should move as one. It will be found from experience that it is much easier to maintain the tool in the correct attitude if the body forms a firm platform for the hands.

Initially, when the turner is preparing to make a cut on a work piece held between centres, the body should be balanced on both feet with the legs and trunk more or less vertical without any twist. If the top half of the body is bent over very far then it will not be long before backache sets in. The position of the feet is important; they need to be close to the lathe so that the turner can reach the rest without bending very much. The position of the feet also determines the orientation of the body in relation to the axis of the lathe. A slightly oblique position is suggested; that is to say a line drawn through the shoulders should cut the axis of the lathe at an angle of somewhere around 15 degrees. So the feet need to be a little distance apart and pointing in the correct direction (see Diagram 6.1).

The stance should also be compact with the elbows kept close to the sides of the body. Because of this the right hand (of a right handed person)should be positioned to hold the tool just below the ferrule. Tool handles are usually made considerably longer than required for many operations. When the right hand is held too far back the elbow is pushed away from the body, ie behind and to the side. If this happens there is little to stop it wobbling around out of control and the necessary movements of the wrist and fingers are seriously inhibited. The forearm should be kept in line with the tool so that the fingers, and the wrist, can easily rotate the tool around its axis.

In carrying out a cut movement must take place. But, as far as is practical, the movement should be

confined to the body rather than the hands or arms. In carrying out the planing cut, for example (see Chapter 11) the tool is traversed along the work piece by means of a sideways movement of the complete body.

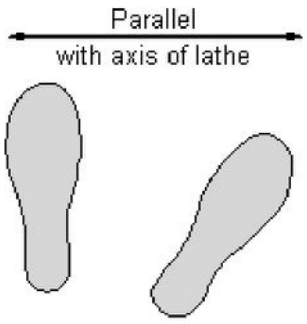


Diagram 3.1 The position of the feet

Let's take a detailed look at the situation of a right-handed person making such a cut from right to left. The feet are positioned so that the body is in the oblique position with the right side furthest from the lathe. At the commencement of the cut the weight of the body is shifted onto the right foot with the body leaning slightly to the right. As the cut is made, and the tool is moved along the wood, the weight of the body is transferred from the right foot onto the left so that the body is leaning in that direction. Whilst this action is being carried out the body should not be allowed to twist and the upper arms should maintain a constant position in relation to the trunk. The movement of the lower arms and the hands should be limited to the extent of keeping the tool in the necessary attitude.

It must be emphasised that the above description is only meant to give an approximate indication of the required stance and accompanying movement. Each turner should take up a stance which he finds comfortable. This description has been applied to turning between centres but the general idea behind it also applies to end grain and bowl turning - that is to say, in these activities as well the body must do as much of the work as possible. Generally speaking the stance should also be compact but bowl gouges have long handles and the turner may stand somewhat further away from the lathe. Then the right hand, holding the end of the handle, may be allowed to rest on the body somewhere in the region of the hip.

3.3 The grip

This leads to the question of the grip. In the case of the left hand there are two basic ways of holding the tool: the overhand grip and the underhand grip. I tend to alternate between one and the other according to circumstances. It is difficult to specify what these circumstances are but they are not critical. The novice should experiment to see which seems to be the most comfortable in various situations.

With the overhand grip the hand is on top of the tool and normally all the fingers are wrapped around the blade with the thumb underneath and the palm facing downwards. With the underhand method there

are two possible grips. One is similar to the overhand grip but with the hand underneath and the palm facing upwards. In the other, which is used when more sensitivity and control is required, the hand is positioned underneath but the blade is held just by tip of the forefinger and the thumb. As the tool is manoeuvred the tips of some of the other fingers may come into play. In the case of the right hand there is a similar choice between the palm grip, where the fingers are wrapped around the handle and the palm is in contact with it, and the finger grip, where the handle is held between the tips of the fingers and the tip of the thumb. The finger grip is mostly used on spindle work when sensitivity and control are required for the more delicate work, such as cutting a small bead. This grip is difficult to master and the novice is advised to use the palm grip.

3.4 Controlling the cut

Having looked at the stance and the way the tool is gripped we now need to look at the position in which the tool should be held so as to produce a clean cut. Wood cuts best when the fibres are severed cleanly and not ripped out of the wood. This is achieved by keeping the bevel of a sharp cutting tool in contact with the wood, i.e. keeping the bevel rubbing in short.

Keep the tool horizontal, and gently attack the wood, don’t go too deep or it will block the wood lathe, but deep enough to actually cut. You should feel when you are having the right control.

Chapter 4: Spindle turning - setting up for practice

4.1 The blank

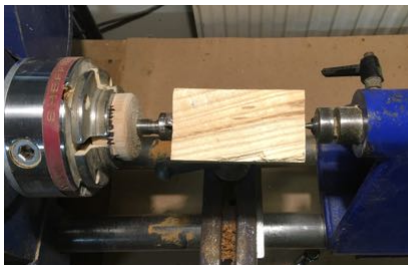
The most convenient timber to practise on is some kind of softwood. This has the advantage that it is cheap and readily available. The wood does not have to be of good quality. Old pallet wood, for example, will do nicely, and offcuts of floor joists can often be picked up on building sites. It is, however, best to avoid knots as much as possible because they are hard and create wild grain; as a consequence they are relatively difficult to turn.

Whatever wood is used, It should be cut to provide a blank about 2 in square by 12 ins long. Some turners, I believe, like to cut the corners off of a square to be used for spindle turning with a power saw or by planing. Normally, this is not necessary. Someone, I think it was Peter Child, said: “there is a machine designed to take the corners off, it’s called a lathe”.

4.2 Mounting the blank

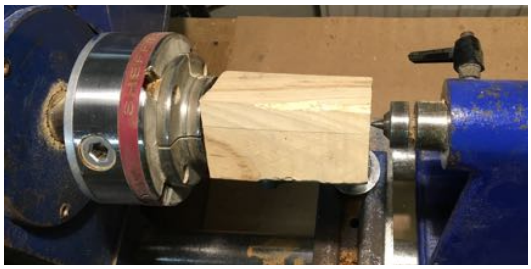
Mark the center of the two faces.

between the two live center



using the chuck screw

drill a 8.5mm hole to use the chuck screw



using the chuck.

Use on the two method above to create a cylinder at one end and then flip the piece.

4.3 The rest

Before the rest is fitted for the first time the top edge should be examined carefully to make sure it is smooth and free from paint, grooves or notches which might impede a tool which is slid along it. If it is not free from these defects it should be filed smooth. It should be remembered that a chisel or beading tool will probably have a relatively square corner which can catch quite easily. To allow chisels to slide more easily any sharp corners should be rounded off with a stone.

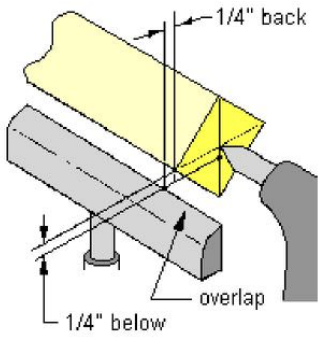


Diagram 4.1 The position of the rest for the initial exercise

Once the work-piece has been mounted the tool rest must be set in position. It should be placed where it will be about 1/4 in clear of the revolving corners of the work-piece and a little below its centre. It is not possible to be very specific about the latter distance. I am often asked how high the rest should be; my answer is “where it is comfortable”. The reason for this is that it depends on the height of the turner in relation to the height of the lathe. However, about 1/4 in should be about right to start with (see Diagram 9.1)

The point is that the rest should be in such a position that a cut can easily be taken whilst maintaining the recommended stance (see Chapter 6). This should not create any heartaches as the position is not that critical. After a couple of passes of the tool the beginner should begin to get the feel of where the rest should be.

In carrying out the exercises described below consideration should be given to the length of the rest.

Ideally it should be about 8 ins long. Anything less than 6 ins will mean that it will have to be moved frequently. Anything more than 10 ins and it may become unwieldy and, if it is not strongly made, it may flex at the ends. But the beginner will probably have to use whatever rest is supplied with the lathe.

4.4 Turning speeds

It should be noted that the “correct” speed is determined by a number of features of the work-piece, such as the diameter, the width or length, the weight, the hardness and density, and the fibre structure. To add to this there is the variability of turners’ techniques and the choice of tools and bevel angles. Even if there was such a thing as a “correct” speed, the actual choice is likely to be a compromise when there may be only three speeds available.

Please note, though, that even if it is not possible to choose the “correct” speed it is quite possible to choose the wrong speed. This is more likely to be too fast than too slow. I think it possible that many novices consider that high speeds (or the fastest practical speeds) are desirable. It is in fact much better (it is certainly safer) for the novice to err on the low side when choosing a speed. If that seems too slow he can then move up to the next speed.

To start set up the smallest gear. When you do so, check if the pulley are not loose and that all the screws are in position (2 for each pulley)

4.5 Start the woodlathe and do some actual cut ☺

once you checked the speed, that the piece of wood is properly secured, the tools rest is the correct position, that you have your goggles on, you can start.
Using the roughing tool (square or round, depending of your preference) start gently to rough it (ie making it cylindrical) it is good to work by chunk of 5ish cm, starting for the right end.

You can create a small cylinder at the end to flip the piece and use the chuck.