

Some thoughts on choosing your lathe

Firstly sit down and think about the following

What do I want to turn, both now and in the future? This is a bit hard when you first start out, but look around for an experienced turner/s for advice. Most of us see some turned objects or watch a demo sometime and think “I could do that” and off we go.

What lathe capacity do I need now, and may need in the future? If you’re keen on doing pens but have a hankering towards bowls or some spindles later.

1. This will most likely end up with two lathes. The reality is there is not a universal lathe that is suitable for all turnings and if there was it would be very expensive.
2. Consider what degree of safety, convenience and accuracy you would want. The more you want of these will drive the price up. How much fettling or filing off lumps, bumps and sharp edges, smoothing various bits here and there and general fiddling you want to put up with. This often gets back to your budget, the less you pay the less you get.
3. Given the answers to the first three, you know have some idea. Now comes the fun time of checking out makes and models. If all else fails on trying to gain information etc by the use of Google as there are a great number of good woodworking sites including many forums. But by this stage you should have a fair idea of what you’re looking at.
4. Have you budgeted for chucks, tools and sharpening gear, as this often will dwarf the cost of the lathe over-time. The only up side to this is can be a gradual process to lessen financial impact. If you’re handy, much can be made in your workshop.

Lathe Design something well worth considering

Lathe designs come in a variety of configurations shapes and sizes, governed by the requirements of the turner. There isn’t a universal lathe that will do pens, swing a 1metre bowl and turn a four poster bed. There will be some trade off to one way or another. Will there ever be one? Probably not, as there may not be a much of a market for it. Also it won’t be cheap, not to mention big and heavy, too heavy for the average guy unload into his workshop.

Basically lathes fall into 2 or 3 categories, cast iron construction, welded construction and the third would be the range of generics that have sprung up starting with Taiwan and now China. Cast iron is synonymous with quality although generics have crept in with dubious quality. Never the less many of the top of the range lathes are of cast iron construction, brand names such as Vicmarc, Omega, Nova, Leady and Hegner lathes of UK to name a few. Then we have the all welded construction and within this range there are many fine examples of lathe design and construction, designs such as Oneway, Robust well designed and built.

The final is the generic range, they are generally well designed but poorly made, and the tolerances are very loose and machining is of a poor standard. Never the less they are still a good lathe for the beginner as the price is very good and with a little effort in the fettling department you can end up with a reasonably priced lathe with good capabilities.

Now you're ready to look at makes and models but consider the following

Positive features to look for:

- A Cast iron headstock and tailstock.
- A Cast iron bed.
- Pivoting or rotating headstock with solid mounting, positive clamping and convenient means of returning the headstock to the original position, ie pins etc
- Solid bowl turning banjo which does not flex, this is to accommodate the swivel head stock. Only really available on quality lathes
- Secure and convenient locking, clamping and repositioning of tool rest, tailstock and barrel.
- Well shaped tool rests not light weight or poorly made variety. Also tool rests that can be adjusted at least 10-12mm (1/2") above and below centre height.
- At least four speeds ranging from 500 r.p.m. to around 2000 rpm or higher. But ideally speeds of around 2-300rpm would be better and if possible a variable speed setup. Today, a lot are electronic; some of the older lathes have mechanical variable speed setups, nothing wrong with the mechanical. The up side is that they are not hard to repair.
- Check the vee belt for quality and condition. This can be a good indicator on how the lathe has been used, if you're looking at a second hand lathe purchase.
- If you can, have a look at the pulley system for rough machining or casting and or sharp edges. This sort of thing will shred your belts in minutes and through this you may gain a bargain as it does not take too much to rectify with a file and some emery paper.
- If second hand, don't be too concerned if the tailstock and headstock are not 100% aligned, not all lathes can do this from day one. But check the bearings in the headstock for sideways or vertical movement. It's a good idea to give the chuck a pull to see if there's any forward and back motion. This may indicate worn bearings or housing which is fatal. Also don't forget to check the quill on the tailstock for side movement.
- Look for damage to the bed, it should be smooth without dings, dents and grooves
- Mechanical or electronic variable speed system will save on having to fiddle with pulleys and belts. Otherwise check that the belt and pulley arrangement is easy to get at and change or move the belts.
- Also look at how easy it is to change your belt if it breaks, some lathes you have to remove head stock shaft and bearings. This could be an extra cost if you're not confident to do it yourself. One way around this is buy some link belting, link belting allows you to split the belt and rejoin it to any length you want in minutes.
- Where possible dust proof induction motor of 1/2" H.P. minimum for small mini lathes or 1hp for the rest. Try and avoid motors with brushes as it will add to the maintenance bill. Should have capacitor start and centrifugal switch for high starting torque.

- Push button switch with “no-volt-release” i.e. safety stop switch sealed against dust. That is, if you remove the power from the lathe when it’s running and restore the power the lathe will not start. This is very important as you tend to disconnect during maintenance or some sort of emergency.
- Heavy duty ball or roller bearings not solid or sleeved bearings [these are rare these days mainly applies to old lathes]. The old solid bronze bushes work fine as long as you keep the oil up to them. It’s just a costly hassle if you have to repair or replace them. Widely spaced bearings which preferably support both ends of the spindle, ideally a three bearing set up is the way to go.
- On the lower cost lathes they will be often two bearing set ups. I owned a generic Chinese for several years and it served me well.
- Morse taper in headstock spindle and in tailstock barrel plus convenient means of ejecting taper fitted accessories ie a knock out bar. Number 2 Morse taper is better than number 1, as it’s far more common and so much easier to buy your accessories.
- Easy spindle locking (so you can unscrew the faceplate or chuck easily)
- Standard headstock spindle thread to enable you to buy chucks from a wide choice of suppliers not just the lathe maker; you don’t want some weird diameter and thread pitch. This will make it very difficult to get chucks, face plates etc to fit and of course they won’t be cheap either.
- Register or step on the headstock spindle nose for true running of chucks, ie normally there’s a little step on the shaft that the chuck screws onto and up to, it acts as alignment. It’s often suggested to cut a small plastic washer to fit here to prevent the chuck from locking up. Doing this negates the register and you’re locking up your chuck way to tight. It’s a fallacy to believe they need to be done as hard as you can.
- Tail stock with a hole right through enabling you to drill cable holes in lamps or any long drilling jobs for that matter.
- Long tailstock travel [at least 50mm or 2" ideally 75mm or 3"] for drilling and good sized hand wheel which is easy to turn. Preferably not plastic but cast iron or aluminum etc
- Good reliable make. Well known makes have better resale value and have a reputation to up hold and therefore will have a better finish, design and QC. OK you pay a bit more for it, but quality rarely comes cheap. But don't be deterred if the lathe is a well known brand and old some of these lathes will be going long after you.
- Good dealer backup and spares availability. This is important on the modern vari-speed lathes as repairs are often beyond average turner.

Features to avoid or watch out for:

- Light sheet metal construction especially the legs.
- Tubular bed set up of light weight pipe
- Tail stock with threaded barrel which rotates in the housing when you tighten it.
- Rough castings – sharp edges poor machining, these all indicate a lack of quality control and you will most likely have problems down the track

- Weird or unknown brands
- Weld repairs to the tool rest can indicate severe usage
- Exposed belt drive
- Poor electrics ie switches, frayed and damaged cabling, DIY wiring and domestic type plastic switches.
- Flimsy motor mounts ie light weight pressed steel.
- Check also on the motor feet and lathe mounts to see if the mounting holes have been worn from loose bolts and that there are no broken feet to the motor.
- Check where the motor is situated, some have the motor high up in line with the chuck and can interfere with your turning capacity
- Can you access the belts easily for speed changing?
- Small foot print for the bed as it mounts onto the stand. Lathes need good strong mounting feet, wide so the load is well spread.
- Check the design of the lathe stand; it should include ample access for you to get close when turning.

Some of the cheaper lathes often have a shelf at knee height that makes you lean forward all the time, not good.

- Basic ergonomics i.e. handles and locks are easy to access and use and are not bent or damaged
- How's the height for you? No point in struggling with a height issue, although it can fairly simple to fix. Duck boards if it too high, hardwood feet extension to lift it higher and so on. A general rule of thumb is the center height should be the same as your elbow. This is only a general rule, have a look at this and see what suits you best.

Safety issues

Get your safety advice from an experienced turner/s. Much of it will seem to be common sense. But if you're new to turning it won't be so obvious, so seek advice. At the end of the day you don't want your hobby to cause you harm, especially if it comes through a lack of knowledge of the dangers

Here are a few things to consider

- Loose clothing, long hair, dangling jewelry and any other object which could get caught up in the revolving machinery.
- Many are in the habit of slowing down the by placing their hand on the chuck, if that's you then remove your wedding ring etc. As most lathes are set up for the right hand turner and the left hand does the slowing down. Better still, **change the habit**, and find another way to do it. IE fit a hand wheel to the rear of the Headstock
- Make sure that the lathe and other power tools are properly guarded and that the guards are securely in place.

- Get into the habit of letting the lathe stop when you want adjust any part of the work piece etc, even if it is 'only' freewheeling to a stop'. If you own a Reeves type drive or a Electronic speed control then these are the exception to the rule as you adjust the speed while its running with this type. In fact its advisable to only adjust your Reeves type vari speed whilst its on the run.
- Ensure that all items such as chuck keys, Tommy bars etc. are removed before the lathe is started or stored in a suitable handy spot, consider using magnets to keep them handy and secure.
- If you have to use extension leads try and bring them down from over head and from the tail stock end. Running along the floor is not a good practice as they can be trip hazards and damage to them will occur at some time.
- Spend some time looking at your lighting requirements. The basic rule is you can't have too much light, just make sure it's in the right place. Using fluorescent lights is not an issue as it was once was. Nowadays any decent electrician or electrical designer will source their fluorescent fittings with high frequency electronic ballasts, rather than standard core and coil magnetic ballasts, which totally eliminate the flicker/stationary effect. In fact I think some of the major manufacturers now only supply their ballasts in HF. A simple solution for existing older or domestic installations is to have a simple tungsten light source either mounted on the machine or above it which will also solve the problem. Tungsten light bulbs don't flicker because the filament in the lamp doesn't have time to cool down in between cycles so stays "white".
- Always stand to one side when you start the lathe so that if anything does fly off - loose bits of bark, for instance - you will be out of the line-of-fire. It's not hard to do; it's just a matter of getting into the habit. Ok there will be times when you may have to stand in the line of fire. If you take all the necessary precautions and heed the advice of more experienced turners you should be able to do so with safety.
- When mounting a new job, rotate the job through 360 degrees by hand, then start the lathe at its slowest speed to allow you to check that everything is secure. Only when you've done this, test it, if it's safe set the lathe to the normal turning speed.
- Always check the lathe speed and have it in low before switching the lathe on to avoid the risk of starting it at too high a speed. A good idea is to leave the lathe on low speed especially if you have finished job and don't plan on starting a new one any time soon.
- If all else fails read the instructions! Actually read them instructions **first**, when you understand them fully. Then start to use the machinery.

- Wear protective clothing i.e. no floppy or long dangling sleeves; ideally have well fitting clothing in one piece down to perhaps the waist. But a must would be safety glasses or Safety Shield.
- With the increased awareness of the potential harm which can be caused by wood-dust most turners now wear an approved dust mask (P2 minimum), especially when sanding. Ideally, wear a powered respirator with integrated visor and know that you're safe. But good cross flow ventilation can achieve this as well. Good cross flow can often be achieved simply by opening doors and windows etc or the use of extraction fans. However you achieve it, it doesn't matter as long you do, do it. The cheap fans that are available over the summer in various stores work well and can save you a lot of money. In Australia now, all wood dust is considered toxic and dust collection and PPE are required for all commercial operations in most States or Territories.
- The use of gloves whilst turning is an issue best solved by your own preference after looking at the up and down side and getting advice from experienced turners. Some will be for it and some against. The basic issues are that when turning your left hand is often showered with a steady flow of chips or dust and with many hardwoods this flow will be hot, very hot in fact. The other side of the story is that it's considered bad practice to wear gloves around spinning machinery. Add to this any medical conditions such as allergies to certain timbers that may require additional protection. It's a judgment call on what you know you can do **safely**; I don't advocate one way or another.

Good Luck.

The Wooden Potter