Pole Lathe and Shave Horse Design

I have been using these designs for about 3 years regularly at shows so they have stood the test of time as portable units, easily fitting into a car or small trailer along with tools, stock and wood. The Lathe and shave horse can be assembled in less than 10 minutes.

Details of every dimension are not included, critical dimensions tend to be relative to other pieces and I'll point those out in the text. Some basic dimensions will also be given to give an idea of the overall size of the equipment.

This document describes the pole lathe and shave horse I use, it is not describe the order of construction. Therefore, you may want to use this document to get some ideas and then experiment on your own.

This document is also available on the internet at www.michaelhughes.org.uk where you can find high quality versions of the pictures.

Pole Lathe

Overview

This version of the pole lathe is made from softwood to keep the weight down and for ease of construction. The design is particularly suited for use with the bungee strap and frame rather than a pole. However, it can easily be used with a pole, in which case you may find you need to peg the legs to the ground. The only parts of the pole lathe that needs to be made from hardwood are the poppets and wedges, in this case they are made of Beech. The body sides are permanently connected and the legs held to these via threaded bars that pass straight through the legs and the body. Assembly time from arrival on-site to being ready to demonstrate, including the laying out of tools, wood and items for sale, is about 12 minutes. The time for assembly also makes this lathe suitable in an environment where the lathe is not left set up, for example, in an typical back garden.

As can be seen from the second picture the pole lathe disassembles into straight pieces about four feet long so can comfortably fit in the back of a car or stand in the corner of a workshop.

Body

The body of the pole lathe is made from 2 straight reasonably hard softwood beams about 100mm x 50 mm and about 1.2m long. They are held apart by two spaces of similar material creating a gap for the poppets, the spacers should be planed down so the gap is about 3mm wider than the poppets. The body sides are held to the spaces using a pair of 12mm Beech pins that were driven into holes drilled straight through all three pieces. A 18mm hole is drilled at each end of each side to accommodate the bolts that hold the legs in place. An 8 mm hole is drilled through the end of the spacer, this is for studding that holds the uprights for the bungee frame. Look at the pictures with the assembled legs and body to see the position of the holes. The edges of the bed are chamfered to make it easier to carry.

Legs

The legs are made to similar dimensions as the bed and about 1.2 metres long. However, it is best to make them slightly longer than you anticipate and cut them down to size once you're able to assemble the lathe and gauge the correct height for yourself. An angled step is cut into the top of the leg so that the legs splay out from the bed and also so that the bed sits on a step rather than depend on the bolts through the leg. Once these steps are cut you can offer the leg up to the bed and mark a hole to match the 18 mm hole previously drilled in the bed.

This picture shows the assembled legs and bed held together with 12 mm studding. The semicircular wooden spaces allow the nut and washer to sit flat on the wood regardless of the angle of the legs. I found that including these reduced the strain and stops the bolts from bending when the legs are tightened up

The best way to assemble this arrangement is shown in this picture. The bed is laid upside-down and the legs and bolts fed through the holes and tightened up before uprighting the lathe. Ignore the notches in the legs in the picture, these are from a previous experiment, however you should drilled a 12 mm hole near the basis of each leg so all the legs can be bolted together for transport, the picture of all the parts shows the legs bolted together.

Poppets

Poppets need to be very strong with no flex in them and therefore should always be made from hardwood. As metal studding runs through the length of the poppets they should not be made of a corrosive wood, such as Oak. The normal choice is Beech or Ash. The overall shape can be seen from the pictures and thickness should be slightly less than the gap in the bed of the lathe. The poppets

are held in place on the lathe bed by using hardwood wedges that you tap through holes in the poppets. The wedges are about 300 mm long and tapered at about 15 degrees. The holes in the poppets should overlap the underside of the bed so the wedges can tightened the poppet against the lathe.

You will need a fixed point in one poppet, for this you can either screw in a piece of 12 mm studding that has been ground to a point, alternatively you can drill right through the poppet and use a length of studding that is also been ground to a point. I use the second method so I can remove the studding to regrind as necessary. The second poppet will house the movable point that you tightened up into your wood. You will need a tapping hole drilled straight through the poppet, for 12 mm studding this hole should be about 10 mm. To tap out the thread in the poppets file the thread at the end of the studying so it has a sharp step that will cut into the wood, use a brace to hold the threaded bar to tap through the studding. To help start the thread you can drill the outside end of a hole out to 12 mm diameter by about 20 mm deep.

To make the crank at the end of the movable point, either bend the studding over, weld a handle on, or bolts a length of bar between two nuts.

The poppets will need a tool rest support on the inside and a poppet rest on the outside as can be seen in this picture. Allow a reasonable depth to the tool rest support as this is the limiting factor on the diameter your lathe can turn. For strength the tool support and poppet rests are rebated into the main uprights. You should drilled 8 mm holes down into the tool rest support to accommodate pins that hold the tool rest away from the work

Note how the tool rest support extends further on one side to hold the tool rest. The poppets should mirror each other in this respect

A-Frame Treadle

I use an A-frame attached to a platform as this helps during demonstrations in muddy or uneven fields. The only real considerations in designing the A-frame are the position of your foot and the length of stroke that the size of the A-frame will give you. This particular frame is about 1.2 m long and I like to have my foot under the lathe bed so that dictates the position of the cross-bar.

Bungee Add-on

Using a bungee cord instead of a pole is not to everyone's liking but it can help with portable lathes and still gave an appreciation for the craft.

The uprights do not need to be too strong as all the force is downwards. Use a spacer pole at the top of the uprights that is the same width as the lathe bed. If you are turning this pole it will need to be done on a lathe that has the capacity of your lathe bed, ie not your lathe!

The top of these uprights are drilled 25 mm and a shoulder turned on the end of the spacer pole. No other fixing is required as the action of the bungee is to pull the uprights onto the spacer

12 mm holes are drilled for the bungee strap and a piece of 12 mm hose used to line the hole, this extends the life of the bungee strap and stops it fraying against the wood.

The uprights are held onto the lathe bed by using a fixed 12 mm hardwood pin and 8 mm bolts that goes straight through the bed spacer, see the following 2 pictures.

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WOOD TURNING

Shave Horse

This shave horse is designed to be light and portable with removable legs and frame.

Overview

The body of the shave horse is made from softwood about 200 mm wide by 50 mm thick, double thickness is used at each end to strengthen the leg holes. The rest of the pieces are made from Holm oak, any hardwood is likely to be OK for a shave horse.

I have used three legs for stability on any ground but there is no reason why you couldn't use a pair of legs and either end.

The shave horse can be disassembled in about one minute, however once the legs are removed the frame folds reasonably flat so I tend to leave it attached to the bed.

I have turned all the items for the frame and legs but these could just as easily be shaped with a drawn knife as you so choose.

Bed

There are just a few points to note about the shave horse bed. The rear leg holes should splay outwards for stability. The frame pivot holes should be far enough away from the front leg hole to allow the frame to swing forward enough. I choose to have my shave horse longer than average as this gives me a surface on which to rest tools and beer. You could also shape the sides of the bed to bring your legs more in line with the frame.

Legs

The height of the legs should be chosen carefully to suit your stature. These are turned to about 50 mm diameter and once they have seasoned the pin is turned to size, about 35 mm-to suit the hole drilled in the bed.

As the bed is softwood I doubled up on the thickness for the leg pins. Also notice the angle of the legs to increase stability.

Frame

The sidebars of the frame were turned as one 50 mm diameter bar about 450 mm long. This was then split down its length and cleaned up with a drawn knife. The 2 halves were then clamped back together with spacer blocks until they had seasoned, this helps to stop them twisting.

The top and bottom rollers are turning jobs for the pole lathe, leaving the outside pins oversized until the wood is seasoned. The top roller should have a notch turned in it to hold the work your shaving.

2 pins are turned to hold the frame onto the bed of the shave horse

Clamp Bar and lifter

A block of hardwood, in this case hornbeam, is used next to the frame to lift the work piece off the bed. This is cut to a wedge shape so I can adjust the angle of the work piece by moving backwards and forwards. I do not attach these lifters to the bed. A clamp bar that goes between the lifter and the top roller of the frame is loosely held in place on the bed by a beech pin. You should experiment with the location and fixture of the clamp Bar and lifter, it is a compromise between flexibility of being able to move things around and the convenience of having them fixed.