

Operator's Manual

Woodworking Copy Lathe



CAUTION: Read and follow all Safety Rules and operating Instructions before First Use of this Product. Keep this manual with tool.

18-08-MCF1000

PRODUCT SPECIFICATIONS

Attention: Please choose proper power source, voltage and frequency that are shown in the label for your lathe.

Woodworking Copy Lathe	
Motor Power	550W
Swing over bed	350 mm
Distance between centers	1000 mm
Spindle Speed(3 speed)	750-2600RPM 50Hz 890-3050RPM 60Hz
Spindle taper	MT2
Tailstock taper	MT2
Sand disc diameter	∅ 204mm
Face plate	∅ 152mm

SAFETY INSTRUCTIONS

WARNING: When using electric tools, basic safety precautions, including the following, should always be followed to reduce the risk of fire, electric shock and personal injury. Read all these instructions before operating this product and save the instructions.

GENERAL

1. Read and understand manual.

For your own safety, read and understand the entire instruction manual before operating the lathe.

2. Read and understand warning label.

Read and understand the warning labels posted on the machine. Failure to comply with all of these labels may cause serious injury.

3. Keep work area clean.

Cluttered areas and benches invite injuries.

4. Consider work area environment.

Do not expose power tools to rain. Do not use power tools in damp or wet locations. Keep work area well lit. Do not use power tools where there is risk to cause fire or explosion.

5. Guard against electric shock.

Avoid body contact with earthed or grounded surfaces (e.g. pipes, radiators, ranges, refrigerators).

6. Keep children away.

Do not let visitors touch the tool or extension cord. All visitors should be kept away from work area.

7. Store idle tool.

When not in use, tools should be stored in a dry, high of locked up place, out of reach of children.

8. Do not force the tool.

It will do the job better and safer at rate for which it was intended.

9. Use the right tool.

Do not force small tools or attachments to do the job of a heavy duty tool. Do not use tools for purposes not intended; for example, do not use circular saws to cut tree limbs or logs.

10. Dress properly.

Do not wear loose clothing or jewellery, they can be caught in moving parts. Rubber gloves and non-skid footwear are recommended when working outdoors. Wear protecting hair covering to contain long hair.

11. Use safety glasses and hearing protection.

Also use face or dust mask if the cutting operation is dusty.

12. Do not abuse the cord.

Never carry the tool by the cord or yank it to disconnect it from the socket, Keep the cord away from heat, oil and sharp edges.

13. Do not overreach.

Keep proper footing and balance at all times.

14. Maintain tools with care.

Keep cutting tools sharp and clean for better and safer performance. Follow instructions for lubrication and changing accessories. Inspect tool cord periodically and if damaged have it repaired by an authorized service facility. Inspect extension cords periodically and replace, if damaged. Keep handles dry, clean and free from oil and grease.

15. Disconnect tools.

When not in use, before servicing and changing accessories such as blades, bits and cutters, disconnect tools.

16. Remove adjusting keys and wrenches.

Form the habit of checking to see that keys and adjusting wrenches are removed from the tool before turning it on.

17. Avoid unintentional starting.

Do not carry a plugged-in tool with a finger on the switch. Ensure switch is off when plugging in.

18. Use outdoor extension leads.

When tool is used outdoors, use only extension cords intended for outdoor use.

19. Stay alert.

Watch what you are doing. Use common sense. Do not operate tool when you are tired.

20. Check damaged parts.

Before further use of tool, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, free running of moving parts, breakage of parts, mounting and any other conditions that may should be properly repaired or replaced by an authorized service center unless otherwise indicated in this instruction manual. Have defective switches replaced by an authorized service facility. Do not use the tool if the switch does not turn it on and off.

21. Warning.

The use of any accessory or attachment, other than those recommended in this instruction manual or the catalog, may present a risk of personal injury.

22. Have your tool repaired by a qualified person.

This electric tool is in accordance with the relevant safety requirements, Repairs should only be carried out by qualified persons using original spare parts, otherwise this may result in considerable danger to the user.

ADDITIONAL SATETY RULES FOR THE LATHE

1. This lathe is designed and intended for use by proper trained and experienced personnel only. If you are not familiar with the proper and safe operation of a lathe, do not use until proper training and knowledge have been obtained.
2. Always wear eye protection while using this lathe.
3. Always use face or dust mask.
4. Do not operate this machine while tired or under the influence of drugs, alcohol or any medication.
5. Use the right tool at the correct speed and feed rate.
6. Turning of the machine before cleaning. Use a brush or compressed air to remove chips or debris, do not use your hands.
7. Check the workpiece carefully for splits, knots or other obstructions which may cause a safety risk while turning.

8. Adjust tool rest to proper height and position for the work. Rotate the workpiece by hand to check clearance with the tool rest before turning on the machine.
9. Select the appropriate speed for the turning job at hand. Start at low speed and allow the lathe to ramp up to operating speed.
10. Never apply coolants or water to a spinning workpiece.
11. Never stop a rotating workpiece with your hand.
12. If gluing up a workpiece, always use a high quality glue of the type necessary for that particular workpiece.
13. Before attaching a workpiece to the faceplate, rough-cut the workpiece close to the finished shape before screwing it to faceplate.
14. When turning between centers, make sure headstock and tailstock are snug against work piece.

ELECTRICAL REQUIREMENTS

POWER SUPPLY AND MOTOR SPECIFICATIONS

WARNING: To avoid electrical hazards, fire hazards, or damage to the tool, use proper circuit protection. Use a separate electrical circuit for your tools. To avoid shock or fire, if power cord is worn or cut, or damaged in any way, have it replaced immediately.

GROUNDING INSTRUCTIONS

WARNING: This tool must be grounded while in use to protect the operator from electrical shock.

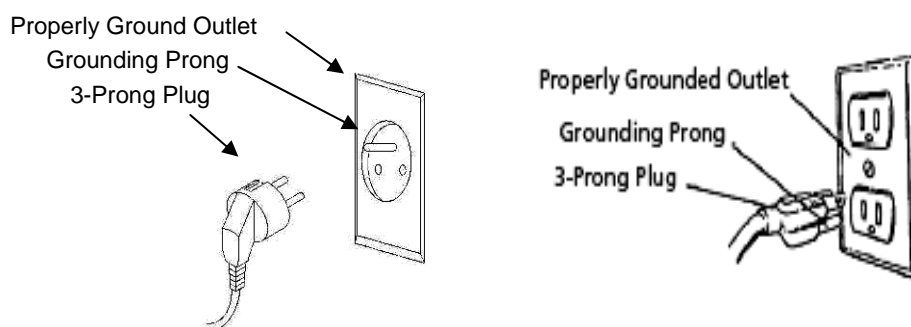
IN THE EVENT OF A MALFUNCTION OR BREAKDOWN, grounding provides a path of least resistance for electric current and reduces the risk of electric shock. This tool is equipped with an electric cord that has an equipment-grounding conductor and a grounding plug. The plug **MUST** be plugged into a matching receptacle that is properly installed and grounded in accordance with ALL local codes and ordinances.

DO NOT MODIFY THE PLUG PROVIDED. If it will not fit the receptacle, have the proper receptacle installed by a qualified electrician.

IMPROPER CONNECTION of the equipment-grounding conductor can result in risk of electric shock. The conductor with green insulation (with or without yellow stripes) is the equipment-grounding conductor. If repair or replacement of the electric cord or plug is necessary, **DO NOT** connect the equipment-grounding conductor to a live terminal.

CHECK with a qualified electrician or service person if you do not completely understand the grounding instructions, or if you are not sure the tool is properly grounded.

Refer to nether picture:



WARNING: Improper connection of equipment grounding conductor can result in the risk of electrical shock. equipment should be grounded while in use to protect operator from electrical shock.

-Check with a qualified electrician if you do not understand grounding instructions or if you are in doubt as to whether the tool is properly grounded.

-This tool is equipped with an approved cord and a 3-prong grounding type plug for you protection against shock hazards.

-Grounding plug should be plugged directly into a properly installed and grounded 3-prong grounding-type receptacle, as shown.

-Do not remove or alter grounding prong in any manner. In the event of a malfunction or breakdown, grounding provides a path of least resistance for electrical shock.

WARNING: This machine is for indoor use only. Do not expose to rain or use in damp locations.

GUIDELINES FOR EXTENSION CORDS

USE PROPER EXTENSION CORD. Make sure your extension cord is in good condition. When using an extension cord,

Be sure to use one heavy enough to carry the current your product will draw. An undersized cord will cause a drop in line voltage, resulting in loss of power and cause overheating.

Be sure your extension cord is properly wired and in good condition. Always replace a damaged extension cord or have it repaired by a qualified person before using it. Protect your extension cords from sharp objects, excessive heat and damp or wet areas.

ACCESSORIES AND ATTACHMENTS

RECOMMENDED ACCESSORIES

WARNING: To avoid injury:

- Use only accessories recommended for this machine.
- Follow instructions that accompany accessories. Use of improper accessories may cause hazards.
- Use only accessories designed for this machine to avoid injury from thrown broken parts or work pieces.
- Do not use any accessory unless you have completely read the instruction or operator's manual for that accessory.

CARTON CONTENTS

UNPACKING AND CHECKING CONTENTS

Carefully unpack the machine and all its parts, and compare against the illustration following.

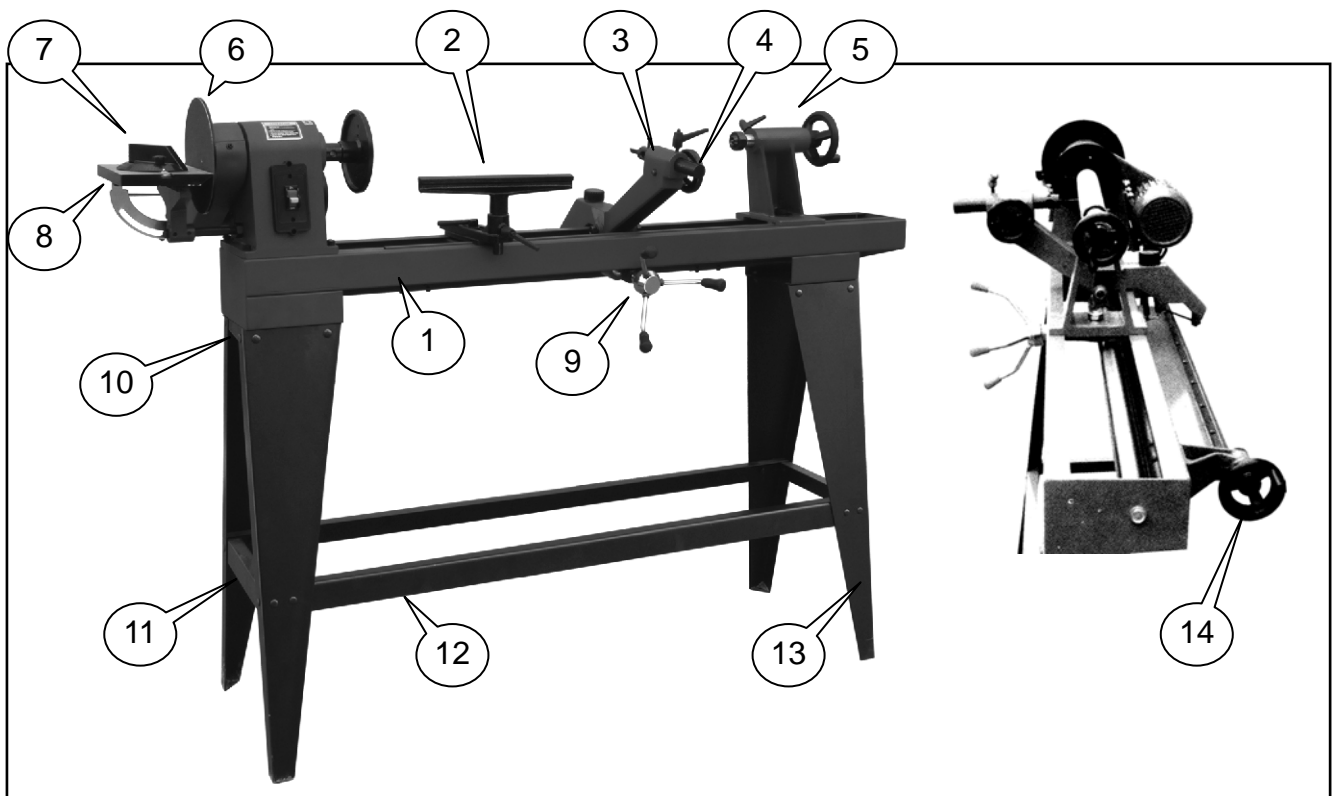
WARNING:

- To avoid injury from unexpected starting, do not plug the power cord into a power source receptacle during unpacking and assembly. This cord must remain unplugged whenever you are assembling or adjusting the machine.
- If any part is missing or damaged, do not plug the machine in until the missing or damaged part is replaced, and assembly is complete.

TABLE OF LOOSE PARTS

Unpack carton; check you machine to see parts listed below:

- | | | |
|-----|------------------------------|----|
| 1. | The Lathe Bed Assembly | X1 |
| 2. | Tool rest and support | X1 |
| 3. | Copy frame assembly | X1 |
| 4. | Handwheel on copy frame | X1 |
| 5. | Tail stock assembly | X1 |
| 6. | Sand disc | X1 |
| 7. | Miter gauge | X1 |
| 8. | Support table assembly | X1 |
| 9. | Adjust handle assembly | X1 |
| 10. | Top plate | X2 |
| 11. | Short leg support | X2 |
| 12. | Long leg support | X2 |
| 13. | Leg | X4 |
| 14. | Handwheel for sample holding | X1 |
| 15. | Hardware bag | |



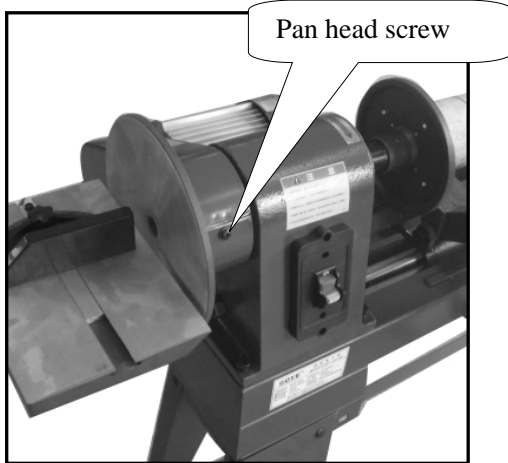
OPERATION

ATTENTION: Read and understand the entire instruction manual before operating the lathe

1. Speed adjustment

Loosen and remove the pan head screw, open the belt house.

Adjust the belt location to change the spindle speed.



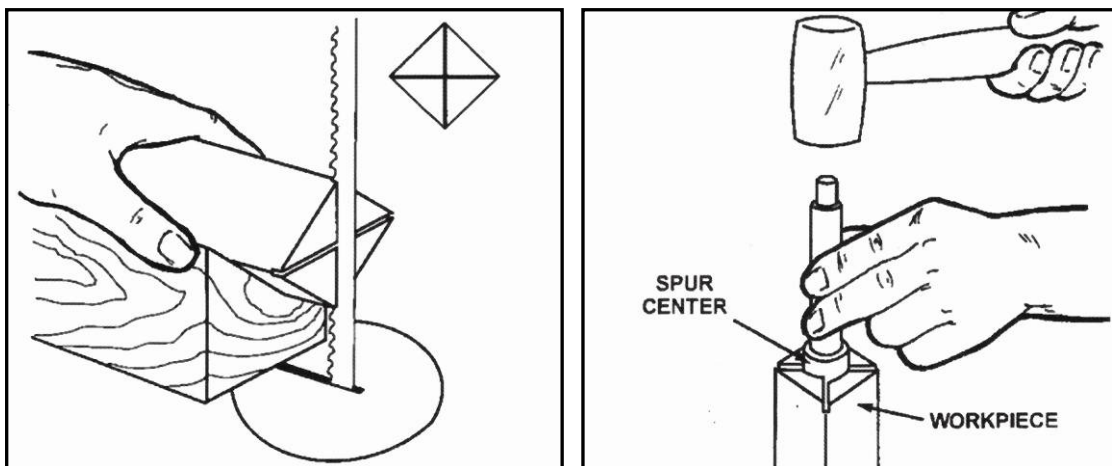
2. Spindle turning

Spindle turning takes place between the centers of the lathe. It requires a spur center in the headstock, and a live center in the tailstock. A cup center rather than a cone center in the tailstock will often reduce the risk of splitting the stock.

2.1 Stock selection and installation

Stock for spindles should be straight grained and free of cracks, knots and other defects.

- With a combination square, or plastic center finder for round stock, locate and mark center on each end of the workpiece. Accuracy is not critical on full rounds but extremely important on stock where square sections are to remain. Put a dimple in the stock with an awl or nail, or use a spring-loaded automatic center punch.
- Extremely hard woods may require kerfs cut into the ends of the stock using a band saw, so the wood will accept the spur center and the live center.
- Drive the spur center about 3mm into the workpiece, use a wood mallet or dead blow hammer. Be careful that you do not split the workpiece. Never use a steel face hammer and never drive the workpiece onto the spur center while it is mounted in the lathe spindle.



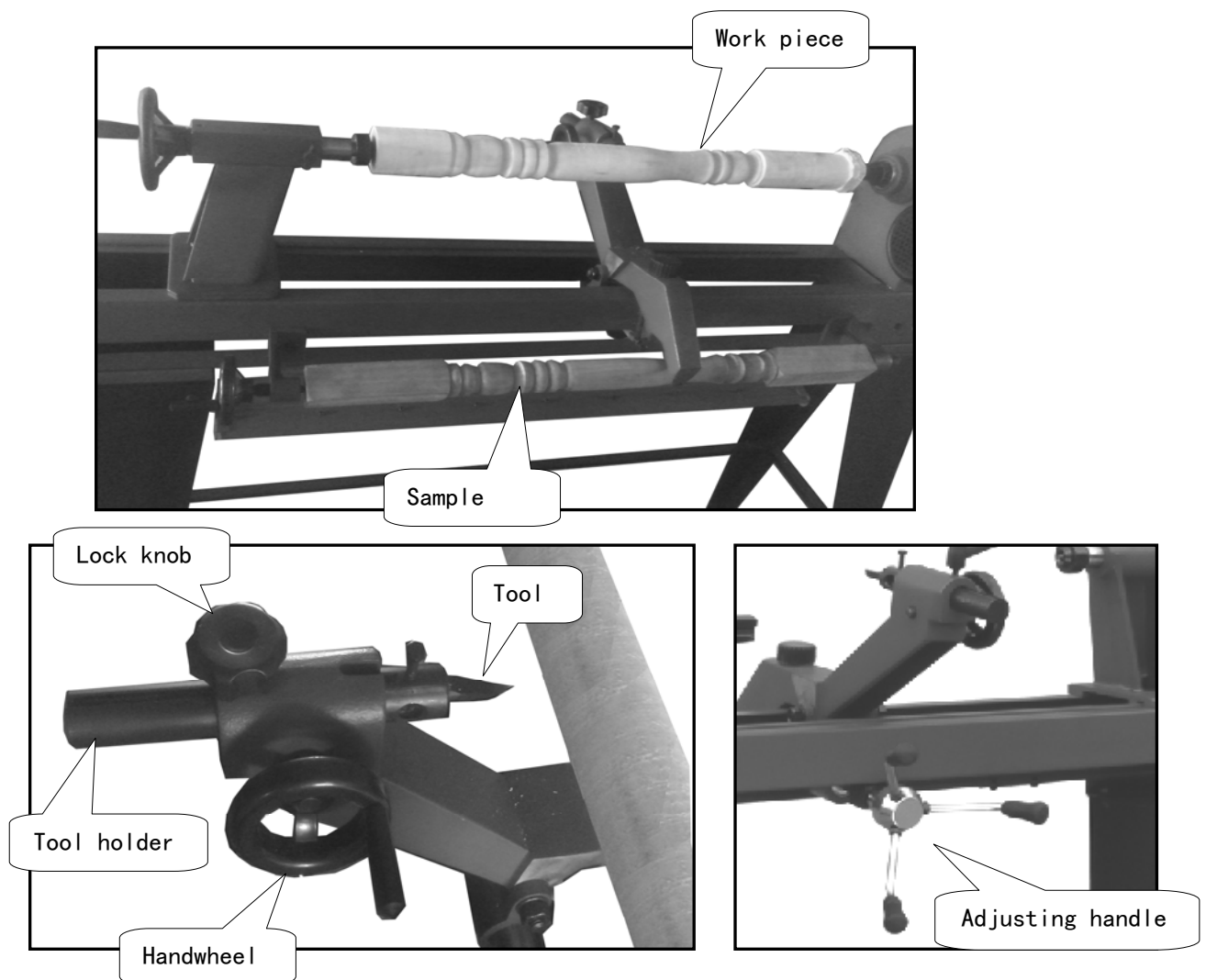
- Clean the tapered end of spur center and the inside of the headstock spindle.

- Insert the tapered end of the spur center (with the attached workpiece) into the headstock spindle.
- Support the workpiece while bring the tailstock into position. Lock the tailstock to the bed.
- Advance the tailstock quill with the handwheel in order to seat the live center into the workpiece. Use enough pressure to secure the workpiece between the centers so that it won't fly off, but do not use excessive pressure.
- Tighten the quill locking handle.

Attention: The tailstock ram is capable of exerting excessive pressure against the workpiece and the headstock. Apply only sufficient force with the tailstock to hold the workpiece securely in place. Excessive pressure can overheat center bearings and damage both workpiece and lathe.

2.1 Turning with copy system

- Attach the sample to the machine.
- Adjust the tool position by turning handwheel and lock the position by tightening the lock knob.
- Turn on the switch and turn the adjusting handle to make cutting.



3. Face plate and bowl turning

3.1 Mounting stock

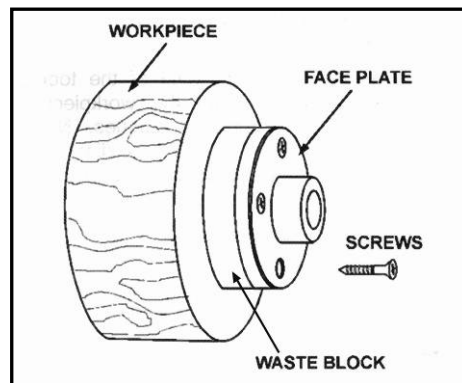
Use of a face plate is the most common method for holding a block of wood for turning bowls and plate.

- Select stock at least 5mm larger than each dimension of the finished workpiece.
- Always select the largest diameter face plate that can be used for the workpiece to be turned.

- True one surface of the workpiece for mounting against the face plate.
- Using the face plate as a template, mark the location of the mounting holes on the workpiece, and drill pilot holes of the appropriate size.

If the mounting screws on the face plate interfere with the workpiece. A glue or waste block can be used:

- Make a block the same diameter as the face plate. Both waste block and workpiece should have flat surfaces for gluing.
- Glue the block to the workpiece. Avoid using brown paper or newspaper between the waste block and workpiece. It may work fine if you are using scrapers, but a slight catch with a bowl gouge can separate the two.



Using a chuck

While face plates are the simplest, most reliable method of holding a block of wood for turning, chucks can also be used.

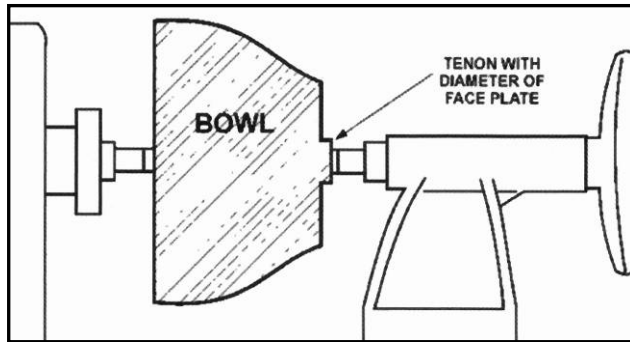
A chuck is not a requirement, but is handy when working on more than one piece at a time. Rather than removing screws, you simply open the chuck and change workpieces.

The most popular ones are four jaw scroll chucks with a variety of jaws to accommodate different size tenons. Most also come with a screw chuck as well.

3.2 To shape outside of bowl

- Odd shaped burls, crotches and other irregular shaped blanks require special preparation before mounting in a chuck or onto a face plate. Remove the bark, if there is any, from what appears to be the center of the top of the workpiece.
- Drive spur center into the top of the workpiece with a mallet or dead blow hammer.
- Slip the spur center into the headstock taper and bring the tailstock with a live center into position. Lock the tailstock to the bed and advance the quill in order to seat the cut center into the workpiece. Tighten the quill locking handle.
- Turn workpiece by hand to ensure proper clearance.
- Start lathe at lowest speed and bring it up to the proper speed for the size of work to be turned. If the machine starts to vibrate, lower the speed until vibration stops.
- Rough out the outside of the bowl with the bowl gouge, holding the handle of the tool firmly against your hip.
- As the bowl takes shape, work on the bottom (tailstock end) to accommodate attaching a face plate.
- Turn a short tenon to the size of the hole in face plate. This will allow centering the workpiece when the face plate is attached.

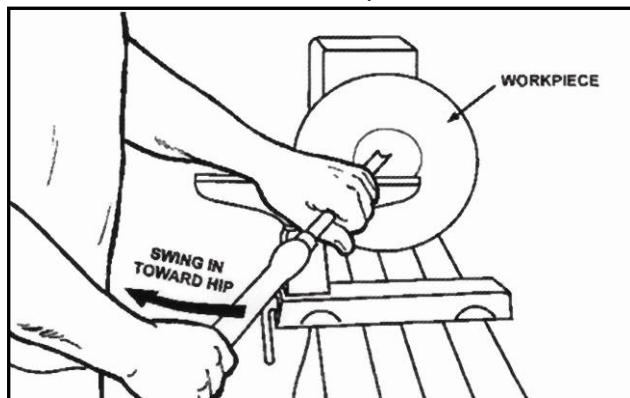
Note: If you plan to use a chuck, turn a tenon of the appropriate length and diameter to fit your chuck.



- Stop the lathe, remove workpiece and attach face plate or chuck.
- Finish turning the outside of bowl with bowl gouge. Leave additional material at base of bowl for support while turning interior. This will be removed later.

To shape interior of bowl

- Stop the lathe and move tailstock away.
- Adjust tool rest in front of the bowl just below centerline, at a right angle to the lathe ways.
- Rotate workpiece by hand to check clearance.
- Face off top of bowl by making a light shearing cut across the top of workpiece, from rim to center.
- Place bowl gouge on tool rest at center of the workpiece with the flute facing top of bowl. The tool handle should be level and pointed toward the four o'clock position.



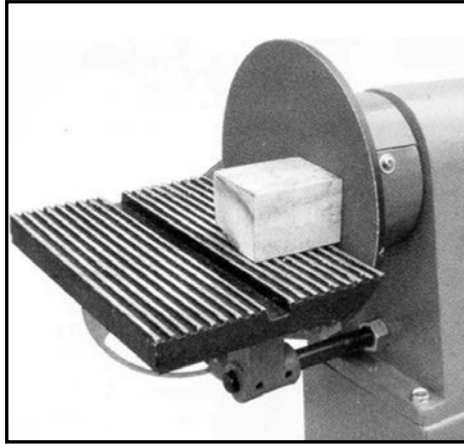
- Use the left hand to control cutting edge of gouge, while right hand swings tool handle around toward your body. The flute should start out facing top of workpiece, and rotate upward as it moves deeper into the bowl to maintain a clean even curve. As the tool goes deeper into the bowl, progressively work out toward the rim. It may be necessary to turn the tool rest into the piece as you get deeper into the bowl.

Note: Try to make one, very light continuous movement from the rim to the bottom of the bowl to ensure a clean, sweeping curve through the piece. Should there be a few small ridges left, a light cut with a large domed scraper can even out the surface.

- Develop wall thickness at the rim and maintain it as you work deeper into the bowl (Once the piece is thin toward the bottom, you cannot make it thinner at the rim). When the interior is finished, move the tool rest to exterior to re-define bottom of bowl.
- Work the tight area around faceplate of chuck with bowl gouge.
- Begin the separation with a parting tool, but do not cut all the way through yet.

4. Work with sanding disc

- Always maintain a maximum of 1/16 inch clearance between the table and the sanding Disc.
- Move workpiece across down side of abrasive disc.
- Hold workpiece firmly with both hands;
- Keep fingers away from abrasive disc.
- For accuracy, use miter gauge.



MAINTENANCE

Maintenance General

Keep your machine clean. At the end of each day, clean the machine. Wood contains moisture, and if sawdust or wood chips are not removed, they will cause rust. Regular oil attracts dust and dirt. Teflon lubricant tends to dry and has fewer tendencies to accumulate dirt and saw dust. Periodically check that all nuts and bolts are tight.

Drive belt

The drive belt should last for many years (depending on the usage) but needs to be inspected regularly for cracks, cuts and general wear. If damage is found, replace the belt.

Bearings

All bearings are sealed for life and do not require any maintenance. If a bearing becomes faulty, replace it.

Rust

The lathe is made from steel and cast iron. All non painted surfaces will rust if not protected. It is recommended that they are protected by applying wax.

TROUBLESHOOTING

<i>PROBLEM</i>	<i>CAUSE</i>	<i>SOLUTION</i>
Motor or spindle stalls or will not start	Excessive cut	Reduce depth of cut
	Improper belt adjustment, or worn belt	Adjust or replace belt
	Worn spindle bearing	Replace bearing
Excessive vibration	Workpiece warped, out of round, has major flaw, or was improperly prepared for turning	Correct problem by planning or sawing workpiece, or discard entirely and use new workpiece
	Worn spindle bearing	Replace spindle bearings
	Worn drive belt	Replace drive belt
	Lathe on uneven surface	Place lathe on flat surface
Tools tend to grab or dig in	Dull tools	Keep tools sharp
	Tool rest set too low	Reposition tool rest height
	Tool rest set too far from work piece	Reposition tool rest closer to workpiece
	Improper tool being used	Use correct tool for operation
Tailstock moves when applying pressure	Cam lock nut needs adjusting	Tighten cam lock nut
	Lathe bed and tailstock mating surfaces are greasy or oil	Remove tailstock and clean surfaces with a cleaner. Re-apply light coat of oil to lathe bed surface

ASSEMBLY DIAGRAM

