

WEN 3421 INSTRUCTION MANUAL



Table of Contents

[Table of Contents](#)

[Introduction](#)

[Specifications](#)

[General Safety Rules](#)

[Electrical Information](#)

[Specific Rules for you Lathe](#)

[Unpacking & Packing List](#)

[Know Your Lathe](#)

[Assembly & Adjustment](#)

[Operation](#)

[Maintenance](#)

[Troubleshooting Guide](#)

[Exploded View & Parts List](#)

[Warranty Statement](#)

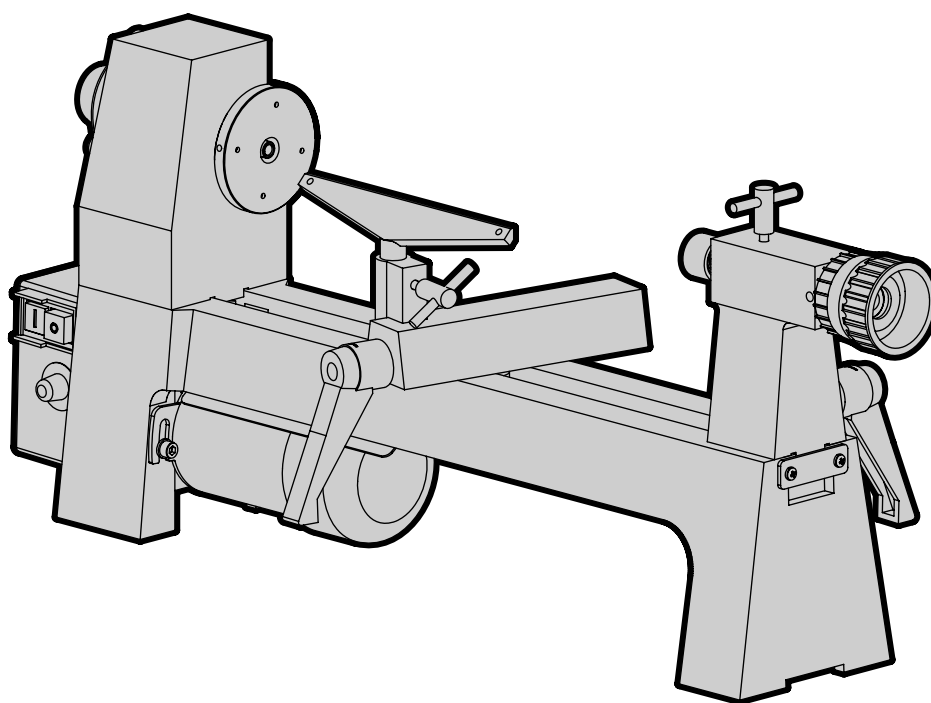
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MODEL 3421

VARIABLE SPEED WOODWORKING LATHE

Instruction Manual



NEED HELP? CONTACT US!

Have product questions? Need technical support? Please feel free to contact us:



1-800-232-1195 (M-F 8AM-5PM CST)



TECHSUPPORT@WENPRODUCTS.COM

IMPORTANT: Your new tool has been engineered and manufactured to WEN's highest standards for dependability, ease of operation, and operator safety. When properly cared for, this product will supply you years of rugged, trouble-free performance. Pay close attention to the rules for safe operation, warnings, and cautions. If you use your tool properly and for its intended purpose, you will enjoy years of safe, reliable service.

For replacement parts and the most up-to-date instruction manuals, visit **WENPRODUCTS.COM**

CONTENTS

WELCOME 3

Introduction	3
Specifications.....	3

SAFETY 4

General Safety Rules	4
Electrical Information	6
Specific Rules for you Lathe	7

BEFORE OPERATING 7

Unpacking & Packing List	7
Know Your Lathe	8
Assembly & Adjustment	9

OPERATION & MAINTENANCE 13

Operation	13
Maintenance.....	18
Troubleshooting Guide	18
Exploded View & Parts List.....	19
Warranty Statement	21

To purchase accessories for your tool, visit **WENPRODUCTS.COM**

2.75-Inch 4-Jaw Self-Centering Keyed Lathe Chuck Set (Model LA4275)

Wooden Lathe Pen-Turning MT1 Mandrel (Model PM01)

Artisan Chisel Sets (Models CH11, CH15, CH4704)

INTRODUCTION

Thanks for purchasing the WEN Woodworking Lathe. We know you are excited to put your tool to work, but first, please take a moment to read through the manual. Safe operation of this tool requires that you read and understand this operator's manual and all the labels affixed to the tool. This manual provides information regarding potential safety concerns, as well as helpful assembly and operating instructions for your tool.

⚠ SAFETY ALERT SYMBOL: Indicates danger, warning, or caution. The safety symbols and the explanations with them deserve your careful attention and understanding. Always follow the safety precautions to reduce the risk of fire, electric shock or personal injury. However, please note that these instructions and warnings are not substitutes for proper accident prevention measures.

NOTE: The following safety information is not meant to cover all possible conditions and situations that may occur. WEN reserves the right to change this product and specifications at any time without prior notice.

At WEN, we are continuously improving our products. If you find that your tool does not exactly match this manual, please visit **wenproducts.com** for the most up-to-date manual or contact our customer service at **1-800-232-1195**.

Keep this manual available to all users during the entire life of the tool and review it frequently to maximize safety for both yourself and others.

SPECIFICATIONS

Model Number	3421
Motor	120V, 60Hz, 3.2A
Swing	8 Inches
Distance Between Centers	12 Inches
Speeds	750 to 3200 RPM
Spindle Taper	MT1
Spindle Thread	1" x 8TPI
Tailstock Taper	MT1
Tool Rest Length	4-1/2 or 7 Inches
Dimensions	28" x 10" x 12"
Weight	45 lbs

GENERAL SAFETY RULES

 **WARNING!** Read all safety warnings and all instructions. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.

Safety is a combination of common sense, staying alert and knowing how your item works. The term “power tool” in the warnings refers to your mains-operated (corded) power tool or battery-operated (cordless) power tool.

SAVE THESE SAFETY INSTRUCTIONS.

WORK AREA SAFETY

1. **Keep work area clean and well lit.** Cluttered or dark areas invite accidents.
2. **Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust.** Power tools create sparks which may ignite the dust or fumes.
3. **Keep children and bystanders away while operating a power tool.** Distractions can cause you to lose control.

ELECTRICAL SAFETY

1. **Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools.** Unmodified plugs and matching outlets will reduce risk of electric shock.
2. **Avoid body contact with earthed or grounded surfaces such as pipes, radiators, ranges and refrigerators.** There is an increased risk of electric shock if your body is earthed or grounded.
3. **Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
4. **Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts.** Damaged or entangled cords increase the risk of electric shock.
5. **When operating a power tool outdoors, use an extension cord suitable for outdoor use.** Use of a cord suitable for outdoor use reduces the risk of electric shock.

6. **If operating a power tool in a damp location is unavoidable, use a ground fault circuit interrupter (GFCI) protected supply.** Use of a GFCI reduces the risk of electric shock.

PERSONAL SAFETY

1. **Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication.** A moment of inattention while operating power tools may result in serious personal injury.
2. **Use personal protective equipment. Always wear eye protection.** Protective equipment such as a respiratory mask, non-skid safety shoes and hearing protection used for appropriate conditions will reduce the risk of personal injury.
3. **Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool.** Carrying power tools with your finger on the switch or energizing power tools that have the switch on invites accidents.
4. **Remove any adjusting key or wrench before turning the power tool on.** A wrench or a key left attached to a rotating part of the power tool may result in personal injury.
5. **Do not overreach. Keep proper footing and balance at all times.** This enables better control of the power tool in unexpected situations.
6. **Dress properly. Do not wear loose clothing or jewelry. Keep your hair and clothing away from moving parts.** Loose clothes, jewelry or long hair can be caught in moving parts.

GENERAL SAFETY RULES

 **WARNING!** Read all safety warnings and all instructions. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.

Safety is a combination of common sense, staying alert and knowing how your item works. The term “power tool” in the warnings refers to your mains-operated (corded) power tool or battery-operated (cordless) power tool.

SAVE THESE SAFETY INSTRUCTIONS.

7. If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used. Use of dust collection can reduce dust-related hazards.

POWER TOOL USE AND CARE

1. Do not force the power tool. Use the correct power tool for your application. The correct power tool will do the job better and safer at the rate for which it was designed.

2. Do not use the power tool if the switch does not turn it on and off. Any power tool that cannot be controlled with the switch is dangerous and must be repaired.

3. Disconnect the plug from the power source and/or the battery pack from the power tool before making any adjustments, changing accessories, or storing power tools. Such preventive safety measures reduce the risk of starting the power tool accidentally.

4. Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool. Power tools are dangerous in the hands of untrained users.

5. Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use. Many accidents are caused by poorly maintained power tools.

6. Keep cutting tools sharp and clean. Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.

7. Use the power tool, accessories and tool bits, etc. in accordance with these instructions, taking into account the working conditions and the work to be performed. Use of the power tool for operations different from those intended could result in a hazardous situation.

8. Use clamps to secure your workpiece to a stable surface. Holding a workpiece by hand or using your body to support it may lead to loss of control.

9. KEEP GUARDS IN PLACE and in working order.

SERVICE

1. Have your power tool serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the power tool is maintained.

CALIFORNIA PROPOSITION 65 WARNING

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities may contain chemicals, including lead, known to the State of California to cause cancer, birth defects, or other reproductive harm. Wash hands after handling. Some examples of these chemicals are:

- Lead from lead-based paints.
- Crystalline silica from bricks, cement, and other masonry products.
- Arsenic and chromium from chemically treated lumber.

Your risk from these exposures varies depending on how often you do this type of work. To reduce your exposure to these chemicals, work in a well-ventilated area with approved safety equipment such as dust masks specially designed to filter out microscopic particles.

ELECTRICAL INFORMATION

GROUNDING INSTRUCTIONS

In the event of a malfunction or breakdown, grounding provides the path of least resistance for an 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 outlet that is properly installed and grounded in accordance with ALL local codes and ordinances.

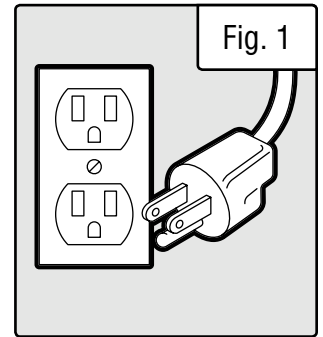
1. **Do not modify the plug provided.** If it will not fit the outlet, have the proper outlet installed by a licensed electrician.

2. **Improper connection** of the equipment grounding conductor can result in electric shock. The conductor with the 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.

3. **Check** with a licensed electrician or service personnel if you do not completely understand the grounding instructions or whether the tool is properly grounded.

4. **Use only three-wire extension cords** that have three-pronged plugs and outlets that accept the tool's plug. Repair or replace a damaged or worn cord immediately.

CAUTION! In all cases, make certain the outlet in question is properly grounded. If you are not sure, have a licensed electrician check the outlet.



GUIDELINES AND RECOMMENDATIONS FOR EXTENSION CORDS

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 overheating. The table below shows the correct size to be used according to cord length and ampere rating. When in doubt, use a heavier cord. The smaller the gauge number, the heavier the cord.

AMPERAGE	REQUIRED GAUGE FOR EXTENSION CORDS			
	25 ft.	50 ft.	100 ft.	150 ft.
3.2A	18 gauge	16 gauge	16 gauge	14 gauge

1. **Examine extension cord before use.** Make 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.

2. **Do not abuse extension cord.** Do not pull on cord to disconnect from receptacle; always disconnect by pulling on plug. Disconnect the extension cord from the receptacle before disconnecting the product from the extension cord. Protect your extension cords from sharp objects, excessive heat and damp/wet areas.

3. **Use a separate electrical circuit for your tool.** This circuit must not be less than a 12-gauge wire and should be protected with a 15A time-delayed fuse. Before connecting the motor to the power line, make sure the switch is in the OFF position and the electric current is rated the same as the current stamped on the motor nameplate. Running at a lower voltage will damage the motor.

SPECIFIC RULES FOR YOUR LATHE

 **WARNING!** Do not operate the power tool until you have read and understood the following instructions and the warning labels.

WOODWORKING LATHE SAFETY

1. This lathe is designed and intended for use by properly trained and experienced personnel only. If you are not familiar with the proper and safe operation of a lathe, do not use it until proper training and knowledge have been acquired.
2. Always wear eye protection and a face shield/dust mask when using the lathe.
3. Make sure all tools, chisels and accessories are sharp enough for the task at hand before using them. Always use the right tool at the correct speed and feed rate.
4. Turn off and unplug the machine before doing any cleaning or maintenance. Use a brush or compressed air to remove chips or debris. Never use your hands to remove excess material and debris.
5. Check the workpiece carefully for splits, knots, nails, or other obstructions. These types of blemishes may cause a safety risk during turning.
6. Adjust the tool rest to the proper height and position for the task at hand. Rotate the workpiece by hand to check clearance with the tool rest before turning the machine on.
7. Select the appropriate speed for the task at hand. Start at a low speed and allow the lathe to ramp up to the operating speed before engaging any chisels, tools or other carving accessories.
8. Never apply coolants or water to a spinning workpiece. Never stop a rotating workpiece with your hand.
10. If gluing up a workpiece, always use a high quality glue that meets the needs of the particular workpiece.
11. Rough cut the workpiece to the finished shape before attaching a workpiece to the faceplate. When turning between centers, make sure the headstock and tailstock are tight and snug against the workpiece.

UNPACKING & PACKING LIST

UNPACKING

With the help of a friend or trustworthy foe, such as one of your in-laws, carefully remove the lathe from the packaging and place it on a sturdy, flat surface. Make sure to take out all contents and accessories. Do not discard the packaging until everything is removed. Check the packing list below to make sure you have all of the parts and accessories. If any part is missing or broken, please contact customer service at **1-800-232-1195** (M-F 8-5 CST), or email techsupport@wenproducts.com.

PACKING LIST

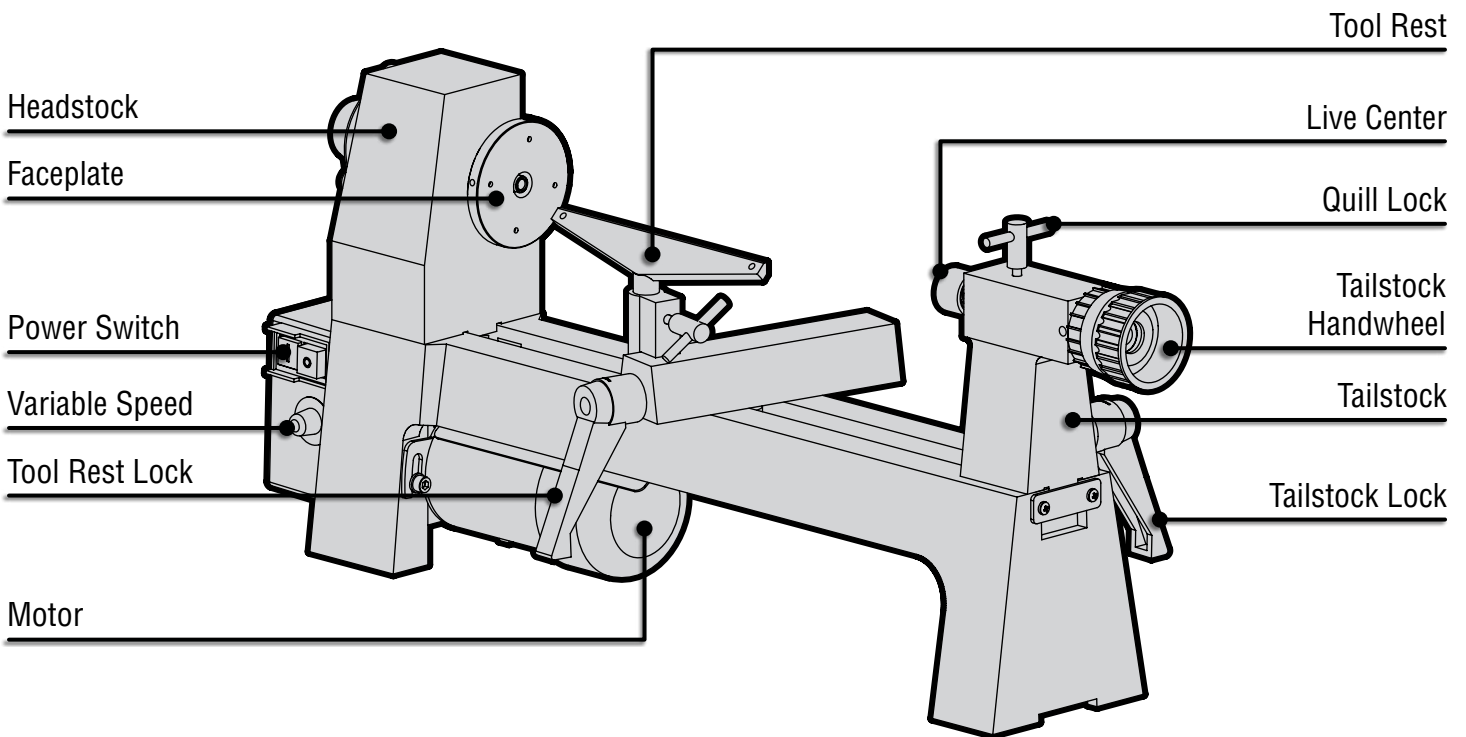
1. Lathe.....	1	6. Knockout Rod	1
2. Flat Wrench.....	1	7. Faceplate Wrench.....	1
3. Headstock Spur Center	1	8. Short Tool Rest	1
4. Tailstock Cup Center	1	9. Long Tool Rest.....	1
5. Faceplate.....	1	10. Hex Wrenches.....	2

KNOW YOUR LATHE

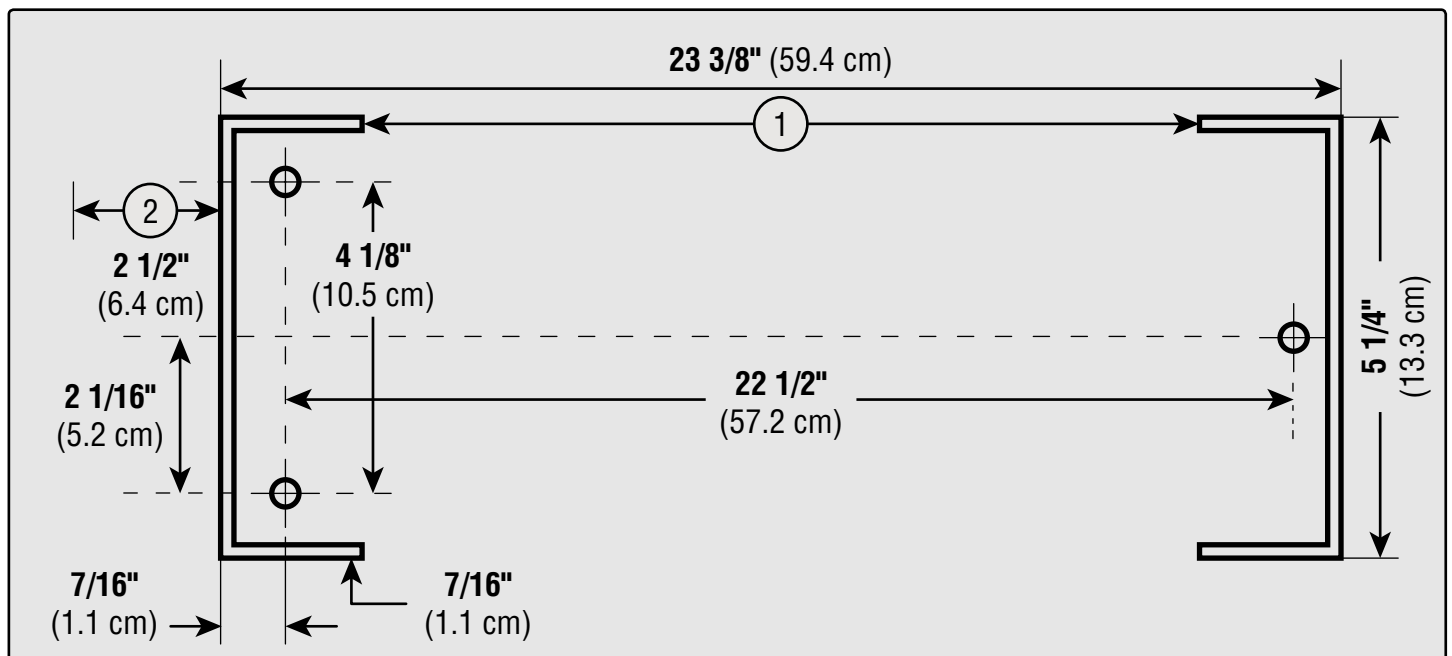
TOOL PURPOSE

Turn pens, chess pieces, cups, and more with your WEN Woodworking Lathe. Refer to the following diagrams to become familiarized with all the parts and controls of your lathe. The components will be referred to later in the manual for assembly and operation instructions.

WOODWORKING LATHE



BENCHTOP MOUNTING GUIDE



ASSEMBLY & ADJUSTMENTS

MOUNTING THE LATHE ON THE BENCHTOP

Measure and mark three hole centers as shown in Figure A. Drill clearance holes through the bench top and position the lathe in place. Attach it securely with bolts (minimum of one inch) and washers (not included) from the underside of the bench top into the tapped holes in the bottom of the lathe's frame. The hole thread is M8-1.25.

SPRING LOADED LOCK LEVERS

Check to make sure that the lock levers for the tailstock quill and the tool rest have not come loose. If they have, reassemble them with the shoulder screw (Fig. 2 - 1) passing through the spring (Fig. 2 - 2) and the handle (Fig. 2 - 3).

These spring-loaded handles are designed to minimize interference with other parts of the lathe. To operate, turn the handle clockwise to tighten or counterclockwise to loosen. Pull the handle outwards to reposition it as needed, then allow it to spring back into position before tightening or loosening.

INSTALLING AND REMOVING THE FACE PLATE

1. Thread the faceplate (Fig. 3 - 1) onto the end of the headstock spindle and hand tighten.

2. Place the wrench (Fig. 3 - 2) over the flats on the faceplate.

NOTE: Since the headstock spindle is belt driven, it will turn freely if not held stationary while the faceplate is being tightened or loosened.

3. Insert the tip of the knockout rod (Fig. 3 - 3) into one of the slots in the side of the headstock spindle.

4. Grip the knockout rod firmly while turning the wrench to either tighten or loosen the faceplate.

5. Remove the knockout rod and wrench. If the faceplate is being removed, continue turning it until it comes off the spindle thread.

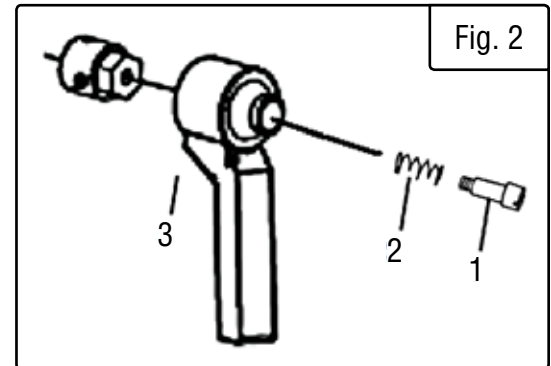


Fig. 2

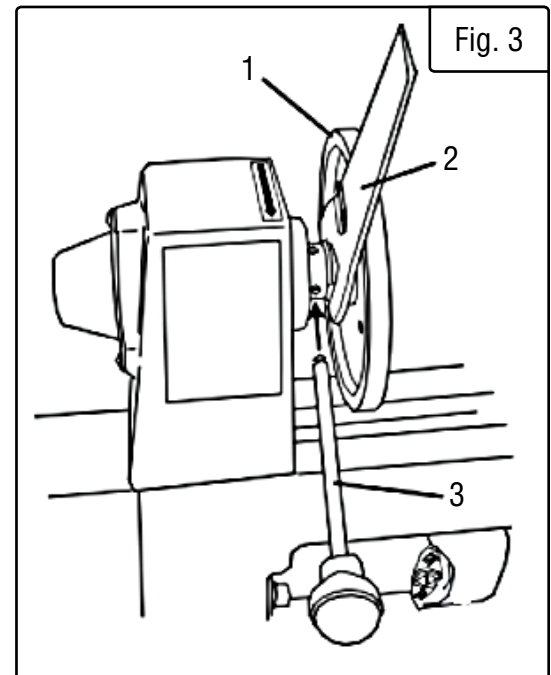


Fig. 3

ASSEMBLY & ADJUSTMENTS

INSTALLING DRIVE SPUR AND REVOLVING CENTER

NOTE: It is not necessary to remove the face plate in order to install the spur center.

1. Make sure the surfaces of both the spur center and the spindle are clean.
2. Drive the spur center (Fig. 4 - 1) into the workpiece (Fig. 4 - 2) using a rubber mallet or a piece of scrap wood.
3. Push the spur center into the spindle.
4. Once the wood is mounted on the spur center and spindle, it can be supported with the live center (Fig. 5 - 2).

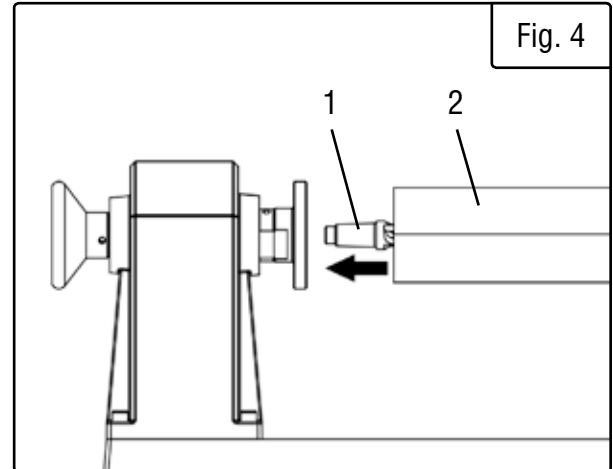


Fig. 4

REMOVING THE CENTER

1. Hold center to prevent it from falling. Use a rag to protect your hand from the sharp edges.
2. Insert the knockout rod (Fig. 6 - 1) into the far end of the spindle or the tailstock quill until it comes into contact with the shaft of the spur or live center.
3. Tap the end of the knockout rod until the spur or live center comes loose.

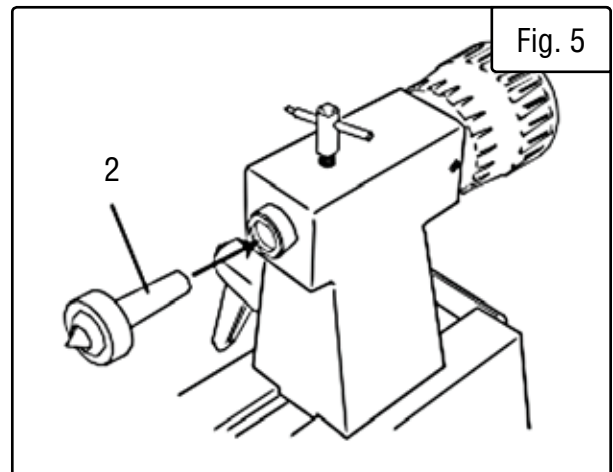


Fig. 5

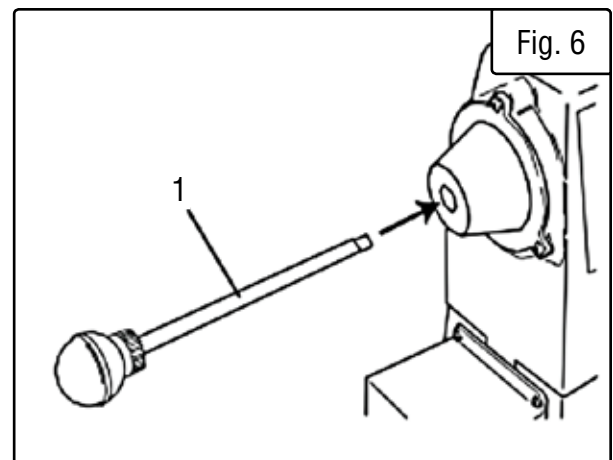


Fig. 6

ASSEMBLY & ADJUSTMENTS

ON/OFF SWITCH

The ON/OFF switch (Fig. 7 - 1) controls the power to the unit. To start the lathe, move the switch into the ON position (flipped up).

NOTE: This lathe features a gradual start up, meaning that the chuck will not start spinning until couple of moments after the switch is turned ON, and will start spinning at a lower speed before gradually ramping up to its full RPM. This doubles as both a safety feature and as protection to the machine's motor, helping to maximize its lifespan.

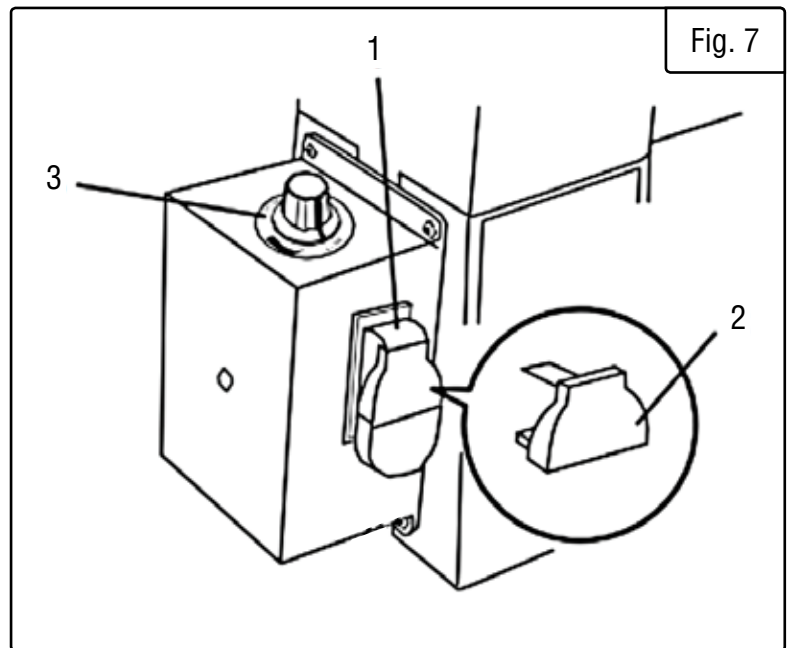
Move the switch to the OFF position to stop the lathe (flipped down). The safety switch key (Fig. 7 - 2) can be removed once the unit has been turned off. This will prevent the lathe from starting up until the safety switch key has been replaced.

⚠ WARNING! Always set the speed control knob to the lowest speed setting before starting the lathe. Never start a workpiece at maximum speed.

SPEED CONTROL KNOB

The speed control knob (Fig. 7 - 3) sets the speed of the lathe to suit the weight of the workpiece or the type of tool being used. After the lathe is started, turn the knob clockwise to increase the spindle speed. Always make sure the variable speed is set to its lowest setting before powering on the machine.

1. Turn the knob counterclockwise to decrease spindle speed (down to the minimum of 750 RPM).
2. Turn the knob clockwise to increase the spindle speed (up to the maximum of 3200 RPM).



ASSEMBLY & ADJUSTMENTS

TAILSTOCK

1. Move the tailstock (Fig. 8 - 5) by loosening the lock lever (Fig. 8 - 1) and pushing the tailstock to the desired position on the bed. Lock it back in place by tightening the lock lever again.

2. The quill extends up to 2-1/2 inches from the tailstock housing. Move the tailstock quill (Fig. 8 - 4) by loosening the quill lock lever (Fig. 8 - 2) and turning the hand wheel (Fig. 8 - 3). Turn the hand wheel clockwise to extend the quill. Turn the hand wheel counter-clockwise to retract the quill.

3. Lock the levers (Fig. 8 - 1 & 2) before operating the lathe.

4. The tailstock quill is hollow and can be accessed from the hand wheel end. Use the knockout rod to remove the center cup or to drill holes through the center of a workpiece on a flat plate.

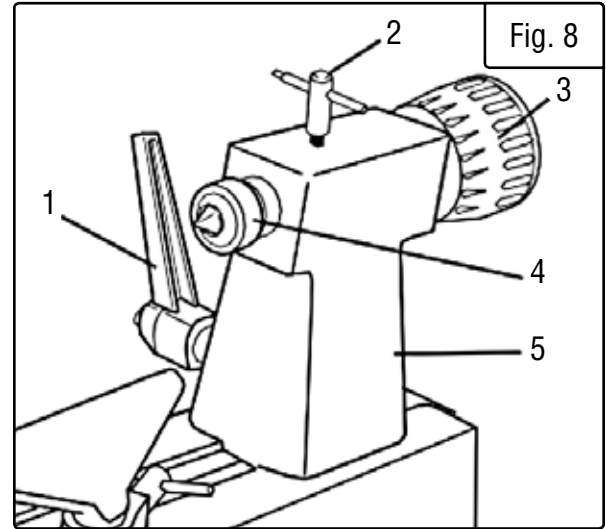


Fig. 8

TOOL REST

1. Loosen the lock lever (Fig. 9 - 4) to move the tool rest (Fig. 9 - 1) to the right or left, the back or front. Tighten the lever (Fig. 9 - 4) when the tool rest base is at the desired position on the lathe bed.

2. To adjust the tool rest, loosen the lock lever (Fig. 9 - 3) to move the tool rest (Fig. 9 - 2) to the desired position, then tighten the lock lever.

3. To change the tool rest, loosen the lock lever (Fig. 9 - 3) and pull the tool rest (Fig. 9 - 2) out of the tool rest base, then insert the tool rest, adjust the rest to the desired position and tighten the lock lever (Fig. 9 - 3)

NOTE: Make sure the tool rest is adjusted to be as close to the workpiece as possible. Rotate the workpiece by hand to check the clearance before turning on the lathe. Refer to Fig. 12 on p. 14 for recommended tool rest placement.

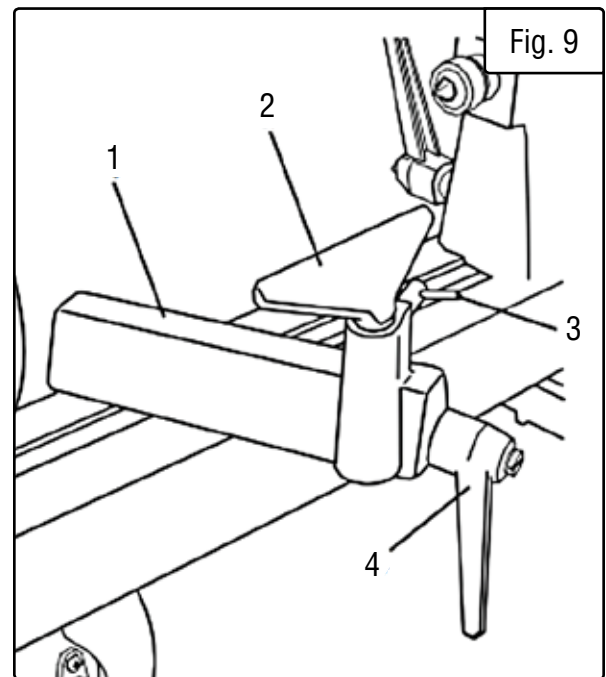
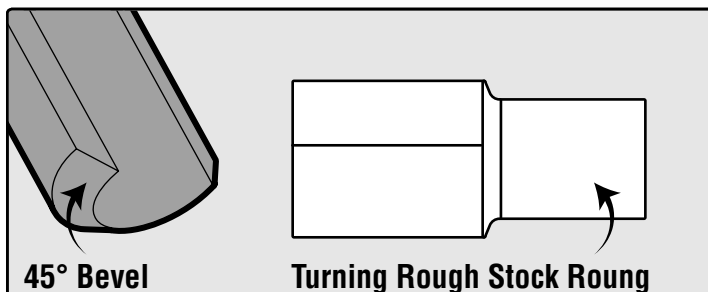


Fig. 9

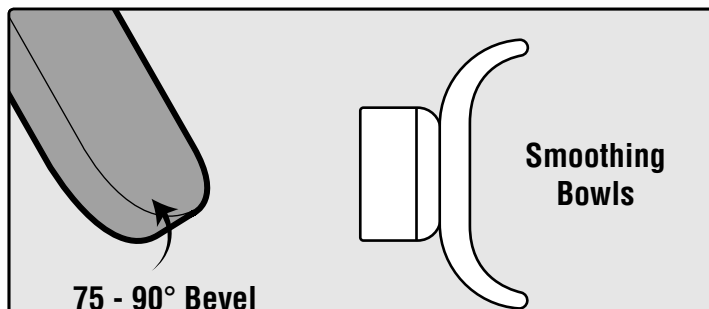
OPERATION

TURNING TOOLS

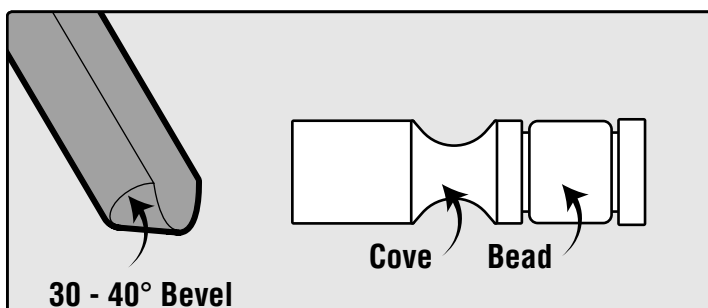
If possible, select only quality high-speed steel turning tools. High-speed steel tools hold an edge and last longer than ordinary carbon steel. As one becomes proficient in turning, a variety of specialty tools for specific applications can be acquired. The following tools provide the basics for most woodturning projects.



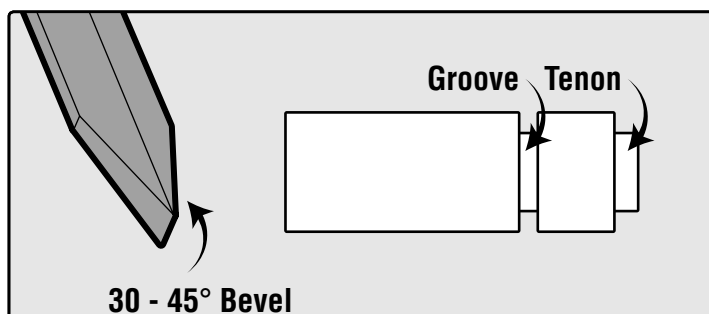
1. ROUGHING GOUGE - Use this tool to shape square or out-of-round spindle-turning stock into a cylinder. This can also be used for creating shallow coves.



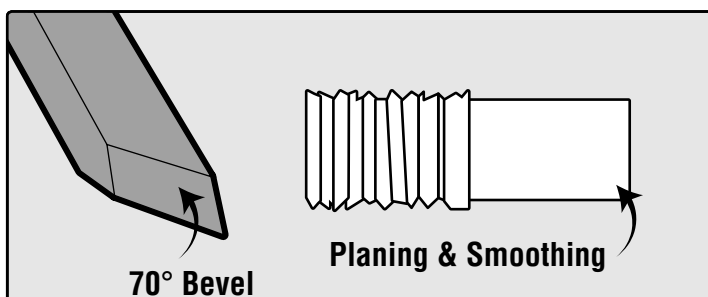
2. ROUND NOSE SCRAPER - Use this scraper for non-aggressive shaping of spindles and bowls. Smooth out surfaces without removing too much stock.



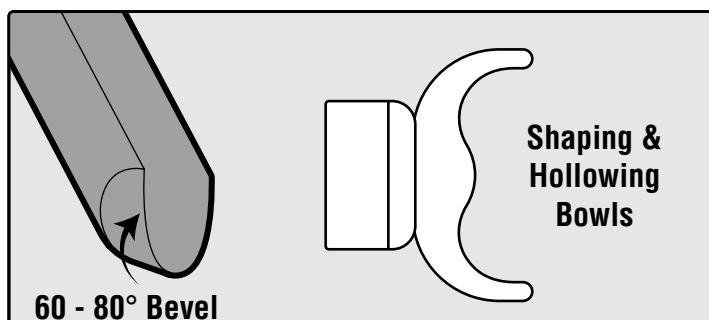
3. SPINDLE GOUGE - The spindle gouge cuts coves, beads and free-form contours. It can also be used for producing shallow hollows on faceplate turnings.



4. PARTING TOOL - Use the parting tool to form grooves and tenons and to remove stock. It can also be used for rolling small beads.



5. SKEW CHISEL - The skew evens out high and low spots to shape the cylinders. Vary the angle of contact to change the aggressiveness of the cut. This can also be used for cutting beads and V-grooves.



6. BOWL GOUGE - The bowl gouge cuts external and internal profiles on faceplate-mounted stock, such as bowls and platters. Use as a shearing scraper to create ultra smooth cuts on bowls and spindles.

OPERATION

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.

Stock for spindles should be straight grained and free of cracks, knots, nails and other defects. With a combination square, locate and mark the center on each end of the workpiece. Accuracy is not critical on full rounds but is 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 (Fig. 10).

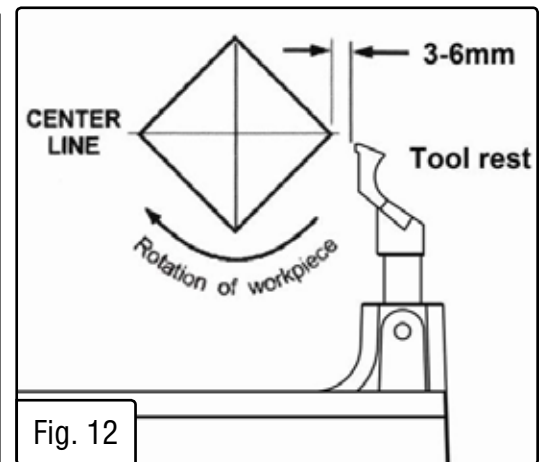
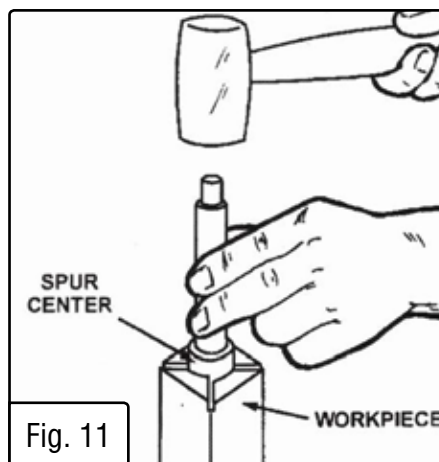
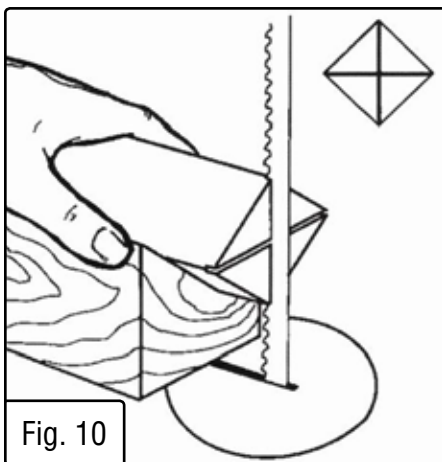
Drive the spur center about .1 inches (3 mm) into the workpiece. Use a wood mallet or dead blow hammer. Be careful that you do not split the workpiece. Never use a steel face hammer and never drive the workpiece onto the spur center while it is mounted on the spindle of the lathe (Fig. 11).

Clean the tapered end of the 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 bringing the tailstock into position. Lock the tailstock to the bed.

Advance the tailstock quill with the hand wheel 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. Excessive pressure runs the risk of overheating the center bearings and damaging both the workpiece and the lathe.

Tighten the quill locking handle. Move the tool rest into position. It should be parallel to the workpiece, just below the centerline and approximately .1 to .2 inches (3 mm to 6 mm) from the corners of the workpiece to be turned. Tighten the tool rest base to the bed of the lathe (Fig. 12).

Before turning on the lathe, rotate the workpiece by hand to check for proper clearance. If clearance is okay and the workpiece is properly centered, start the lathe at the lowest speed. Slowly bring it up to the appropriate speed given the size of the workpiece.



OPERATION

CUTTING TECHNIQUES

Begin with a large roughing gouge. Place the tool on the tool rest with the heel of the tool on the surface to be cut. Slowly and gently raise the tool handle until the cutting edge comes into contact with the workpiece. Beginning about 2 inches from the tailstock end of the workpiece, roll the flute of the tool (the hollowed-out portion) in the direction of the cut. Make long sweeping cuts in a continuous motion to turn the piece to a cylinder (Fig. 13).

Keep as much of the bevel of the tool in contact with the workpiece as possible to ensure control and avoid catches.

NOTE: Always cut downhill, or from the large diameter to the small diameter. Always work towards the end of the workpiece; never start at the cutting end.

Once the workpiece is roughed down to a cylinder, smooth it with a large skew. Keep the skew handle perpendicular to the spindle and use only the center third of the cutting edge for a long smoothing cut (touching one of the points of the skew to the spinning workpiece may cause a catch and ruin the workpiece). Add details to the workpiece with skews, parting tools, scrapers or spindle gouges.

BEADS - Make a parting cut for what is to be a bead to the desired depth. Place the parting tool on the tool rest and move the tool forward to make the full bevel of the tool come into contact with the workpiece. Gently raise the handle to make cuts of the appropriate depth. Repeat for the other side of the bead. Using a small skew or spindle gouge, start in the center between the two cuts and cut down each side to form the bead. Roll the tool in the direction of the cut.

COVES (Fig. 14) - Use a spindle gouge to create a cove. With the flute of the tool at 90 degrees to the workpiece, touch the point of the tool to the workpiece and roll in towards the bottom of the cove. Stop at the bottom, as attempting to go up the opposite side may cause the tool to catch. Move the tool over the desired width of the cove. With the flute facing the opposite direction, repeat the step for the other side of the cove. Stop at the bottom of the cut.

V-GROOVES (Fig. 15) - Use the point of the skew to create a V-groove in the workpiece. Lightly mark the center of the V with the top of the skew. Move the point of the skew to the right half of the desired width of your cut. With the bevel parallel to the right side of the cut, raise the handle and push the tool in to the desired depth. Repeat from the left side. The two cuts should meet at the bottom and leave a clean V-groove. Additional cuts may be taken to add to either the depth or the width of the cut.

PARTING OFF - Adjust the lathe to a slower speed for parting through a workpiece. Place a parting tool on the tool rest and raise the handle until it starts to cut. Continue cutting towards the center of the workpiece. Loosely hold on to the piece in one hand as it separates from the waste wood.

SANDING - Leaving clean cuts will reduce the amount of sanding required. Move the tool rest out of the way, adjusting the lathe to a low speed. Begin with fine sandpaper (120 grit or finer), as coarser sandpaper will leave deep scratches and dull the features of the workpiece. Progress through each grit without skipping grits (as in, don't jump from 120 grit to 220 grit). Fold the sandpaper into a pad; do not wrap sandpaper around your fingers or the workpiece.

FINISHING - To apply a finish, the workpiece can be left on the lathe. Turn off the lathe and use a brush or paper towel to apply the finish. Remove excess finish before restarting the lathe. Only start it at a very low speed with awareness that fresh coats have a tendency to splash and fling if not given adequate drying time. Allow it to dry and sand again with 320 to 400 grit sandpaper. Apply a second coat of finish and buff.

OPERATION

MOUNTING ON THE FACE PLATE

Use of the face plate is the most common for holding a block of wood for turning bowls and plates. This is an alternative option for workpieces with diameters that are greater than the 8-inch throat of the lathe. **NOTE:** Your lathe is intended for pens, chess pieces, cups, and other small workpieces. This lathe is not suitable for larger workpieces.

To mount the stock to the face plate, select a stock that is at least .2 inches (5 mm) larger than each dimension of the finished workpiece. Always select the largest diameter face plate that can be used for the workpiece at hand.

True one of the surfaces of the workpiece for mounting against the faceplate. Using the face plate as a template, mark the location of the mounting holes on the workpiece and drill pilot holes of 8 mm in diameter.

If mounting screws on the face plate interfere with the workpiece, a glue or waste block can be used (Fig. 16). Make sure the block is of the same diameter as the face plate. Both the waste block and the 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.

While face plates are the simplest, most reliable method of holding a larger 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 (dovetails) with a variety of jaws to accommodate different size tenons. Most also come with a screw chuck as well.

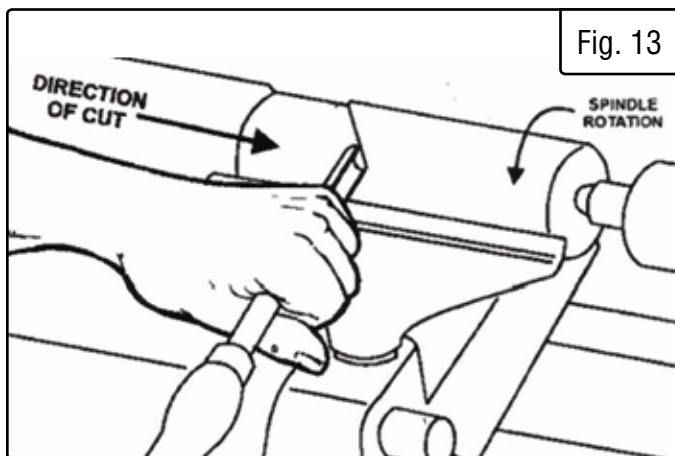


Fig. 13

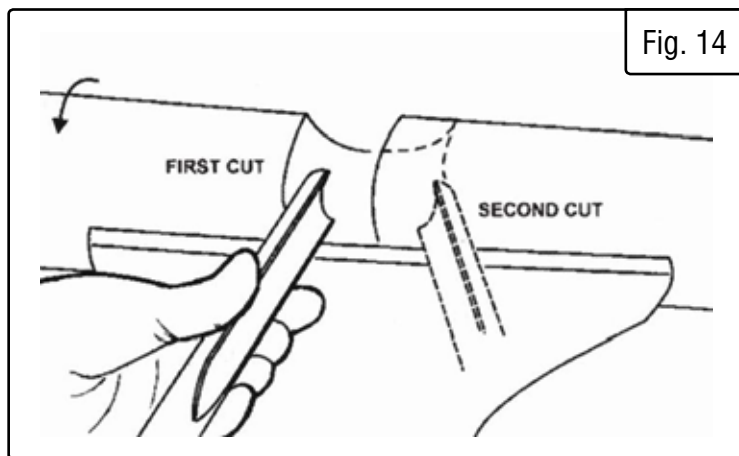


Fig. 14

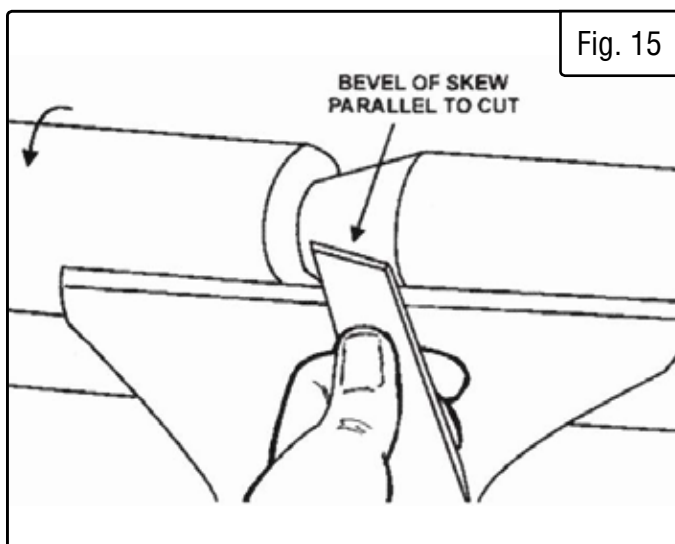


Fig. 15

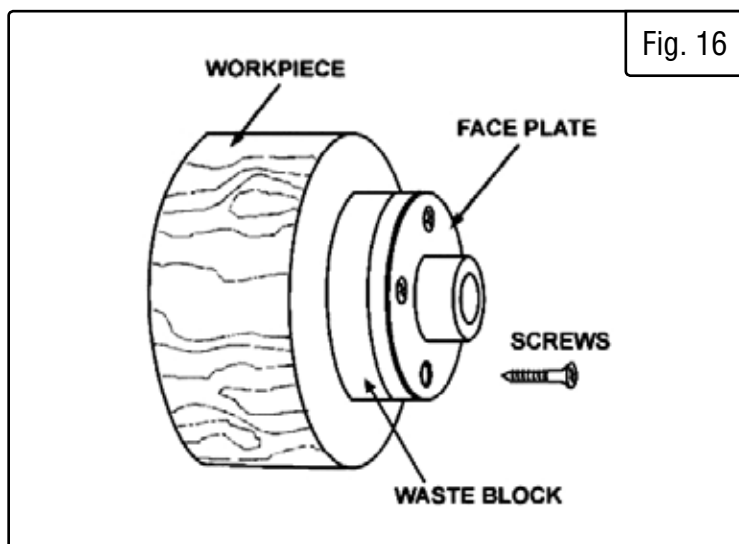


Fig. 16

OPERATION

TO SHAPE THE OUTSIDE OF THE 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 the spur center into the top of the workpiece with a mallet or a 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 the workpiece by hand to ensure proper clearance. Start the lathe at the lowest speed and bring it up to the proper speed for the size of the work being turned. If the machine starts to vibrate, lower the speed until the vibration stops. Rough out the outside of the bowl with the bowl gouge, holding 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 the 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 and remove the workpiece. Attach the face plate or chuck. Finish turning the outside of the bowl with a bowl gouge. Leave additional material at the base of the bowl for support while turning the interior. This will be removed later.

TO SHAPE THE INSIDE OF THE BOWL

Stop the lathe and move the tailstock away. Adjust the tool rest in front of the bowl just below the centerline at a right angle to the lathe's turning axis. Rotate the workpiece by hand to check for clearance.

Start by lightly shearing across the top of the workpiece from rim to center. Place a bowl gouge on the tool rest at the center of the workpiece with the flute facing the top of the bowl. The tool handle should be level and pointed toward the four o'clock position.

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

NOTE: Try to make one 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 the preferred 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 back to the exterior to re-define the bottom of the bowl. Work the tight area around the face plate or the chuck with a bowl gouge. Begin the separation with a parting tool, but do not cut all the way through.

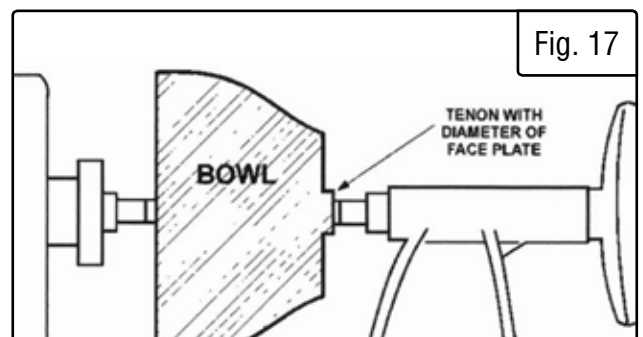


Fig. 17

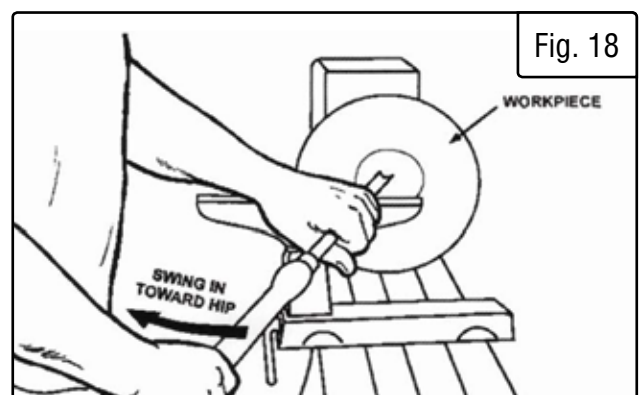


Fig. 18

MAINTENANCE

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

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

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

The lathe is made from steel and cast iron. All non-painted surfaces will rust if not protected. Apply a light coat of good-quality paste wax to all machined surfaces to protect against rust and corrosion.

Blow out dust accumulation inside the motor, the housing, and the bed assembly frequently. If the tailstock has been used as a guide for drilling through the center of a workpiece, also blow sawdust or shavings out of the center of both the headstock spindle and the tailstock quill.

A coat of machine lubricant applied to the bed will help keep the surface clean and the movement of the tool rest and tailstock smooth.

Periodic lubrication of the spring levers and other threaded parts will make these parts easier to operate.

TROUBLESHOOTING GUIDE

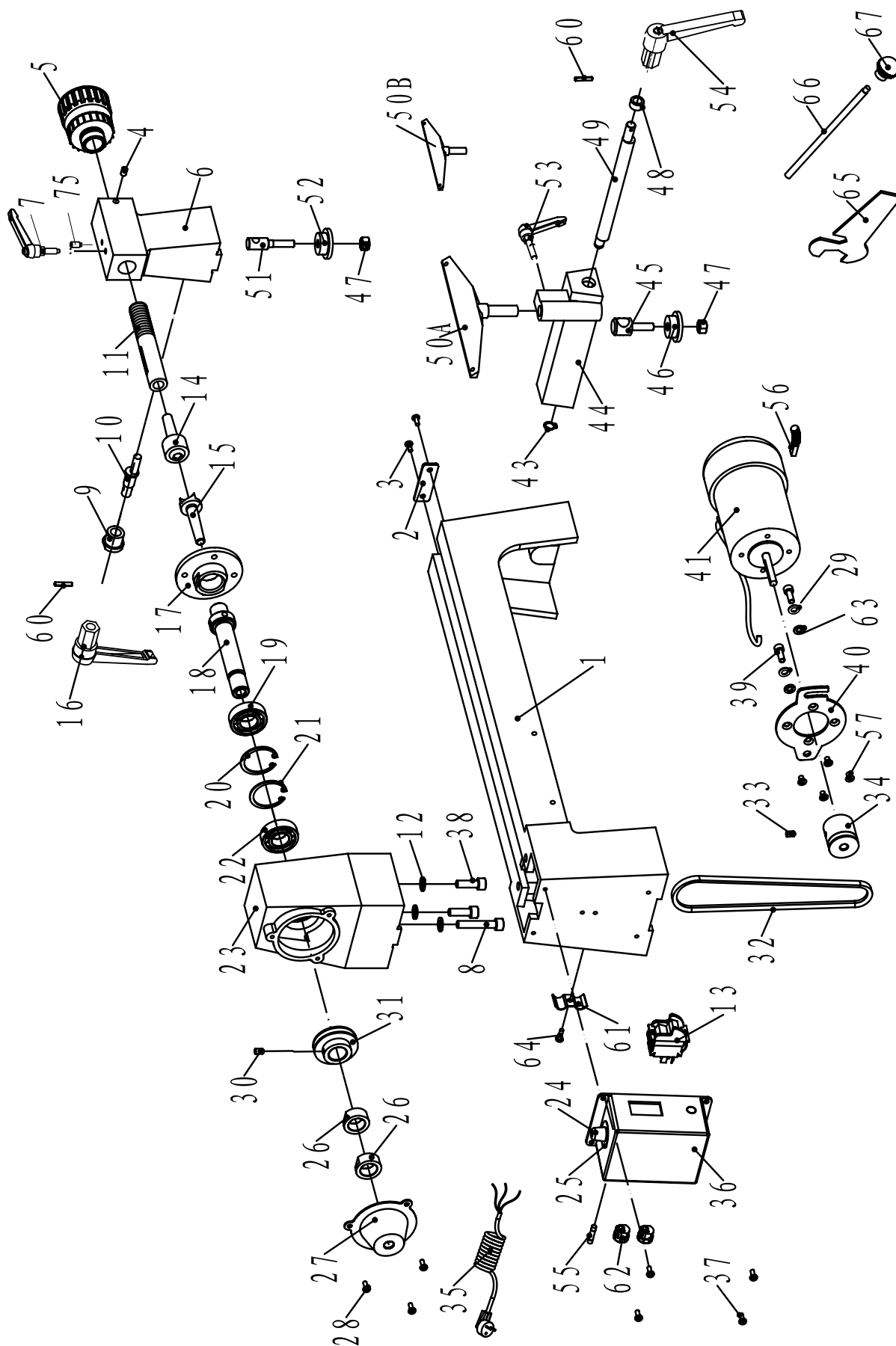
PROBLEM	CAUSE	SOLUTION
Motor or spindle stalls and will not start.	1. Excessive cut	1. Reduce the depth of the cut.
	2. Worn, damaged, or improperly adjusted belt.	2. Adjust or replace the belt.
	3. Worn spindle bearing.	3. Replace the bearing.
	4. Motor is protected from overload.	4. Reset the circuit.
Excessive vibration.	1. Workpiece is warped, out of round, has major flaw, or was improperly prepared for turning.	1. Correct the problem by planing or sawing workpiece, or discard it entirely and restart.
	2. Worn spindle bearing.	2. Replace the spindle bearings.
	3. Worn drive belt.	3. Replace the drive belt.
	4. Lathe is on an uneven surface.	4. Place the lathe on a flat surface.
Tools tend to grab or dig in.	1. Dull tools.	1. Keep tools sharp.
	2. Tool rest set too low.	2. Reposition the tool rest height.
	3. Tool rest set too far from work piece.	3. Reposition the tool rest closer to the workpiece.
	4. Improper tool being used.	4. Use correct tool for operation.
Tailstock moves when applying pressure.	1. Cam lock nut needs adjusting.	1. Tighten cam lock nut.
	2. Lathe bed and tailstock mating surfaces are greasy or oily.	2. Remove the tailstock and clean the surfaces with a cleaner. Apply a light coat of oil to the lathe bed surface.

EXPLODED VIEW & PARTS LIST

No.	Part No.	Description	Qty
1	3420-001	Bed	1
2	3420-002	Retaining Plate	1
3	3420-003	Bolt	2
4	3420-004	Set Screw	2
5	3420-005	Hand Wheel	1
6	3420-006	Tailstock	1
7	3420-007	Tailstock Spindle Lock	1
8	3420-008	Bolt	1
9	3420-009	Sleeve	1
10	3420-010	Eccentric Connector	1
11	3420-011	Tailstock Sleeve	1
12	3420-012	Washer	3
13	3420-013	Switch	1
14	3420-014	Center Assembly	1
15	3420-015	Spur Center	1
16	3421-016	Tailstock Handle	1
17	3420-017	Faceplate	1
18	3420-018	Headstock Spindle	1
19	3420-019	Ball Bearing	1
20	3420-020	Retaining Ring	1
21	3420-021	Retaining Ring	1
22	3420-022	Ball Bearing	1
23	3420-023	Headstock	1
24	3420-024	Variable Speed Knob Cap	1
26	3420-026	Headstock Spindle Nut	2
27	3420-027	Headstock Cover	1
28	3420-028	Bolt	3
29	3421-029	Washer	1
30	3420-030	Bolt	1
31	3420-031	Headstock Pulley	1
32	3420-032	Belt	1
33	3420-033	Screw	1
34	3420-034	Motor Pulley	1

No.	Part No.	Description	Qty
35	3420-035	Power Cord	1
36	3421-036	Switch Box Assembly	1
37	3420-037	Bolt	4
38	3420-038	Bolt	2
39	3420-039	Bolt	2
40	3420-040	Motor Mount	1
41	3421-041	Motor	1
43	3420-043	Retaining Ring	1
44	3420-044	Tool Rest Base	1
45	3420-045	Bolt	1
46	3420-046	Plate	1
47	3420-047	Nut	2
48	3420-048	Sleeve	1
49	3420-049	Eccentric Rod	1
50A	3420-050A	7" Tool Rest	1
50B	3420-050B	4.5" Tool Rest	1
51	3420-051	Bolt	1
52	3420-052	Plate	1
53	3420-053	Tool Rest Lock	1
54	3421-054	Tool Rest Base Lock	1
55	3420-055	Fuse, 10A	1
56	3420-056	Carbon Brush	2
57	3420-057	Screw	4
60	3420-060	Spring Pin	2
61	3420-061	Cable Clamp	1
62	3420-062	Wire Gasket	2
63	3420-063	Washer	2
64	3420-064	Screw	1
65	3420-065	Faceplate Wrench	1
66	3420-066	Knock Out Rod	1
67	3420-067	Knock Out Cap	1
75	3421-075	Tailstock Set Screw	1

EXPLODED VIEW & PARTS LIST



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Upon the confirmation of a WEN representative, your product may qualify for repairs and service work. When returning a product for warranty service, the shipping charges must be prepaid by the purchaser. The product must be shipped in its original container (or an equivalent), properly packed to withstand the hazards of shipment. The product must be fully insured with a copy of the proof of purchase enclosed. There must also be a description of the problem in order to help our repairs department diagnose and fix the issue. Repairs will be made and the product will be returned and shipped back to the purchaser at no charge for addresses within the contiguous United States.

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NOTES

NOTES

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