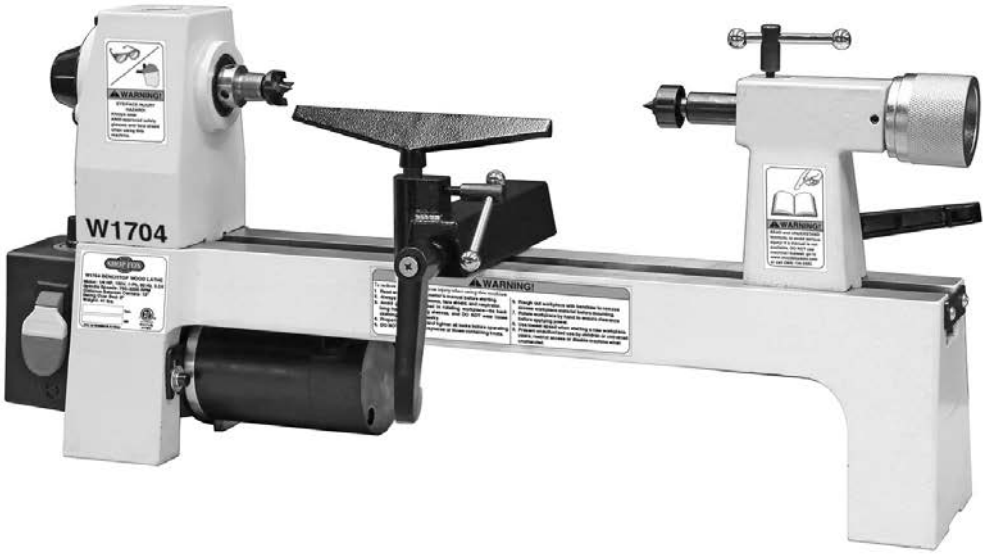
WOODSTOCK

SHOP FOX®

INTERNATIONAL

MODEL W1704
8" X 13" BENCHTOP WOOD LATHE



OWNER'S MANUAL

(FOR MODELS MANUFACTURED SINCE 01/20)

Phone: (360) 734-3482 • Online Technical Support: techsupport@woodstockint.com

Intertek
4000909

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WARNING: NO PORTION OF THIS MANUAL MAY BE REPRODUCED IN ANY SHAPE OR FORM WITHOUT THE WRITTEN APPROVAL OF WOODSTOCK INTERNATIONAL, INC.

#5378TR Printed in China

⚠ WARNING!

This manual provides critical safety instructions on the proper setup, operation, maintenance, and service of this machine/tool. Save this document, refer to it often, and use it to instruct other operators.

Failure to read, understand and follow the instructions in this manual may result in fire or serious personal injury—including amputation, electrocution, or death.

The owner of this machine/tool is solely responsible for its safe use. This responsibility includes but is not limited to proper installation in a safe environment, personnel training and usage authorization, proper inspection and maintenance, manual availability and comprehension, application of safety devices, cutting/sanding/grinding tool integrity, and the usage of personal protective equipment.

The manufacturer will not be held liable for injury or property damage from negligence, improper training, machine modifications or misuse.

⚠ WARNING!

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. 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, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

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USE THE QUICK GUIDE PAGE LABELS TO SEARCH OUT INFORMATION FAST!

INTRODUCTION

Woodstock Technical Support

This machine has been specially designed to provide many years of trouble-free service. Close attention to detail, ruggedly built parts and a rigid quality control program assure safe and reliable operation.

Woodstock International, Inc. is committed to customer satisfaction. Our intent with this manual is to include the basic information for safety, setup, operation, maintenance, and service of this product.

We stand behind our machines! In the event that questions arise about your machine, please contact Woodstock International Technical Support at (360) 734-3482 Ext. 2 or send e-mail to: **techsupport@woodstockint.com**. Our knowledgeable staff will help you troubleshoot problems and process warranty claims.

If you need the latest edition of this manual, you can download it from **http://www.shopfox.biz**.
If you have comments about this manual, please contact us at:

Woodstock International, Inc.
Attn: Technical Documentation Manager
P.O. Box 2309
Bellingham, WA 98227
Email: manuals@woodstockint.com

⚠WARNING

Like all machinery there is potential danger when operating this machine. Accidents are frequently caused by lack of familiarity or failure to pay attention. Use this machine with respect and caution to decrease the risk of operator injury. If normal safety precautions are overlooked or ignored, serious personal injury may occur.

⚠WARNING

No list of safety guidelines can be complete. Every shop environment is different. Always consider safety first, as it applies to your individual working conditions. Use this and other machinery with caution and respect. Failure to do so could result in serious personal injury, damage to equipment, or poor work results.

MACHINE SPECIFICATIONS

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MODEL W1704
8" X 13" BENCH-TOP WOOD LATHE

Product Dimensions

Weight..... 41 lbs.
Width (side-to-side) x Depth (front-to-back) x Height..... 29 x 10-1/2 x 13 in.
Footprint (Length x Width)..... 23-1/2 x 5-1/2 in.

Shipping Dimensions

Type..... Cardboard Box
Content..... Machine
Weight..... 52 lbs.
Length x Width x Height..... 30 x 15 x 8 in.

Electrical

Power Requirement..... 120V, Single-Phase, 60 Hz
Full-Load Current Rating..... 3.2A
Minimum Circuit Size..... 15A
Connection Type..... Cord & Plug
Power Cord Included..... Yes
Power Cord Length..... 6 ft.
Power Cord Gauge..... 18 AWG
Plug Included..... Yes
Included Plug Type..... 5-15
Switch Type..... Paddle Safety Switch w/Removable Key

Motors

Main

Horsepower..... 1/3 HP
Phase..... Single-Phase
Amps..... 4A
Speed..... 4600 RPM
Type..... Universal
Power Transfer ..... Belt
Bearings..... Shielded & Permanently Lubricated

Main Specifications

Operation Information

Swing Over Bed..... 8 in.
Distance Between Centers..... 13 in.
Max. Distance Tool Rest to Spindle Center..... 2-3/4 in.
No of Spindle Speeds..... Variable
Spindle Speed Range..... 750 – 3200 RPM
Floor to Center Height..... 9-3/4 in.

Spindle Information

Spindle Taper..... MT#1
Spindle Thread Size..... 3/4" x 16 TPI
Spindle Thread Direction..... Right Hand
Spindle Bore..... 0.394 in.
Type of Included Spindle Center..... Spur

Tailstock Information

Tailstock Taper..... MT#1
Type of Included Tailstock Center..... Live

Construction

Bed..... Precision-Ground Cast Iron
Frame..... Cast Iron & Steel
Headstock..... Cast Iron & Steel
Tailstock..... Cast Iron & Steel
Paint Type/Finish..... Enamel

Other Related Information

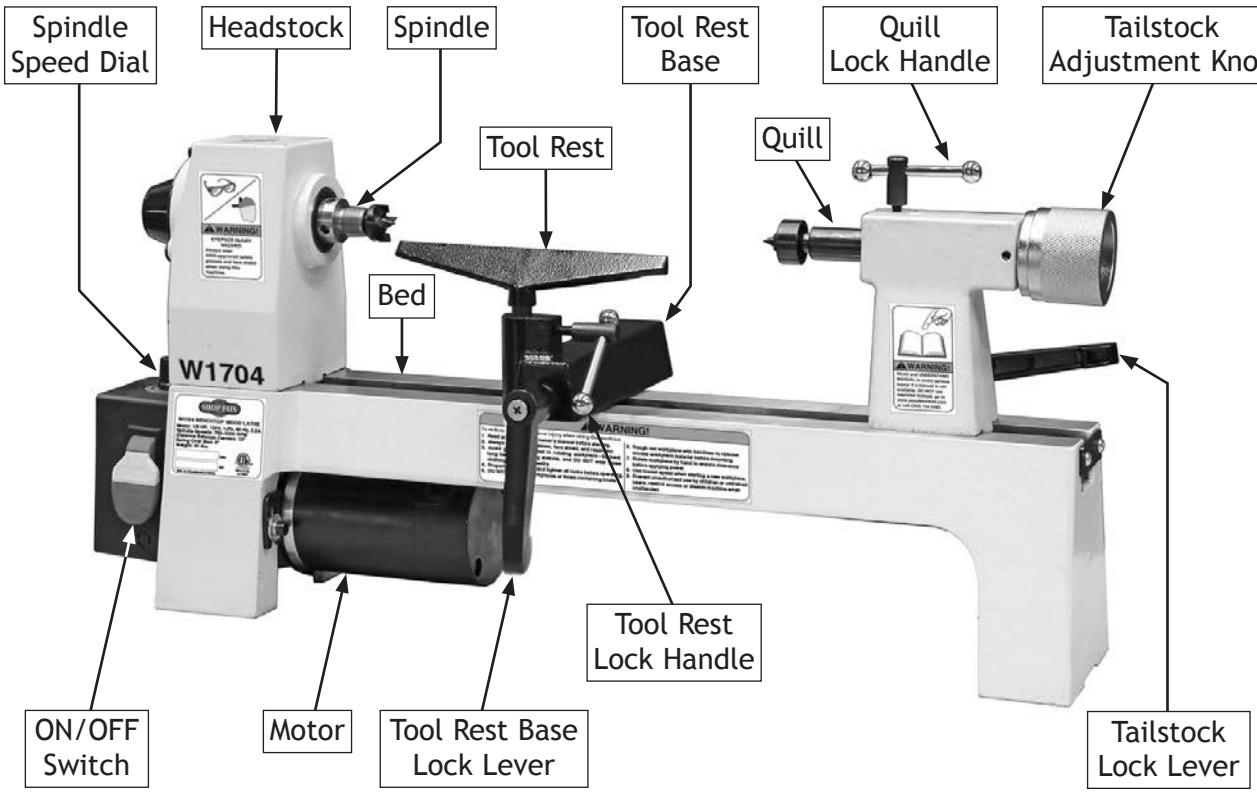
Bed Width..... 5-1/8 in.
Faceplate Size..... 5-3/4 in.

Other

Country of Origin ..... China
Warranty ..... 2 Years
Approximate Assembly & Setup Time ..... 15 Minutes
Serial Number Location ..... ID Label on Lathe Bed
ISO 9001 Factory ..... Yes
Certified by a Nationally Recognized Testing Laboratory (NRTL) ..... Yes

Identification

Become familiar with the names and locations of the controls and features shown below to better understand the instructions in this manual.



⚠CAUTION

For Your Own Safety Read Instruction Manual Before Operating Lathe

a) Wear eye protection.
b) Do not wear gloves, necktie, or loose clothing.
c) Tighten all locks before operating.
d) Rotate workpiece by hand before applying power.
e) Rough out workpiece before installing on faceplate.
f) Do not mount split workpiece or one containing knot.
g) Use lowest speed when starting new workpiece.

Controls & Components

Refer to **Figures 1-3** and the following descriptions to become familiar with the basic controls and components of this machine. Understanding these items and how they work will help you understand the rest of the manual and stay safe when operating this machine.

⚠WARNING



To reduce your risk of serious injury or damage to the machine, read this entire manual BEFORE using machine.

A. Spindle Speed Dial: Controls spindle speed. Always turn dial to lowest setting before starting lathe.

B. ON/OFF Paddle Switch: Turns lathe ***ON*** and ***OFF***.

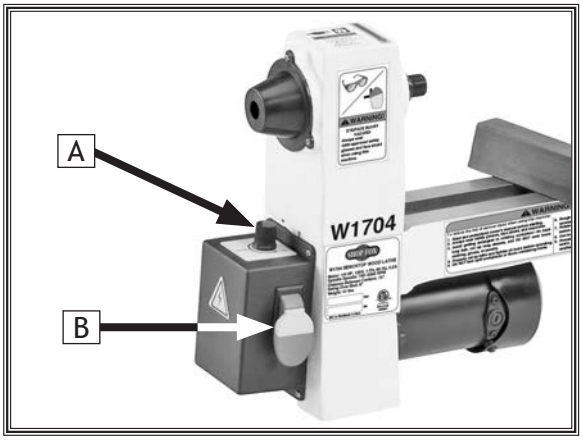


Figure 1. Switch box controls.

C. Tailstock Adjustment Knob: Moves quill toward or away from spindle.

D. Quill Lock Handle: Secures quill in position.

E. Quill: Holds centers or tooling. Can be moved toward and away from spindle.

F. Tailstock Lock Lever: Secures tailstock in position along bed.

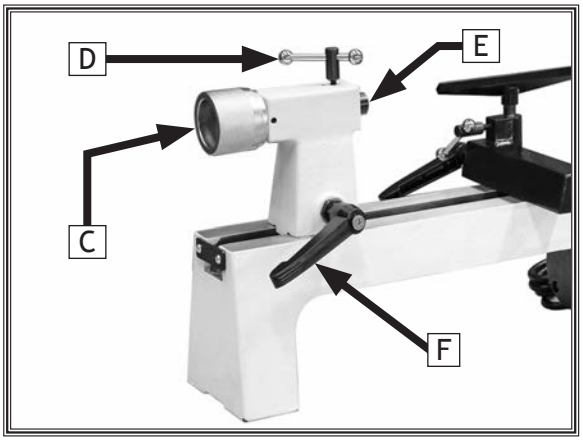


Figure 2. Tailstock controls.

G. Tool Rest: Provides stable platform for cutting tools.

H. Tool Rest Lock Handle: Secures tool rest in position.

I. Tool Rest Base (Banjo) Lock Lever: Secures tool rest holder when tool rest is proper distance from workpiece.

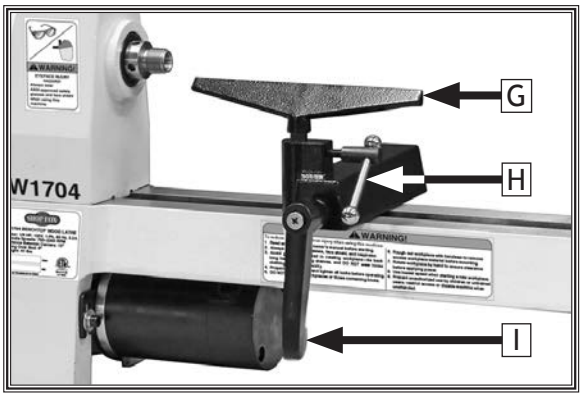


Figure 3. Tool rest controls.

SAFETY

For Your Own Safety, Read Manual Before Operating Machine

The purpose of safety symbols is to attract your attention to possible hazardous conditions. This manual uses a series of symbols and signal words intended to convey the level of importance of the safety messages. The progression of symbols is described below. Remember that safety messages by themselves do not eliminate danger and are not a substitute for proper accident prevention measures—this responsibility is ultimately up to the operator!

⚠DANGER **Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.**

⚠WARNING **Indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.**

⚠CAUTION **Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury.**

NOTICE **This symbol is used to alert the user to useful information about proper operation of the equipment or a situation that may cause damage to the machinery.**

Standard Machinery Safety Instructions

OWNER'S MANUAL. Read and understand this owner's manual BEFORE using machine.

TRAINED OPERATORS ONLY. Untrained operators have a higher risk of being hurt or killed. Only allow trained/supervised people to use this machine. When machine is not being used, disconnect power, remove switch keys, or lock-out machine to prevent unauthorized use—especially around children. Make workshop kid proof!

DANGEROUS ENVIRONMENTS. Do not use machinery in areas that are wet, cluttered, or have poor lighting. Operating machinery in these areas greatly increases the risk of accidents and injury.

MENTAL ALERTNESS REQUIRED. Full mental alertness is required for safe operation of machinery. Never operate under the influence of drugs or alcohol, when tired, or when distracted.

ELECTRICAL EQUIPMENT INJURY RISKS. You can be shocked, burned, or killed by touching live electrical components or improperly grounded machinery. To reduce this risk, only allow an electrician or qualified service personnel to do electrical installation or repair work, and always disconnect power before accessing or exposing electrical equipment.

DISCONNECT POWER FIRST. Always disconnect machine from power supply BEFORE making adjustments, changing tooling, or servicing machine. This eliminates the risk of injury from unintended startup or contact with live electrical components.

EYE PROTECTION. Always wear ANSI-approved safety glasses or a face shield when operating or observing machinery to reduce the risk of eye injury or blindness from flying particles. Everyday eyeglasses are not approved safety glasses.

WEARING PROPER APPAREL. Do not wear clothing, apparel, or jewelry that can become entangled in moving parts. Always tie back or cover long hair. Wear non-slip footwear to avoid accidental slips, which could cause loss of workpiece control.

HAZARDOUS DUST. Dust created while using machinery may cause cancer, birth defects, or long-term respiratory damage. Be aware of dust hazards associated with each workpiece material, and always wear a NIOSH-approved respirator to reduce your risk.

HEARING PROTECTION. Always wear hearing protection when operating or observing loud machinery. Extended exposure to this noise without hearing protection can cause permanent hearing loss.

REMOVE ADJUSTING TOOLS. Tools left on machinery can become dangerous projectiles upon startup. Never leave chuck keys, wrenches, or any other tools on machine. Always verify removal before starting!

INTENDED USAGE. Only use machine for its intended purpose—never make modifications without prior approval from Woodstock International. Modifying machine or using it differently than intended will void the warranty and may result in malfunction or mechanical failure that leads to serious personal injury or death!

AWKWARD POSITIONS. Keep proper footing and balance at all times when operating machine. Do not overreach! Avoid awkward hand positions that make workpiece control difficult or increase the risk of accidental injury.

CHILDREN & BYSTANDERS. Keep children and bystanders at a safe distance from the work area. Stop using machine if they become a distraction.

GUARDS & COVERS. Guards and covers reduce accidental contact with moving parts or flying debris—make sure they are properly installed, undamaged, and working correctly.

FORCING MACHINERY. Do not force machine. It will do the job safer and better at the rate for which it was designed.

NEVER STAND ON MACHINE. Serious injury may occur if machine is tipped or if the cutting tool is unintentionally contacted.

STABLE MACHINE. Unexpected movement during operation greatly increases risk of injury or loss of control. Before starting, verify machine is stable and mobile base (if used) is locked.

USE RECOMMENDED ACCESSORIES. Consult this owner's manual or the manufacturer for recommended accessories. Using improper accessories will increase risk of serious injury.

UNATTENDED OPERATION. To reduce the risk of accidental injury, turn machine ***OFF*** and ensure all moving parts completely stop before walking away. Never leave machine running while unattended.

MAINTAIN WITH CARE. Follow all maintenance instructions and lubrication schedules to keep machine in good working condition. A machine that is improperly maintained could malfunction, leading to serious personal injury or death.

CHECK DAMAGED PARTS. Regularly inspect machine for any condition that may affect safe operation. Immediately repair or replace damaged or mis-adjusted parts before operating machine.

MAINTAIN POWER CORDS. When disconnecting cord-connected machines from power, grab and pull the plug—NOT the cord. Pulling the cord may damage the wires inside, resulting in a short. Do not handle cord/plug with wet hands. Avoid cord damage by keeping it away from heated surfaces, high traffic areas, harsh chemicals, and wet/damp locations.

EXPERIENCING DIFFICULTIES. If at any time you experience difficulties performing the intended operation, stop using the machine! Contact Technical Support at (360) 734-3482.

Additional Safety for Wood Lathes

MAIN INJURY HAZARDS: Death or crushing injury from getting entangled in rotating spindle or workpiece; death, blindness, or broken bones from being struck by a workpiece that breaks apart or comes loose during rotation, turning tool kickback, or flying wood chips. To minimize your risk of these hazards, always heed the following warning information:

INTEGRITY OF STOCK. Verify each workpiece is free of knots, splits, nails, or foreign material to ensure it can safely rotate on spindle without breaking apart or causing turning tool kickback.

WORKPIECE PREPARATION. Before mounting, cut off waste portions with a bandsaw or other tool to ensure workpiece has no large edges to catch turning tool, and it will rotate without dangerous wobbling.

SECURING LOCKS. Verify tool rest, headstock, and tailstock are secure before turning lathe ***ON***.

SECURING WORKPIECE. An improperly secured workpiece can fly off spindle with deadly force. Use proven setup techniques and always verify workpiece is well-secured before starting lathe. Only use high-quality fasteners with non-tapered heads for faceplate attachment.

TOOL SUPPORT. An improperly supported tool may be grabbed or ejected. Adjust tool rest approximately 1/4" away from workpiece and 1/8" above workpiece center line to provide proper support for turning tool. Firmly hold turning tool with both hands against tool rest.

TOOL KICKBACK. Occurs when turning tool is ejected from workpiece with great force, striking operator or bystanders. Commonly caused by poor workpiece selection/ preparation, improper tool usage, or improper machine setup or tool rest adjustment.

ADJUSTMENT TOOLS. Remove all chuck keys, wrenches, and adjustment tools before turning lathe ***ON***. A tool left on the lathe can become a deadly projectile when spindle is started.

SAFE CLEARANCES. Before starting spindle, verify workpiece has adequate clearance by hand-rotating it through its entire range of motion.

EYE/FACE PROTECTION. Always wear a face shield and safety glasses when operating lathe.

PROPER APPAREL. Do not wear gloves, necktie or loose clothing. Keep keep long hair away from rotating spindle.

SPEED RATES. Select correct spindle speed for workpiece size, type, shape, and condition. Use low speeds when roughing or when turning large, long, or non-concentric workpieces. Allow spindle to reach full speed before turning.

NEW SETUPS. Test each new setup by starting spindle rotation at the lowest speed and standing to the side of the lathe until workpiece reaches full speed and you can verify safe rotation.

ROUGHING. Use correct tool. Take light cuts, use low speeds, and firmly support tool with both hands.

SHARP TOOLS. Only use sharp turning tools—they cut with less resistance than dull tools. Dull turning tools can catch or grab and pull your hands into the rotating workpiece.

STOPPING SPINDLE. Always allow spindle to completely stop on its own. Never put hands or another object on spinning workpiece.

ADJUSTMENTS/MAINTENANCE. Make sure wood lathe is turned ***OFF***, disconnected from power, and all moving parts are completely stopped before doing adjustments or maintenance.

MEASURING WORKPIECE. Only measure workpiece after it has stopped. Trying to measure a spinning workpiece increases entanglement risk.

SANDING/POLISHING. To reduce entanglement risk, remove tool rest before sanding. Never completely wrap sandpaper around workpiece.

Glossary of Terms

The following is a list of common definitions, terms and phrases used throughout this manual as they relate to this wood lathe and woodworking in general. Become familiar with these terms for assembling, adjusting or operating this machine.

Bed: The long, rail-like metal base to which the tailstock, tool base, and headstock are attached.

Chuck: A mechanical device that attaches to the spindle and holds the workpiece.

Faceplate: The metal disc that threads onto the headstock spindle.

Faceplate Turning: Turning situation in which the grain of the turning stock is at right angles to the lathe bed axis.

Backing Block: A sacrificial piece of wood glued to the base of the workpiece and screwed to the faceplate. Often used to prevent mounting marks from appearing on the completed workpiece.

Headstock: The cast metal box to which the motor is attached and contains the spindle, bearings, belts, and electrical components for operating the lathe.

Offset Turning: A turning situation where the center of the workpiece is offset at various stages of the work to produce different shapes.

Outboard Turning: Turning of workpiece with the headstock situated at the far end of the lathe so the work done is not over the bed of the lathe.

Roughing Out: Taking stock from square billet to round blank.

Spindle: This term has two meanings. First, it refers to the threaded shaft in the headstock to which the faceplate is attached. Second, it refers to any work that is spindle-turned.

Spindle-Turning: Work performed where the grain and length of the workpiece are parallel to the axis of the bed.

Swing: The capacity of the lathe, measured by doubling the distance from the bed to the spindle center.

Tailstock: The metal component at the opposite end of the bed from the headstock containing a quill and live or dead centers. It maintains pressure on the spindle-turned workpiece.

Tool Base: The movable metal fixture attached to the bed upon which the tool rest is fixed.

Tool Rest: The adjustable metal arm upon which the tool rests during a turning operation.

Way: One of the metal rails that make up the bed of the lathe.

ELECTRICAL

Circuit Requirements

This machine must be connected to the correct size and type of power supply circuit, or fire or electrical damage may occur. Read through this section to determine if an adequate power supply circuit is available. If a correct circuit is not available, a qualified electrician MUST install one before you can connect the machine to power.

A power supply circuit includes all electrical equipment between the breaker box or fuse panel in the building and the machine. The power supply circuit used for this machine must be sized to safely handle the full-load current drawn from the machine for an extended period of time. (If this machine is connected to a circuit protected by fuses, use a time delay fuse marked D.)

Full-Load Current Rating

The full-load current rating is the amperage a machine draws at 100% of the rated output power. On machines with multiple motors, this is the amperage drawn by the largest motor or sum of all motors and electrical devices that might operate at one time during normal operations.

Full-Load Current Rating at 120V ..... 3.2 Amps

Circuit Requirements

This machine is prewired to operate on a power supply circuit that has a verified ground and meets the following requirements:

Circuit Type ..... 110V/120V, 60 Hz, Single-Phase
Circuit Size ..... 15 Amps
Plug/Receptacle ..... NEMA 5-15

⚠WARNING

The machine must be properly set up before it is safe to operate. DO NOT connect this machine to the power source until instructed to do so later in this manual.

⚠WARNING



Incorrectly wiring or grounding this machine can cause electrocution, fire, or machine damage. To reduce this risk, only an electrician or qualified service personnel should do any required electrical work on this machine.

NOTICE

The circuit requirements listed in this manual apply to a dedicated circuit—where only one machine will be running at a time. If this machine will be connected to a shared circuit where multiple machines will be running at the same time, consult with an electrician to ensure that the circuit is properly sized for safe operation.

Grounding Requirements

This machine MUST be grounded. In the event of certain types of malfunctions or breakdowns, grounding provides a path of least resistance for electric current to travel—in order to reduce the risk of electric shock.

Improper connection of the equipment-grounding wire will increase the risk of electric shock. The wire with green insulation (with/without yellow stripes) is the equipment-grounding wire. If repair or replacement of the power cord or plug is necessary, do not connect the equipment-grounding wire to a live (current carrying) terminal.

Check with a qualified electrician or service personnel if you do not understand these grounding requirements, or if you are in doubt about whether the tool is properly grounded. If you ever notice that a cord or plug is damaged or worn, disconnect it from power, and immediately replace it with a new one.

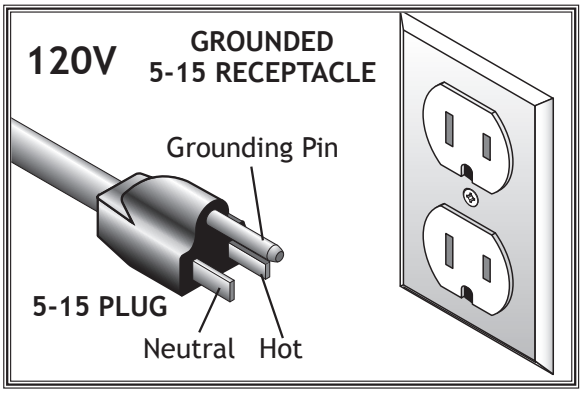
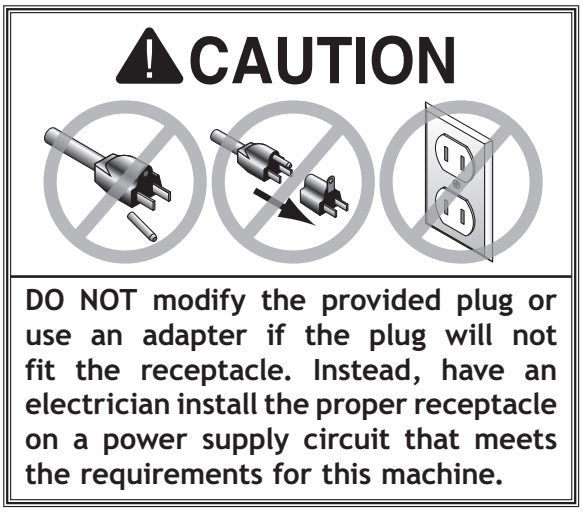


Figure 4. NEMA 5-15 plug & receptacle.

For 120V Connection

This machine is equipped with a power cord with an equipment-grounding wire and NEMA 5-15 grounding plug (see figure). The plug must only be inserted into a matching receptacle that is properly installed and grounded in accordance with local codes and ordinances.



DO NOT modify the provided plug or use an adapter if the plug will not fit the receptacle. Instead, have an electrician install the proper receptacle on a power supply circuit that meets the requirements for this machine.

Extension Cords

We do not recommend using an extension cord with this machine. Extension cords cause voltage drop, which may damage electrical components and shorten motor life. Voltage drop increases with longer extension cords and smaller gauge sizes (higher gauge numbers indicate smaller sizes).

Any extension cord used with this machine must contain a ground wire, match the required plug and receptacle, and meet the following requirements:

Minimum Gauge Size at 120V ..... 16 AWG
Maximum Length (Shorter is Better) ..... 50 ft.

SETUP

Unpacking

This machine has been carefully packaged for safe transportation. If you notice the machine has been damaged during shipping, please contact your authorized Shop Fox dealer immediately.

Items Needed for Setup

The following items are needed, but not included, to set up your machine.

Description	Qty
• Safety Glasses (for each person)	1
• Solvent/Cleaner	1
• Gloves	1 Pair
• Shop Rags	As Needed
• Additional Person	1
• Phillips Head Screwdriver #2	1
• Quality Metal Protectant Lubricant	As Needed



⚠WARNING

This machine presents serious injury hazards to untrained users. Read through this entire manual to become familiar with the controls and operations before starting the machine!



⚠WARNING

Wear safety glasses during entire setup process!



⚠WARNING

USE helpers or power lifting equipment to lift this machine. Otherwise, serious personal injury may occur.

Inventory

The following is a list of items shipped with your machine. Before beginning setup, lay these items out and inventory them.

Note: *If you cannot find an item on this list, carefully check around/inside the machine and packaging materials. Often, these items get lost in packaging materials while unpacking or they are pre-installed at the factory.*

Inventory (Figures 5-6)	**Qty**
A. Lathe Assembly	
—Tool Rest Base (mounted)	1
—Tailstock (mounted)	1
B. Faceplate 5¾"	1
C. Tool Rest 7"	1
D. Tool Rest 4½"	1
E. Adjustable Levers (Tool Rest Base, Tailstock)	2
F. Lock Handle M6-1 x 28 (Tool Rest)	1
G. Live Center	1
H. Spur Center	1
I. Knockout Tool	1
J. Lock Handle M6-1 x 17 (Quill)	1
K. Hardware (Not Shown)	
—Hex Wrenches 3, 5mm	1 Ea
—Open-Ends Wrench 19/27mm	1

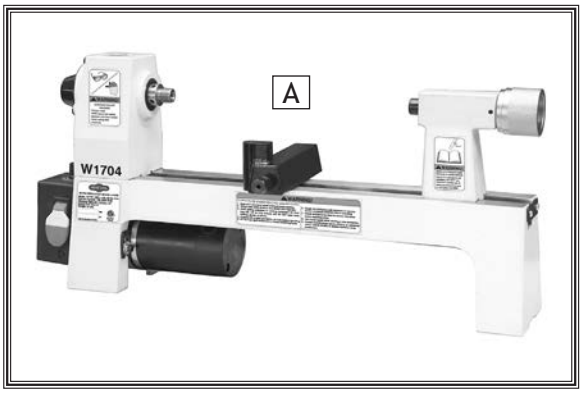


Figure 5. Lathe assembly.

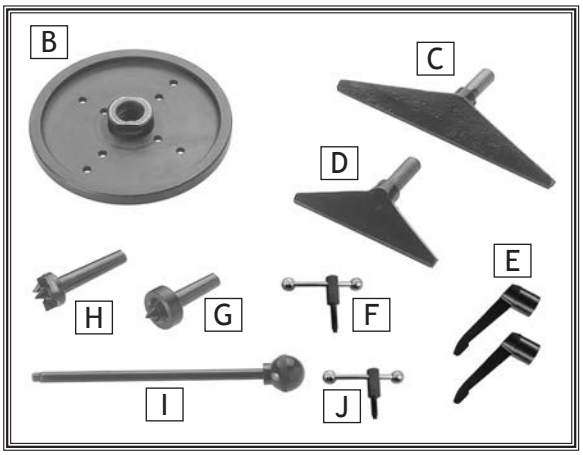
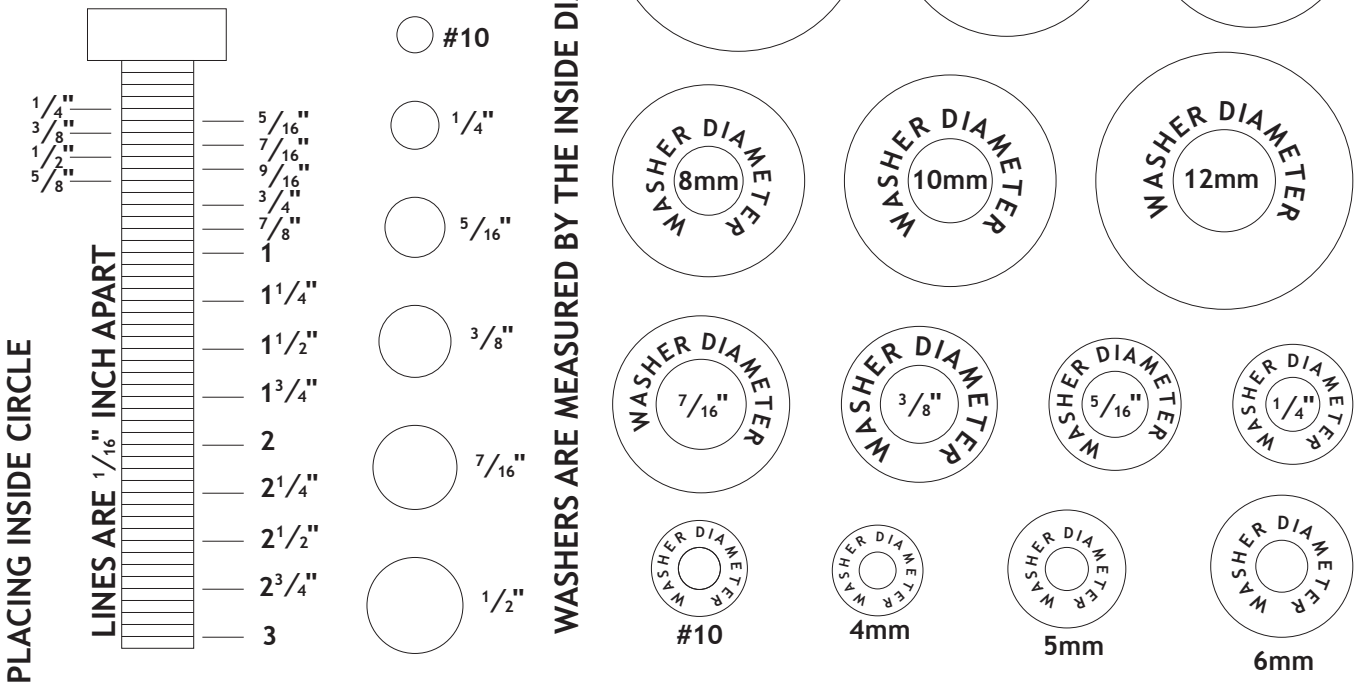
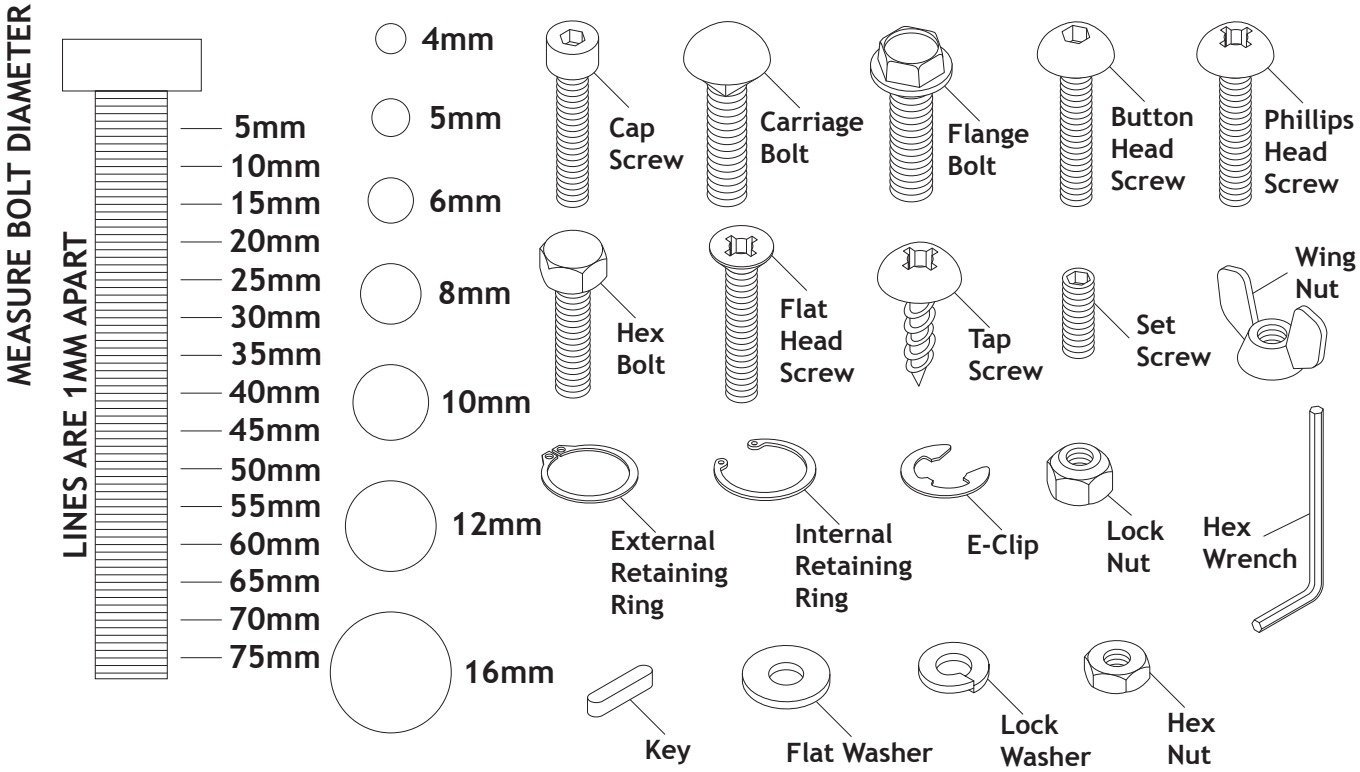


Figure 6. Loose inventory.

Hardware Recognition Chart

USE THIS CHART TO IDENTIFY HARDWARE DURING THE INVENTORY/ASSEMBLY PROCESS.





Cleaning Machine

The unpainted surfaces of your machine are coated with a heavy-duty rust preventative that prevents corrosion during shipment and storage. This rust preventative works extremely well, but it will take a little time to clean.

Be patient and do a thorough job cleaning your machine. The time you spend doing this now will give you a better appreciation for the proper care of your machine's unpainted surfaces.

There are many ways to remove this rust preventative, but the following steps work well in a wide variety of situations. Always follow the manufacturer's instructions with any cleaning product you use and make sure you work in a well-ventilated area to minimize exposure to toxic fumes.

Before cleaning, gather the following:

- Disposable rags
- Cleaner/degreaser (WD•40 works well)
- Safety glasses & disposable gloves
- Plastic paint scraper (optional)

Basic steps for removing rust preventative:

1. Put on safety glasses.

2. Coat the rust preventative with a liberal amount of cleaner/degreaser, then let it soak for 5–10 minutes.

3. Wipe off the surfaces. If your cleaner/degreaser is effective, the rust preventative will wipe off easily. If you have a plastic paint scraper, scrape off as much as you can first, then wipe off the rest with the rag.

4. Repeat **Steps 2-3** as necessary until clean, then coat all unpainted surfaces with a quality metal protectant to prevent rust.

NOTICE

Avoid chlorine-based solvents, such as acetone or brake parts cleaner, that may damage painted surfaces.

Machine Placement

Workbench Load

Refer to the **Machine Specifications** for the weight and footprint specifications of your machine. Some workbenches may require additional reinforcement to support the weight of the machine and workpiece materials.

Placement Location

Consider anticipated workpiece sizes and additional space needed for auxiliary stands, work tables, or other machinery when establishing a location for this machine in the shop. Below is the minimum amount of space needed for the machine.



CAUTION

INJURY HAZARD! Untrained users can injure themselves with this machine. Restrict access to machine when you are away, especially if it is installed where children are present.

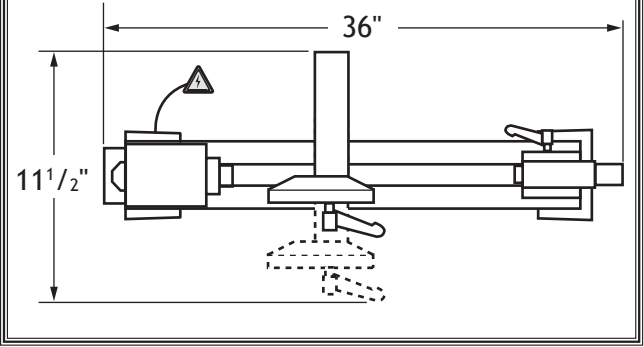


Figure 7. Minimum working clearances.

Assembly

Before beginning the assembly process, refer to **Items Needed for Setup** and gather everything you need. Ensure all parts have been properly cleaned of any heavy-duty rust-preventative applied at the factory (if applicable). Be sure to complete all steps in the assembly procedure prior to performing the **Test Run** or connecting the machine to power.

To assemble machine, do these steps:

1. Install tailstock lock lever and M6-1 x 17 quill lock handle, as shown in **Figure 8**.

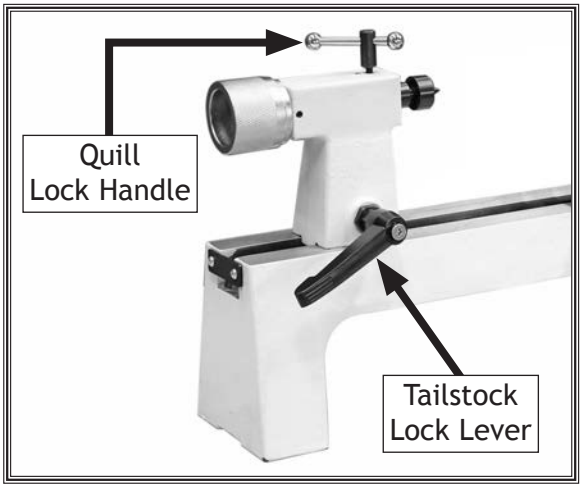


Figure 8. Hardware installed on tailstock.

2. Install tool rest base lock lever and M6-1 x 28 tool rest lock handle, as shown in **Figure 9**.

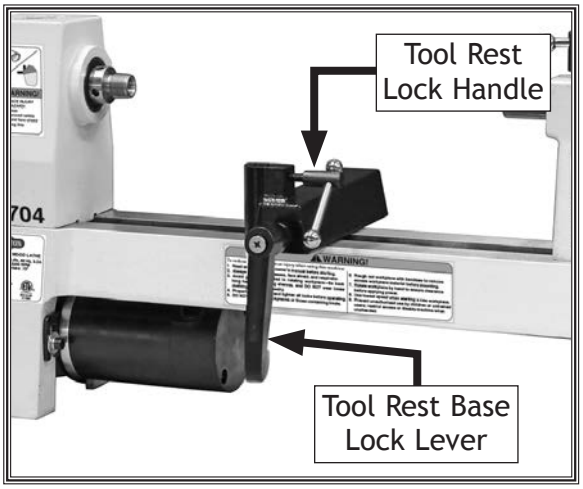


Figure 9. Hardware installed on tool rest base.

3. Insert tool rest into tool rest base and tighten tool rest lock handle (see **Figure 10**).

   Note: *Unless workpiece clearance is an issue, always install the larger of the (2) tool rests included with this machine to give yourself more room to work.*

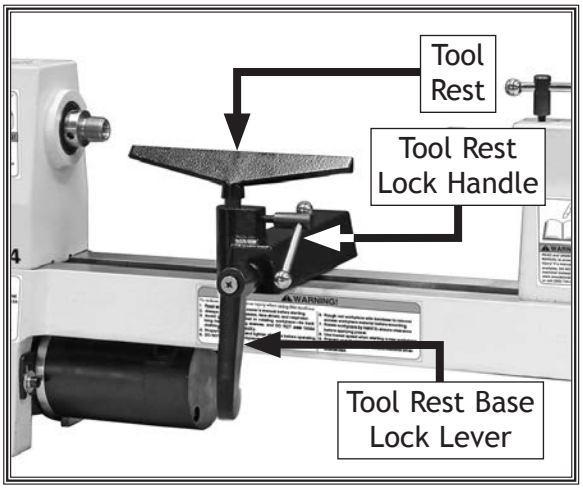


Figure 10. Tool rest installed on tool rest base.

Test Run

Once assembly is complete, test run the machine to ensure it is properly connected to power and safety components are functioning properly.

If you find an unusual problem during the test run, immediately stop the machine, disconnect it from power, and fix the problem BEFORE operating the machine again. The **Troubleshooting** table in the **SERVICE** section of this manual can help.

The test run consists of verifying the following: 1) The motor powers up and runs correctly, and 2) the safety disabling mechanism on the switch works correctly.

To test run machine, do these steps:

1. Clear all setup tools away from machine.
2. Turn spindle speed dial all the way counterclockwise (see **Figure 11**).
3. Connect machine to power supply.
4. Verify machine is operating correctly by flipping ON/OFF paddle switch up, then slowly turning spindle speed dial clockwise.
   - When operating correctly, machine runs smoothly with little or no vibration or rubbing noises.
   - Investigate and correct strange or unusual noises or vibrations before operating machine further. Always disconnect machine from power when investigating or correcting potential problems.
5. Turn spindle speed dial all the way counterclockwise.
6. Turn machine ***OFF***.
7. Remove switch disabling key (see **Figure 12**).
8. Try to start machine with paddle switch.
   - If machine *does not* start, switch disabling feature is working correctly.
   - If machine *does* start, immediately disconnect power to machine. Switch disabling feature is not working correctly. Call Tech Support for help.

Congratulation! The Test Run is complete.

WARNING

Serious injury or death can result from using this machine BEFORE understanding its controls and related safety information. DO NOT operate, or allow others to operate, machine until the information is understood.

WARNING

DO NOT start machine until all preceding setup instructions have been performed. Operating an improperly set up machine may result in malfunction or unexpected results that can lead to serious injury, death, or machine/property damage.



Figure 11. Location of spindle speed dial.

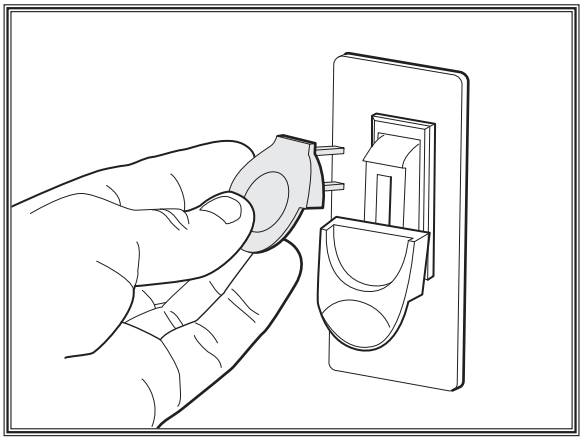


Figure 12. Removing switch key from paddle switch.

OPERATIONS

General

This machine will perform many types of operations that are beyond the scope of this manual. Many of these operations can be dangerous or deadly if performed incorrectly.

The instructions in this section are written with the understanding that the operator has the necessary knowledge and skills to operate this machine. If at any time you are experiencing difficulties performing any operation, stop using the machine!

The overview below provides the novice machine operator with a basic understanding of how the machine is used during operation, so the machine controls/components discussed later in this manual are easier to understand. Due to its generic nature, this overview is **NOT** intended to be an instructional guide.

To complete a typical operation, operator does the following:

1. Examines workpiece to make sure it is suitable for turning. No extreme bows, knots, or cracks present.
2. Prepares and trims up workpiece with a bandsaw or table saw to make it roughly concentric.
3. Installs workpiece between centers, or attaches it to faceplate or chuck.
4. Adjusts tool rest to 1/8" above workpiece centerline, and sets minimum clearance between workpiece and lip of tool rest to 1/4" gap.
5. Rotates workpiece by hand to verify spindle and workpiece rotate freely through full range of motion.
6. Verifies spindle speed dial is turned all the way counterclockwise so spindle does not start in high speed.
7. Puts on safety glasses, face shield, and respirator.
8. Turns lathe ***ON***, adjusts lathe speed, and carefully begins turning operation, keeping chisel against tool rest entire time it is cutting.
9. Turns lathe ***OFF*** when cutting operation is complete.

⚠WARNING



To reduce your risk of serious injury or damage to the machine, read this entire manual BEFORE using machine.

⚠WARNING



To reduce the risk of eye injury and long-term respiratory damage, always wear safety glasses, face shield and a respirator while operating machine.

NOTICE

If you are an inexperienced operator, we strongly recommend that you read books or trade articles, or seek training from an experienced operator of this type of machinery before performing unfamiliar operations. Above all, safety must come first!

Workpiece Inspection

Some workpieces are not safe to turn or may require modification before they can be made safe to turn.

Before turning, get in the habit of inspecting all workpieces for the following:

- ***Material Type:*** This machine is intended for turning natural wood products. Never attempt to turn any composite wood materials, plastics, metal, stone, or rubber workpieces; turning these materials can lead to machine damage or severe injury

- ***Foreign Objects:*** Nails, staples, dirt, rocks and other foreign objects are often embedded in wood. While turning, these objects can become dislodged and hit the operator, cause tool grab, or break the turning tool, which might then fly apart. Always visually inspect your workpiece for these items. If they can't be removed, DO NOT turn the workpiece.

- ***Large/Loose Knots:*** Loose knots can become dislodged during the turning operation. Large knots can cause a workpiece to completely break in half during turning and cause machine damage and injury. Choose workpieces that do not have large/loose knots.

- ***Wet or "Green" Stock:*** Turning wood with a moisture content over 20% can cause increased wear on tooling.

- ***Excessive Warping:*** Workpieces with excessive bowing or twisting are unstable and unbalanced. Never turn these workpieces at high speed, or instability will be magnified and the workpiece can be ejected from the lathe causing injury. Only turn concentric workpieces!

Selecting Turning Tools

Lathe tools come in a variety of shapes and sizes, and usually fall into five major categories.

- **Gouges**—Mainly used for rough cutting, detail cutting, and cove profiles. The rough gouge is a hollow, double-ground tool with a round nose, and the detail gouge is a hollow, double-ground tool with either a round or pointed nose.

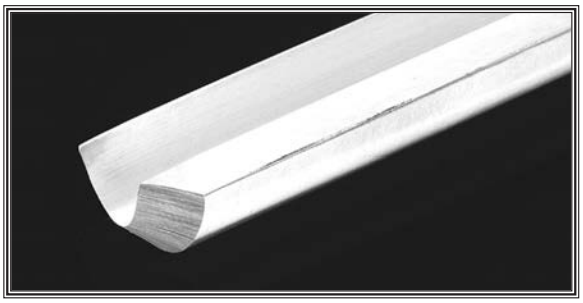


Figure 13. Example of a gouge.

- **Skew Chisel**—A very versatile tool that can be used for planing, squaring, V-cutting, beading, and parting off. The skew chisel is flat, double-ground with one side higher than the other (usually at an angle of 20°-40°).

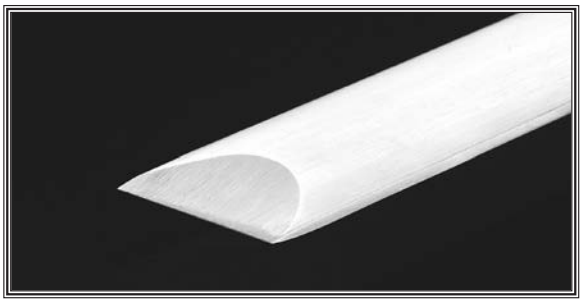


Figure 14. Example of a skew chisel.

- **Scrapers**—Typically used where access for other tools is limited, such as hollowing operations. This is a flat, double-ground tool that comes in a variety of profiles (round nose, spear point, square nose, etc.) to match many different contours.



Figure 15. Example of a round nose scraper.

- **Parting Tools**—Used for sizing and cutting off work. This is a flat tool with a sharp pointed nose that may be single- or double-ground.
- **Specialty Tools**—These are the unique, special function tools to aid in hollowing, bowl making, cutting profiles, etc.



Figure 16. Example of a parting tool.

Adjusting Tailstock

The tailstock on this lathe is equipped with a cam-action clamping system to secure it to the lathe bed. When the lever is tightened, a locking plate lifts up underneath the bed and secures the tailstock in place. The tailstock can be positioned anywhere along the lathe bed.

To position tailstock along length of bed, do these steps:

1. Loosen tailstock lock lever (see **Figure 17**) and move tailstock to desired position along bed.

2. Tighten tailstock lock lever to secure tailstock in position.

   Note: *The clamp nut underneath the tailstock (see* **Figure 18***) will require occasional adjusting to ensure proper clamping pressure of the tailstock to the bed. Turn this lock nut in small increments to fine tune the clamping pressure as needed.*

⚠WARNING

Always operate lathe with tailstock firmly locked to bed. Otherwise, serious personal injury may occur by tailstock moving during operation and workpiece being ejected at high speed.



Figure 17. Location of tailstock lock lever.

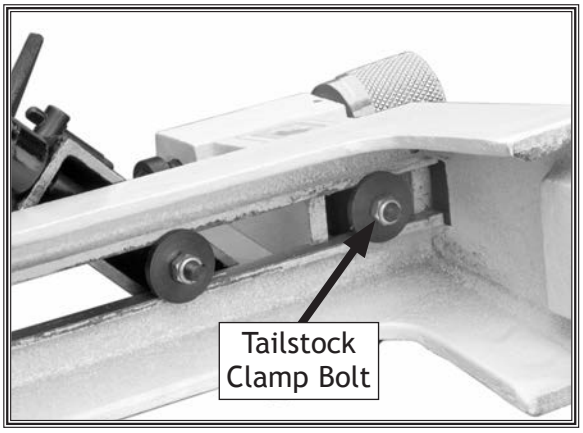


Figure 18. Location of tailstock clamp nut.

Adjusting Tool Rest

The tool rest assembly consists of two components: the tool rest base (or banjo) and the tool rest. The tool rest base moves forward/backward and along the length of the lathe bed. The tool rest rotates and moves up and down in the tool rest base. Locks for both components allow you to secure the tool rest in position as needed after making these adjustments.

When adjusting the tool rest, position it as close as possible to the workpiece without actually touching it. This maximizes support where the cutting occurs and minimizes leverage, reducing the risk of injury if a "catch" occurs.

Many woodturners typically set the height of the tool rest 1/8" above or below the centerline of the workpiece, depending on their height, the type of tool they're using, and the type of operation they're performing.

As a rule of thumb: For most (spindle) turning operations, the cutting tool should contact the workpiece slightly above centerline. For most inside (bowl) turning operations, the cutting tool should contact the workpiece slightly below centerline.

Keeping all these factors in mind, your main goal when adjusting the tool rest should be providing maximum support for the type of tool being used, in a position that is safe and comfortable for you.

To position tool rest forward/backward and along the length of the bed, do these steps:

1. Loosen tool rest base lock lever (see **Figure 19**) and move tool rest assembly to desired position on lathe bed.

   Note: *To maximize support, the tool rest base should always be locked on both sides of the bed. Never pull the tool rest so far back that it is only secured on one side.*

2. Re-tighten tool rest base lock lever to secure tool rest assembly in position.

   Note: *The clamping hex nut underneath the tool rest base will require occasional adjusting to ensure proper clamping pressure of the tool rest assembly to the bed. Turn this hex nut in small increments to fine tune the clamping pressure as needed.*

WARNING

Improperly supported or positioned cutting tools can "catch" on workpiece, ejecting tool from your hands with great force. To reduce this risk, always ensure tool rest is properly positioned for each type of operation, cutting tool is firmly supported against tool rest BEFORE cutting, and cutting tool is properly positioned to cut at the correct angle for tool and operation type.

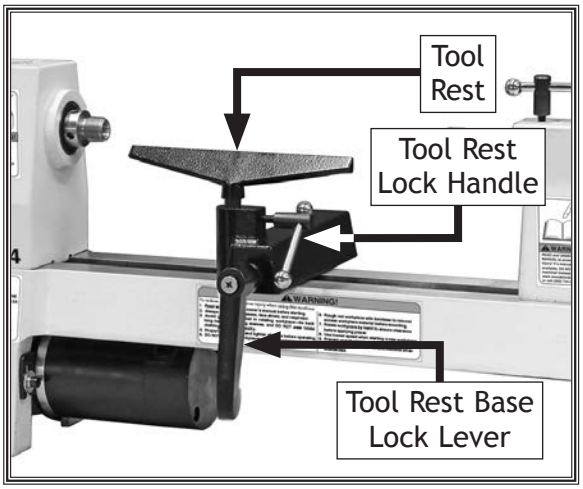


Figure 19. Tool rest controls.

WARNING

Always operate lathe with tool rest assembly firmly locked in position. Otherwise, serious personal injury may occur by tool being pulled from operator's hands.

To adjust angle or height of tool rest, do these steps:

1. Loosen tool rest lock handle (see **Figure 19**).

2. Position tool rest in desired location.

3. Re-tighten tool rest lock handle to secure tool rest in position.

Installing/Removing Headstock Center

The included spur center installs in the headstock spindle with an MT#1 tapered fit.

Items Needed	Qty
Heavy Gloves/Clean Rag	1
Knockout Rod	1

Installing Headstock Center

1. DISCONNECT MACHINE FROM POWER!

2. Make sure mating surfaces of center and spindle are free of debris and oily substances before inserting center to ensure a good fit and reduce runout.

3. Insert tapered end of center into spindle, and push it in with a quick, firm motion, as shown in **Figure 20**.

4. Make sure center is securely installed by attempting to pull it out by hand—a properly installed center will *not* pull out easily.

Removing Headstock Center

1. DISCONNECT MACHINE FROM POWER!

2. Hold a clean rag under spindle or wear leather glove to catch center when you remove it.

3. Insert knockout tool through outbound end of spindle and firmly tap back of center, catching it as it falls, as shown in **Figure 21**.

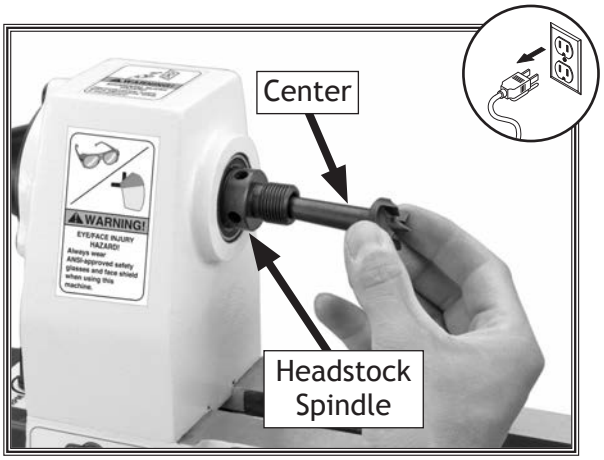


Figure 20. Installing center in headstock spindle.

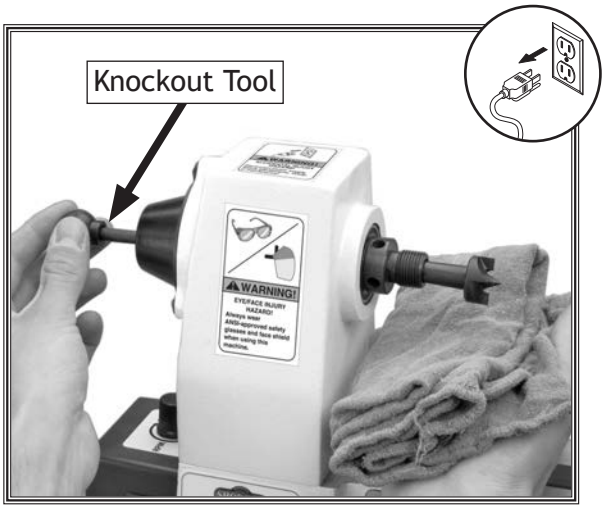


Figure 21. Removing center from headstock spindle with knockout tool.

Installing/Removing Tailstock Center

The included live center installs into the tailstock quill with an MT#1 tapered fit.

Items Needed	Qty
Heavy Gloves/Clean Rag	1
Knockout Rod	1

Installing Tailstock Center

1. Loosen quill lock handle, and rotate tailstock adjustment knob clockwise until quill extends about 1", as shown in **Figure 22**.

2. Make sure mating surfaces of center and quill are free of debris and oily substances before inserting center to ensure a good fit and reduce runout.

3. Firmly insert tapered end of center into tailstock quill, as shown in **Figure 22**.

4. Make sure center is securely installed by attempting to pull it out by hand—a properly installed center will not pull out easily.

5. Make sure set screw (see **Figure 23**) is aligned with quill keyway to ensure center and quill will not freely rotate under load.

6. Secure quill in place by tightening quill lock handle.

Removing Tailstock Center

1. Loosen quill lock handle.

2. Hold a clean rag under spindle or wear a glove to catch center when you remove it.

3. Rotate adjustment knob counterclockwise—quill will retract back into tailstock, causing center to be forced out. If necessary, use knockout rod to remove center.

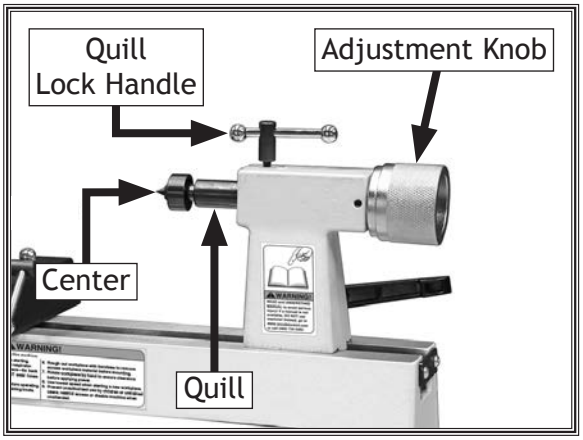


Figure 22. Tailstock center installed in quill.

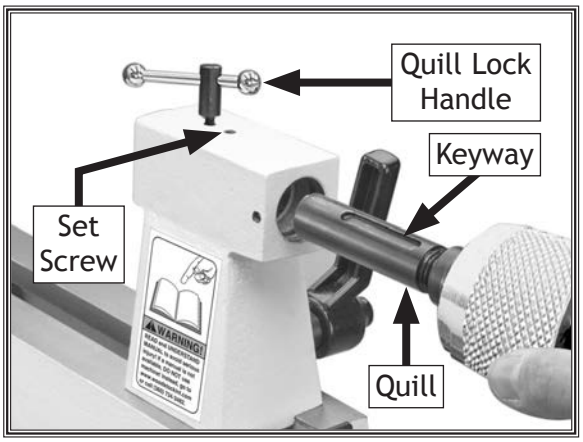


Figure 23. Tailstock quill alignment slot.

⚠WARNING

Tailstock quill must always be locked in place during lathe operation. Before tightening quill lock handle, set screw in front of handle must be properly aligned with quill keyway. Otherwise, workpiece can be thrown from lathe, causing serious personal injury or death.

Installing/Removing Faceplate

These instructions cover removing and installing the faceplate. To mount a workpiece to your faceplate, refer to **Faceplate Turning** on **Page 30**.

Items Needed	**Qty**
Open-End Wrench 19/27mm	1
Knockout Rod	1

Installing Faceplate

1. DISCONNECT MACHINE FROM POWER!

2. While holding spindle in place, thread faceplate clockwise onto spindle shaft until secure against shoulder on spindle shaft.

3. Insert knockout rod into one hole on spindle, then tighten faceplate with open-end wrench (see **Figure 24**).

Removing Faceplate

1. DISCONNECT MACHINE FROM POWER!

2. Put open end of wrench over flats behind faceplate. While holding spindle in place with knockout rod, turn wrench counterclockwise until faceplate is removed (see **Figure 24**).

   Note: *If spur center is installed, it will be removed during this process.*

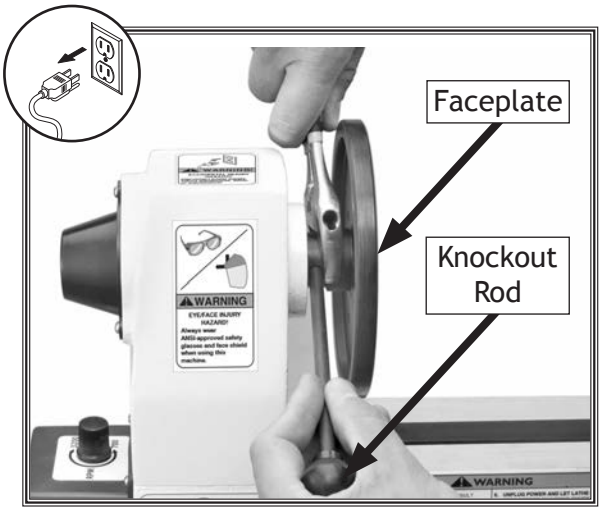


Figure 24. Attaching faceplate to headstock spindle.

WARNING

To prevent faceplate and workpiece separating from spindle during operation, headstock faceplate MUST be firmly threaded onto spindle.

OPERATIONS

Changing Spindle Speed

The Model W1704 utilizes a spindle speed dial (see **Figure 26**) that allows for on-the-fly spindle speed changes from 750 to 3200 RPM. Rotate the spindle speed dial clockwise to increase speed and counterclockwise to decrease speed.

Refer to the speed recommendations chart in **Figure 25** to choose the appropriate RPM for your operation.

Workpiece Diameter	Roughing RPM	General Cutting RPM	Finishing RPM
Under 2"	1520	3200	3200
2-4"	760	1600	2480
4-6"	510	1080	1650
6-8"	380	810	1240
8-10"	300	650	1000
10-12"	255	540	830
12-14"	220	460	710

Figure 25. Typical spindle speed recommendations.

— When a lot of material must be removed and a rough finish does not matter, use *lower* speed range.

— When making light cuts or when a clean finish is required, use *higher* speed range.

— For general turning operations, or as a compromise between the two ranges, use *mid* range.

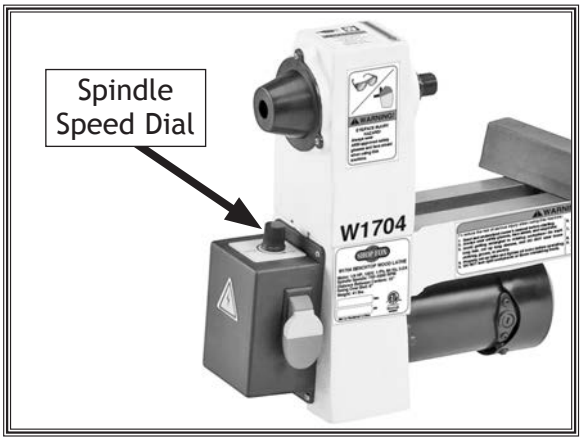


Figure 26. Location of spindle speed dial.

WARNING

Always choose correct spindle speed for an operation. Using wrong speed may lead to workpiece being thrown at high speed, causing fatal or severe impact injuries.

Spindle Turning

Spindle turning is the operation performed when a workpiece is mounted between the headstock and the tailstock, as shown in **Figure 27**. Bowls, table legs, tool handles, and candlesticks are typical projects where this operation is used.

⚠WARNING

Damage to your eyes and lungs could result from using this machine without proper protective gear. Always wear safety glasses, a face shield, and a respirator when operating this machine.

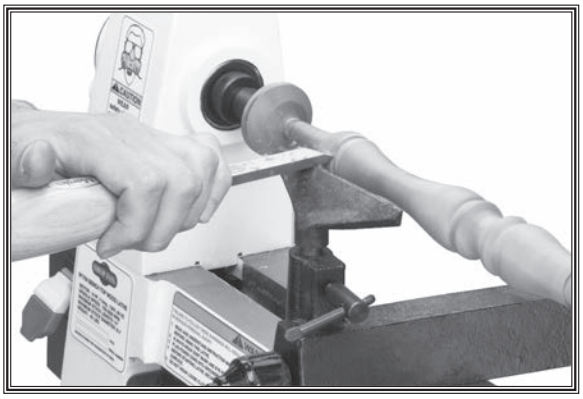


Figure 27. Example of typical spindle turning operation.

Items Needed	Qty
Precision Ruler	1
Wood Mallet	1
Drill Bit 1/4"	1
Table Saw/Bandsaw	1

To set up a spindle turning operation, do these steps:

1. Find center point of both ends of your workpiece by drawing diagonal lines from corner to corner across end of workpiece, as shown in **Figure 28**.

2. Make a center mark by using a wood mallet and tapping point of spur center into center of workpiece on both ends.

3. Using a 1/4" drill bit, drill a 1/4" deep hole at center mark on end of the workpiece to be mounted on headstock spur center.

4. To help embed spur center into workpiece, cut 1/8" deep saw kerfs in headstock end of workpiece along diagonal lines marked in **Step 1**.

5. If your workpiece is over 2" x 2", cut corners off workpiece lengthwise to make turning safer and easier (see **Figure 29**).

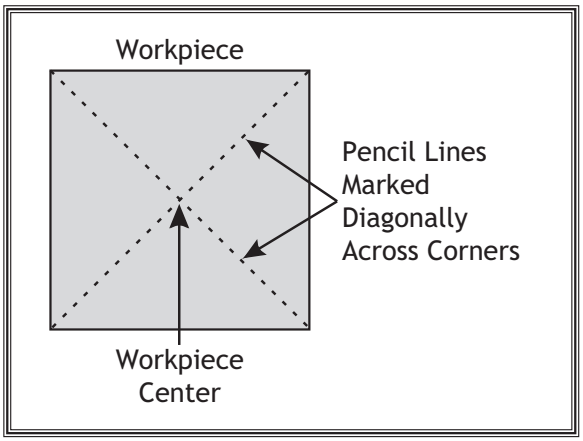


Figure 28. Workpiece marked diagonally from corner to corner to determine the center.

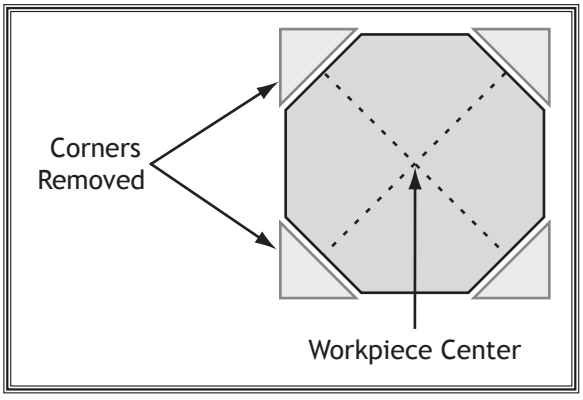


Figure 29. Corners of workpiece removed.

OPERATIONS

6. Drive spur center into end center mark of workpiece with a wood mallet to embed it at least 1/4" into workpiece, as shown in **Figure 30**.

7. With workpiece still attached, insert spur center into headstock spindle (refer to **Installing/Removing Headstock Center** on **Page 24** for additional instructions).

   Note: *Use tool rest to support opposite end of workpiece so that workpiece and spur center do not separate during installation.*

8. Install live center into tailstock quill and tighten quill lock handle to lock quill in position (refer to **Page 25** for additional instructions).

9. Slide tailstock toward workpiece until point of live center touches workpiece center mark, then lock tailstock in this position.

10. Loosen quill lock handle and rotate tailstock handwheel to push live center into workpiece at least 1/4".

11. Properly adjust tool rest to workpiece (see **Adjusting Tool Rest** on **Page 23**).

12. Before beginning lathe operation, rotate workpiece by hand to ensure there is safe clearance on all sides.

Spindle Turning Tips:

- When turning the lathe ***ON***, stand away from the path of the spinning workpiece until the spindle reaches full speed and you can verify that the workpiece will not come loose.
- Use the slowest speed when starting or stopping the lathe.
- Select the right speed for the size of workpiece that you are turning (refer to **Figure 25** on **Page 27**).
- Keep the turning tool on the tool rest the ENTIRE time that it is in contact with the workpiece.
- Learn the correct techniques for each tool you will use. If you are unsure about how to use the lathe tools, read books or magazines about lathe techniques, and seek training from experienced and knowledgeable lathe users.

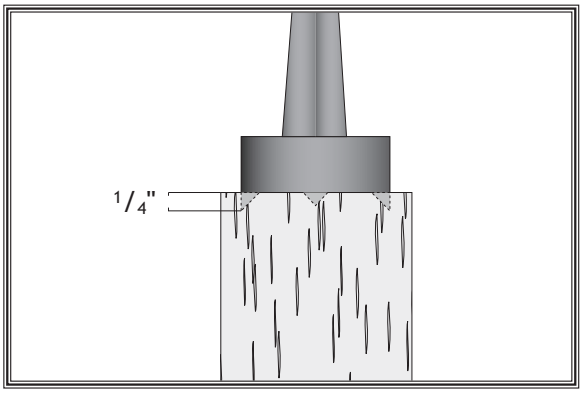


Figure 30. Spur center properly embedded.

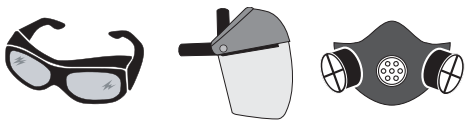
WARNING

Do not press the workpiece too firmly with the tailstock or the bearings will bind and overheat. Do not adjust the tailstock too loosely or the workpiece will spin off the lathe. Use good judgment and care, otherwise, serious personal injury could result from the workpiece being ejected at high speeds.

WARNING

Keep lathe tool resting on tool rest the ENTIRE time it is in contact with workpiece or when preparing to make contact between lathe tool and workpiece. Otherwise, spinning workpiece could force lathe tool out of your hands or entangle your hands with workpiece. Failure to heed this warning could result in serious personal injury.

WARNING



To reduce the risk of eye injury and long-term respiratory damage, always wear safety glasses, face shield and a respirator while operating machine.

Faceplate Turning

Faceplate turning is when a workpiece is mounted to the faceplate, which is then mounted to the headstock spindle, as shown in **Figure 31**. This type of turning is usually done with open-faced workpieces like bowls or plates.

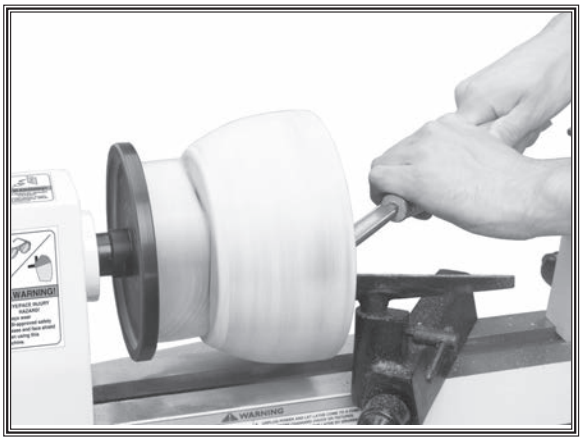


Figure 31. Example of faceplate turning operation.

Mounting Workpiece on Faceplate

1. Mark workpiece center in same manner as described in **Spindle Turning** (see **Page 28**).

   Note: *Cut off corners of workpiece to make it as close to "round" as possible, as described in **Spindle Turning**, **Step 5** (see **Page 28**).*

2. Center faceplate on workpiece and attach it (see **Figure 32**) with wood screws.



Figure 32. Example of attaching faceplate to workpiece.

NOTICE

Only use screws with non-tapered heads (see Figure 33) to attach faceplate to the workpiece. Screws with tapered heads can split faceplate or snap off during operation.

3. Thread and secure faceplate onto headstock spindle (refer to **Installing Faceplate** on **Page 26**).

   — If wood screws cannot be placed in workpiece, faceplate can be mounted to a backing block attached to workpiece (see **Mounting the Workpiece to a Backing Block**).

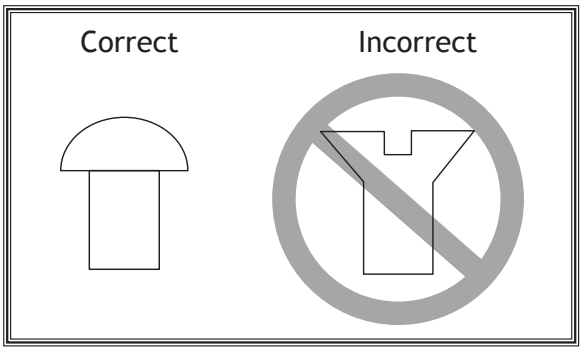


Figure 33. Correct and incorrect screw types.

Mounting Workpiece to Backing Block

1. Make backing block from a suitable size piece of scrap wood.

   Note: *Faces of backing block must be flat and parallel to each other, or uneven surfaces will cause workpiece to spin eccentrically, causing unnecessary vibration and runout. It is best to mount backing block to faceplate and turn other surface flat prior to mounting.*

2. Locate and mark center of workpiece and backing block.

3. Drill a 1/4" hole through center of backing block.

4. Look through hole in backing block to line up center with workpiece and glue and clamp backing block to workpiece.

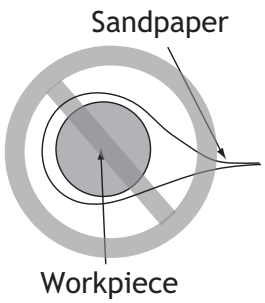
   Note: *Allow glue to cure according to manufacturer's instructions.*

5. Follow **Steps 1-3** under **Mounting Workpiece on Faceplate** (see **This Page**) to attach backing block to faceplate.

Sanding/Finishing

After the turning operations are complete, the workpiece can be sanded and finished before removing it from the lathe, as shown in **Figure 34**.

Note: *Whenever sanding or finishing, move the tool rest holder out of the way to increase personal safety and gain adequate working room.*



⚠WARNING

Wrapping sandpaper completely around workpiece could pull your hands into moving workpiece and may cause serious injury. Never wrap sandpaper or finishing materials completely around workpiece.

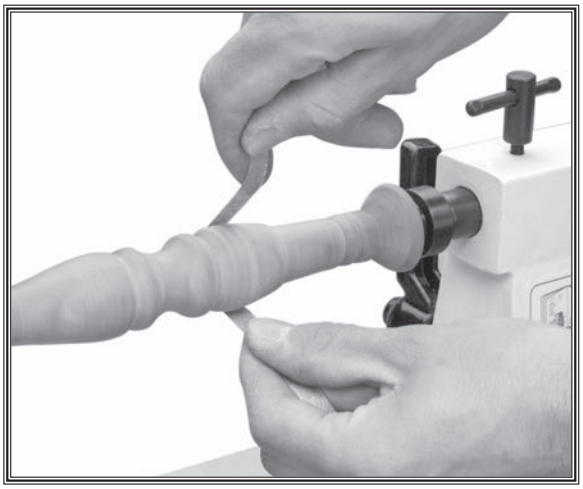


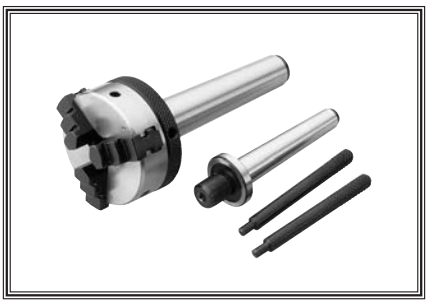
Figure 34. Typical sanding operation.

ACCESSORIES

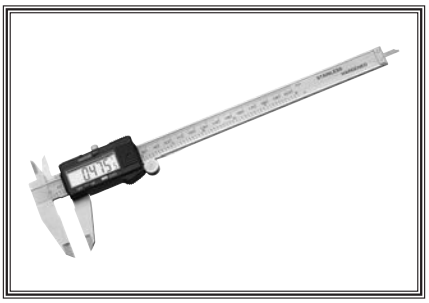
Wood Lathe Accessories

The following wood lathe accessories may be available through your local Woodstock International Inc. Dealer. If you do not have a dealer in your area, these products are also available through online dealers. Please call or e-mail Woodstock International Inc. Customer Service to get a current listing of dealers at: 1-800-545-8420 or at sales@woodstockint.com.

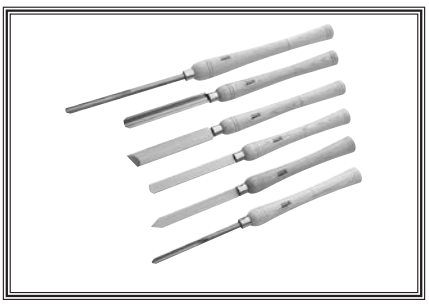
The **D4103 Mini Lathe Chuck with Arbors** is a "must have" for the serious wood turner. This 2" diameter 3-jaw mini lathe chuck is a self-centering scroll-type chuck with reversible jaws. Includes MT#1 and MT#2 arbors and wrenches.



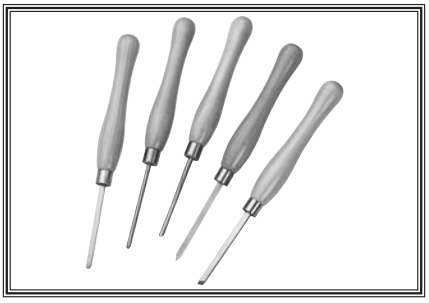
The **D4105 8" Digital Caliper** features stainless steel construction and an extra-large LCD readout. Accuracy: ±0.001" / 0.02mm. Resolution: 0.0005" / 0.01mm. Includes SAE and metric modes with digital display and automatic shutoff.



The **D2304** Steelex **Plus 6-Pc. Deluxe Lathe Chisel Set** features beefy ash handles for unsurpassed control, brass ferrules, and high-speed steel blades. Includes: a 17" long $^{13}/_{16}$" parting tool, $^{13}/_{16}$" round nose, $^{3}/_{8}$" gouge, 19" long 1" skew, $^{5}/_{8}$" gouge, and a $22^{3}/_{4}$" long $^{3}/_{8}$" gouge. Comes in a beautiful red blow-molded carrying case.



The **D2250 Steelex 5-Pc. Turning Chisel Set** is for those fine detail turning operations. This set features well balanced hardwood handles and high carbon steel cutting edges. Includes: a $^{1}/_{16}$" radius gouge, $^{1}/_{8}$" radius gouge, $^{3}/_{16}$" parting tool, $^{1}/_{4}$" spear point, and a $^{1}/_{4}$" skew. All tools are $10^{1}/_{2}$" overall in length.



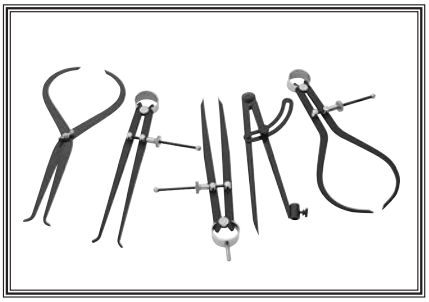
The **D4058 3-Pc. HSS Lathe Chisel Set** is ideal for bowl turning and detail work. Each chisel measures roughly 16" long, with 10" ash handles, and the high-speed steel blades measure a full 7/32" thick! The set includes one round, one curved, and one 90° corner chisel. Chisel set is protected in a fitted wooden box.



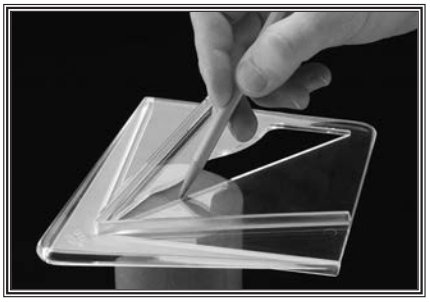
The **D3781 4-Pc. HSS Beading Lathe Chisel Set** turns beaded spindles with ease. Perfectly ground half-round profiles include 1/8", 1/4", 5/16", and 3/8" diameters. Tapered sides allow closely-spaced, multiple beads for complete design flexibility. Naturally finished ash handles measure 8 7/8" and the high-speed steel blades measure 5 1/8" long (the 1/8" beaded chisel blade measures 4" long).



The **D4596 5-Pc. Woodworking Caliper Set** includes compass, straight dividers, inside calipers, outside calipers, and inside/outside calipers. Perfect for woodturning and general layout work.



Find the center of round or square stock for lathe turning with the **D3098 Center Finder**. One side locates a diagonal line on square stock up to 8" x 8", and the other side locates a diagonal line on round stock up to 4 1/2" in diameter. Marking two opposite diagonal lines determines the center point. It's that simple!



The **D3640 Tool Table Plus** is designed to accommodate larger benchtop machines. The table has a butcher block finish and measures 14" x 40" x 1 1/4" thick. The wide A-frame stand has a 700 lb. capacity and measures 33" high. Bottom measures 47 1/2" x 25 1/4". Includes stand frame and top.



MAINTENANCE

General

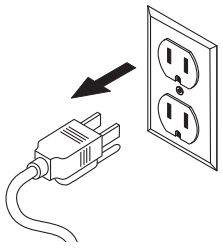
For optimum performance from your machine, follow this maintenance schedule and refer to any specific instructions given in this section.

Ongoing
- Loose faceplate or mounting bolts.
- Damaged center or tooling.
- Worn or damaged wires.
- Loose machine components.
- Any other unsafe condition.

Daily Check
- Clean off dust buildup.
- Clean and lubricate lathe bed, spindle, and quill.

Monthly Check
- Belt tension, damage, or wear.

⚠WARNING



MAKE SURE that your machine is unplugged during all maintenance procedures! If this warning is ignored, serious personal injury may occur.

Cleaning & Protecting

Cleaning this lathe is relatively easy. Vacuum excess wood chips and sawdust, and wipe off the remaining dust with a dry cloth. If any resin has built up, use a resin-dissolving cleaner to remove it.

Protect the unpainted cast-iron surfaces by wiping them clean after every use—this ensures moisture from wood dust does not remain on bare metal surfaces. Keep the surfaces rust-free with regular applications of light machine oil.

Lubrication

All bearings on this lathe are lubricated and sealed at the factory, and do not need additional lubrication.

Wipe a lightly oiled shop rag on the outside of the headstock spindle. DO NOT allow any oil to get on the inside mating surfaces of the spindle.

Use the tailstock adjustment knob to extend the quill out to the furthest position and apply a thin coat of white lithium grease to the outside of the quill. DO NOT allow any oil or grease to get on the inside mating surfaces of the quill.

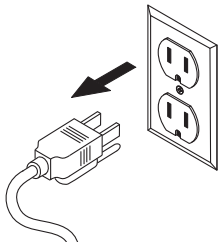
SERVICE

General

This section covers the most common service adjustments or procedures that may need to be made during the life of your machine.

If you require additional machine service not included in this section, please contact Woodstock International Technical Support at (360) 734-3482 or send e-mail to: **techsupport@woodstockint.com**.

⚠WARNING



MAKE SURE that your machine is unplugged during all maintenance procedures! If this warning is ignored, serious personal injury may occur.

Aligning Pulleys

The motor and spindle pulleys are aligned at the factory and should not require any adjustment. If they become misaligned over time, it is important that they be re-aligned in order to extend belt life and maximize the transfer of power from the motor to the spindle.

Tools Needed	**Qty**
Phillips Head Screwdriver #2	1
Hex Wrench 3mm	1

To align motor and spindle pulleys, do these steps:

1. DISCONNECT MACHINE FROM POWER!
2. Remove outboard spindle cover (see **Figure 35**).
3. Loosen M6-1 x 8 set screw on spindle pulley.
4. Slide spindle pulley into alignment with motor pulley.

   Note: *When pulleys are properly aligned, there should be no unusual or pulsing sounds coming from the belt.*
5. Tighten set screw on spindle pulley.
6. Install spindle cover.

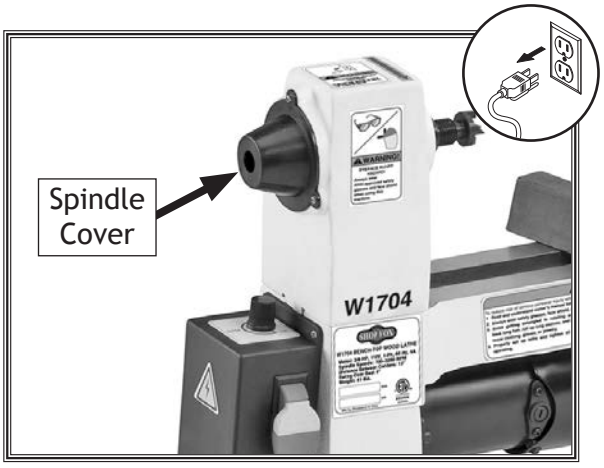


Figure 35. Location of outboard spindle cover.

Changing/Tensioning Belt

Over time, the belt will slightly wear and stretch, eventually losing its efficiency of transmitting power, and will require re-tensioning. A new belt typically has a break-in period and should be checked/re-tensioned after the first 16 hours of belt life, as it will stretch during this time.

To change/replace belt, do these steps:

1. DISCONNECT MACHINE FROM POWER!

2. Loosen (2) M6-1 x 1 cap screws on motor mounting plate (see **Figure 36**).

3. Lift motor assembly all the way up, then re-tighten both motor mounting plate cap screws—this will hold motor in place while you change belt position.

4. Remove outboard spindle cover (see **Figure 37**) by removing (3) M4-.7 x 8 Phillips head screws.

5. Roll belt off spindle pulley, then pull belt off motor pulley and through bottom of lathe.

   Tip: *This step may be easier to accomplish by gently rolling machine onto its back.*

6. Install new belt by performing **Step 5** *in reverse*.

7. Loosen motor mounting plate cap screws and apply downward pressure on motor assembly to properly tension drive belt, then re-tighten cap screws.

   Note: *When properly tensioned, belt should deflect about 1/8" when moderate pressure is applied to belt mid-way between upper and lower pulley, as illustrated in* **Figure 38**.

8. Ensure belt is fully seated on pulleys, roll machine upright if necessary, and re-install outboard spindle cover.

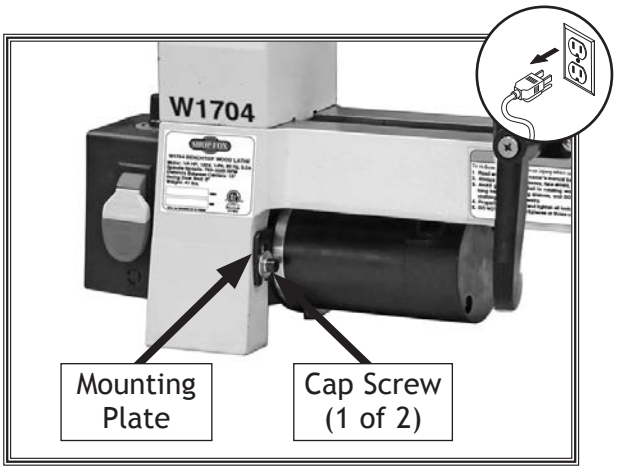


Figure 36. Location of motor mounting plate.

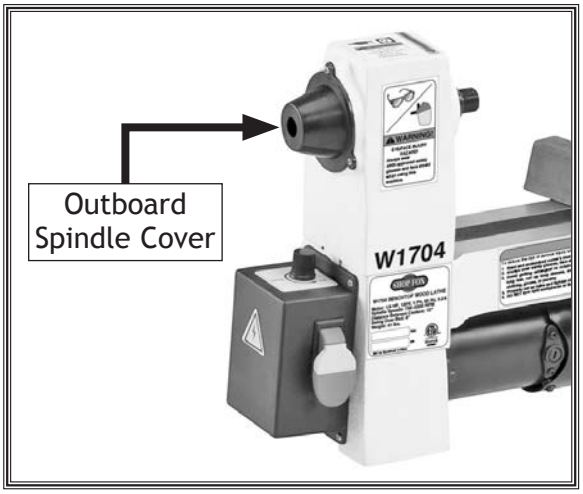


Figure 37. Location of outboard spindle cover.

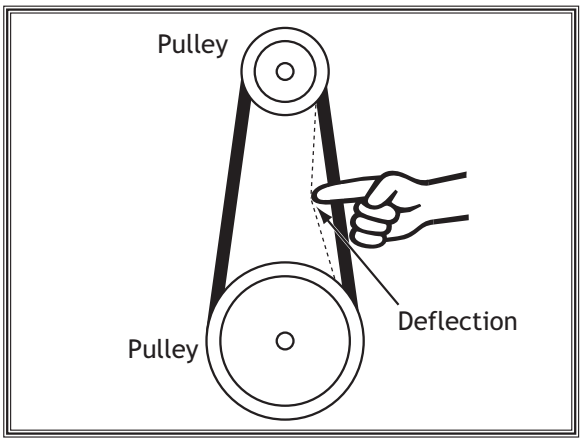


Figure 38. Testing for 1/8" belt deflection.

Replacing Fuse

This machine features an onboard fuse designed to protect sensitive electrical parts in the event of electrical overload. If the fuse has blown, the motor will not start.

To verify the condition of the fuse, remove it from the switch box and hold it up to the light. If the element is broken, the fuse is blown and must be replaced.

Items Needed **Qty**
Phillips Head Screwdriver #2.....1
Fuse (PN X1704059) 1

To replace fuse, do these steps:

1. DISCONNECT MACHINE FROM POWER!
2. Remove fuse holder on back of switch box (see **Figure 39**).
3. Remove old fuse from holder and install new fuse.
4. Re-install fuse holder in switch box.

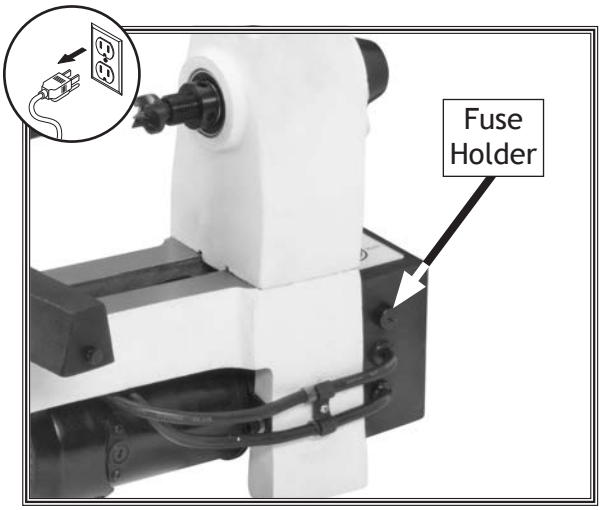


Figure 39. Location of fuse holder.

Replacing Brushes

This machine is equipped with a universal motor that uses two carbon brushes to transmit electrical current inside the motor. These brushes are considered to be regular "wear items" or "consumables" that will need to be replaced during the life of the motor. The frequency of required replacement is related to how much the motor is used and how hard it is pushed.

Replace both carbon brushes at the same time when the motor no longer reaches full power, or when the brushes measure less than 1/4" long (new brushes are 5/8" long).

Items Needed **Qty**
Flat Head Screwdriver #2.....1
Motor Brushes (PN X1704041V2-1) 2

To replace motor brushes, do these steps:

1. DISCONNECT MACHINE FROM POWER!
2. Remove brush caps (see **Figure 40**) and worn brushes from motor.
3. Replace both motor brushes and re-install brush caps.

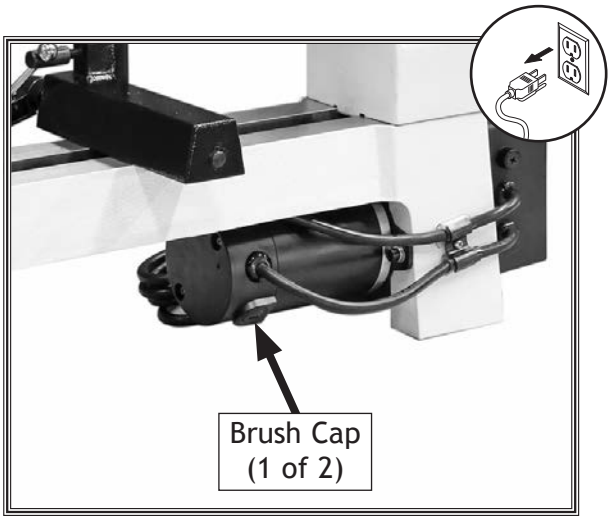
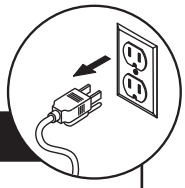


Figure 40. Location of motor brushes.

Troubleshooting

The following troubleshooting tables cover common problems that may occur with this machine. If you need replacement parts or additional troubleshooting help, contact our Technical Support.

Note: *Before contacting Tech Support, find the machine serial number and manufacture date, and if available, your original purchase receipt. This information is required to properly assist you.*



Motor and Electrical

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Machine does not start, or power-supply fuse/breaker trips immediately after startup.	1. Switch disabling key removed. 2. Incorrect power supply voltage or circuit size. 3. Machine fuse blown. 4. Power supply circuit breaker tripped or fuse blown. 5. Wiring broken, disconnected, or corroded. 6. Spindle speed dial at fault. 7. ON/OFF switch at fault. 8. Motor brushes worn or at fault. 9. Machine circuit breaker tripped/at fault. 10. Circuit board at fault. 11. Motor at fault.	1. Install switch disabling key. 2. Ensure correct power supply voltage and circuit size. 3. Replace fuse. 4. Ensure circuit is sized correctly and free of shorts. Reset circuit breaker or replace fuse. 5. Check/fix broken, disconnected, or corroded wires. 6. Test/replace if at fault. 7. Inspect/replace if at fault. 8. Remove/replace brushes (**Page 37**). 9. Reset circuit breaker; inspect/replace if at fault. 10. Inspect/replace if at fault. 11. Test/repair/replace.
Machine stalls or is underpowered.	1. Machine undersized for task. 2. Workpiece material not suitable for machine. 3. Feed rate/cutting speed too fast. 4. Belt slipping. 5. Pulley slipping on shaft. 6. Spindle speed dial at fault. 7. Motor brushes worn or at fault. 8. Circuit board at fault. 9. Motor at fault.	1. Use sharp chisels; reduce feed rate/depth of cut. 2. Only cut wood/ensure moisture is below 20%. 3. Decrease feed rate/cutting speed. 4. Tension/replace belt (**Page 36**); ensure pulleys are aligned (**Page 35**); ensure belt is clean and not damaged. 5. Tighten/replace loose pulley/shaft. 6. Test/replace if at fault. 7. Remove/replace brushes (**Page 37**). 8. Inspect/replace if at fault. 9. Test/repair/replace.
Machine has vibration or noisy operation.	1. Motor or component loose. 2. Machine sits unevenly on workbench. 3. Belt worn, loose, or misaligned. 4. Pulley loose. 5. Workpiece/faceplate at fault. 6. Motor mount loose/broken. 7. Motor bearings at fault.	1. Inspect/replace damaged bolts/nuts, and retighten with thread-locking fluid. 2. Adjust rubber feet. 3. Inspect/replace belt (**Page 36**). Re-align pulleys if necessary (**Page 35**). 4. Re-align/replace shaft, pulley, set screw, and key. 5. Center workpiece in chuck/faceplate; reduce RPM; replace defective chuck. 6. Tighten/replace. 7. Test by rotating shaft; rotational grinding/loose shaft requires bearing replacement.

Operation

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Bad surface finish.	1. Dull tooling or wrong tool used for task. 2. Tool height is not 1/8" above spindle centerline. 3. Spindle speed is wrong. 4. Excessive vibration.	1. Sharpen tooling, select correct tool for operation. 2. Adjust tool rest so tool is 1/8" above spindle centerline. 3. Adjust for appropriate spindle speed (**Page 27**). 4. Troubleshoot possible causes/solutions in this table.
Excessive vibration upon startup (when workpiece is installed).	1. Workpiece is mounted incorrectly. 2. Workpiece warped, out of round, or flawed. 3. Lathe is resting on an uneven surface. 4. Spindle speed too fast for workpiece. 5. Workpiece hitting stationary object. 6. Tailstock or tool rest not securely clamped to lathe bed. 7. Belt pulleys are not properly aligned. 8. Motor mount bolts are loose. 9. Belt is worn or damaged. 10. Spindle bearings are worn or damaged.	1. Remount workpiece, making sure that centers are embedded in true center of workpiece. 2. Cut workpiece to be concentric, or use a different workpiece. 3. Shim machine base to eliminate wobble. 4. Reduce spindle speed (**Page 27**). 5. Stop lathe and fix interference problem. 6. Check lock levers and handles and tighten if necessary (**Page 17**). 7. Align belt pulleys (**Page 35**). 8. Tighten motor mount bolts. 9. Replace belt (**Page 36**). 10. Test by rotating shaft; rotational grinding/loose shaft requires bearing replacement.
Chisel grabs or digs into workpiece.	1. Wrong chisel/tool being used. 2. Chisel/tool too dull. 3. Tool rest height not set correctly. 4. Tool rest is set too far from workpiece.	1. Use correct chisel/tool. 2. Sharpen or replace chisel/tool. 3. Correct tool rest height (**Page 23**). 4. Move tool rest closer to workpiece.
Tailstock moves under load.	1. Tailstock mounting bolt/hex nut is loose. 2. Bed or clamping surface is excessively oily or greasy.	1. Tighten mounting bolt/hex nut. 2. Clean bed or clamping surface to remove excess oil/grease.
Spindle lacks turning power or starts up slowly.	1. Belt is slipping. 2. Pulleys loose. 3. Workpiece too heavy for spindle.	1. Tighten/adjust belt (**Page 36**). 2. Tighten pulley set screws; re-align/replace shaft, pulley set screws, and key. 3. Remove excess material before remounting; use lighter workpiece.
Quill will not move forward when knob is turned.	1. Keyway is not aligned with quill lock lever.	1. Align quill keyway and quill lock lever and slightly tighten lever to engage keyway (**Page** 25).

Electrical Safety Instructions

These pages are current at the time of printing. However, in the spirit of improvement, we may make changes to the electrical systems of future machines. Compare the manufacture date of your machine to the one stated in this manual, and study this section carefully.

If there are differences between your machine and what is shown in this section, call Technical Support at (360) 734-3482 for assistance BEFORE making any changes to the wiring on your machine. An updated wiring diagram may be available. **Note:** *Please gather the serial number and manufacture date of your machine before calling. This information can be found on the main machine label.*

⚠WARNING

SHOCK HAZARD. Working on wiring that is connected to a power source is extremely dangerous. Touching electrified parts will result in personal injury including but not limited to severe burns, electrocution, or death. Disconnect the power from the machine before servicing electrical components!

QUALIFIED ELECTRICIAN. Due to the inherent hazards of electricity, only a qualified electrician should perform wiring tasks on this machine. If you are not a qualified electrician, get help from one before attempting any kind of wiring job.

WIRE CONNECTIONS. All connections must be tight to prevent wires from loosening during machine operation. Double-check all wires disconnected or connected during any wiring task to ensure tight connections.

WIRE/COMPONENT DAMAGE. Damaged wires or components increase the risk of serious personal injury, fire, or machine damage. If you notice that any wires or components are damaged while performing a wiring task, replace those wires or components before completing the task.

MODIFICATIONS. Using aftermarket parts or modifying the wiring beyond what is shown in the diagram may lead to unpredictable results, including serious injury or fire.

MOTOR WIRING. The motor wiring shown in these diagrams is current at the time of printing, but it may not match your machine. Always use the wiring diagram inside the motor junction box.

CAPACITORS/INVERTERS. Some capacitors and power inverters store an electrical charge for up to 10 minutes after being disconnected from the power source. To reduce the risk of being shocked, wait at least this long before working on capacitors.

CIRCUIT REQUIREMENTS. You MUST follow the requirements at the beginning of this manual when connecting your machine to a power source.

EXPERIENCING DIFFICULTIES. If you are experiencing difficulties understanding the information included in this section, contact our Technical Support at (360) 734-3482.

NOTICE

The photos and diagrams included in this section are best viewed in color. You can view these pages in color at www.shopfox.biz.

WIRING DIAGRAM COLOR KEY

BLACK	Bk	BLUE	Bl	YELLOW	Yl	LIGHT BLUE	Lb
WHITE	Wt	BROWN	Br	YELLOW GREEN	Yg	BLUE WHITE	Bw
GREEN	Gn	GRAY	Gy	PURPLE	Pu	TUR-QUOISE	Tu
RED	Rd	ORANGE	Or	PINK	Pk		

SERVICE

Electrical Components

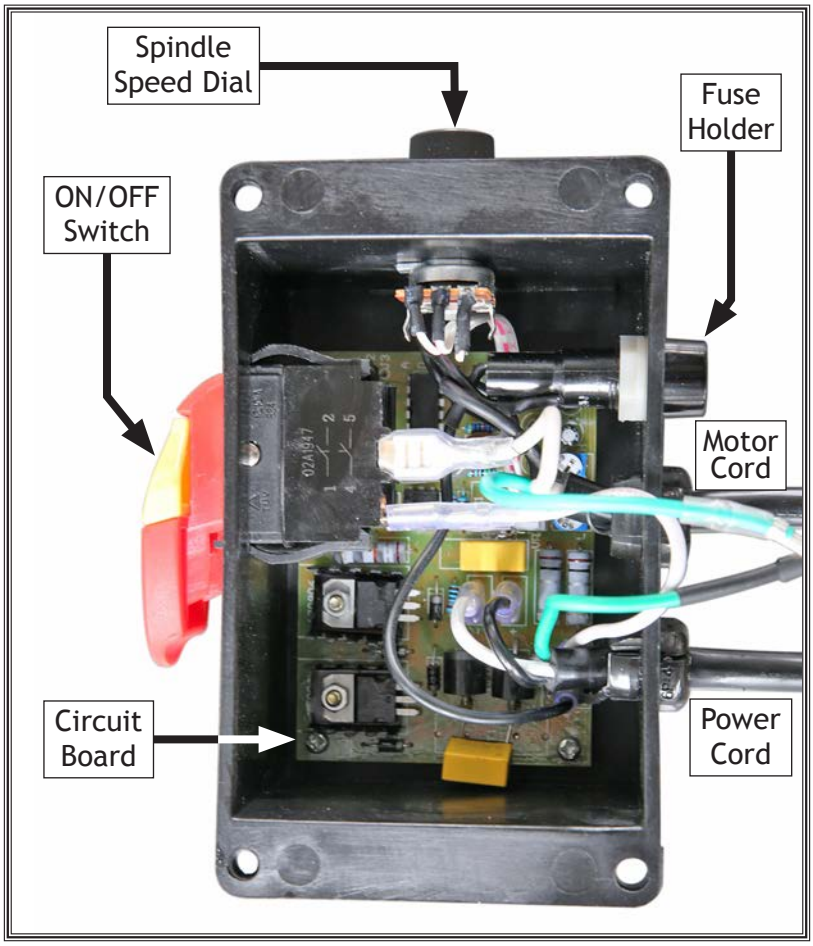
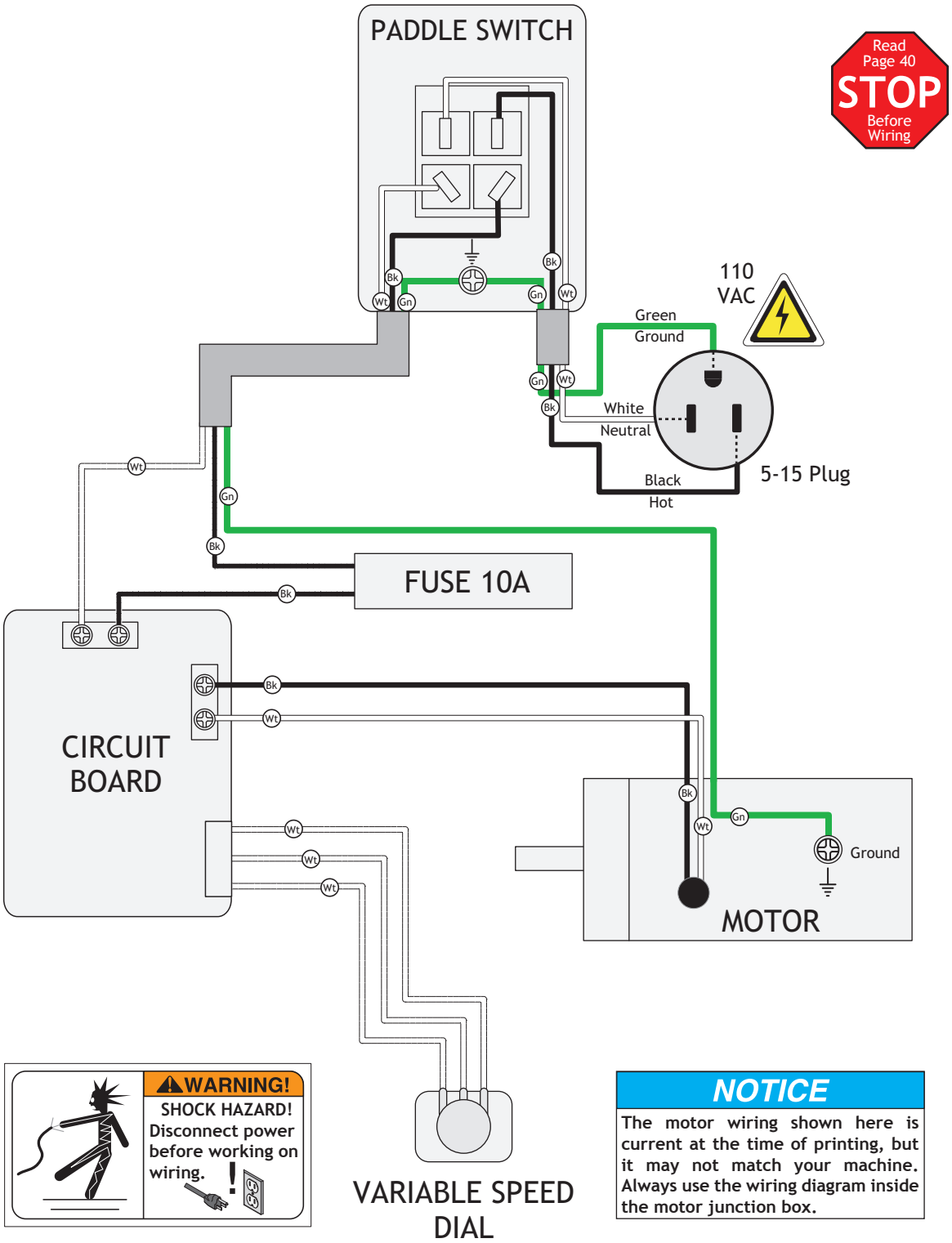


Figure 41. Switch box wiring and components.

Wiring Diagram



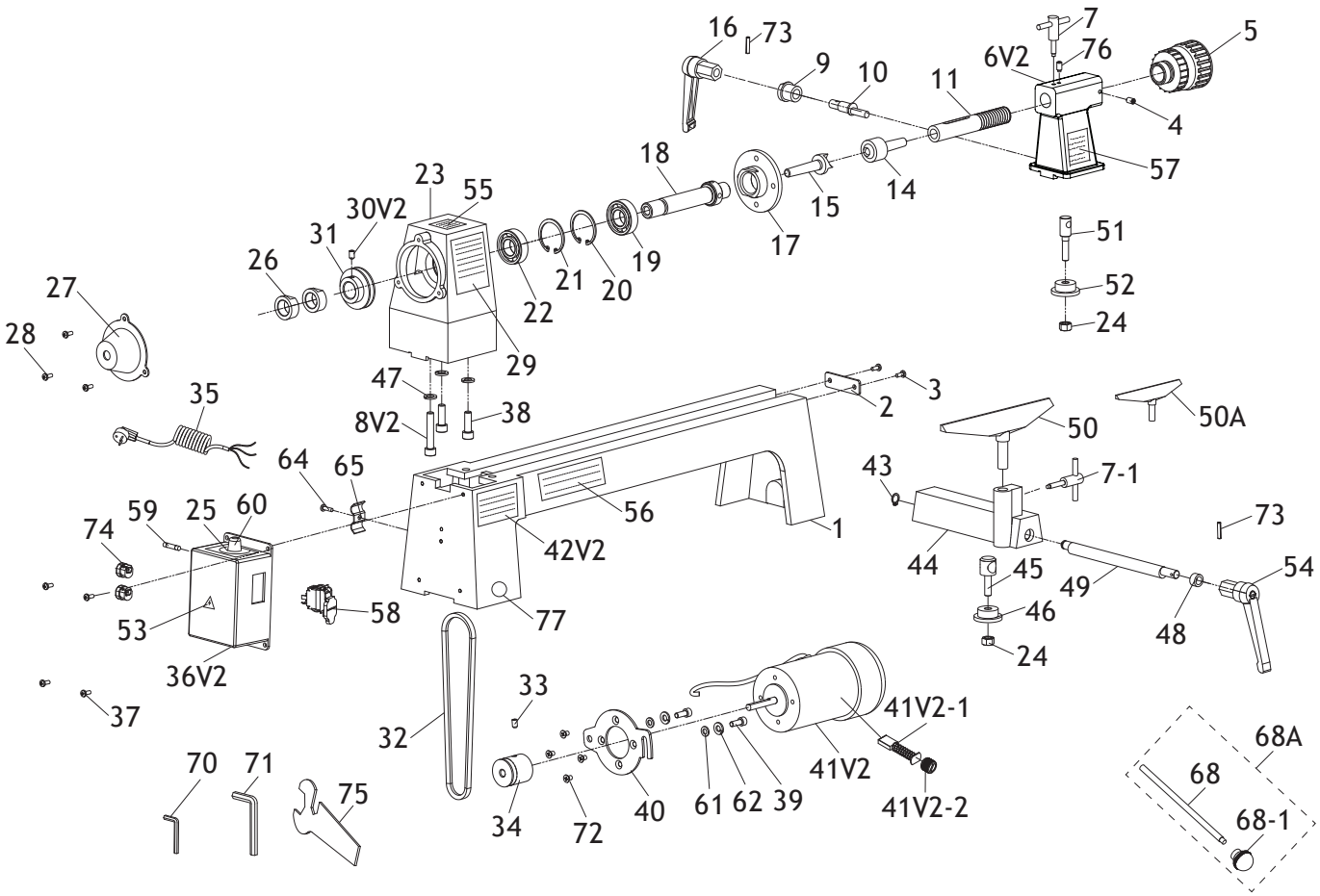
NOTICE

The motor wiring shown here is current at the time of printing, but it may not match your machine. Always use the wiring diagram inside the motor junction box.

SERVICE

PARTS

Main



PARTS

Main Parts List

REF	PART #	DESCRIPTION
1	X1704001	BED
2	X1704002	RETAINING PLATE
3	X1704003	PHLP HD SCR M5-.8 X 8
4	X1704004	SET SCREW M6-1 X 8 DOG-PT
5	X1704005	TAILSTOCK ADJUSTMENT KNOB
6V2	X170400V2	TAILSTOCK BODY V2.04.21
7	X1704007	T-LOCK KNOB BOLT M6-1 X 18
7-1	X1704007-1	T-LOCK KNOB BOLT M6-1 X 28
8V2	X1704008V2	CAP SCREW M8-1.25 X 50 V2.09.15
9	X1704009	SLEEVE
10	X1704010	ECCENTRIC AXIS
11	X1704011	TAILSTOCK QUILL
14	X1704014	LIVE CENTER ASSEMBLY
15	X1704015	SPUR CENTER
16	X1704016	TAILSTOCK LOCK LEVER
17	X1704017	FACEPLATE 5-3/4"
18	X1704018	HEADSTOCK SPINDLE
19	X1704019	BALL BEARING 6004ZZ
20	X1704020	INT RETAINING RING 42MM
21	X1704021	INT RETAINING RING 42MM
22	X1704022	BALL BEARING 6004ZZ
23	X1704023	HEADSTOCK
24	X1704024	LOCK NUT M8-1.25
25	X1704025	SPEED DIAL LABEL
26	X1704026	HEADSTOCK SPINDLE NUT
27	X1704027	OUTBOARD SPINDLE COVER
28	X1704028	PHLP HD SCR M4-.7 X 8
29	X1704029	EYE/EAR/LUNG HAZARD LABEL
30V2	X1704030V2	SET SCREW M6-1 X 8 V2.12.19
31	X1704031	DRIVE PULLEY
32	X1704032	BELT K-516
33	X1704033	SET SCREW M6-1 X 10
34	X1704034	MOTOR PULLEY
35	X1704035	POWER CORD 18AWG 3W 72" 5-15P
36V2	X1704036V2	CIRCUIT BOARD W/BOX V2.01.20
37	X1704037	PHLP HD SCR M4-.7 X 10
38	X1704038	CAP SCREW M8-1.25 X 25
39	X1704039	CAP SCREW M6-1 X 16
40	X1704040	MOTOR MOUNTING PLATE

REF	PART #	DESCRIPTION
41V2	X1704041V2	MOTOR V2.01.20
41V2-1	X1704041V2-1	CARBON BRUSH
41V2-2	X1704041V2-2	BRUSH CAP
42V2	X1704042V2	MACHINE ID LABEL V2.01.20
43	X1704043	EXT RETAINING RING 10MM
44	X1704044	TOOL REST BASE
45	X1704045	TOOL REST CLAMP BOLT M8-1.25 X 32
46	X1704046	CLAMP BLOCK
47	X1704047	LOCK WASHER 8MM
48	X1704048	SLEEVE
49	X1704049	ECCENTRIC ROD
50	X1704050	TOOL REST 7" LARGE
50A	X1704050A	TOOL REST 4-1/2" SMALL
51	X1704051	TAILSTOCK CLAMP BOLT M8-1.25 X 32
52	X1704052	CLAMP BLOCK
53	X1704053	ELECTRICITY LABEL
54	X1704054	TOOL REST LOCK LEVER
55	X1704055	UNPLUG MACHINE LABEL
56	X1704056	LATHE WARNING LIST LABEL
57	X1704057	READ MANUAL LABEL
58	X1704058	SHOP FOX PADDLE SWITCH
59	X1704059	FUSE 10A
60	X1704060	SPINDLE SPEED DIAL SWITCH
61	X1704061	FLAT WASHER 6MM
62	X1704062	LOCK WASHER 6MM
64	X1704064	PHLP HD SCR M4-.7 X 10
65	X1704065	CABLE HOLDER
68A	X1704068A	KNOCK-OUT TOOL ASSY
68	X1704068	KNOCK-OUT TOOL ROD
68-1	X1704068-1	KNOCK-OUT TOOL END BALL
70	X1704070	HEX WRENCH 3MM
71	X1704071	HEX WRENCH 5MM
72	X1704072	FLAT HD SCR M5-.8 X 8
73	X1704073	ROLL PIN 4 X 16
74	X1704074	STRAIN RELIEF TYPE-1 3/8"
75	X1704075	WRENCH 19 X 27MM OPEN-ENDS
76	X1704076	SET SCREW M6-1 X 12
77	X1704077	TOUCH-UP PAINT, SHOP FOX WHITE

⚠WARNING

Safety labels warn about machine hazards and how to prevent serious personal injury. The owner of this machine MUST maintain the original location and readability of all labels on this machine. If any label is removed or becomes unreadable, REPLACE that label before allowing machine to be operated again. Contact us at (360) 734-3482 or www.woodstockint.com to order new labels.

WARRANTY

Woodstock International, Inc. warrants all Shop Fox machinery to be free of defects from workmanship and materials for a period of two years from the date of original purchase by the original owner. This warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence or accidents, lack of maintenance, or reimbursement of third party expenses incurred.

Woodstock International, Inc. will repair, replace, or arrange for a dealer refund, at its expense and option, the Shop Fox machine or machine part proven to be defective for its designed and intended use, provided that the original owner returns the product prepaid to an authorized warranty or repair facility as designated by our Bellingham, Washington office with proof of their purchase of the product within two years, and provides Woodstock International, Inc. reasonable opportunity to verify the alleged defect through inspection. If it is determined there is no defect, or that the defect resulted from causes not within the scope of Woodstock International Inc.'s warranty, then the original owner must bear the cost of storing and returning the product.

This is Woodstock International, Inc.’s sole written warranty and any and all warranties that may be implied by law, including any merchantability or fitness, for any particular purpose, are hereby limited to the duration of this written warranty. We do not warrant that Shop Fox machinery complies with the provisions of any law, acts or electrical codes. We do not reimburse for third party repairs. In no event shall Woodstock International, Inc.’s liability under this limited warranty exceed the purchase price paid for the product, and any legal actions brought against Woodstock International, Inc. shall be tried in the State of Washington, County of Whatcom. We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special or consequential damages arising from the use of our products.

Every effort has been made to ensure that all Shop Fox machinery meets high quality and durability standards. We are commited to continuously improving the quality of our products, and reserve the right to change specifications at any time.

To register the warranty, go to **https://www.woodstockint.com/warranty**, or scan the QR code below. You will be directed to the Warranty Registration page on www.woodstockint.com. Enter all applicable production information.

WARRANTY

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