



# MODEL W1669/W1670 RADIAL DRILL PRESS



## OWNER'S MANUAL

*(FOR MODELS MANUFACTURED SINCE 03/25)*

Phone: (360) 647-0802 • Online Technical Support: [techsupport@shopfoxtools.com](mailto:techsupport@shopfoxtools.com)

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

## **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

## Grizzly 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.

Grizzly Industrial, 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 Grizzly Industrial Technical Support at (360) 647-0802 or send e-mail to: [techsupport@shopfoxtools.com](mailto:techsupport@shopfoxtools.com). Our knowledgeable staff will help you troubleshoot problems and process warranty claims.

If you need the latest edition, you can download it from <http://www.shopfoxtools.com/manuals>. If you have comments about this manual, please contact us at:

Grizzly Industrial, Inc.  
Attn: Technical Documentation Manager  
P.O. Box 2309  
Bellingham, WA 98227  
Email: [manuals@shopfoxtools.com](mailto:manuals@shopfoxtools.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.

### CAUTION

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 W1669 BENCHTOP RADIAL DRILL PRESS

### Product Dimensions

Weight..... 91 lbs.  
 Width (side-to-side) x Depth (front-to-back) x Height..... 12 x 33-1/2 x 31-1/2 in.  
 Footprint (Length x Width)..... 13-1/2 x 8-1/2 in.

### Shipping Dimensions

Type..... Cardboard Box  
 Content..... Machine  
 Weight..... 98 lbs.  
 Length x Width x Height..... 36 x 18 x 13 in.

### Electrical

Power Requirement..... 120V, Single-Phase, 60 Hz  
 Full-Load Current Rating..... 7A  
 Minimum Circuit Size..... 15A  
 Connection Type..... Cord & Plug  
 Power Cord Included..... Yes  
 Power Cord Length..... 7 ft.  
 Power Cord Gauge..... 18 AWG  
 Plug Included..... Yes  
 Included Plug Type..... 5-15  
 Switch Type..... Toggle Safety Switch w/Removable Key

### Motors

#### Main

Horsepower..... 1/2 HP  
 Phase..... Single-Phase  
 Amps..... 7A  
 Speed..... 1725 RPM  
 Type..... TEFC Capacitor-Start Induction  
 Power Transfer ..... V-Belt Drive  
 Bearings..... Shielded & Permanently Lubricated



**Main Specifications**

**Operation Information**

Type.....	Radial
Swing.....	34 in.
Spindle Taper.....	JT#33
Spindle Travel.....	3-1/4 in.
Max. Distance From Spindle to Column.....	5-1/2 - 17 in.
Max. Distance From Spindle to Table.....	11-1/2 in.
Number of Spindle Speeds.....	5
Range of Spindle Speeds.....	550 - 3000 RPM
Max. Head Tilt (Left/Right).....	90 / 45 deg.
Max. Head Swivel.....	360 deg.
Drilling Capacity (Mild Steel).....	1/2 in. in Steel
Drill Chuck Type.....	JT33 Key Chuck
Drill Chuck Size.....	1/16 - 5/8 in.

**Spindle Information**

Distance From Spindle to Base.....	17-1/2 in.
Quill Diameter.....	1.575 in.

**Table Information**

Max. Table Tilt (Left/Right).....	90 deg.
Table Swing.....	360 deg.
Table Swivel Around Center.....	360 deg.
Table Swivel Around Column.....	360 deg.
Max. Movement of Work Table.....	9-1/2 in.
Table Length.....	(Diameter) 9-3/4 in.
Table Width.....	(Diameter) 9-3/4 in.
Table Thickness.....	1 in.
Vertical Table Travel.....	Crank Handle Operation
Number of T-Slots.....	6
T-Slot Size.....	1/2 in.
T-Slot Centers.....	2-3/4 in.
Floor-To-Table Height.....	7-3/4 - 17-1/4 in.

**Construction**

Table.....	Precision-Ground Cast Iron
Column.....	Steel
Spindle Housing.....	Cast Iron
Head.....	Cast Iron
Base.....	Cast Iron
Paint Type/Finish.....	Enamel

**Other Related Information**

Base Length.....	13-1/2 in.
Base Width.....	8-1/2 in.
Column Diameter.....	2.360 in.
Depth Stop Type.....	Threaded Rod with Positive Stop
Has Work Light.....	No



# MACHINE SPECIFICATIONS



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## MODEL W1670 FLOOR RADIAL DRILL PRESS

### Product Dimensions

Weight..... 138 lbs.  
 Width (side-to-side) x Depth (front-to-back) x Height..... 14 x 32 x 64-1/2 in.  
 Footprint (Length x Width)..... 18 x 11 in.

### Shipping Dimensions

Type..... Cardboard Box  
 Content..... Machine  
 Weight..... 147 lbs.  
 Length x Width x Height..... 20 x 56 x 10 in.

### Electrical

Power Requirement..... 120V, Single-Phase, 60 Hz  
 Full-Load Current Rating..... 7A  
 Minimum Circuit Size..... 15A  
 Connection Type..... Cord & Plug  
 Power Cord Included..... Yes  
 Power Cord Length..... 7 ft.  
 Power Cord Gauge..... 18 AWG  
 Plug Included..... Yes  
 Included Plug Type..... 5-15  
 Switch Type..... Toggle Safety Switch w/Removable Key

### Motors

#### Main

Horsepower..... 1/2 HP  
 Phase..... Single-Phase  
 Amps..... 7A  
 Speed..... 1725 RPM  
 Type..... TEFC Capacitor-Start Induction  
 Power Transfer ..... V-Belt Drive  
 Bearings..... Shielded & Permanently Lubricated



**Main Specifications**

**Operation Information**

Type.....	Radial
Swing.....	34 in.
Spindle Taper.....	JT#33
Spindle Travel.....	3-1/4 in.
Max. Distance From Spindle to Column.....	5-1/2 - 17 in.
Max. Distance From Spindle to Table.....	29-1/2 in.
Number of Spindle Speeds.....	5
Range of Spindle Speeds.....	550 - 3000 RPM
Max. Head Tilt (Left/Right).....	90 / 45 deg.
Max. Head Swivel.....	360 deg.
Drilling Capacity (Mild Steel).....	1/2 in.
Drill Chuck Type.....	JT33 Key Chuck
Drill Chuck Size.....	1/16 - 5/8 in.

**Spindle Information**

Distance From Spindle to Base.....	49-3/4 in.
Quill Diameter.....	1.575 in.

**Table Information**

Max. Table Tilt (Left/Right).....	90 deg.
Table Swing.....	360 deg.
Table Swivel Around Center.....	360 deg.
Table Swivel Around Column.....	360 deg.
Max. Movement of Work Table.....	24-1/2 in.
Table Diameter.....	12-3/16 in.
Table Thickness.....	1 in.
Vertical Table Travel.....	Crank Handle Operation
Number of T-Slots.....	6
T-Slot Size.....	5/8 in.
T-Slot Centers.....	3-1/4 in.
Floor-To-Table Height.....	22-1/2 - 47 in.

**Construction**

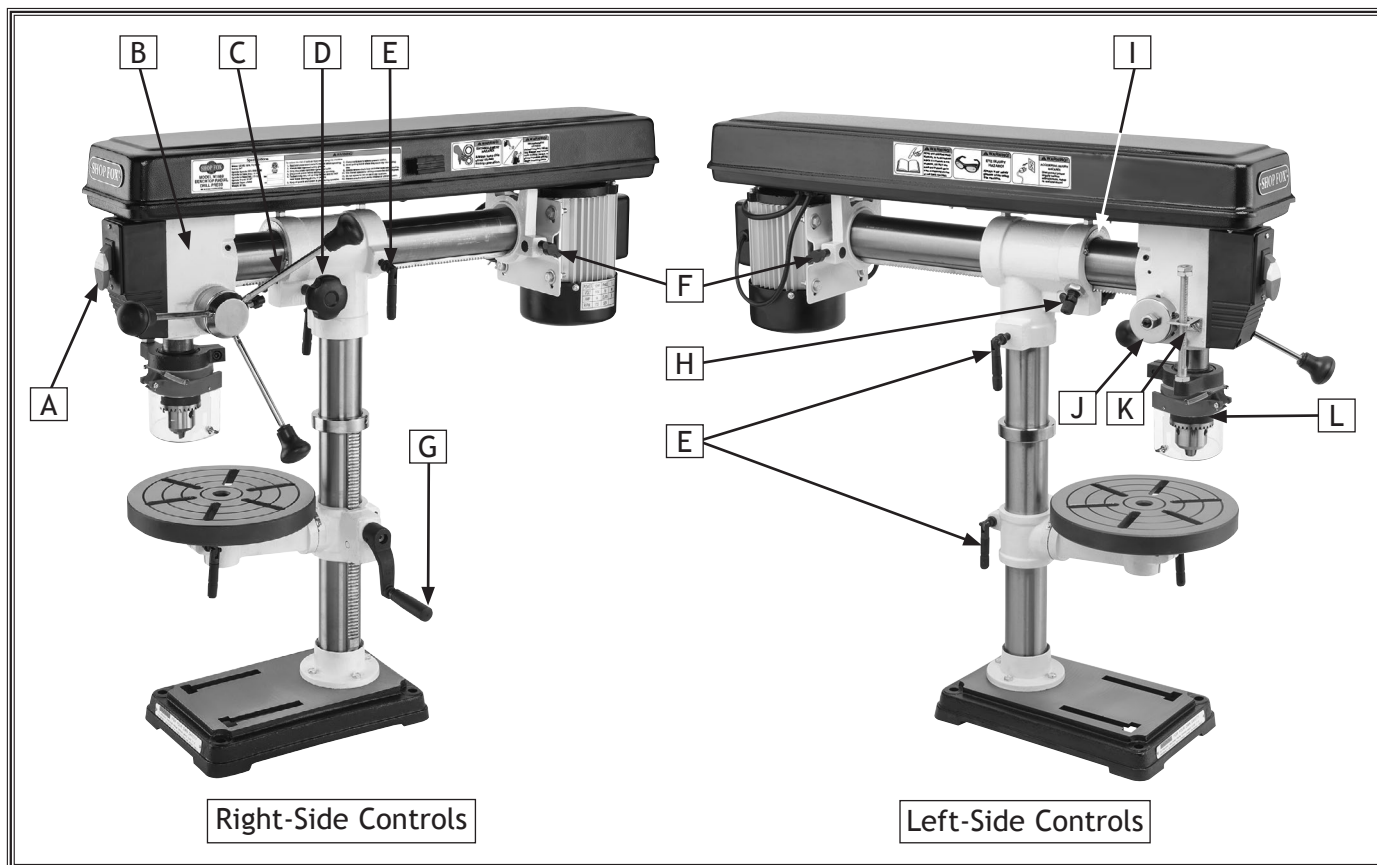
Table.....	Precision-Ground Cast Iron
Column.....	Steel
Spindle Housing.....	Cast Iron
Head.....	Cast Iron
Base.....	Cast Iron
Paint Type/Finish.....	Enamel

**Other Related Information**

Base Length.....	17-1/2 in.
Base Width.....	10-1/2 in.
Mobile Base.....	D2260A
Column Diameter.....	2.790 in.
Depth Stop Type.....	Hub
Has Work Light.....	No

# Identification

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



- A. Power Switch
- B. Headstock
- C. Downfeed Handles
- D. Horizontal Adjustment Knob
- E. Lock Levers
- F. Belt Tension Lock Knobs

- G. Crank Handle
- H. Lock Pin
- I. Headstock Angle Tilt Scale
- J. Spindle Return Spring
- K. Depth Stop
- L. Chuck Guard & Chuck

## WARNING

For Your Own Safety Read Instruction Manual Before Operating Drill Press

- a) Wear eye protection.
- b) Do not wear gloves, necktie, or loose clothing.
- c) Clamp workpiece or brace against column to prevent rotation.
- d) Use recommended speed for drill accessory and workpiece material.

# Controls & Components

Refer to the following figures and 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.

- A. **Power Switch:** Turns motor ON/OFF.
- B. **Headstock:** The cast-iron upper portion of the drill press, which houses the quill and supports the motor and belt housing.
- C. **Belt Cover:** Provides access to drive belt for spindle-speed changes.
- D. **Belt Tension Lock Knobs:** Secure motor in position to set belt tension.
- E. **Headstock Rotation Lock Lever:** Locks headstock in position.
- F. **Horizontal Adjustment Knob:** Moves the headstock forward and backward over the column.
- G. **Downfeed Handles:** Move the quill up and down.
- H. **Table Height Crank Handle:** Raises/lowers table.
- I. **Table Rotation Lock Lever:** Locks table rotation.
- J. **Chuck Guard & Chuck:** Chuck guard protects user from flying debris; chuck accepts drill bits from  $\frac{1}{64}$ " to  $\frac{5}{8}$ " and mounts to the spindle with a JT#33 taper.
- K. **Lock Pin:** When pulled out, allows headstock to be tilted left/right.
- L. **Scale:** Indicates headstock angle.
- M. **Spindle Return Spring:** Automatically returns quill into headstock.
- N. **Depth Stop:** Limits quill travel to a pre-set drilling depth.
- O. **Spindle:** Used to mount chuck and accessories with a JT#33 taper.
- P. **Table Elevation Lock Lever:** Locks table height.
- Q. **Column Lock Lever:** Locks headstock on column.

## WARNING



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

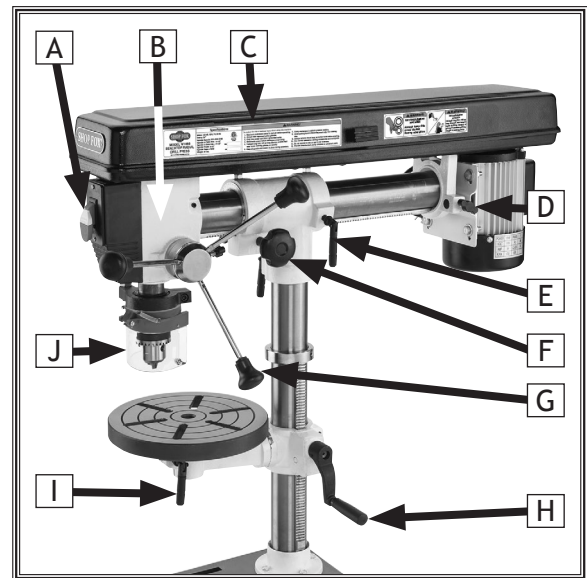


Figure 1. Machine controls (right).

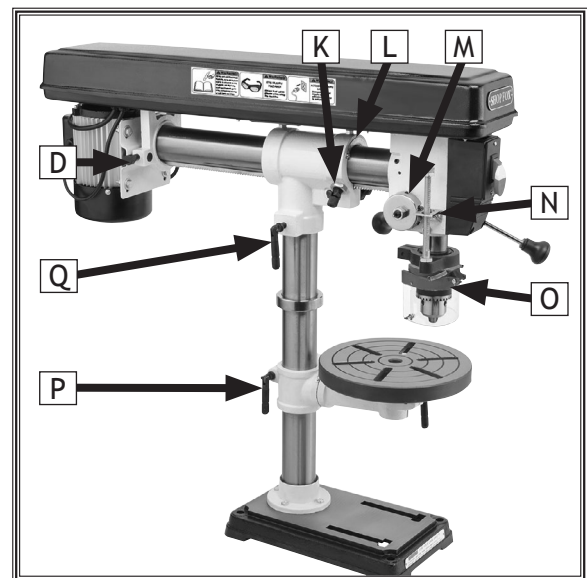


Figure 2. Machine controls (left).

# 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!



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



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



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 loose clothing, gloves, neckties, 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 Grizzly Industrial. 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) 647-0802.

# Additional Safety for Drill Presses

Serious injury or death can occur from getting clothing, jewelry, or long hair entangled in rotating spindle or bit/cutting tool. Contact with rotating bit/cutting tool can result in severe cuts or amputation of fingers. Flying metal chips can cause blindness or eye injuries. Broken bits/cutting tools, unsecured workpieces, chuck keys, or other adjustment tools thrown from rotating spindle can strike nearby operator or bystanders with great force. To reduce the risk of these hazards, operator and bystanders **MUST** completely heed hazards and warnings below.

**WEARING PROPER PPE.** Flying chips created by drilling can cause eye injuries or blindness. Always wear a face shield in addition to safety glasses. Always keep hands and fingers away from drill bit/cutting tool. Avoid awkward hand positions, where a sudden slip could cause hand to move into bit/cutting tool.

**AVOIDING ENTANGLEMENT.** DO NOT wear loose clothing, gloves, or jewelry, and tie back long hair. Keep all guards in place and secure. Always allow spindle to stop on its own. DO NOT stop spindle using your hand or any other object.

**REMOVING ADJUSTMENT TOOLS.** Chuck key, drawbar wrench, and other tools left on machine can become deadly projectiles when spindle is started. Remove all loose items or tools used on spindle immediately after use.

**SECURING BIT/CUTTING TOOL.** Firmly secure bit/cutting tool so it does not fly out of spindle during operation or startup.

**SECURING TABLE AND HEADSTOCK.** To avoid accidental contact with tool/bit, tighten all table and headstock locks before operating drill.

**CORRECT SPINDLE SPEED.** Using wrong spindle speed can cause bits/cutting tools to break and strike operator or bystanders. Follow recommended speeds and feeds for each size/type of bit/cutting tool and workpiece material.

**WORKPIECE PREPARATION.** To avoid loss of workpiece control, DO NOT drill material with an uneven surface on the table, unless a suitable support is used. To avoid impact injuries, make sure workpiece is free of nails or foreign objects in area to be drilled.

**WORKPIECE CONTROL.** An unsecured workpiece may unexpectedly shift, spin out of control, or be thrown if bit/cutting tool “grabs” during operation. Clamp workpiece to table or in table-mounted vise, or brace against column to prevent rotation. NEVER hold workpiece by hand during operation. NEVER start machine with bit/cutting tool touching workpiece; allow spindle to gain full speed before drilling.

**INSPECTING BIT/CUTTING TOOL.** Damaged bits/cutting tools may break apart during operation and hit operator or bystanders. Dull bits/cutting tools increase cutting resistance and are more likely to grab and spin/throw workpiece. Always inspect bits/cutting tools for sharpness, chips, or cracks before each use. Replace dull, chipped, or cracked bits/cutting tools immediately.

**MAINTAINING MACHINE.** Keep machine in proper working condition to help ensure that it functions safely and all guards and other components work as intended. Perform routine inspections and all necessary maintenance. Never operate machine with damaged or worn parts that can break or result in unexpected movement during operation.

**CLEANING MACHINE SAFELY.** To avoid contact with tool/bit, never clear chips while spindle is turning. To avoid cuts and eye injuries, DO NOT clear chips by hand or with compressed air—use a brush or vacuum instead.

**DISCONNECT POWER FIRST.** To reduce risk of electrocution or injury from unexpected startup, make sure drill is turned OFF, disconnected from power, and all moving parts have come to a complete stop before changing bits/cutting tools or starting any inspection, adjustment, or maintenance procedure.

# 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 (W1669) .....7 Amps

Full-Load Current Rating at 120V (W1670) .....7 Amps

### Circuit Requirements for 120V

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.

ELECTRICAL

# 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.

## 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.

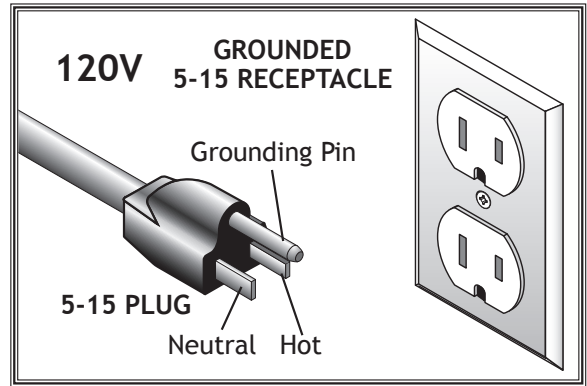
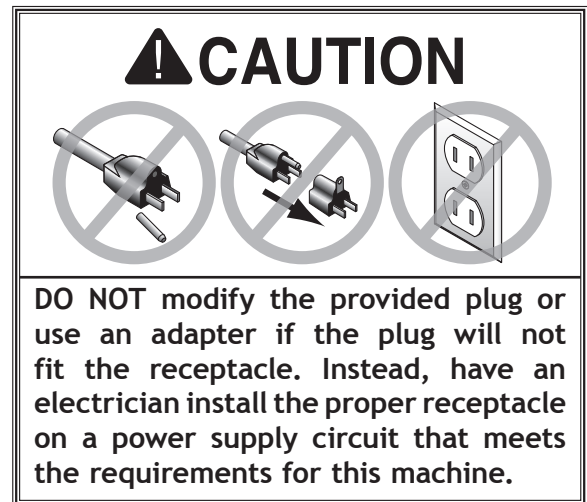


Figure 3. NEMA 5-15 plug & receptacle.



ELECTRICAL

# 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 ..... 14 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
• Mounting Hardware .....	As Needed
• Wrench or Socket 13mm .....	1
• Hex Wrench 1.5mm .....	1
• Phillips Head Screwdriver #2 .....	1
• Disposable Gloves for Cleaning .....	As Needed
• Degreaser or Solvent for Cleaning .....	As Needed
• Paint Brush for Cleaning .....	1
• Disposable Rags for Cleaning .....	As Needed
• Plumb Bob .....	1
• Ruler .....	1
• Block of Wood (At Least 4" x 4") .....	1
• Assistant for Lifting .....	1

SETUP



**⚠ 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**

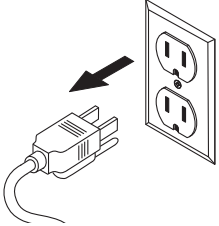
Wear safety glasses during entire setup process!



**⚠ WARNING**

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

**⚠ WARNING**



Keep machine disconnected from power until instructed otherwise.

# 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.

Box Inventory (Figure 4)	Qty	
A. Table Bracket Assembly.....	1	N. Downfeed Levers .....
B. Headstock Assembly.....	1	O. Table.....
C. Base.....	1	P. Hex Wrenches 3, 5mm.....
D. Special Wrench 24mm .....	1	Q. Table Support Arm Bracket (W1670).....
E. Rack (W1670).....	1	R. Column (W1670) .....
F. Column Ring (W1669) .....	1	S. Hardware and Tools (Not Shown)
G. Column (W1669) .....	1	–Hex Bolts M8-1.25 x 20 (W1669) .....
H. Hex Bolts M8-1.25 x 125.....	4	–Flat Washers 8mm (W1669) .....
–Wing Nuts M8-1.25 .....	4	–Hex Bolts M10-1.5 x 35 (W1670) .....
–Flat Washers 8mm.....	8	–Flat Washers 10mm (W1670) .....
I. Locking Gib .....	1	–Phillips Head Screws M4-.7 x 10 .....
J. Chuck Key.....	1	–Flat Washers 4mm.....
K. Drill Chuck.....	1	–Lock Washers 4mm .....
L. Lock Levers M10-1.5 x 30 .....	2	–Belts Cover Knob .....
M. Lift Handle Crank.....	1	–Tap Screw #8 x 3/4".....
		–Chuck Guard Assembly.....

SETUP

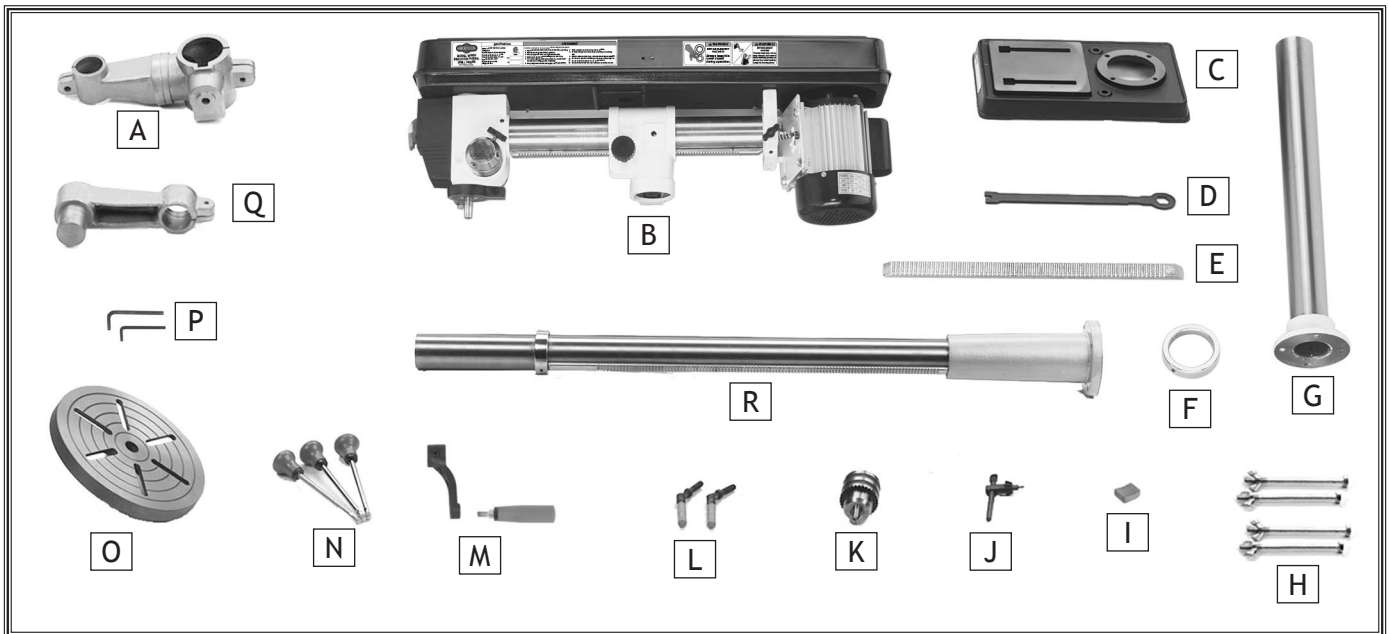


Figure 4. W1669 and W1670 inventory.

# Cleaning Machine

To prevent corrosion during shipment and storage of your machine, the factory has coated the bare metal surfaces of your machine with a heavy-duty rust prevention compound.

If you are unprepared or impatient, this compound can be difficult to remove. To ensure that the removal of this coating is as easy as possible, please gather the correct cleaner, lubricant, and tools listed below:

- Cleaner/degreaser designed to remove storage wax and grease
- Safety glasses & disposable gloves
- Solvent brush or paint brush
- Disposable Rags

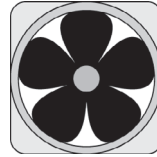
To remove rust preventative coating, do these steps:

1. DISCONNECT MACHINE FROM POWER!
2. Put on safety glasses and disposable gloves.
3. Coat the rust preventative with a liberal amount of cleaner/degreaser, then let it soak for 5-10 minutes.
4. Wipe off surfaces. If your cleaner/degreaser is effective, the coating will wipe off easily.

**Tip:** *An easier way to clean off thick coats of rust preventative from flat surfaces is to use a PLASTIC paint scraper to scrape off the majority of the coating before wiping it off with your rag. (Do not use a metal scraper or you may scratch your machine.)*

5. Repeat cleaning steps as necessary until all of the compound is removed.
6. To prevent rust on freshly cleaned surfaces, immediately coat with a quality metal protectant.

## ! WARNING



Gasoline and petroleum products have low flash points and can explode or cause fire if used to clean machinery. Avoid using these products to clean machinery. Many cleaning solvents are toxic if inhaled. Minimize your risk by only using these products in a well ventilated area.

## NOTICE

In a pinch, automotive degreasers, mineral spirits or WD•40 can be used to remove rust preventative coating. Before using these products, though, test them on an inconspicuous area of your paint to make sure they will not damage it.

# Machine Placement

## Weight Load

Refer to the **Machine Specifications** for the weight of your machine. Make sure that the surface upon which the machine is placed will bear the weight of the machine, additional equipment that may be installed on the machine, and the heaviest workpiece that will be used. Additionally, consider the weight of the operator and any dynamic loading that may occur when operating the machine.

## Space Allocation

Consider the largest size of workpiece that will be processed through this machine and provide enough space around the machine for adequate operator material handling or the installation of auxiliary equipment. With permanent installations, leave enough space around the machine to open or remove doors/covers as required by the maintenance and service described in this manual. See below for required space allocation.

## Physical Environment

The physical environment where your machine is operated is important for safe operation and the longevity of its components. For best results, operate this machine in a dry environment that is free from excessive moisture, hazardous chemicals, airborne abrasives, or extreme conditions. Extreme conditions for this type of machinery are generally those where the ambient temperature range exceeds 41°-104°F; the relative humidity range exceeds 20-95% (non-condensing); or the environment is subject to vibration, shocks, or bumps.

## Electrical Installation

Place this machine near an existing power source. Make sure all power cords are protected from traffic, material handling, moisture, chemicals, or other hazards. Make sure to leave access to a means of disconnecting the power source or engaging a lockout/tagout device.

## Lighting

Lighting around the machine must be adequate enough that operations can be performed safely. Shadows, glare, or strobe effects that may distract or impede the operator must be eliminated.

SETUP

	 <h3>CAUTION</h3> <p>Children or untrained people may be seriously injured by this machine. Only install in an access restricted location.</p>
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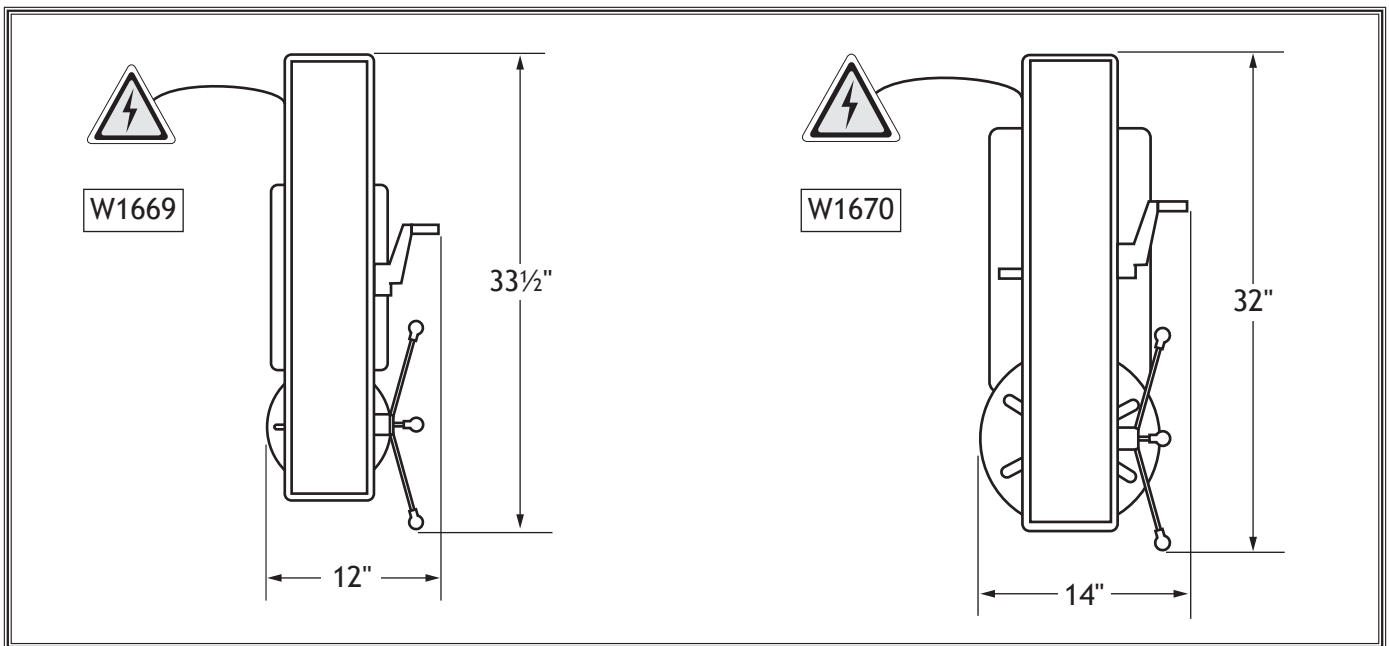


Figure 5. Working clearances.

# Mounting to Bench (W1669)

Number of Mounting Holes..... 4  
Hex Bolts size included..... M8-1.25 x 125

The base of this machine has mounting holes that allow it to be fastened to a workbench or other mounting surface to prevent it from moving during operation and causing accidental injury or damage.

The strongest mounting option is a "Through Mount" (see example) where holes are drilled all the way through the workbench—and hex bolts, washers, and hex nuts are used to secure the machine in place.

Another option is a "Direct Mount" (see example) where the machine is secured directly to the workbench with lag screws and washers.

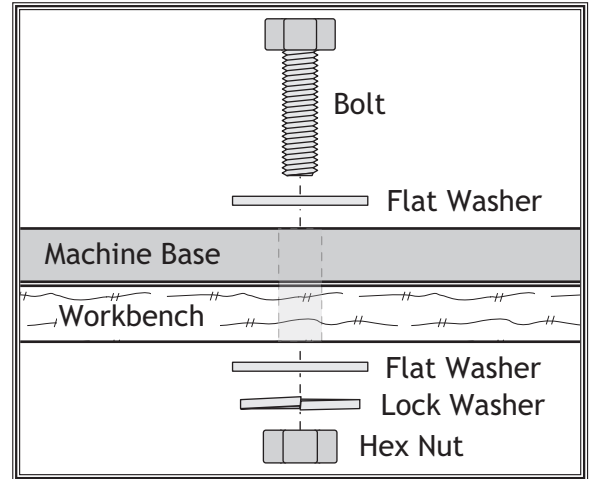


Figure 6. Typical "Through Mount" setup.

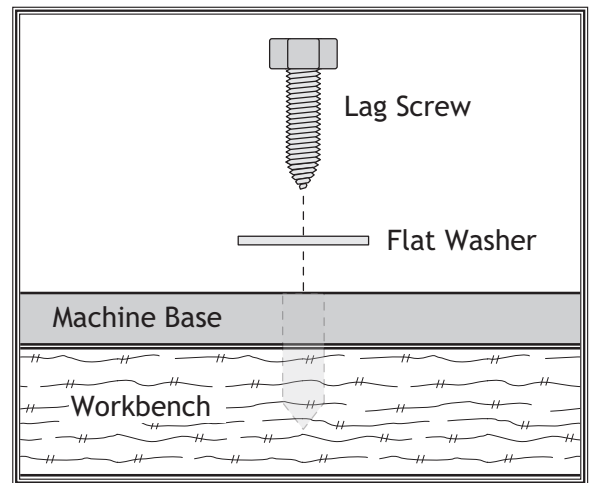


Figure 7. Typical "Direct Mount" setup.

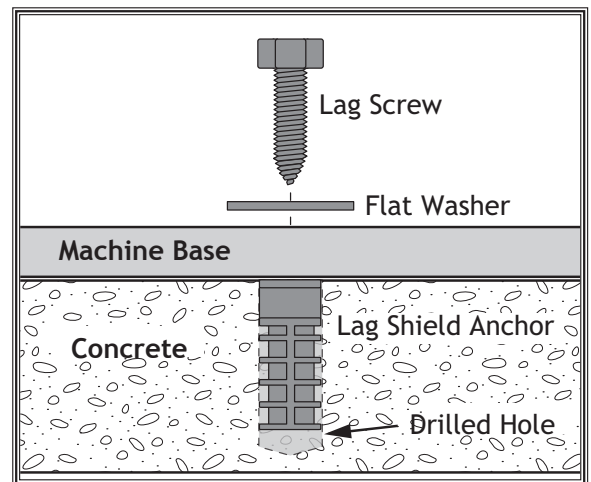


Figure 8. Popular method for anchoring machinery to a concrete floor.

# Anchoring to Floor (W1670)

Number of Mounting Holes..... 4  
Diameter of Mounting Hardware..... 5/16"

Anchoring machinery to the floor prevents tipping or shifting and reduces vibration that may occur during operation, resulting in a machine that runs slightly quieter and feels more solid.

If the machine will be installed in a commercial or workplace setting, or if it is permanently connected (hardwired) to the power supply, local codes may require that it be anchored to the floor.

If not required by any local codes, fastening the machine to the floor is an optional step. If you choose not to do this with your machine, we recommend placing it on machine mounts, as these provide an easy method for leveling and they have vibration-absorbing pads.

## Anchoring to Concrete Floors

Lag shield anchors with lag screws (see Figure) are a popular way to anchor machinery to a concrete floor, because the anchors sit flush with the floor surface, making it easy to unbolt and move the machine later, if needed. However, anytime local codes apply, you **MUST** follow the anchoring methodology specified by the code.

# Mounting W1670 to Mobile Base

Because the drill press is top-heavy by nature, we recommend mounting it to the floor, rather than a mobile base.

If you must use a mobile base, ALWAYS mount your drill press to a base plate inside of the mobile base, as shown in Figure 9.

A good quality base plate increases the standard footprint of the drill press to make it much more stable. The base plate must be at least 1 1/2" thick and made of plywood (do not use OSB, MDF, or particle board) to hold the weight of the drill press. A common way for making the baseplate is described in this sub-section.

Always use extreme care when moving the drill press around with the mobile base!

### Items Needed

	Qty
Plywood 3/4" x 23 3/4" x 23 3/4" .....	2
Wood Glue .....	As Needed
Wood Screws #6 x 1 1/4" .....	24
Hex Bolts (2 1/4" Long, Sized for Base Plate).....	4
Hex Nuts (Sized for Hex Bolts) .....	4
Lock Washers (Sized for Hex Bolts) .....	4
Flat Washers (Sized for Hex Bolts).....	8
Assistant to Lift Drill Press .....	1

### To make and use the base plate, do these steps:

1. Glue the two pieces of plywood together, aligning edges and corners to make one thick piece.
2. Use wood screws to secure boards together from both sides.
3. Allow 24 hours for glue to dry before mounting drill press.
4. Place plywood base plate on mobile base.
5. Drill holes through base plate and metal plates at mobile base corners.
6. Secure base plate to mobile base with hex bolts, hex nuts, flat washers and lock washers, as shown in Figure 10.

**⚠ CAUTION**

Drill presses are top-heavy and must be securely attached to a large-footprint base plate when used with a mobile base. Failure to use a base plate greatly increases possibility of tipping and personal injury.

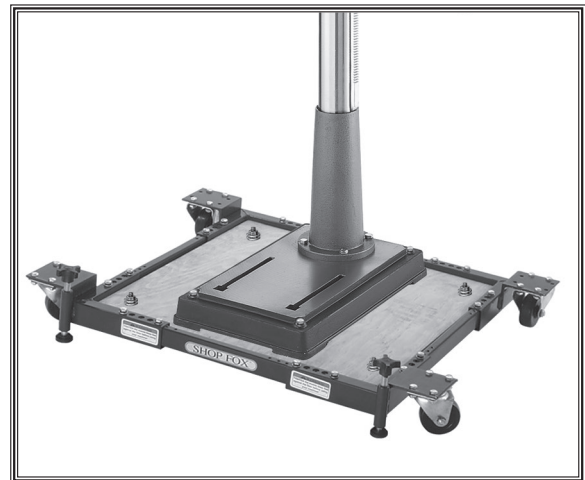


Figure 9. Drill press mounted on mobile base, using a base plate for support.

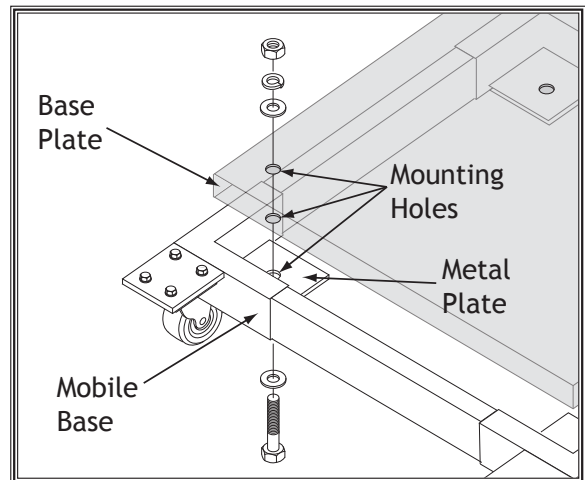


Figure 10. Mounting base plate to mobile base.

SETUP

# 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

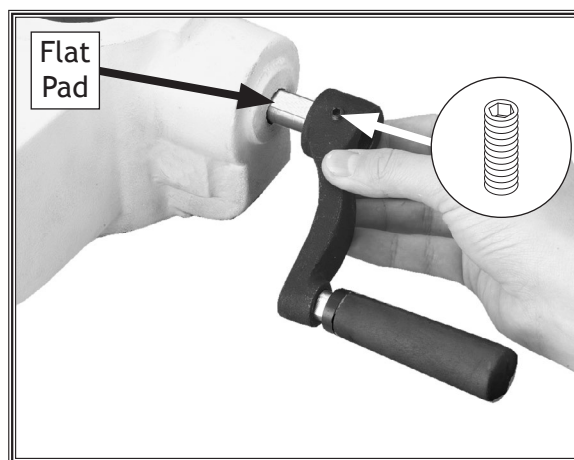
The W1669 comes with one geared table bracket. The W1670 comes with a geared table bracket and a table support arm, which allows the distance between the column and table to be adjusted. The table bracket and support parts are not interchangeable between models.

To assemble the drill press, do these steps:

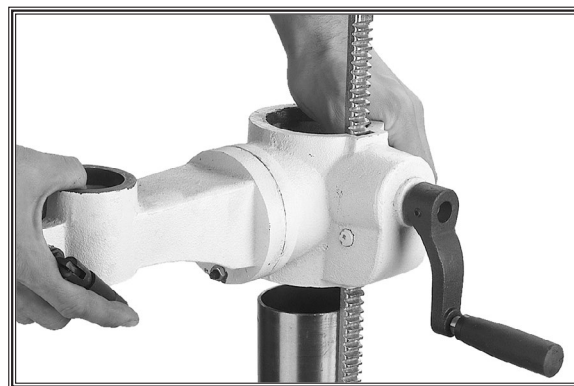
1. Place the column on the base and align the mounting holes.
2. **W1669 Only:** Secure the column to the base with (4) M8-1.25 x 20 hex bolts and 8mm flat washers, as shown in **Figure 11**.
3. **W16670 Only:** Secure the column to the base with (4) M10-1.5 x 35 hex bolts and 10mm flat washers, as shown in **Figure 11**.
4. Align the set screw in the crank handle with the flat pad on pinion shaft of the table bracket assembly (see **Figure 12**).
5. Tighten the 3mm set screw to lock the handle in place.
6. Examine the rack and note that the rack teeth at one end are cut closer to the end of the rack than the other.
7. Insert the rack through the table bracket so the end that has the rack teeth cut closer to the end is pointing down (see **Figure 13**).
8. Hold the rack against the worm gear and slide the table bracket and rack onto the column (see **Figure 13**).



**Figure 11.** Column secured to base.



**Figure 12.** Aligning set screw with flat pad on pinion.



**Figure 13.** Installing rack and table bracket.

SETUP

9. Seat the rack tapered point into the bevel that is cut into the column support tube (see **Figure 14**).

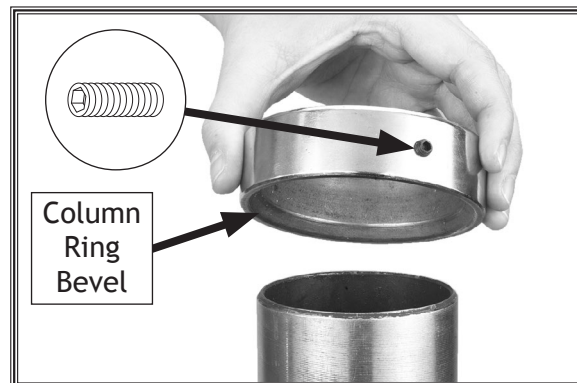


**Figure 14.** Bevel and rack seated correctly.

10. Loosen set screw shown in **Figure 15**, then slide the column ring onto the column with the inside bevel in the down position until the rack tapered-point seats into the bevel.

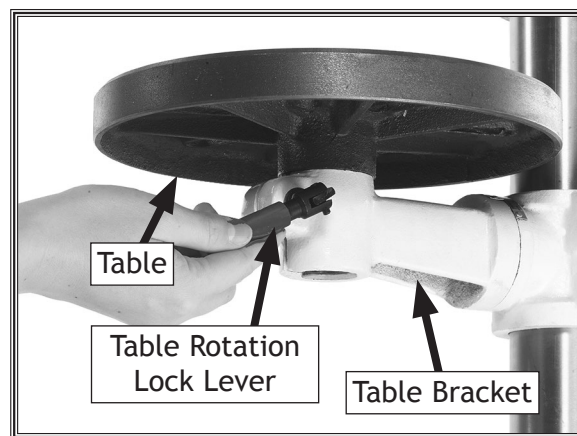
11. Position the column ring so the table bracket and rack can just rotate around the column without binding.

12. Carefully snug the set screw to hold the column ring in place. **DO NOT** overtighten the set screw to avoid distorting the column or splitting the column ring.



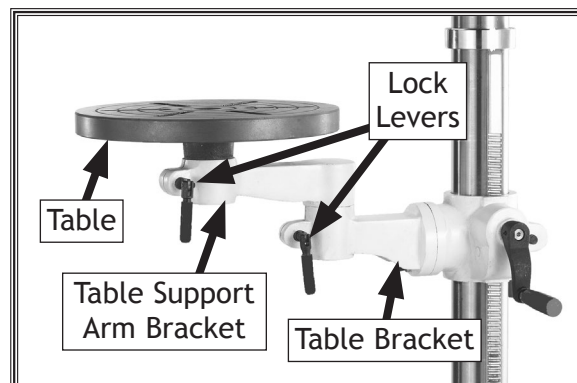
**Figure 15.** Column ring in correct position.

13. **W1669 Only:** Install table onto the table bracket and tighten table rotation lock lever to secure (see **Figure 16**).



**Figure 16.** Model W1669 table assembly.

14. **W1670 Only:** Install the table support arm bracket onto the table bracket, then install the table and tighten lock levers to secure (see **Figure 17**).



**Figure 17.** Model W1670 table assembly.

SETUP

- Place the locking gib into the recessed pocket on the inside of the column bracket casting (see Figure 18).

	<p><b>⚠ CAUTION</b> Get help to lift the headstock, or you may seriously hurt your back or drop the headstock.</p>
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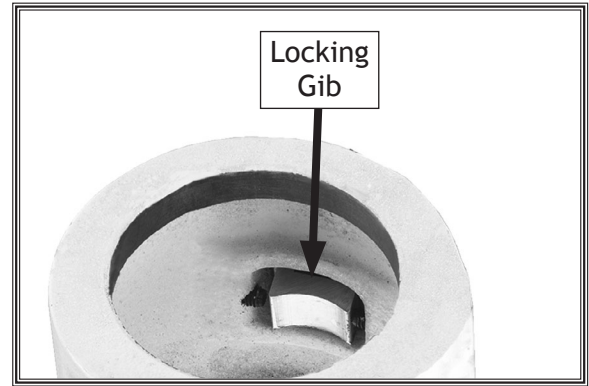


Figure 18. Locking gib location.

- With an assistant, lift and position the headstock pocket over the column and allow the headstock to slide down until the column fully seats into the headstock (approximately 2", see Figure 19).
- Rotate the headstock directly over the foot of the base as viewed from the front of the drill press.



Figure 19. Installing the headstock onto the column.

- Thread the downfeed handles into the hub, as shown in Figure 20.
- Attach the belts cover knob to the belts cover with (1) #8 x 3/4" tap screw, (see Figure 20).

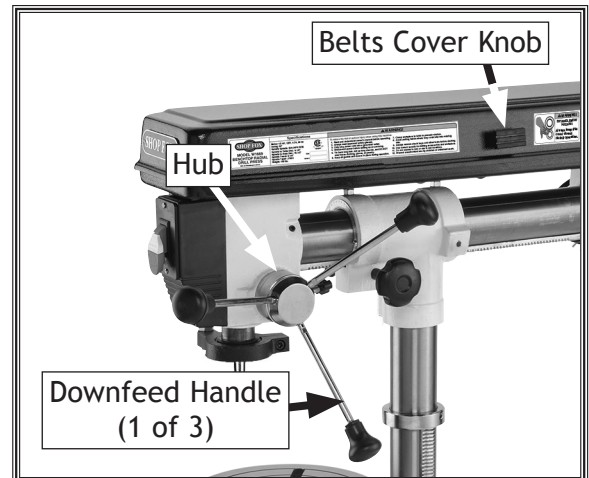


Figure 20. Downfeed handles thread into hub and belts cover installed.

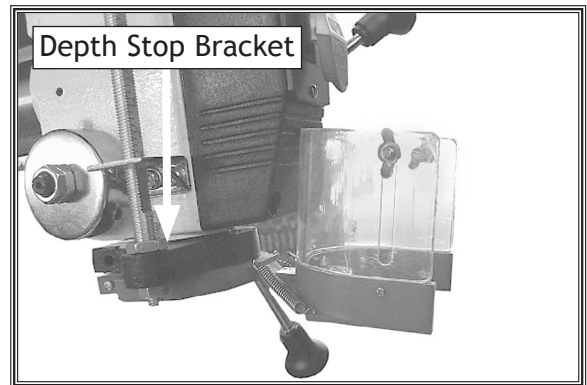
SETUP

20. Rotate the table out of the way, then use a plumb bob and ruler to center the headstock with the base (see **Figure 21**).
21. Screw in the two lock handles on the sides of the headstock to secure.



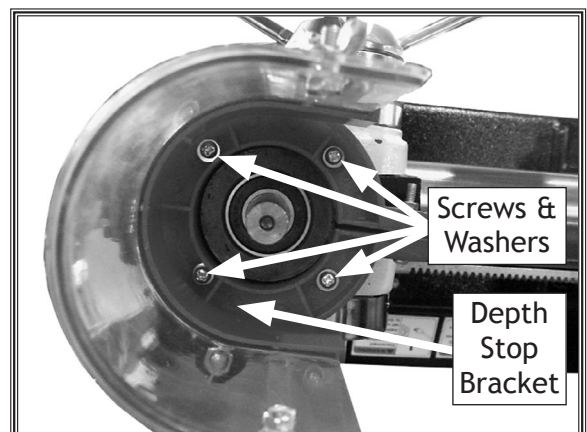
**Figure 21.** Aligning the headstock.

22. Slide chuck guard onto bottom of depth stop bracket, as shown in **Figure 22**.



**Figure 22.** Chuck guard installed on depth stop bracket.

23. Secure chuck guard to bracket with (4) M4-.7 x 10 Phillips head screws, 4mm lock washers, and 4mm flat washers, as shown in **Figure 23**.



**Figure 23.** Chuck guard secured to depth stop bracket.

SETUP

# Joining Drill Chuck & Arbor

The drill chuck is attached to the drill spindle by means of a machined taper between the chuck and spindle nose. An almost permanent assembly is created when properly joined.

**IMPORTANT: DO NOT** install the drill chuck until **AFTER** the test run.

To assemble the drill chuck and mount it to the spindle, do these steps:

1. Use mineral spirits to thoroughly clean the drill chuck, arbor, and spindle sockets and dry all surfaces before assembly.
2. Use the chuck key provided to adjust the jaws of the chuck until they are well inside the drill chuck body.
3. Slide the chuck onto the spindle end and tap the drill chuck with a rubber or wooden mallet to seat it as shown in **Figure 24**.

**⚠ CAUTION**

DO NOT use a steel hammer on the drill chuck to seat it onto the spindle. Damage will occur to the chuck and/or spindle which may make them unusable or unsafe.



**Figure 24.** Example of joining drill chuck to arbor.

SETUP

## 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 the machine, do these steps:

1. Clear all setup tools away from machine.
2. Connect machine to power supply.
3. Turn machine **ON**, verify motor operation, then turn machine **OFF**.

The motor should run smoothly and without unusual noises.

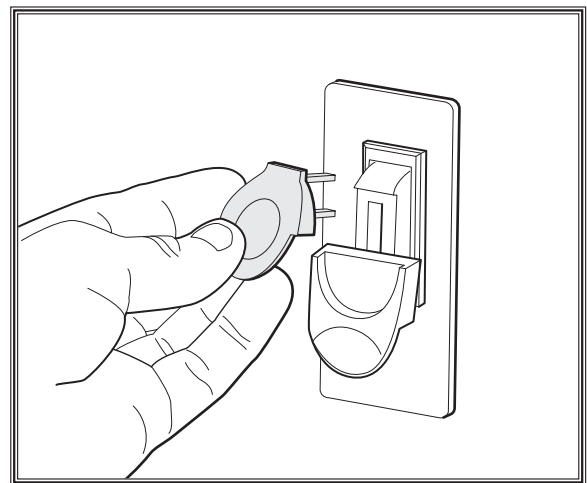
4. Remove switch disabling key (see example).
5. Try to start machine with paddle switch. The machine should not start.
  - If machine *does not* start, the switch disabling feature is working as designed.
  - If machine *does* start, immediately stop the machine. The switch disabling feature is not working correctly. This safety feature must work properly before proceeding with regular operations. Call Tech Support for help.

### **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 25.** Removing switch key from power switch.

# Spindle Break-In

The spindle break-in procedure distributes lubrication throughout the bearings to reduce the risk of early bearing failure if there are any "dry" spots or areas where lubrication has settled in the bearings. You must complete this procedure before placing operational loads on the spindle for the first time when the machine is new or if it has been sitting idle for longer than 6 months.

Always start the spindle break-in at the lowest speed to minimize wear if there are dry spots. Allow the spindle to run long enough to warm up and distribute the bearing grease, then incrementally increase spindle speeds and repeat this process at each speed until reaching the maximum spindle speed. Following the break-in procedure in this progressive manner helps minimize any potential wear that could occur before lubrication is fully distributed.

To perform spindle break-in, do these steps:

1. Make sure spindle area is free of obstructions.
2. Configure V-belt for a spindle speed of 550 RPM. Refer to **Changing Spindle Speed** on **Page 31**.
3. Connect machine to power and run spindle for 10 minutes.
4. Turn machine OFF, allow spindle to come to a complete stop, then DISCONNECT MACHINE FROM POWER!
5. Configure V-belt for spindle speed of 950 RPM (refer to **Changing Spindle Speed** on **Page 31**), then connect machine to power.
6. Run spindle for 5 minutes at 950 RPM.
7. Repeat **Steps 4-6** for each speed listed below in progressive order.
  - a. 1610 RPM
  - b. 2230 RPM
  - c. 3000 RPM
8. Turn machine **OFF**.

Congratulations! Spindle break-in is now complete.

## **NOTICE**

Complete spindle bearing break-in procedure to prevent rapid wear and tear of spindle components once drill press is placed into operation.

# 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 typical operation, operator does following:

1. Examines workpiece to make sure it is suitable for drilling.
2. Puts on required safety glasses and face shield.
3. Firmly secures workpiece to table using a vise or T-slot clamps.
4. Installs correct cutting tool for operation.
5. Adjusts table to correct height, then locks it in place.
6. Selects appropriate spindle speed according to V-belt configuration chart located inside belt cover.
7. Connects machine to power, and starts spindle rotation in proper direction for cutting tool installed.
8. Begins drilling.
9. When finished, stops spindle rotation and disconnects machine from power.

**! 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 from flying chips, always wear approved safety glasses and a face shield when operating this 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!

# Drill Press RPM Chart

Use **Figure 26** to select the optimum motor-to-spindle pulley ratio for drilling, cutting, and sanding operations. For example the above figure shows the belt in the C position on the spindle pulley and the #3 position on the motor pulley, which will give a speed of 1610 RPM. Refer to the **Drill, Cutter, and Hole Saw Suggested RPM Chart** on **Page 29** for suggested tool RPMs.

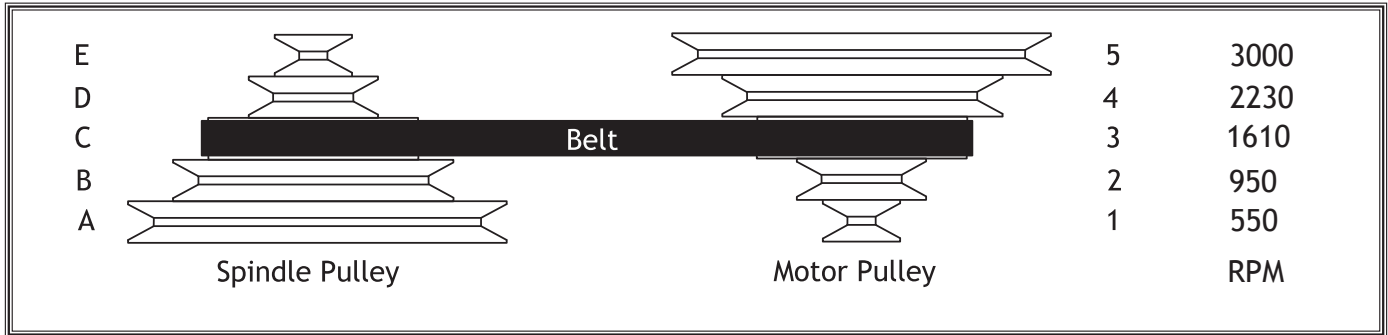


Figure 26. Drill Press RPM Chart.

## Lubrication Suggestions

- Wood/Cast Iron..... None
- Plastics ..... Soapy Water
- Brass ..... Water-Based Lubricant
- Aluminum ..... Paraffin-Based Lubricant
- Mild Steel ..... Oil-Based Lubricant

OPERATIONS

# Drill, Cutter, & Hole Saw Suggested RPM Chart

**ALWAYS** follow the drill, saw, or cutter manufacturer's recommended RPM specifications. **ALWAYS** wear safety glasses. **DO NOT** use your drill press to exceed the drilling, cutting, or sawing RPM or the feed rate of your bit or cutter. Otherwise serious personal injury can occur.

The RPMs listed below are merely suggestions to help you use your drill press in the event that you cannot find a basic starting RPM point. The final RPMs may differ based on the material drilled, the pressure you apply, and the cut-quality needed. Remember, even if the RPM and all other settings are correct, cooling the tool with a lubricant and drilling a pilot hole may also be required. Refer to **WARNINGS** and **TIPS**, trade journals, training manuals, and other educational resources for in-depth instructions and safety knowledge.

For current product line, refer to: <http://www.shopfoxtools.com>.

Sanding Sleeves or Grinding Bits	Soft Wood	Hard Wood	Plastic	Brass	Aluminum	Mild Steel
1", 1-1/2", 2"	2000	1725	1000	3100	3100	3100
<b>Twist Type Drill Bits: (Wood, Plastic, and Metal)</b>						
1/16" to 3/16"	3000	3000	2500	3000	3000	3000
1/4" to 3/8"	3000	1500	2000	1200	2500	1000
7/16" to 5/8"	1500	750	1500	750	1500	600
11/16" to 1"	750	500	-	400	1000	350
<b>Spade Drill Bits: (Wood)</b>						
1/4" to 1/2"	2000	1500	-	-	-	-
5/8" to 1"	1750	1500	-	-	-	-
1-1/8" to 1-1/2"	1500	1000	-	-	-	-
<b>Spade with Spur Drill Bits: (Wood and Plastic)</b>						
3/8" to 1"	2000	1800	500	-	-	-
<b>Brad Point Drill Bits: (Wood and Plastic)</b>						
1/8"	1800	1200	1500	-	-	-
1/4"	1800	1000	1500	-	-	-
3/8"	1800	750	1500	-	-	-
1/2"	1800	750	1000	-	-	-
5/8"	1800	500	750	-	-	-
3/4"	1400	250	750	-	-	-
7/8"	1200	250	500	-	-	-
1"	1000	250	250	-	-	-
<b>Forstner Drill Bits: (Wood and Plastic)</b>						
1/4" to 11/16"	2400	1600	250	-	-	-
3/4" to 1-1/16"	1800	1200	250	-	-	-
1-1/8" to 1-7/16"	1200	800	250	-	-	-
1-1/2" to 2-1/8"	600	450	-	-	-	-
2-1/4" to 3-1/8"	480	250	-	-	-	-
<b>Multi-Spur Drill Bits: (Wood)</b>						
2-1/8" to 4"	250	250	-	-	-	-
<b>Countersink Cutters: (Wood, Plastic, and Metal)</b>						
2-Flute Cutter	1400	1400	-	-	-	-
5-Flute Cutter	1000	750	750	250	250	250
<b>Plug Cutters: (Wood)</b>						
3/8" to 1/2"	1200	1000	-	-	-	-
5/8" to 1"	800	600	-	-	-	-
<b>Carbide Rosette Cutters: One-Piece Shear Type (Wood)</b>						
2-1/2" to 3"	1800	500	-	-	-	-
<b>Rosette Cutters: Replaceable Carbide-Knife Type (Wood)</b>						
2-1/4" to 3-1/8"	350	250	-	-	-	-

## WARNINGS and TIPS

- **WARNING:** The larger the drill bit or hole saw and the slower the RPM, the greater the chance the tool could aggressively grab the workpiece, damage the tool and workpiece and cause injury. High RPMs can melt plastic, burn wood, and dull the tool.
- **WARNING:** Use a 5-Flute cutter when cutting into plastics, brass, aluminum, and mild steel. A 2-Flute cutter can aggressively grab the workpiece and damage the tool.
- **TIP:** To increase the life of drill bits, cutters, hole saws, and improve cut quality, use a lubricant equivalent to these:
  - Plastics:** use a soapy-water lubricant
  - Brass:** use a water-based lubricant
  - Mild Steel:** use an oil-based lubricant
  - Aluminum:** use a paraffin-based lubricant
  - Cast Iron:** use a pipe-thread cutting lubricant
  - Wood:** use no lubricant.
- **TIP:** Raise the drill bit, cutter, or hole saw often to clear chips and cool the tool.
- **TIP:** When drilling plastics with spade bits, use a spade bit with spurs.
- **TIP:** Plug cutters and rosette cutters are for wood only; however, carbide-tipped bits and cutters cut at a higher RPM, and can cut materials other than wood depending on cutter type. Carbide makes better cuts and lasts longer than HSS steel.
- **TIP:** When using hole saws, apply firm and even pressure, so the saw teeth contact the surface all at the same time-not at an angle. You can also flip the workpiece and finish drilling from the other side.
- **TIP:** To prevent drill bit wandering, use a center punch to start the drill bit.

OPERATIONS



Saws: Bi-Metal Hole Saws (Most Materials)															
Hole Saw Diameter	Soft Wood	Hard Wood	Plastic	Mild Steel	Cast Iron	Brass	Aluminum	Hole Saw Diameter	Soft Wood	Hard Wood	Plastic	Mild Steel	Cast Iron	Brass	Aluminum
9/16"	1150	870	1320	580	400	790	900	2-7/8"	240	180	275	120	80	160	180
5/8"	1100	825	1250	550	365	730	825	3"	230	170	260	115	75	150	170
11/16"	1000	750	1140	500	330	665	750	3-1/16"	220	165	250	110	75	150	170
3/4"	920	690	1050	460	300	600	690	3-1/8"	220	165	250	110	70	140	165
13/16"	850	635	970	425	280	560	635	3-3/16"	210	155	240	105	70	140	165
7/8"	780	585	890	390	260	520	585	3-1/4"	210	155	240	105	70	140	155
15/16"	740	555	845	370	245	495	555	3-5/16"	200	150	225	100	70	130	155
1"	700	525	800	350	235	470	525	3-3/8"	200	150	225	100	65	130	150
1-1/16"	650	480	740	325	215	435	480	3-7/16"	200	150	225	100	65	130	150
1-1/8"	600	450	685	300	200	400	450	3-1/2"	190	140	215	95	65	130	145
1-3/16"	570	430	650	285	190	380	425	3-9/16"	190	140	215	95	65	120	145
1-1/4"	550	410	625	275	180	360	410	3-5/8"	190	140	215	95	60	120	140
1-5/16"	520	390	595	260	175	345	390	3-11/16"	180	135	205	90	60	120	140
1-3/8"	500	375	570	250	165	330	375	3-3/4"	180	135	205	90	60	120	135
1-7/16"	480	360	545	240	160	315	360	3-13/16"	180	135	205	90	60	120	135
1-1/2"	460	345	525	230	150	300	345	3-7/8"	180	135	205	90	60	120	135
1-9/16"	440	330	500	220	145	290	330	4"	170	130	195	85	55	110	130
1-5/8"	420	315	475	210	140	280	315	4-1/16"	170	130	195	85	55	110	120
1-11/16"	410	310	465	205	130	260	295	4-1/8"	160	120	180	80	55	110	120
1-3/4"	390	290	445	195	130	260	295	4-3/16"	160	120	180	80	55	110	120
1-13/16"	380	285	435	190	125	250	285	4-1/4"	160	120	180	80	55	100	120
1-7/8"	360	270	400	180	120	240	270	4-5/16"	160	120	180	80	55	100	120
2"	340	255	385	170	115	230	255	4-3/8"	160	120	180	80	50	100	120
2-1/16"	330	245	375	165	110	220	245	4-7/16"	150	110	170	75	50	100	105
2-1/8"	320	240	365	160	105	210	240	4-1/2"	150	110	170	75	50	100	105
2-3/16"	310	230	355	155	105	205	240	4-9/16"	150	110	170	75	50	95	100
2-1/4"	300	225	340	150	100	200	225	4-5/8"	150	110	170	75	50	95	100
2-5/16"	290	215	330	145	100	195	225	4-11/16"	150	110	170	75	50	95	100
2-3/8"	280	210	320	140	95	190	220	4-3/4"	150	110	170	75	50	95	95
2-7/16"	280	210	320	140	95	185	210	4-13/16"	130	100	150	65	45	90	95
2-1/2"	270	200	310	135	90	180	205	4-7/8"	130	100	150	65	45	90	90
2-9/16"	270	200	310	135	85	175	200	5"	130	100	150	65	45	90	90
2-5/8"	260	195	295	130	85	170	195	5-1/4"	120	90	135	60	40	85	85
2-11/16"	260	195	295	130	85	165	190	5-1/2"	120	90	135	60	40	85	85
2-3/4"	250	185	285	125	80	160	185	5-3/4"	110	80	125	55	35	75	75
2-13/16"	250	185	285	125	80	160	185	6"	110	80	125	55	35	75	75

OPERATIONS

# Changing Spindle Speed

The Model W1669 and W1670 Radial Drill Press has 5 speeds ranging from 550 to 3000 RPM. To find your needed drilling speed and pulley combination, refer to the speed chart located under the belt guard; or refer to the Drill Press RPM Chart on Page 28.

To change the drilling speed, do these steps:

1. DISCONNECT MACHINE FROM POWER!
2. Loosen the belt tension lock knobs on both sides of the headstock (see Figure 27), so the motor is free to move.

**⚠ WARNING**  
Unplug the drill press before changing speeds to avoid accidental startup. Failure to do this may result in serious personal injury.

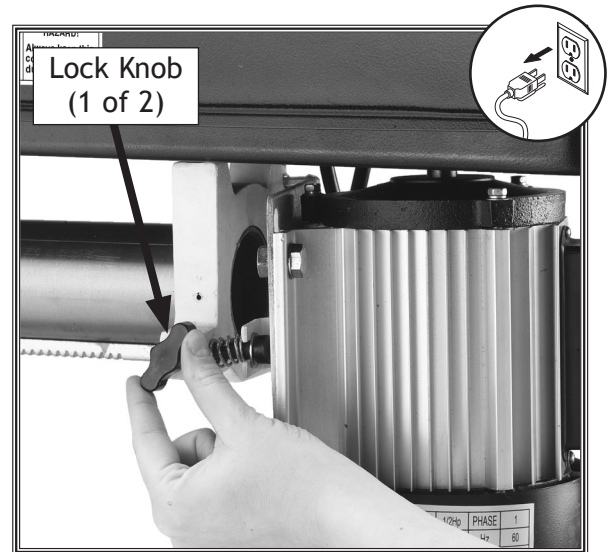


Figure 27. Example of loosening belt tension lock knob.

**⚠ WARNING**  
Never operate drill press with belt cover in the open position. Your hand may become trapped in a belt and serious personal injury will occur.

3. Locate the desired speed on the speed chart under the pulley cover, and move the V-belt to the desired V-grooves on the motor and spindle pulleys (see Figure 28).
4. Pivot the motor toward the back of the headstock and tighten the lock knobs once the desired V-belt tension is achieved.
5. Close the cover before connecting the machine to power.



Figure 28. Belt set to desired speed.

OPERATIONS

# Drilling

The Model W1669/W1670 is designed for drilling holes in wood, plastic, and metal. The basic operation of a drill press is lining up your drill bit with the intended hole location, turning the drill press ON, and using the down feed levers to move the spinning drill bit into the workpiece.

For safe operation and optimum results, it is very important to follow these guidelines when drilling:

**CLEARING CHIPS:** Raise the drill bit often to clear chips and cool the drill bit. This will ease the work of the drill press motor and extend the life of your drill bits.

**SECURING WORKPIECE TO TABLE:** Secure the workpiece to the table or in a vise that is secured to the table before drilling.

**PROTECTING TABLE:** Protect the table by placing the workpiece on scrap wood, or center the location of the hole to be drilled over the pocket in the table when through drilling. Also, make use of the depth stop so that the drill bit goes no deeper than necessary.

**USING CORRECT SPEEDS:** Use the correct speed for the diameter of the drill bit being used and the type of material being drilled. Refer to the **Drill, Cutter, and Hole Saw Suggested RPM Chart** on **Page 29** to help you choose the correct speed for your application.

**LARGE DIAMETER BITS:** Large diameter drill bits require slower spindle speeds.

**SMALL DIAMETER BITS:** Smaller diameter drill bits require faster spindle speeds.

**HARD MATERIAL:** Harder materials (steel vs. wood) require slower drilling speeds.

**SOFT MATERIAL:** Soft materials require a faster drilling speed. (**NOTE:** Plastics can melt at too high of a spindle speed!)

## CAUTION

Larger bits turning at slower speeds tend to grab the workpiece aggressively. This can result in the operator's hand being pulled into the bit or the workpiece being thrown with great force. Always clamp the workpiece to the table to prevent injuries.

**LUBRICANT:** Use lubricant on all materials except wood and cast iron. Refer to **Lubrication Suggestions** on **Page 28** to find the correct lubrication for your application.

**DRILLING ACCURACY:** To prevent drill bit wandering and ensure accurate placement of holes, mark the hole location with a center punch before drilling. Also consider using a center-point drill to start the hole.

**PLUG/ROSETTE CUTTERS:** Plug cutters and rosette cutters are for wood only.

**5-FLUTE/2-FLUTE CUTTERS:** Use a 5-flute cutter when cutting into plastics, brass, aluminum, and mild steel. A 2-flute cutter can aggressively grab the workpiece and damage the tool if used with materials other than wood.

**SPADE BITS AND PLASTIC:** When drilling plastic with a spade bit, use a spade bit with spurs.

**HOLE SAWS:** When using hole saws, apply firm and even pressure, so the saw teeth contact the surface all at the same time—not at an angle. You can also flip the workpiece and finish drilling from the other side.

# Installing/Removing Drill Bits

Any drill bit you install in the chuck must be tight enough that it will not come loose during operation.

## Installing a Drill Bit

1. DISCONNECT MACHINE FROM POWER!
2. Open the drill chuck wide enough to accept the shank of the drill bit (see **Figure 29**).
3. Insert the drill bit as far as possible into the chuck WITHOUT allowing the chuck jaws to touch the fluted portion of the bit, and hand-tighten the chuck.

*Note: Make sure small bits are not trapped between the edges of two jaws; if they are, reinstall the drill bit or it will not be secure enough to use for drilling.*

4. Final-tighten the drill bit with the chuck key.

## Removing a Drill Bit

1. DISCONNECT MACHINE FROM POWER!
2. Use the chuck key to open the drill chuck, as shown in **Figure 30**, and catch the drill bit with a rag to protect your hands.

**⚠ WARNING**  
TURN OFF and UNPLUG the drill press, and wait until all working parts are stopped before you attempt to change the drill bits. Otherwise, severe personal injury may occur!



Figure 29. Installing a drill bit.

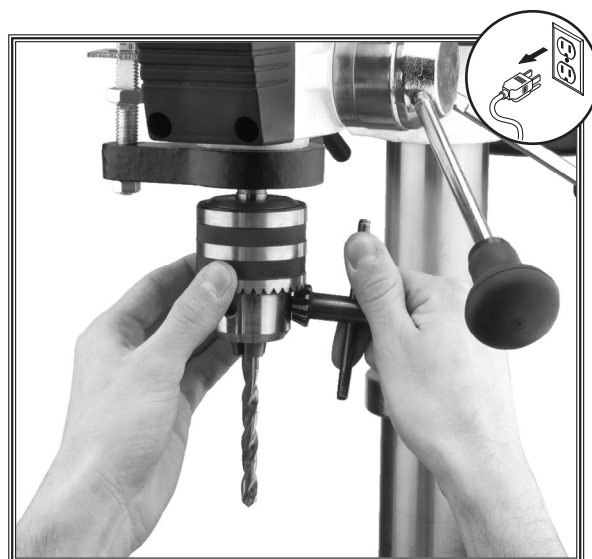


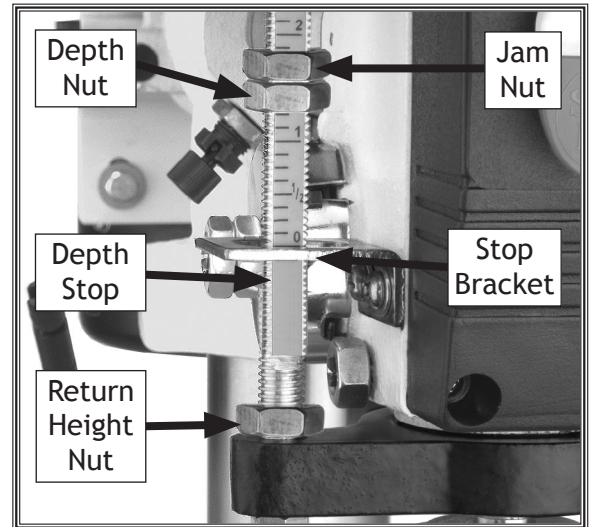
Figure 30. Using the chuck key.

# Adjusting Depth Stop

The Model W1669/W1670 has a depth stop that allows you to drill repeated non-through holes to the same depth every time.

The depth stop consists of a stud attached to the quill with two hex nuts that can be lowered or raised on the stud so the lower nut (depth nut) hits a stop bracket when the drill bit is lowered. The upper hex nut (jam nut) is then used to tighten against the depth nut to secure it in place so it doesn't move with repeated operations. **Figure 31** shows the various components of the depth stop.

The return height nut, on the base of the stud, limits the downfeed handle return distance, which is set by how high the nut is placed on the stud. This feature is useful for repetitive drilling motions.



**Figure 31.** Depth stop components.

## Setting Depth Stop

1. Lower the drill bit to the required height.
2. Thread the depth nut down against the stop bracket.
3. Lower the jam nut against the depth nut.
4. Using wrenches, hold the depth nut in place and tighten the jam nut against the depth nut.

## Setting Spindle Return Distance

1. Lower the drill bit.
2. Thread the return height nut up the stud to the desired height.

**Note:** *The scale on the depth stop can be recalibrated if it gets moved or has changed since the factory setting. Refer to **Calibrating Depth Stop** on **Page 40** for instructions on how this is done.*

# Adjusting Table

The Model W1669 table can be adjusted for height, angle, and location (see **Figure 32**). The W1670 table can also be adjusted for distance from column and rotation (see **Figure 33**).

## Adjusting Table Height

1. Loosen the table bracket lock lever. Turn the table crank to raise or lower the table.
2. Remember to lock the support bracket in place before operating the machine.

## Adjusting Table Tilt

1. (W1670 Only): Turn the locating pin nut (see **Figure 33**) in a clockwise direction. This will draw the locating pin out of the casting. Once loose, pull out the pin and nut, and set them in a safe place until needed.
2. Loosen the lock bolt (**Figure 34**) using the included wrench and tilt the table (W1669) or the column support arm (W1670) to the desired angle.
3. Lock in place by tightening the lock bolt.
4. (W1670 Only): To return the table to its original position, align the holes in the column support arm and table bracket, insert the locating pin and nut, and gently tap the pin with a hammer.
5. Tighten the locating pin nut.

## Adjusting Table Rotation

1. Loosen the lock lever(s) located under the table (see **Figure 33**). Rotate the table the desired amount.
2. Always lock the table support arm in place before operating the machine.

## Adjusting Distance from Column (W1670 Only)

1. Loosen the lock lever located at the pivoting elbow of the table support (see **Figure 33**).
2. Swing the table support to the desired distance from the column. The support bracket may need to be rotated around the column to keep the table centered under the chuck. Secure all lock levers before operating the machine.

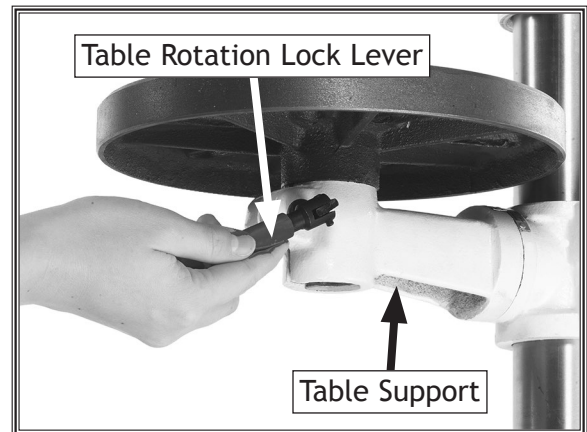


Figure 32. W1669 table components.

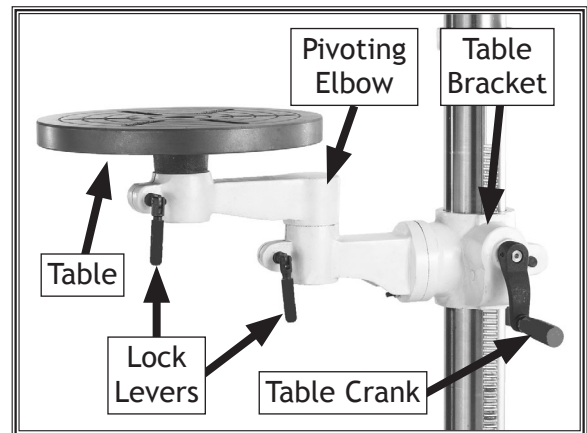


Figure 33. W1670 table components.

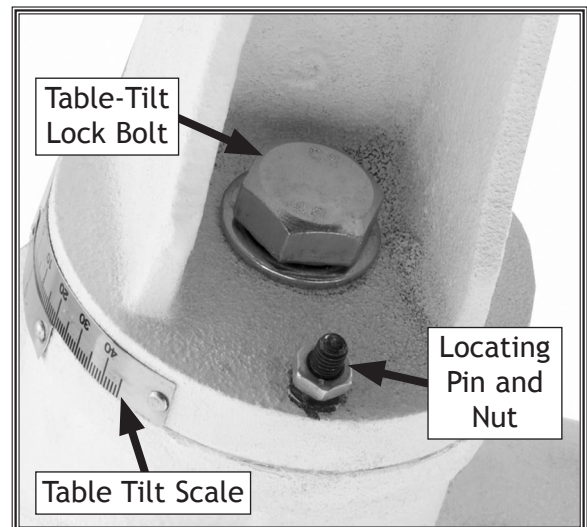


Figure 34. W1670 tilt mechanism and lock bolt (W1669 uses cap screw).

OPERATIONS

# Adjusting Headstock

To drill wide workpieces up to 34" in diameter, you can slide the headstock in and out to increase the distance between the drill chuck and the column up to 17". You can also tilt the headstock from 45° clockwise to 90° counterclockwise for drilling angled holes or for horizontal boring machine use. Using the slide and tilt features, you can drill a line of straight or angled holes without the need to reposition your workpiece after drilling each hole.

## Tilting Headstock

1. Loosen the lock lever on the right side of the headstock.
2. Pull out the lock pin located on the left side of the headstock and rotate the pin 90°, as shown in **Figure 35**.
3. Tilt the headstock to the desired angle specified on the scale and tighten the lock lever on the right side of the headstock.

## Returning Head to Vertical Position

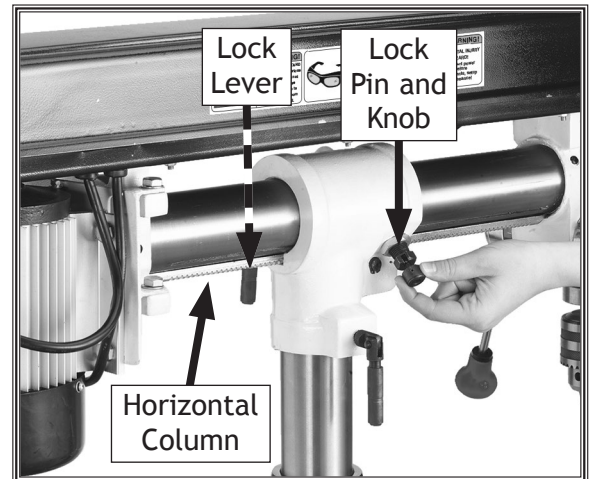
1. Loosen the lock lever located on the right side of the headstock.
2. Move the lock pin back into the guide slot.
3. Return the headstock to the vertical position. The headstock should lock into place.

**Note:** The lock pin is only intended to be a rough indexing tool.

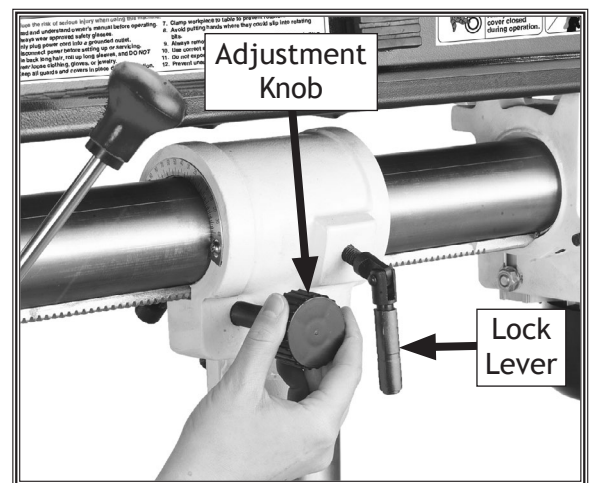
4. For finer adjustments, align the zero mark on the headstock scale with the line on the horizontal column.
5. Tighten the lock lever.

## Adjusting Headstock Back and Forth

1. Loosen the lock lever located on the left side of the headstock (see **Figure 36**).
2. Turn the adjustment knob, as shown in **Figure 36**, to move the headstock back and forth to the desired position. Tighten the lock lever before operating the machine.



**Figure 35.** Headstock lock pin and knob and lock lever.



**Figure 36.** Headstock slide controls.

# MAINTENANCE

## General

Periodic maintenance on your Model W1669 and W1670 Radial Drill Press will ensure its optimum performance. Make a habit of inspecting your drill press after each use.

Check for the following conditions and repair or replace when necessary.

1. Loose or missing base mounting bolts.
2. Worn switch.
3. Worn or damaged cords and plugs.
4. Damaged drive belt.
5. Any other condition that could hamper the safe operation of this machine.

## Cleaning & Protecting

Cleaning the Model W1669/W1670 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 table by wiping it clean after every use—this ensures moisture from wood dust does not remain on bare metal surfaces. Keep your table rust-free with regular applications of quality lubricants.

## Lubrication

Since all bearings are shielded and permanently lubricated, simply leave them alone until they need to be replaced. **DO NOT** lubricate them.

For other items on this machine, such as the quill, table and column, horizontal and vertical columns, an occasional application of light machine oil is all that is necessary to maintain smooth rust-free operation.

Before applying any lubricant, clean off the old lubricant, and any sawdust or metal chips.

**DO NOT** over lubricate, your goal is to achieve adequate lubrication. Too much lubrication will attract dirt and sawdust, and various parts of your machine could lose freedom of movement.

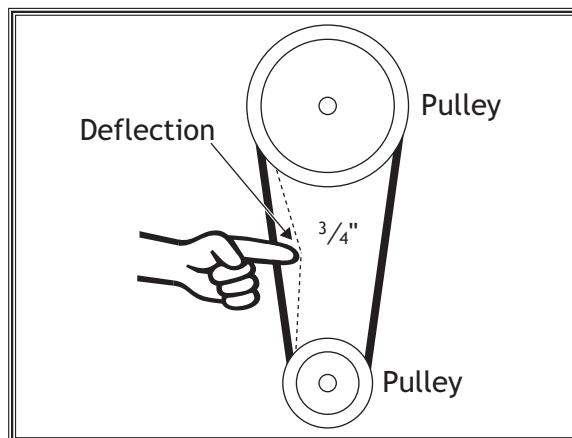
**⚠ WARNING**

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

## Inspecting/ Replacing V-Belts

Inspect V-belts regularly for tension and wear. Refer to **Figure 37** for proper belt tension. Belt deflection should be approximately  $\frac{3}{4}$ " under moderate pressure. Check pulleys to ensure that they are properly aligned when installing V-belts.

To replace the V-belts, refer to **Adjusting Belt Tension** on **Page 39** to loosen the belts. Remove them from the pulleys, then install new V-belts and adjust tension.



**Figure 37.** Inspecting V-belt tension.

**MAINTENANCE**

# 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 Grizzly Industrial Technical Support at (360) 647-0802 or send e-mail to: [techsupport@shopfoxtools.com](mailto:techsupport@shopfoxtools.com).

## Adjusting Belt Tension

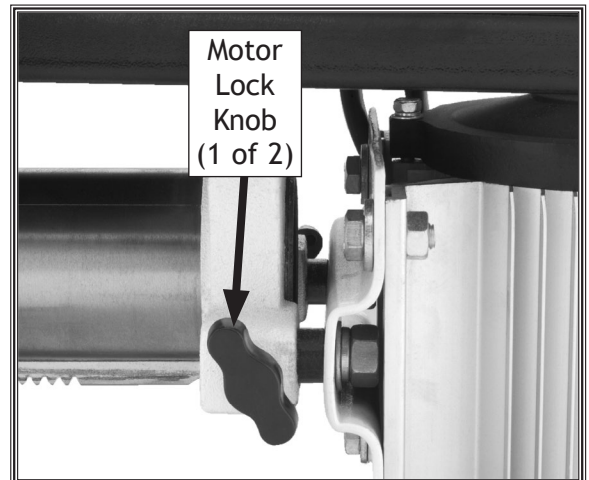
During the life of your drill press you will use different belt and pulley combinations. No matter which pulley combination you use, make sure that the belt is tensioned properly.

To adjust belt tension, do these steps:

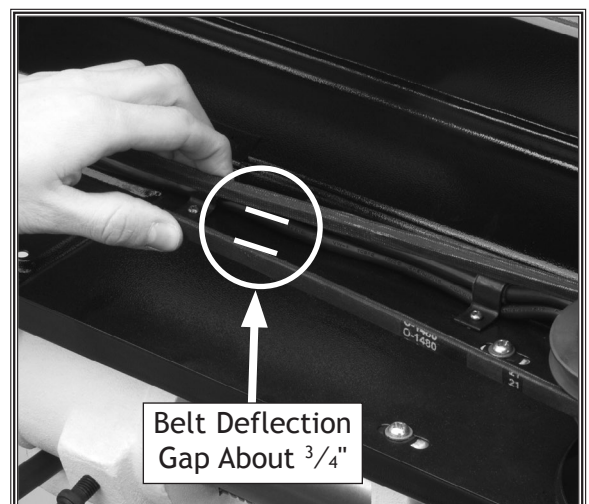
1. DISCONNECT THE MACHINE FROM POWER!
2. Open the belt safety cover (see **Figure 38**).
3. Loosen both motor lock knobs at the side of the headstock (see **Figure 39**).
4. Slide the motor away from the headstock until the belt is taut.
5. Hold the motor in position, then tighten the lock screw and make sure the belt deflection gap is correct when pinched together between the pulleys (see **Figure 40**).
  - If the gap between both inner sides of the belt is greater or less than  $\frac{3}{4}$ " , repeat **Steps 3-5** until the deflection gap is  $\frac{3}{4}$ " .
  - If the deflection gap is  $\frac{3}{4}$ " the belt is tensioned correctly.
6. Close the belt safety cover.



**Figure 38.** Belt safety cover opened.



**Figure 39.** Motor lock knob.



**Figure 40.** Measuring belt deflection.

## Calibrating Depth Stop

The drill press comes fitted with a depth stop to use when drilling multiple holes at the same depth. The scale on this depth stop can be calibrated if it ever becomes incorrect.

To calibrate the depth stop, do these steps:

1. Loosen the return height nut and calibration nut shown in Figure 41.
2. Use the calibration nut to zero the depth stop scale with the stop bracket.
3. Hold the depth stop at zero, and tighten the return height nut to hold the depth stop in position.
4. Test the depth stop by measuring how far the spindle actually moves with respect to where you set the depth stop.

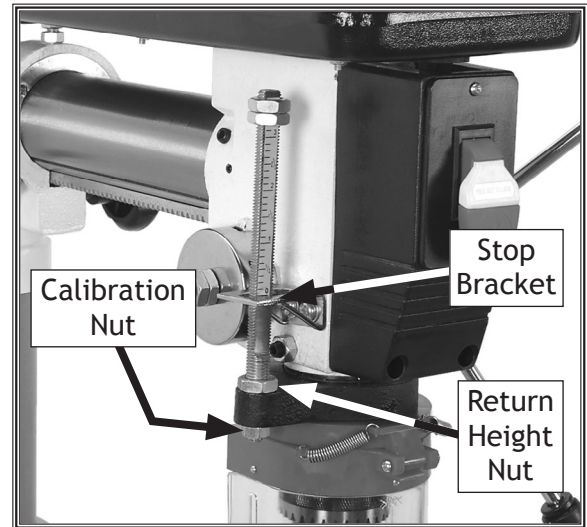


Figure 41. Depth-stop components.

## Adjusting Spindle Return Spring Tension

The tension of the spindle return spring makes the spindle automatically return to the top (starting) position when the downfeed handle is released. This spring is pre-adjusted at the factory, and typically will never need further adjustment during the life of the drill press. However, additional tension can be applied if the spindle stops automatically returning to the top position.

To adjust the spindle return spring tension, do these steps:

1. DISCONNECT THE MACHINE FROM POWER!
2. Wipe off any oil on the spring-lock cover so it will not slip when you hold the cover from spinning (see Figure 42).

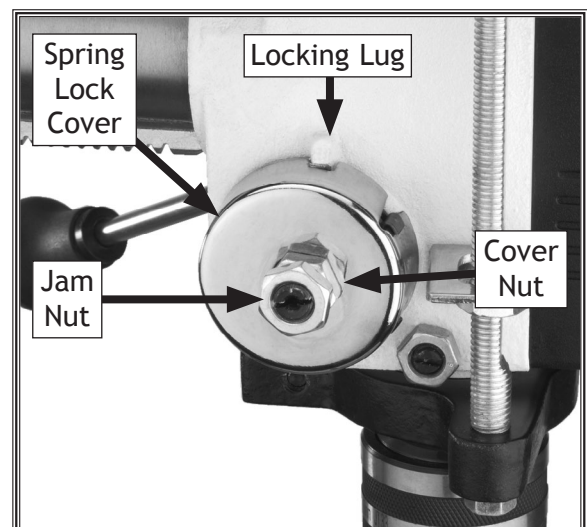
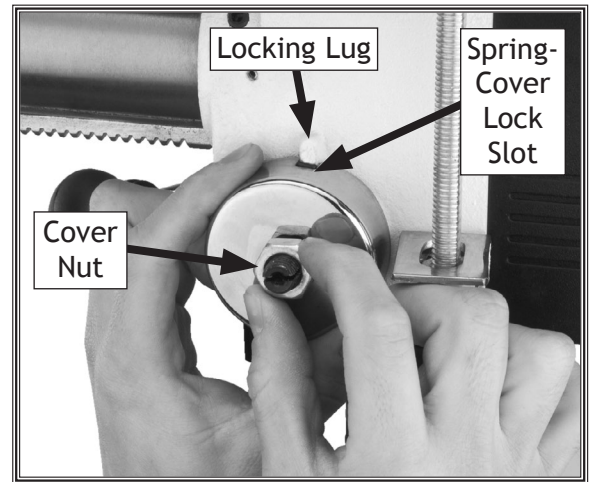


Figure 42. Spindle return spring components.

SERVICE

- While holding the spring lock cover against the side of the headstock so the cover stays splined with the locking lug, as shown in **Figure 43**, loosen the jam nut and loosen the cover nut approximately  $\frac{1}{4}$ " each.



**Figure 43.** Hold the spring cover tightly while loosening jam nut and cover nut.

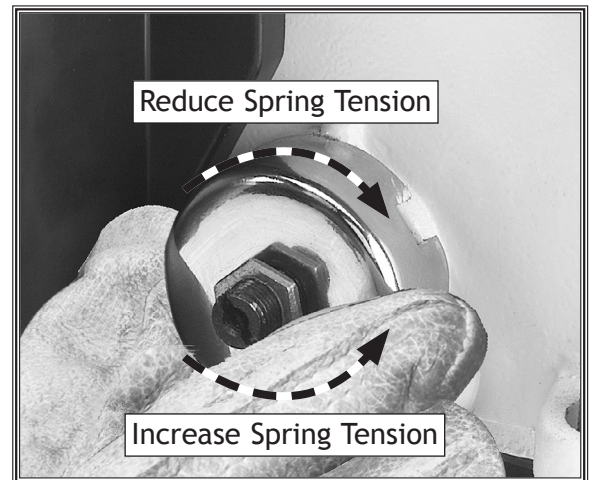
- Put on heavy leather gloves to protect your hands from possible lacerations if the spring uncoils during the next step (see **Figure 44**).
- Pull the cover outward just enough to disengage the spring-cover lock slot from the locking lug (see **Figure 43**).

**CAUTION:** *It is important to keep a good grip during this step. Letting go of the cover will cause the spring to rapidly uncoil.*

- Rotate the cover counterclockwise to increase spring tension, or let the cover slowly unwind in the clockwise direction to reduce spring tension (see **Figure 44**).
- Engage the next available spring-cover lock slot with the locking lug and hold the spring lock cover tightly against the side of the headstock.
- Snug the cover nut against the spring cover just until the nut stops, and then back off the nut approximately  $\frac{1}{3}$  turn, or just enough so there is no binding at complete spindle travel.
- Hold the cover nut and tighten the jam nut against the cover nut.

**⚠ CAUTION**

A high-tension coiled spring is underneath the cover. Put on heavy leather gloves to protect your hands from possible lacerations when removing the cover.



**Figure 44.** Turning cover to adjust spindle return spring tension.

## Adjusting Quill-Shaft Screw

While you may never have to adjust the quill-shaft screw, you should understand its function and know how to adjust it should you ever need to remove the quill for cleaning. This screw prevents the quill from rotating during drilling and sanding procedures, and if adjusted incorrectly, the quill may have lash or bind.

To adjust the quill-shaft screw, do these steps:

1. DISCONNECT THE MACHINE FROM POWER!
2. Clean the quill shaft and lubricate it with a thin coat of light oil, so the quill travels freely (see Figure 45).
3. Loosen the jam nut (see Figure 46).
4. Move the quill up and down through the entire range of travel, and turn the quill-shaft screw inward as far as it can go without binding the quill.
5. Tighten the jam nut, and check the quill movement for binding or play while moving the quill up and down through its entire range of travel.
6. Re-adjust the quill-shaft screw as required.



Figure 45. Clean and oil quill shaft.

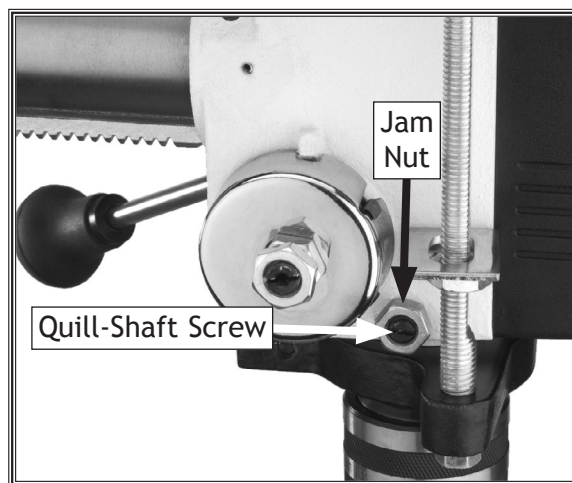


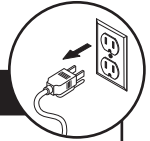
Figure 46. Quill-shaft screw and jam nut.

# 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 & Electrical



Symptom	Possible Cause	Possible Solution
Machine does not start or a breaker trips.	<ol style="list-style-type: none"> <li>1. Switch disabling key removed or at fault.</li> <li>2. Incorrect power supply voltage or circuit size.</li> <li>3. Power supply circuit breaker tripped or fuse blown.</li> <li>4. Motor wires connected incorrectly.</li> <li>5. Wiring open/has high resistance.</li> <li>6. Start capacitor at fault.</li> <li>7. Centrifugal switch at fault.</li> <li>8. Motor at fault.</li> </ol>	<ol style="list-style-type: none"> <li>1. Insert disabling key or replace.</li> <li>2. Ensure correct power supply voltage and circuit size.</li> <li>3. Ensure circuit is sized correctly and free of shorts. Reset circuit breaker or replace fuse.</li> <li>4. Correct motor wiring connections (<b>Page 40</b>).</li> <li>5. Check/fix broken, disconnected, or corroded wires.</li> <li>6. Test/replace.</li> <li>7. Adjust/replace centrifugal switch if available.</li> <li>8. Test/repair/replace.</li> </ol>
Machine stalls or is underpowered.	<ol style="list-style-type: none"> <li>1. Incorrect/dull cutter/bit for task.</li> <li>2. Feed rate/cutting speed too fast.</li> <li>3. Belt(s) slipping.</li> <li>4. Machine undersized for task.</li> <li>5. Motor overheated.</li> <li>6. Pulley slipping on shaft.</li> <li>7. Centrifugal switch at fault.</li> <li>8. Motor at fault.</li> </ol>	<ol style="list-style-type: none"> <li>1. Use correct cutter/bit.</li> <li>2. Decrease feed rate/cutting speed (<b>Page 31</b>).</li> <li>3. Ensure belts are oil free, tension/replace belt(s); ensure pulleys are aligned.</li> <li>4. Perform operation with different machine.</li> <li>5. Clean motor, let cool, and reduce workload.</li> <li>6. Tighten loose pulley; replace broken/missing parts.</li> <li>7. Adjust/replace centrifugal switch if available.</li> <li>8. Test/repair/replace.</li> </ol>
Machine has vibration or noisy operation.	<ol style="list-style-type: none"> <li>1. Motor or other drive component loose.</li> <li>2. V-belt(s) worn or loose.</li> <li>3. Motor fan rubbing on fan cover.</li> <li>4. Pulley loose.</li> <li>5. Motor mount loose/broken.</li> <li>6. Motor or spindle bearings at fault.</li> <li>7. Chuck unbalanced or cutter dull.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect/replace damaged bolts/nuts, and retighten with thread locking fluid, if necessary.</li> <li>2. Inspect/replace belts with a new matched set (<b>Page 38</b>).</li> <li>3. Fix/replace fan cover; replace loose/damaged fan.</li> <li>4. Re-align/replace shaft, pulley set screw, and key.</li> <li>5. Tighten/replace.</li> <li>6. Test by rotating shaft; rotational grinding/loose shaft requires bearing replacement.</li> <li>7. Replace chuck; replace/resharpen cutter.</li> </ol>

## Drill Press Operations

Symptom	Possible Cause	Possible Solution
Tool loose/lack of power in spindle.	<ol style="list-style-type: none"> <li>1. Tool incorrectly installed in spindle taper.</li> <li>2. Debris on tool or spindle taper mating surfaces.</li> <li>3. Taking too big of a cut.</li> <li>4. V-belts are loose.</li> <li>5. Wrong voltage.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove and re-install (<b>Page 1</b>).</li> <li>2. Clean tool and spindle taper.</li> <li>3. Lessen depth of cut and allow chips to clear (<b>Page 32</b>).</li> <li>4. Properly tension V-belts (<b>Page 38</b>).</li> <li>5. Correct voltage.</li> </ol>
Workpiece or tool vibrates or chatters during operation.	<ol style="list-style-type: none"> <li>1. Table locks not tight.</li> <li>2. Workpiece not secure.</li> <li>3. Spindle speed/feed rate is too fast.</li> <li>4. Spindle or quill extended too far down.</li> <li>5. Quill shaft screw not tight.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten table locks (<b>Page 35</b>).</li> <li>2. Properly clamp workpiece on table or in vise.</li> <li>3. Set spindle speed correctly (<b>Page 31</b>) or use slower feed rate.</li> <li>4. Fully retract spindle and lower headstock. This increases rigidity to decrease vibration.</li> <li>5. Tighten quill shaft screw (<b>Page 42</b>).</li> </ol>
Headstock is hard to raise.	<ol style="list-style-type: none"> <li>1. Headstock lock nuts at fault.</li> <li>2. Rack and pinion at fault or jammed with grime/debris.</li> </ol>	<ol style="list-style-type: none"> <li>1. Loosen/replace lock nuts.</li> <li>2. Fix/replace broken or loose parts; clean and lubricate rack and pinion.</li> </ol>
Bad surface finish.	<ol style="list-style-type: none"> <li>1. Spindle speed too fast for workpiece material.</li> <li>2. Dull or incorrect cutting tool.</li> <li>3. Wrong rotation direction of cutting tool.</li> <li>4. Workpiece not secure.</li> <li>5. Spindle extended too far down during operation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Set spindle speed correctly (<b>Page 31</b>).</li> <li>2. Sharpen cutting tool or select one that better suits the operation.</li> <li>3. Check for proper cutting tool rotation.</li> <li>4. Properly clamp workpiece on table or in vise.</li> <li>5. Fully retract spindle and lower headstock. This increases rigidity.</li> </ol>
Spindle overheats.	<ol style="list-style-type: none"> <li>1. Drill operated at high speeds for extended period.</li> </ol>	<ol style="list-style-type: none"> <li>1. Allow drill to cool.</li> </ol>
Spindle does not return to highest position.	<ol style="list-style-type: none"> <li>1. Poorly adjusted spindle return spring.</li> <li>2. Worn return spring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Increase spindle return spring tension (<b>Page 40</b>).</li> <li>2. Replace return spring.</li> </ol>
Depth stop producing inaccurate results.	<ol style="list-style-type: none"> <li>1. Depth stop not calibrated.</li> </ol>	<ol style="list-style-type: none"> <li>1. Calibrate depth stop (<b>Page 40</b>).</li> </ol>

# 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) 647-0802 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) 647-0802.

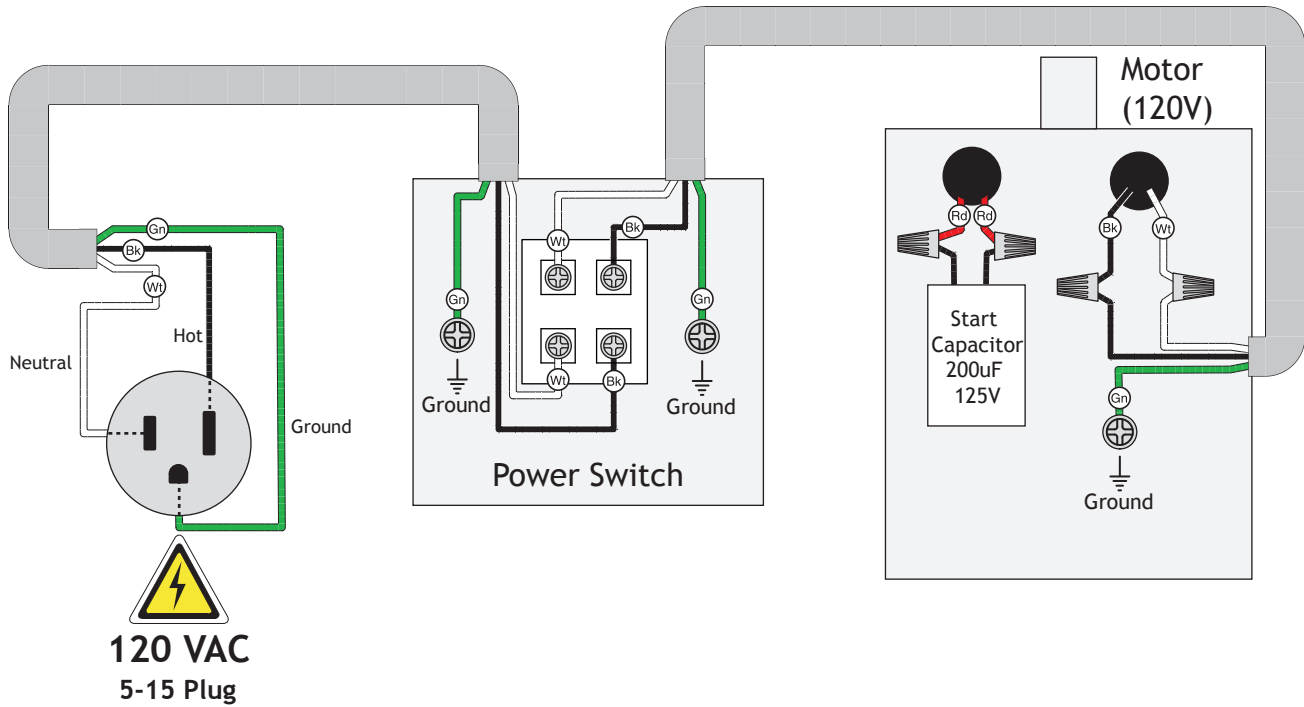
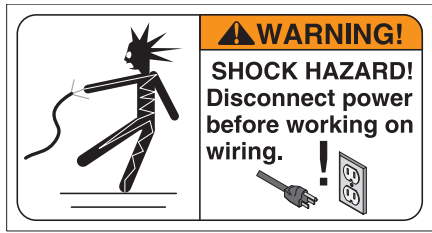
### NOTICE

Photos and diagrams included here are best viewed in color. You can view these pages in color at [www.shopfoxtools.com](http://www.shopfoxtools.com)

### WIRING DIAGRAM COLOR KEY

BLACK	BLUE	YELLOW	LIGHT BLUE
WHITE	BROWN	YELLOW GREEN	BLUE WHITE
GREEN	GRAY	PURPLE	TUR-QUOISE
RED	ORANGE	PINK	

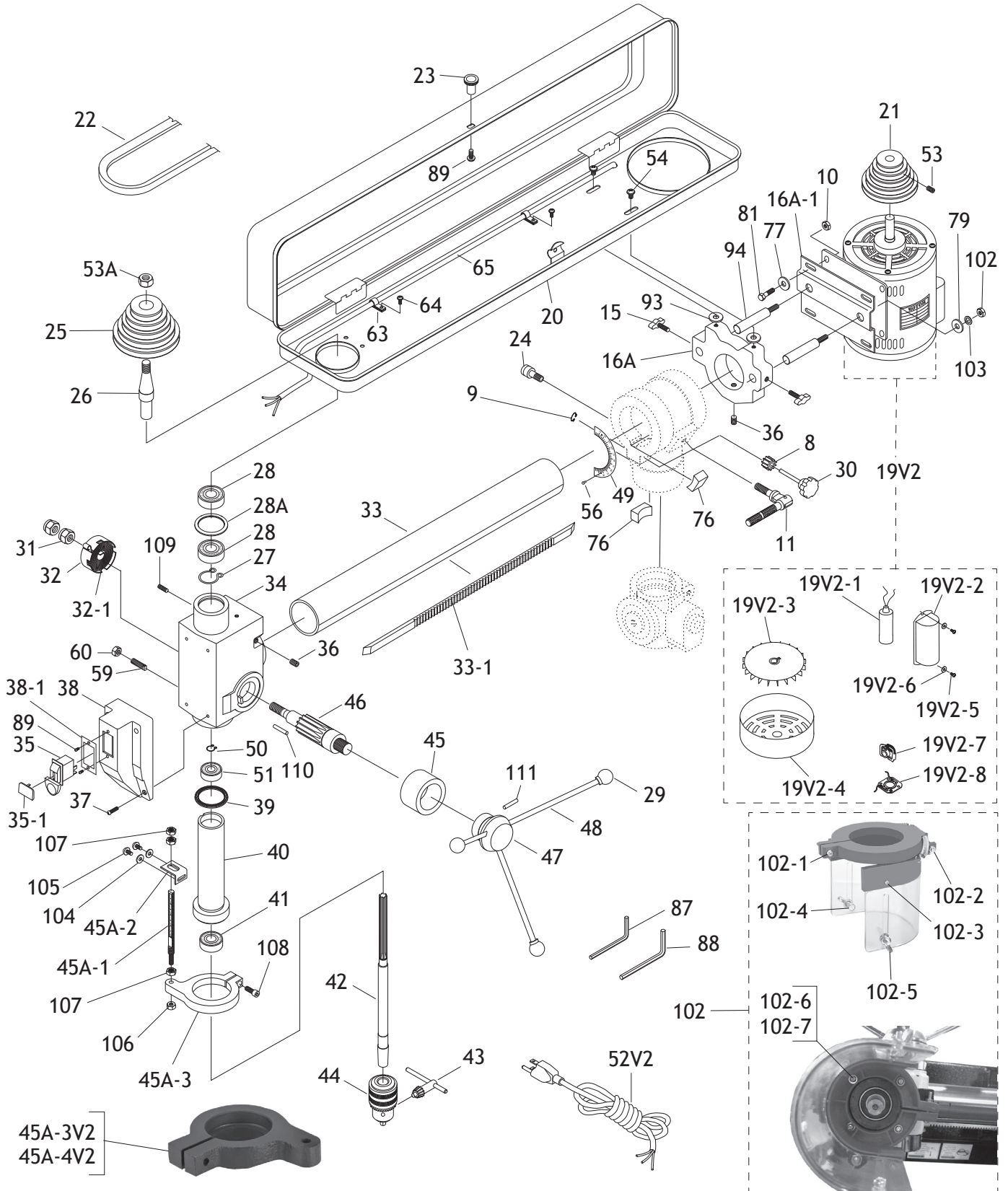
# Wiring Diagram



SERVICE

# PARTS

## Headstock



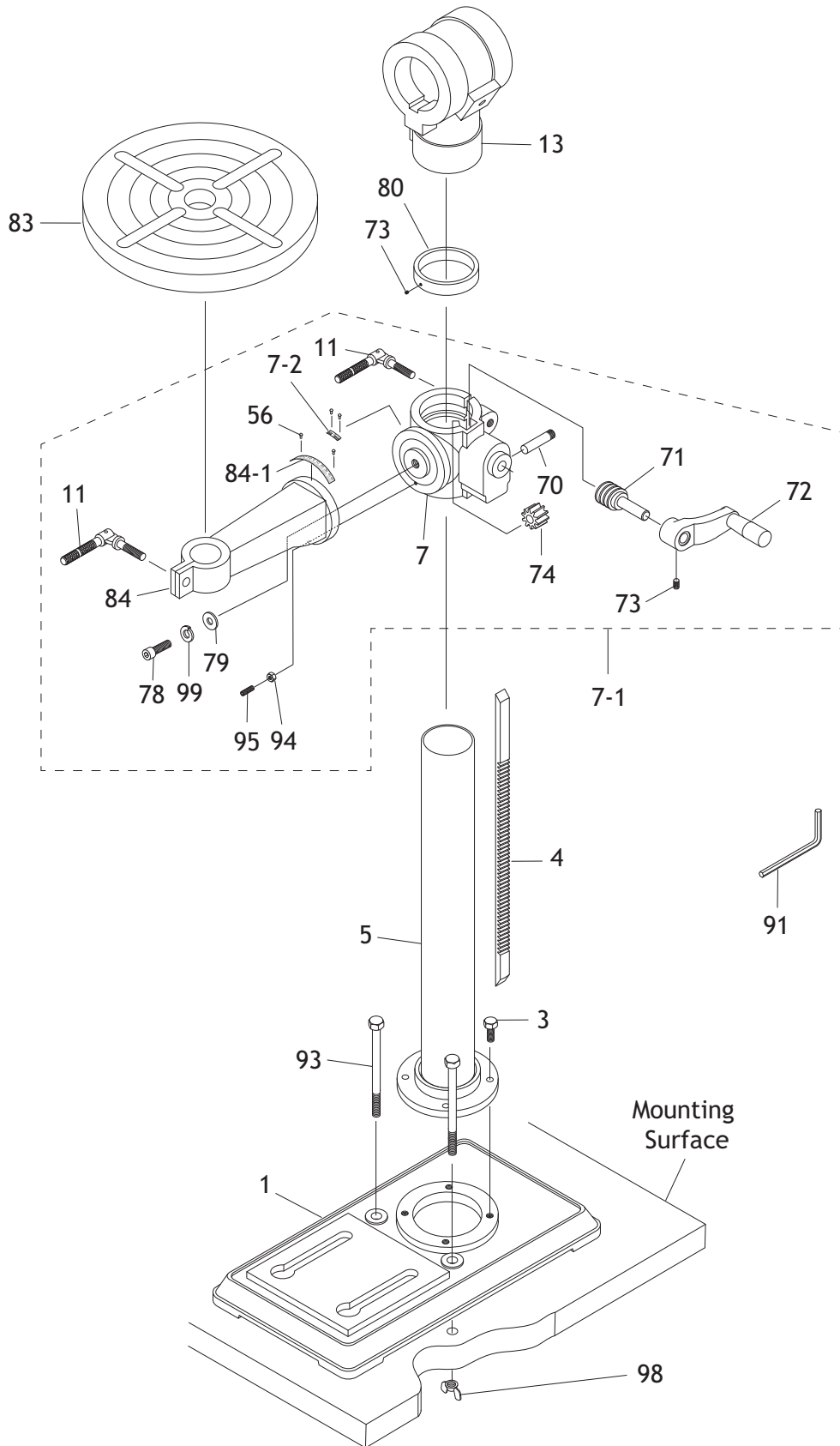
PARTS

# Headstock Parts List

REF	PART #	DESCRIPTION
8	X1669008	GEAR
9	X1669009	EXT RETAINING RING 9MM
10	X1669010	HEX NUT M8-1.25
11	X1669011	CLAMP BOLT M10-1.5 X 30
15	X1669015	KNOB BOLT M8-1.25 X 16
16A	X1669016A	MOUNT PLATE V2.10.04
16A-1	X1669016A-1	MOTOR MOUNT PLATE
19V2	X1669019V2	MOTOR 1/2HP 120V 1-PH V2.03.25
19V2-1	X1669019V2-1	S CAPACITOR 200M 125V
19V2-2	X1669019V2-2	CAPACITOR COVER
19V2-3	X1669019V2-3	MOTOR FAN
19V2-4	X1669019V2-4	FAN COVER
19V2-5	X1669019V2-5	PHLP HD SCR M4-.7 X 6
19V2-6	X1669019V2-6	FLAT WASHER 4MM
19V2-7	X1669019V2-7	CENTRIFUGAL SWITCH
19V2-8	X1669019V2-8	CONTACT PLATE
20	X1669020	PULLEY COVER
21	X1669021	MOTOR PULLEY
22	X1669022	V-BELT 0-1500
23	X1669023	UNTHREADED FEMALE KNOB
24	X1669024	LOCK PIN ASSEMBLY
25	X1669025	SPINDLE PULLEY
26	X1669026	DRIVE SLEEVE
27	X1669027	INT RETAINING RING M40
28	X1669028	BEARING 6203
28A	X1669028A	SPACER
29	X1669029	KNOB
30	X1669030	LEVER
31	X1669031	LOCK NUT 1/2"-20
32	X1669032	COVER WITH SPRING
32-1	X1669032	COVER WITH SPRING
33	X1669033	HORIZONTAL COLUMN
33-1	X1669033-1	HORIZONTAL COLUMN RACK
34	X1669034	HEADSTOCK
35	X1669035	SWITCH AND KEY
35-1	X1669035-1	SWITCH KEY
36	X1669036	SET SCREW 5/16"-18 X 3/8"
37	X1669037	PHLP SCREW 10-24 X 5/8"
38	X1669038	SWITCH BOX
38-1	X1669038-1	SWITCH MOUNTING PLATE
39	X1669039	RUBBER WASHER
40	X1669040	QUILL SHAFT
41	X1669041	BEARING 6202
42	X1669042	SPINDLE JT#33
43	X1669043	CHUCK KEY
44	X1669044	1/2" CHUCK 1-16MM JT#33
45	X1669045	COLLAR
45A-1	X1669045A-1	DEPTH STOP ROD N/S

REF	PART #	DESCRIPTION
45A-2	X1669045A-2	DEPTH STOP ROD BRACKET
45A-3	X1669045A-3	DEPTH STOP MOUNT
46	X1669046	FEED SHAFT
47	X1669047	FEED COLLAR
48	X1669048	HANDLE
49	X1669049	DEGREE SCALE
50	X1669050	EXT RETAINING RING 12M
51	X1669051	BEARING 6201
52	X1669052	POWER CORD
53	X1669053	SET SCREW
53A	X1669053A	PULLEY LOCK NUT V2.01.05
54	X1669054	PHLP SCREW 1/4"-20 X 3/8"
56	X1669056	RIVET
59	X1669059	SPECL SET SCR 5/16"-18 X 1"
60	X1669060	HEX NUT 5/16"-18
63	X1669063	WIRE STRAP
64	X1669064	PHLP SCREW 10-24 X 3/8"
65	X1669065	MOTOR SWITCH CORD
76	X1669076	LOCKING GIB
77	X1669077	FLAT WASHER 8MM
79	X1669079	FLAT WASHER 12MM
81	X1669081	HEX BOLT M8-1.25 X 20
85	X1669085	SAFETY GOGGLES LABEL V1
86	X1669086	LONG HAIR SAFETY LABEL
87	X1669087	HEX WRENCH 3MM
88	X1669088	HEX WRENCH 5MM
89	X1669089	SELF TAP SCREW #8 X 3/8"
93	X1669093	RUBBER WASHER 8MM
94	X1669094	GUIDE ROD 16 X 30MM
102	X1669102	HEX NUT M10-1.5
102-1	X1669102-1	PHLP HD SCR M4-.7 X30
102-2	X1669102-2	HEX NUT M4-.7
102-3	X1669102-3	TAP SCREW M2.2 X 4.5
102-4	X1669102-4	HEX BOLT M5-.8 X 12
102-5	X1669102-5	WING NUT M5-.8
102-6	X1669102-6	PHLP HD SCR M4-.7 X 10
102-7	X1669102-7	FLAT WASHER 4MM
103	X1669103	LOCK WASHER 10MM
104	X1669104	FLAT WASHER 6MM
105	X1669105	PHLP HD SCR M6-1 X 10
106	X1669106	HEX NUT M8-1.25
107	X1669107	HEX NUT M10-1.5
108	X1669108	CAP SCREW M8-1.25 X 20
109	X1669109	RUBBER BUMPER
110	X1669110	ROLL PIN 6 X 20
111	X1669111	ROLL PIN 5 X 40
112	X1669112	STRAIN RELIEF TYPE-1 M12-1.75

# W1669 Table & Column

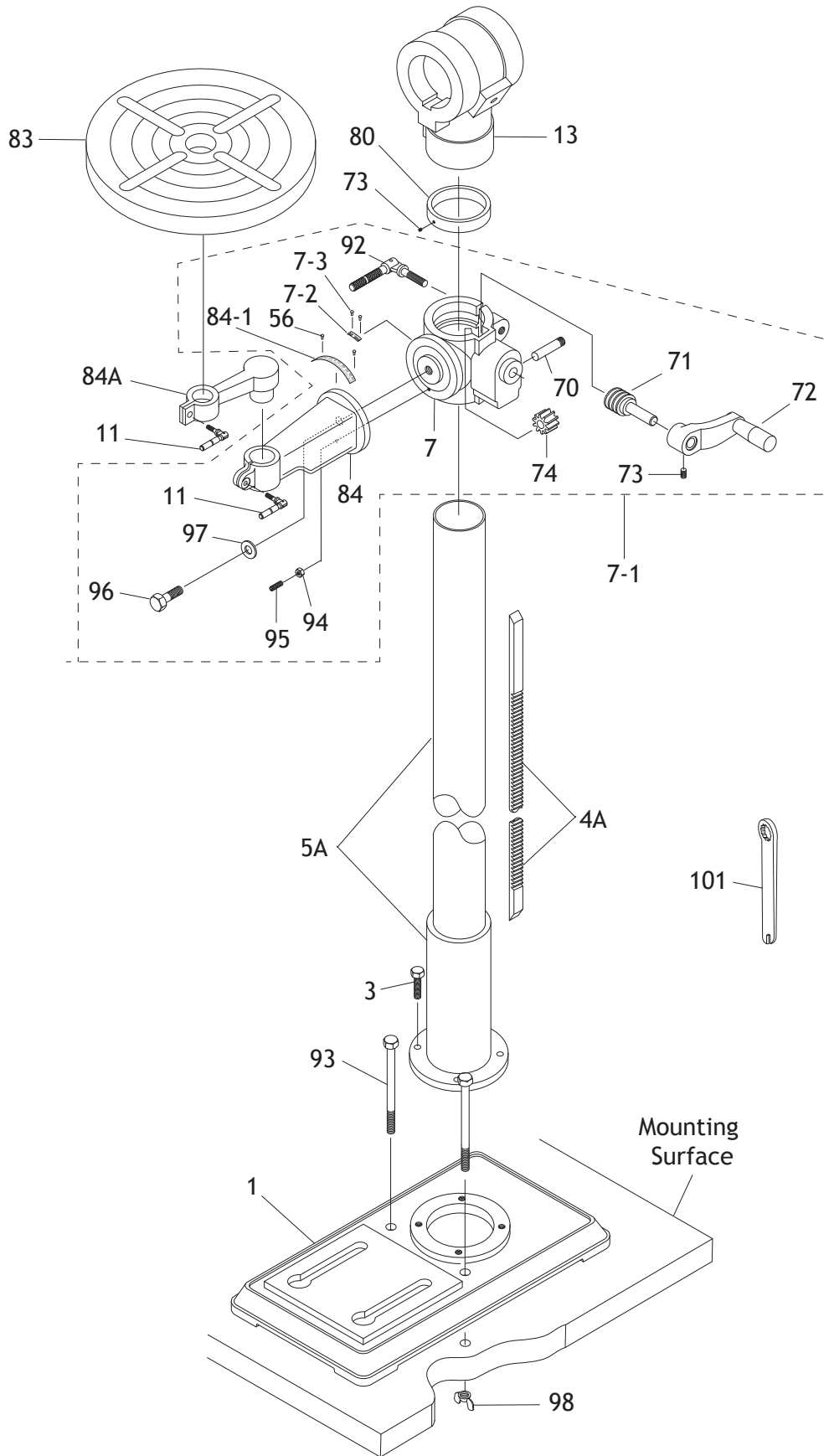


# W1669 Table & Column Parts List

REF	PART #	DESCRIPTION
1	X1669001	BASE
3	X1669003	HEX BOLT M8-1.25 X 20
4	X1669004	W1669 RACK
5	X1669005	W1669 COLUMN
7	X1669007	GEARED TBL BRKT N/S
7-1	X1669007-1	COMPLETE TBL BRKT ASSY
7-2	X1669007-2	TABLE TILT SCALE
11	X1669011	CLAMP BOLT M10-1.5 X 30
13	X1669013	HORR. COLUMN BRKT
54	X1669054	PHLP SCREW 1/4"-20 X 3/8"
56	X1669056	RIVET
70	X1669070	PIN
71	X1669071	WORM PINION

REF	PART #	DESCRIPTION
72	X1669072	LIFT HANDLE CRANK
73	X1669073	SET SCREW M6-1.0 X 10
74	X1669074	10T GEAR
78	X1669078	CAP SCREW M12-1.75 X 30
79	X1669079	FLAT WASHER 12MM
80	X1669080	COLUMN RING
83	X1669083	TABLE
84	X1669084	COLUMN SUPPORT ARM N/S
84-1	X1669084-1	TABLE TILT SCALE INDICATOR
91	X1669090	HEX WRENCH 10MM
93	X1669093	RUBBER WASHER 8MM
99	X1669099	LOCK WASHER 12MM
98	X1669098	WING NUT M8-1.25

# W1670 Table & Column



# W1670 Table & Column Parts List

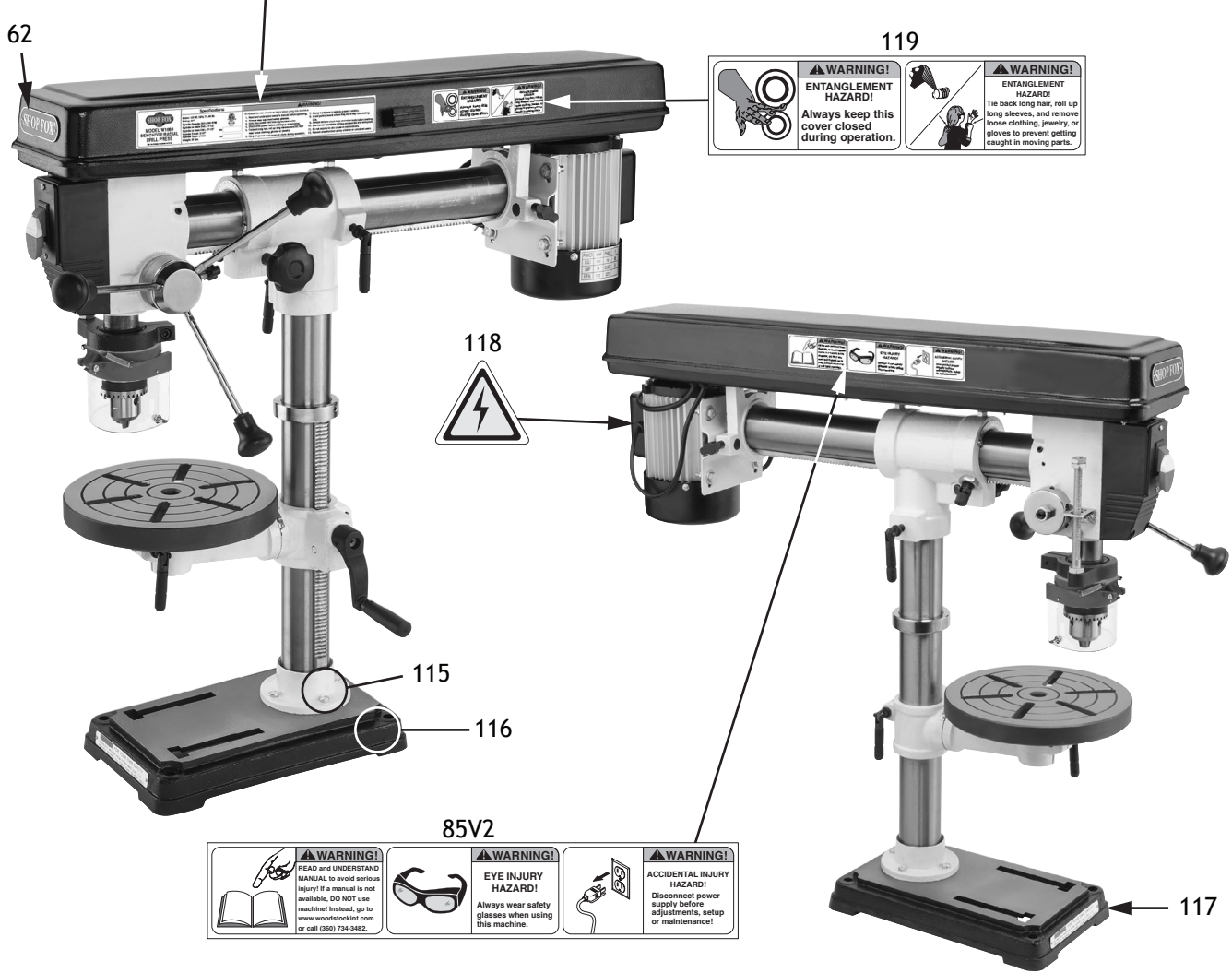
REF	PART #	DESCRIPTION
1	X1670001	BASE
3	X1670003	HEX BOLT M10-1.5 X 35
4A	X1670004A	W1670 RACK
5A	X1670005A	W1670 COLUMN
7	X1670007	GEARED TBL BRKT N/S
7-1	X1670007-1	TABLE BRACKET ASSY
7-2	X1670007-2	DEGREE SCALE
7-3	X1670007-3	RIVET
11	X1670011	CLAMP BOLT M10-1.5 X 30
13	X1670013	HORR. COLUMN BRKT
56	X1670056	RIVET
70	X1670070	AXLE
71	X1670071	WORM PINION
72	X1670072	LIFT HANDLE CRANK
73	X1670073	SET SCREW M6-1.0 X 10

REF	PART #	DESCRIPTION
74	X1670074	10T GEAR
80	X1670080	COLUMN RING
83	X1670083	TABLE
84	X1670084	COLUMN SUPPORT ARM N/S
84-1	X1670085	TABLE TILT SCALE INDICATOR
84A	X1670084A	TABLE SUPPORT ARM
92	X1670092	CLAMP BOLT M12-1.75 x 50
93	X1670093	HEX BOLT M8-1.25 X 125
94	X1670094	GUIDE ROD 16 X 30MM
95	X1670095	SPECIAL PIN
96	X1670096	HEX BOLT 5/8-13 X 1-1/2
97	X1670097	FLAT WASHER 5/8"
98	X1670098	WING NUT M8-1.25
101	X1670101	SPECIAL WRENCH

# Labels & Cosmetics

75V3

<p><b>MODEL W1669 BENCHTOP RADIAL DRILL PRESS</b> Mfd. for Grizzly Industrial in China</p>	<p><b>Specifications</b></p> <p>Motor: 1/2 HP, 120V, 7A, 60 Hz Swing: 34" Spindle Speeds: 550-3000 RPM Spindle to Table Dist.: 11-1/2" Spindle to Base Dist.: 17-1/2" Spindle Travel: 3-1/4" Spindle Taper: J1#3 Weight: 91 lbs.</p>	<p><b>WARNING!</b></p> <p>To reduce the risk of serious injury when using this machine:</p> <ol style="list-style-type: none"> <li>1. Read and understand owner's manual before operating.</li> <li>2. Always wear approved safety glasses.</li> <li>3. Only plug power cord into a grounded outlet.</li> <li>4. Disconnect power before setting up or servicing.</li> <li>5. Tie back long hair, roll up long sleeves, and DO NOT wear loose clothing, gloves, or jewelry.</li> <li>6. Keep all guards and covers in place during operation.</li> <li>7. Clamp workpiece to table to prevent rotation.</li> <li>8. Avoid putting hands where they could slip into rotating bits.</li> <li>9. Always remove chuck keys and other tools before starting.</li> <li>10. Use correct speeds for drilling accessories and workpiece.</li> <li>11. Do not expose to rain or use in wet locations.</li> <li>12. Prevent unauthorized use by children or untrained users.</li> </ol>
	<p>DATE: _____</p> <p>SN: _____</p>	



REF	PART #	DESCRIPTION
62	X1669062	SHOP FOX NAMEPLATE
75V3	X1669075V3	MACHINE ID LABEL ETL V3.03.25 (W1669)
75V3	X1670075V3	MACHINE ID LABEL ETL V3.03.25 (W1670)
85V2	X1669085V2	COMBO WARNING LABEL V2.06.22
115	X1669115	TOUCH-UP PAINT, SHOP FOX WHITE

REF	PART #	DESCRIPTION
116	X1669116	TOUCH-UP PAINT, SHOP FOX BLACK
117	X1669117	TIPPING HAZARD LABEL
118	X1669118	ELECTRICITY LABEL
119	X1669119	KEEP COVER CLOSED LABEL

## ⚠ 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) 647-0802 or [www.shopfoxtools.com](http://www.shopfoxtools.com) to order new labels.

# WARRANTY

Grizzly Industrial, 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.

Grizzly Industrial, 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 Grizzly Industrial, 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 Grizzly Industrial Inc.'s warranty, then the original owner must bear the cost of storing and returning the product.

This is Grizzly Industrial, 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 Grizzly Industrial, Inc.'s liability under this limited warranty exceed the purchase price paid for the product, and any legal actions brought against Grizzly Industrial, 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 committed to continuously improving the quality of our products, and reserve the right to change specifications at any time.

For further information about the warranty, go to <https://www.shopfoxtools.com/warranty>, or scan the QR code below to be automatically directed to our warranty page.



# High Quality Machines and Tools

Grizzly Industrial carries thousands of products designed to meet the needs of today's woodworkers and metalworkers. Ask your dealer about these fine products:



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ABRASIVE BELT & DISC CLEANER

**BROSM**<sup>®</sup>  
PRECISION STOP BLOCK

**PARROT VISE**<sup>®</sup>

**THE REBEL**<sup>®</sup>

*Aluma-Classic*<sup>®</sup>

**STEELEX**<sup>®</sup>  
FINE TOOLS

**PLANER PAL**<sup>®</sup>

**JOINTER PAL**<sup>®</sup>

**STEELEX**<sup>®</sup>  
*PLUS*

**Rotacator**<sup>®</sup>

**slickplane**<sup>®</sup>

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