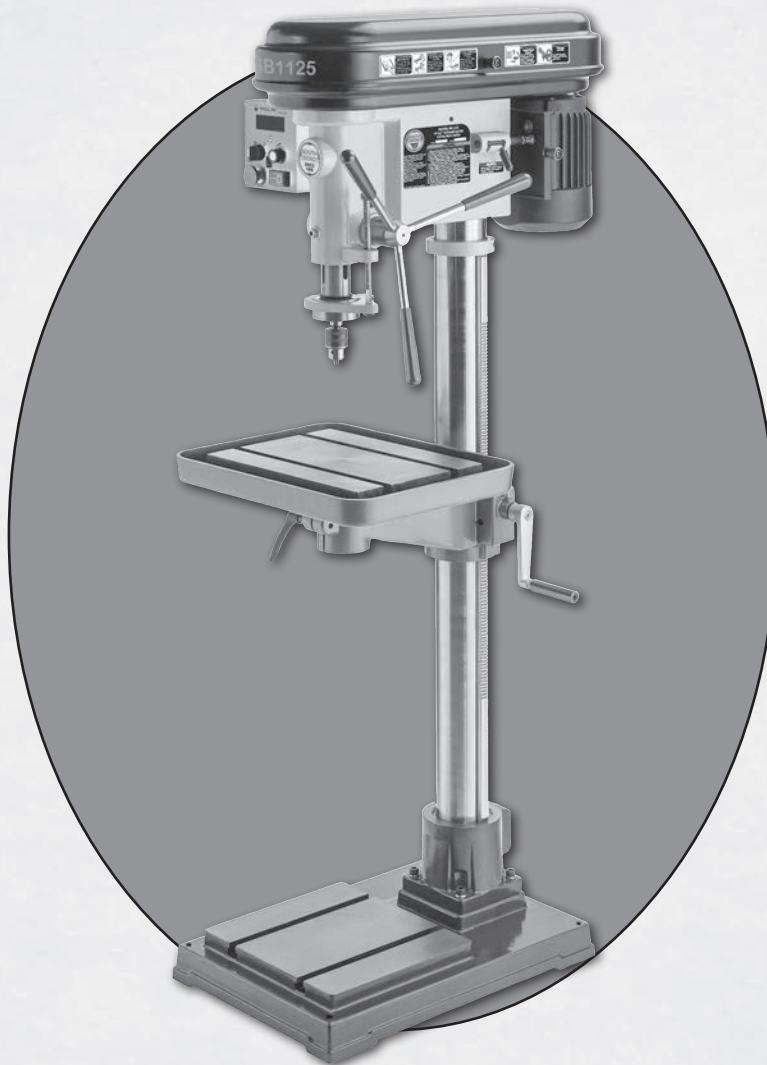


# 19½" FLOOR DRILL PRESS

MODEL SB1125



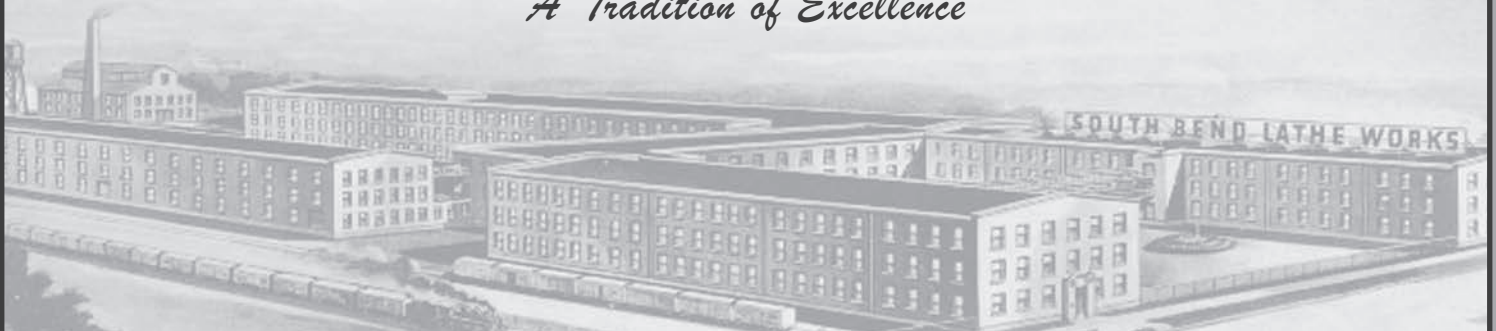
**OWNER'S MANUAL**

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# South Bend Tools®

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*A Tradition of Excellence*



# Scope of Manual

This manual helps the reader understand the machine, how to prepare it for operation, how to control it during operation, and how to keep it in good working condition. We assume the reader has a basic understanding of how to operate this type of machine, but that the reader is not familiar with the controls and adjustments of this specific model. As with all machinery of this nature, learning the nuances of operation is a process that happens through training and experience. If you are not an experienced operator of this type of machinery, read through this entire manual, then learn more from an experienced operator, schooling, or research before attempting operations. Following this advice will help you avoid serious personal injury and get the best results from your work.

# Manual Feedback

We've made every effort to be accurate when documenting this machine. However, errors sometimes happen or the machine design changes after the documentation process—so the manual may not exactly match your machine. If a difference between the manual and machine leaves you in doubt, contact our customer service for clarification.

We highly value customer feedback on our manuals. If you have a moment, please share your experience using this manual. What did you like about it? Is there anything you would change to make it better? Did it meet your expectations for clarity, professionalism, and ease-of-use?

**South Bend Tools**  
c/o Technical Documentation Manager  
P.O. Box 2027  
Bellingham, WA 98227  
Email: [manuals@southbendtools.com](mailto:manuals@southbendtools.com)

# Updates

For your convenience, any updates to this manual will be available to download free of charge through our website at:

[www.southbendtools.com](http://www.southbendtools.com)

# Customer Service

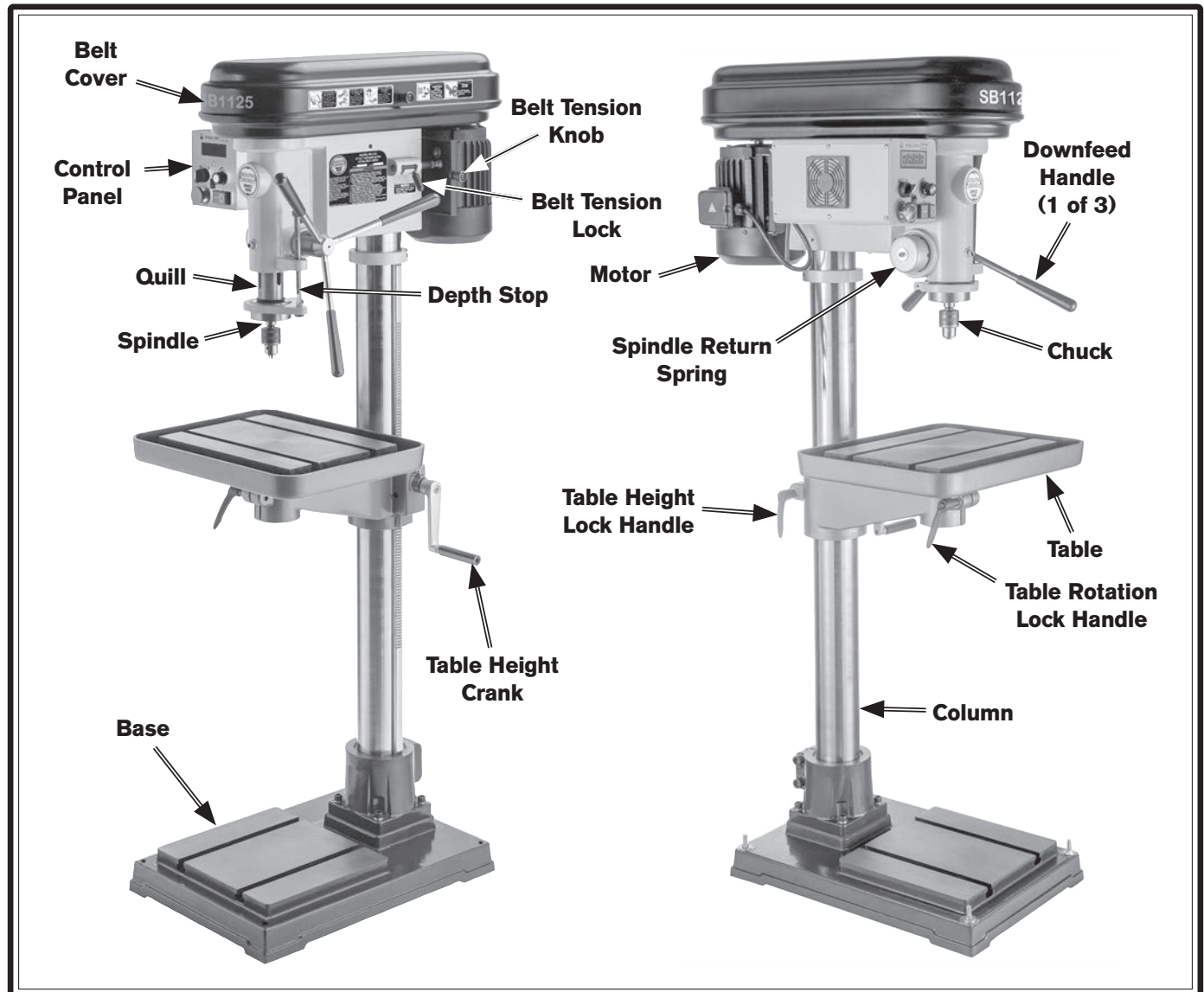
We stand behind our machines. If you have any service questions, parts requests or general questions about your purchase, feel free to contact us.

**South Bend Tools**  
P.O. Box 2027  
Bellingham, WA 98227  
Phone: (360) 734-1540  
Fax: (360) 676-1075 (International)  
Fax: (360) 734-1639 (USA Only)  
Email: [sales@southbendtools.com](mailto:sales@southbendtools.com)

# Table of Contents

<b>INTRODUCTION</b> .....	<b>2</b>	<b>ACCESSORIES</b> .....	<b>29</b>
Identification .....	2	<b>MAINTENANCE</b> .....	<b>32</b>
Description of Controls & Components .....	3	Maintenance Schedule.....	32
Product Specifications .....	5	Cleaning & Protecting .....	32
<b>SAFETY</b> .....	<b>7</b>	Lubrication .....	32
Understanding Risks of Machinery .....	7	Machine Storage .....	35
Basic Machine Safety .....	7	Checking V-Belts .....	35
Additional Drill Press Safety .....	9	<b>SERVICE</b> .....	<b>36</b>
<b>PREPARATION</b> .....	<b>10</b>	Adjusting Return Spring Tension .....	36
Preparation Overview.....	10	Replacing V-Belts.....	37
Required for Setup.....	10	Aligning Motor Pulley.....	39
Power Supply Requirements .....	11	Replacing Worklight Bulb .....	40
Unpacking .....	13	<b>TROUBLESHOOTING</b> .....	<b>41</b>
Inventory .....	13	<b>ELECTRICAL</b> .....	<b>44</b>
Cleaning & Protecting .....	14	Electrical Safety Instructions .....	44
Location .....	15	Wiring Diagram .....	45
Placing & Anchoring Machine .....	16	Electrical Component Pictures.....	46
Joining Drill Chuck & Arbor .....	18	<b>PARTS</b> .....	<b>47</b>
Assembly .....	18	Headstock.....	47
Test Run .....	19	Control Box.....	49
Spindle Break-In.....	21	Column .....	50
<b>OPERATION</b> .....	<b>22</b>	Machine Labels .....	52
Operation Overview.....	22	<b>WARRANTY</b> .....	<b>53</b>
Installing/Removing Arbor .....	23		
Installing/Removing Drill Bit.....	24		
Spindle Speed.....	25		
Calculating Spindle Speed for Drilling.....	27		
Adjusting Depth Stop .....	28		
Positioning Table .....	28		

# Identification



## **⚠️ 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.

## **⚠️ WARNING**





**Serious personal injury could occur if you connect the machine to power before completing the setup process. DO NOT connect power until instructed to do so later in this manual.**

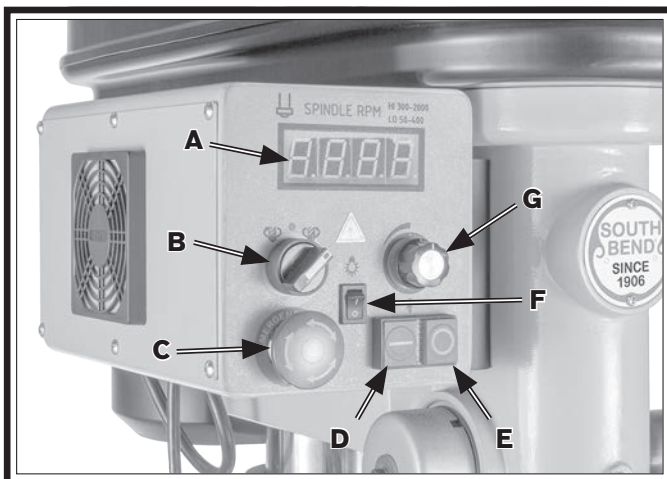
## **⚠️ WARNING**

**Untrained users have an increased risk of seriously injuring themselves with this machine. Do not operate this machine until you have understood this entire manual and received proper training.**

# Description of Controls & Components

Refer to **Figures 1–6** and the following descriptions to become familiar with the basic controls and components used to operate this machine.

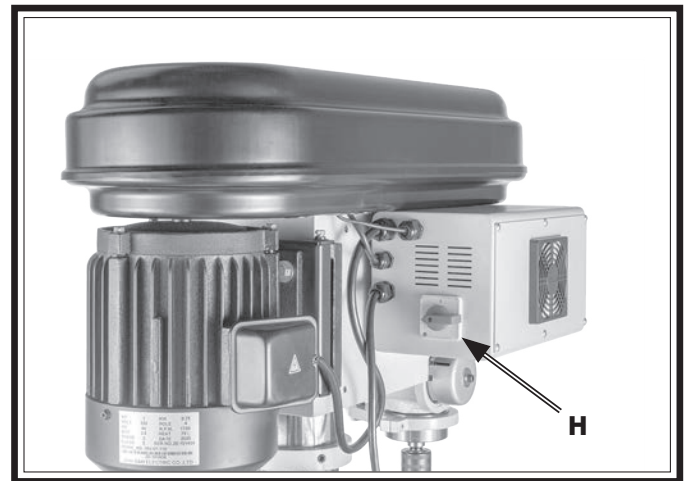
- A. RPM Digital Readout:** Displays current spindle speed.
- B. Spindle Rotation Switch:** Determines spindle rotation direction / and stops (O) spindle rotation.
- C. EMERGENCY STOP Button:** Stops spindle rotation and prevents it from starting.
- D. ON Button:** Starts spindle rotation if spindle rotation switch is in forward  or reverse  position.
- E. OFF Button:** Stops spindle rotation.
- F. Worklight Switch:** Turns worklight *ON* and *OFF*.
- G. Spindle Speed Dial:** Adjusts spindle speed between 50–2,000 RPM.



**Figure 1. Control panel components.**

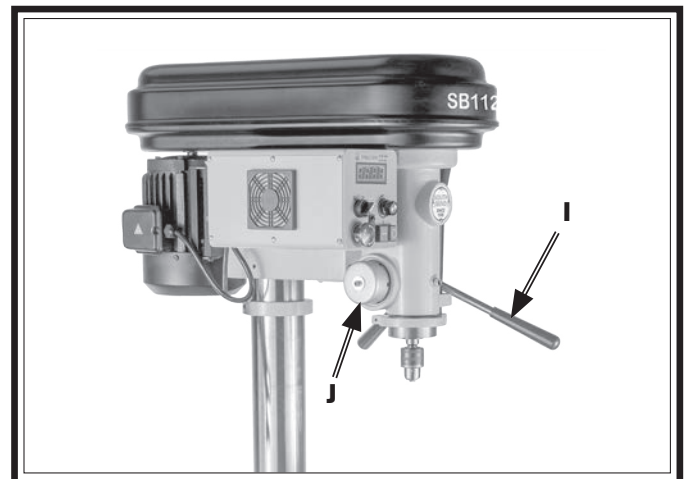
- H. Master Power Switch:** Turns incoming power to control box *ON* (1) and *OFF* (0).

**Note:** *ON/OFF buttons will illuminate when master power switch is in ON (1) position.*



**Figure 2. Location of master power switch.**

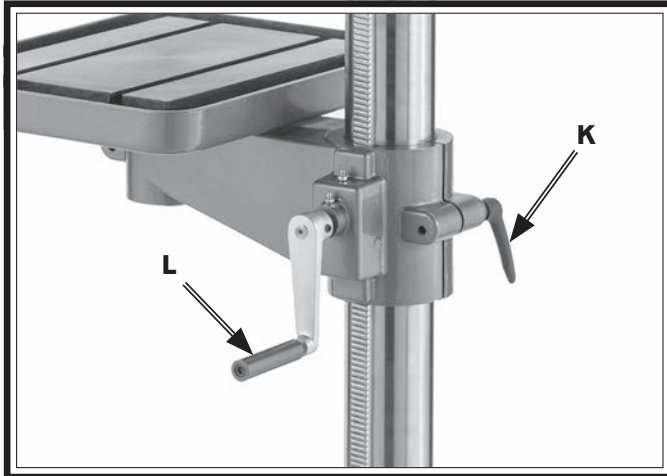
- I. Downfeed Handle (1 of 3):** Moves spindle down when pulled down. Spindle automatically returns to top position when released.
- J. Spindle Return Spring:** Automatically returns quill into headstock.



**Figure 3. Spindle travel components.**

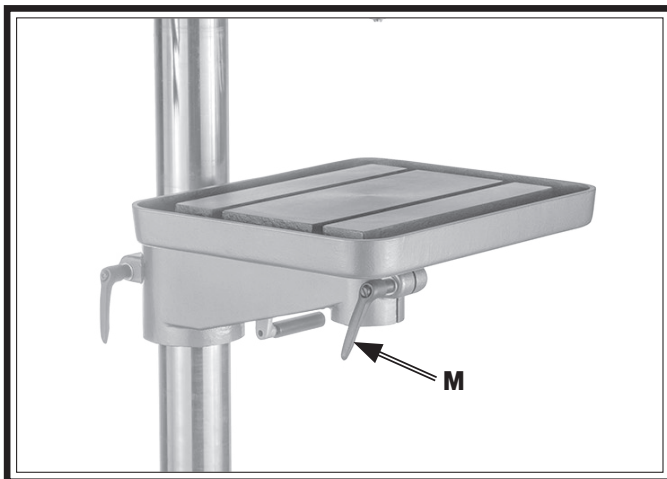


- K. Table Height Lock Handle:** Loosens to allow use of table height crank; tightens to lock table height.
- L. Table Height Crank:** Adjusts table up and down.



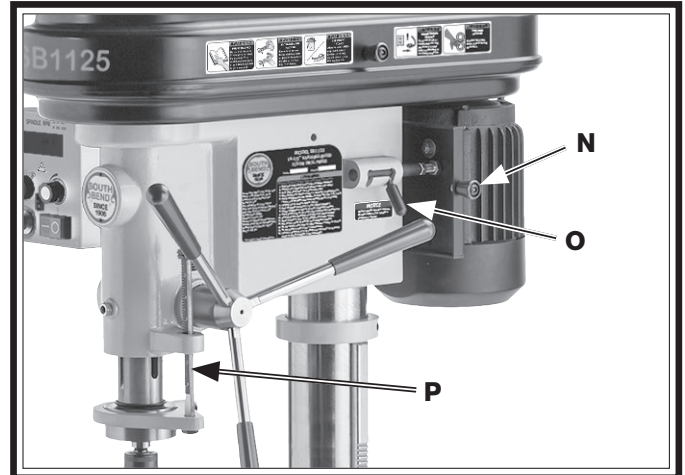
**Figure 4. Table height controls.**

- M. Table Rotation Lock Handle:** Loosens to allow table rotation; tightens to lock table rotation.



**Figure 5. Table rotation lock handle.**

- N. Belt Tension Knob:** Adjusts motor position to tension and release belt.
- O. Belt Tension Lock:** Locks motor position.
- P. Depth Stop:** Stops spindle travel at predetermined depth.



**Figure 6. Belt tension components and depth stop.**

	<h1 style="margin: 0;">Product Specifications</h1> <p style="margin: 5px 0;">P.O. Box 2027, Bellingham, WA 98227 U.S.A.                  PHONE: (360) 734-1540 • © South Bend Tools  <a href="http://www.southbendtools.com">www.southbendtools.com</a></p>	
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## Model SB1125 19-1/2" Floor Drill Press

**Product Dimensions**

Weight..... 448 lbs.  
 Width (side-to-side) x Depth (front-to-back) x Height..... 21-1/2 x 33 x 68-1/2 in.  
 Footprint (Length x Width)..... 17-1/2 x 25-1/2 in.

**Shipping Dimensions**

Type..... Wood Crate  
 Content..... Machine  
 Weight..... 514 lbs.  
 Length x Width x Height..... 36 x 30 x 76 in.  
 Must Ship Upright..... Yes

**Electrical**

Power Requirement..... 220V, Single-Phase, 60 Hz  
 Full-Load Current Rating..... 3.8A  
 Minimum Circuit Size..... 15A  
 Connection Type..... Cord & Plug  
 Power Cord Included..... Yes  
 Power Cord Length..... 80 in.  
 Power Cord Gauge..... 14 AWG  
 Plug Included..... Yes  
 Included Plug Type..... 6-15  
 Switch Type..... Control Panel w/Magnetic Switch Protection  
 Inverter (VFD) Type..... KBVF-24D

**Motors**

**Main**

Horsepower..... 1 HP  
 Phase..... 3-Phase  
 Amps..... 3.8A  
 Speed..... 1720 RPM  
 Type..... TEFC  
 Power Transfer ..... Belt  
 Bearings..... Sealed & Permanently Lubricated

**Main Specifications****Operation Information**

Type.....	Floor
Swing.....	19-1/2 in.
Spindle Taper.....	MT#3
Spindle Travel.....	5-1/2 in.
Max. Distance From Spindle to Column.....	9-3/4 in.
Max. Distance From Spindle to Table.....	31-1/2 in.
Number of Spindle Speeds.....	Variable
Range of Spindle Speeds.....	50 - 2000 RPM
Drilling Capacity (Mild Steel).....	1-9/16 in.
Drill Chuck Type.....	JT6 Key Chuck
Drill Chuck Size.....	3/64–5/8 in.

**Spindle Information**

Distance From Spindle to Base.....	45 in.
Quill Diameter.....	2.132 in.

**Table Information**

Table Swing.....	360 deg.
Table Swivel Around Center.....	0-30 deg. L/R
Table Swivel Around Column.....	360 deg.
Table Length.....	20 in.
Table Width.....	16 in.
Table Thickness.....	1-1/2 in.
Vertical Table Travel.....	25-1/16 in.
Number of T-Slots.....	2
T-Slot Size.....	5/8 in.
T-Slot Centers.....	6-1/4 in.
Floor-To-Table Height.....	18-1/2 - 43-5/8 in.

**Construction**

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

**Other Related Information**

Base Length.....	25-1/2 in.
Base Width.....	17-5/8 in.
Column Diameter.....	4 in.
Quill Flange/Collar Diameter.....	3-3/4 in.
Depth Stop Type.....	Threaded Rod w/Positive Stop
Has Work Light.....	Yes
Light Socket Type.....	LED

**Other**

Country of Origin .....	Taiwan
Warranty .....	2 Years
Approximate Assembly & Setup Time .....	1 Hour
Serial Number Location .....	ID Label
ISO 9001 Factory .....	Yes



# Understanding Risks of Machinery

Operating all machinery and machining equipment can be dangerous or relatively safe depending on how it is installed and maintained, and the operator's experience, common sense, risk awareness, working conditions, and use of personal protective equipment (safety glasses, respirators, etc.).

The owner of this machinery or equipment is ultimately responsible for its safe use. This responsibility includes proper installation in a safe environment, personnel training and usage authorization, regular inspection and maintenance, manual availability and comprehension, application of safety devices, integrity of cutting tools or accessories, and the usage of approved personal protective equipment by all operators and bystanders.

The manufacturer of this machinery or equipment will not be held liable for injury or property damage from negligence, improper training, machine modifications, or misuse. Failure to read, understand, and follow the manual and safety labels may result in serious personal injury, including amputation, broken bones, electrocution, or death.

The signals used in this manual to identify hazard levels are as follows:



*Death or catastrophic harm WILL occur.*



*Moderate injury or fire MAY occur.*



*Death or catastrophic harm COULD occur.*



*Machine or property damage may occur.*

## Basic Machine Safety

**Owner's Manual:** All machinery and machining equipment presents serious injury hazards to untrained users. To reduce the risk of injury, anyone who uses THIS item MUST read and understand this entire manual before starting.

**Personal Protective Equipment:** Operating or servicing this item may expose the user to flying debris, dust, smoke, dangerous chemicals, or loud noises. These hazards can result in eye injury, blindness, long-term respiratory damage, poisoning, cancer, reproductive harm or hearing loss. Reduce your risks from these hazards by wearing approved eye protection, respirator, gloves, or hearing protection.

**Trained/Supervised Operators Only:** Untrained users can seriously injure themselves or bystanders. Only allow trained and properly supervised personnel to operate this item. Make sure safe operation instructions are clearly understood. If electrically powered, use padlocks and master switches, and remove start switch keys to prevent unauthorized use or accidental starting.

**Guards/Covers:** Accidental contact with moving parts during operation may cause severe entanglement, impact, cutting, or crushing injuries. Reduce this risk by keeping any included guards/covers/doors installed, fully functional, and positioned for maximum protection.

**Entanglement:** Loose clothing, gloves, neckties, jewelry or long hair may get caught in moving parts, causing entanglement, amputation, crushing, or strangulation. Reduce this risk by removing/securing these items so they cannot contact moving parts.

**Mental Alertness:** Operating this item with reduced mental alertness increases the risk of accidental injury. Do not let a temporary influence or distraction lead to a permanent disability! Never operate when under the influence of drugs/alcohol, when tired, or otherwise distracted.

**Safe Environment:** Operating electrically powered equipment in a wet environment may result in electrocution; operating near highly flammable materials may result in a fire or explosion. Only operate this item in a dry location that is free from flammable materials.

**Electrical Connection:** With electrically powered equipment, improper connections to the power source may result in electrocution or fire. Always adhere to all electrical requirements and applicable codes when connecting to the power source. Have all work inspected by a qualified electrician to minimize risk.

**Disconnect Power:** Adjusting or servicing electrically powered equipment while it is connected to the power source greatly increases the risk of injury from accidental startup. Always disconnect power **BEFORE** any service or adjustments, including changing blades or other tooling.

**Secure Workpiece/Tooling:** Loose workpieces, cutting tools, or rotating spindles can become dangerous projectiles if not secured or if they hit another object during operation. Reduce the risk of this hazard by verifying that all fastening devices are properly secured and items attached to spindles have enough clearance to safely rotate.

**Chuck Keys or Adjusting Tools:** Tools used to adjust spindles, chucks, or any moving/rotating parts will become dangerous projectiles if left in place when the machine is started. Reduce this risk by developing the habit of always removing these tools immediately after using them.

**Work Area:** Clutter and dark shadows increase the risks of accidental injury. Only operate this item in a clean, non-glaring, and well-lighted work area.

**Properly Functioning Equipment:** Poorly maintained, damaged, or malfunctioning equipment has higher risks of causing serious personal injury compared to those that are properly maintained. To reduce this risk, always maintain this item to the highest standards and promptly repair/service a damaged or malfunctioning component. Always follow the maintenance instructions included in this documentation.

**Unattended Operation:** Electrically powered equipment that is left unattended while running cannot be controlled and is dangerous to bystanders. Always turn the power **OFF** before walking away.

**Health Hazards:** Certain cutting fluids and lubricants, or dust/smoke created when cutting, may contain chemicals known to the State of California to cause cancer, respiratory problems, birth defects, or other reproductive harm. Minimize exposure to these chemicals by wearing approved personal protective equipment and operating in a well ventilated area.

**Difficult Operations:** Attempting difficult operations with which you are unfamiliar increases the risk of injury. If you experience difficulties performing the intended operation, **STOP!** Seek an alternative method to accomplish the same task, ask a qualified expert how the operation should be performed, or contact our Technical Support for assistance.

# Additional Drill Press Safety

## **WARNING**

**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 deadly force. To reduce the risk of these hazards, operator and bystanders MUST completely heed hazards and warnings below.**

**Eye/Face/Hand Protection.** 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. 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, wrenches, and other tools left in spindle chuck or on machine can become deadly projectiles if thrown by rotating spindle. Remove all loose items or tools used on spindle immediately after use.

**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.

**Drilling Preparation.** To avoid loss of drilling control or bit breakage, only drill into a flat surface that is approximately perpendicular to bit. Clear table of all objects before starting spindle. Never start spindle with bit pressed against workpiece.

**Securing Table and Headstock.** To avoid loss of control leading to accidental contact with tool/bit, tighten all table and headstock locks before operating drill press.

**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.

**Securing Bit/Cutting Tool.** Firmly secure bit/cutting tool in chuck so it cannot fly out of spindle during operation or startup.

**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.

### **WARNING**

**Like all machinery there is a 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.**

## Preparation Overview

The purpose of the preparation section is to help you prepare your machine for operation. The list below outlines the basic process. Specific steps for each of these points will be covered in detail later in this section.

### The typical preparation process is as follows:

1. Unpack the machine and inventory the contents of the box/crate.
2. Clean the machine and its components.
3. Identify an acceptable location for the machine and move it to that location.
4. Either bolt machine to the floor or place it on mounts.
5. Assemble the loose components and make any necessary adjustments or inspections to ensure the machine is ready for operation.
6. Connect the machine to the power source.
7. Test run the machine to make sure it functions properly and is ready for operation.

## Required for Setup

The items listed below are required to successfully set up and prepare this machine for operation.

### For Lifting

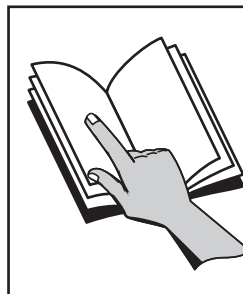
- A forklift or other power lifting device rated for the weight of the machine.
- Lifting sling (rated for at least 650 lbs.).

### For Power Connection

- A power source that meets the minimum circuit requirements for this machine. (Refer to the **Power Supply Requirements** section on **Page 11** for details.)
- A qualified electrician to ensure a safe and code-compliant connection to the power source.

### For Assembly

- Disposable Rags
- Cleaner Degreaser
- Safety Glasses (for each person)
- Disposable Gloves
- Open-End Wrench 13mm
- Another Person
- Mounting Hardware (As Needed)
- Acetone or Lacquer Thinner
- Block of Wood
- Hex Wrench  $\frac{3}{16}$ "



### **!WARNING**

**Incorrect use of this machine can result in death or serious injury. For your own safety, read and understand this entire document before using.**



### **!WARNING**


**Wear safety glasses during the entire setup process!**

# Power Supply Requirements

## Availability

Before installing the machine, consider the availability and proximity of the required power supply circuit. If an existing circuit does not meet the requirements for this machine, a new circuit must be installed.

To minimize the risk of electrocution, fire, or equipment damage, installation work and electrical wiring must be done by an electrician or qualified service personnel in accordance with applicable electrical codes and safety standards.



**! WARNING**  
**Electrocution or fire may occur if machine is not correctly grounded and attached to the power supply. Use a qualified electrician to ensure a safe power connection.**

## 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 Rating..... 3.8 Amps**

The full-load current is not the maximum amount of amps that the machine will draw. If the machine is overloaded, it will draw additional amps beyond the full-load rating.

If the machine is overloaded for a sufficient length of time, damage, overheating, or fire may result—especially if connected to an undersized circuit. To reduce the risk of these hazards, avoid overloading the machine during operation and make sure it is connected to a power supply circuit that meets the requirements in the following section.

## **! WARNING**

**Serious injury could occur if you connect the machine to power before completing the setup process. DO NOT connect to power until instructed later in this manual.**

## Circuit Requirements

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

**Nominal Voltage ..... 208V/220V/230V/240V**  
**Cycle ..... 60 Hz**  
**Phase ..... Single-Phase**  
**Circuit Rating..... 15 Amps**  
**Plug/Receptacle (included) ..... NEMA 6-15**

A power supply circuit includes all electrical equipment between the main breaker box or fuse panel in your building and the incoming power connections inside the machine. This circuit must be safely sized to handle the full-load current that may be 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.)

## **! CAUTION**

**For your own safety and protection of property, consult an electrician if you are unsure about wiring practices or applicable electrical codes.**

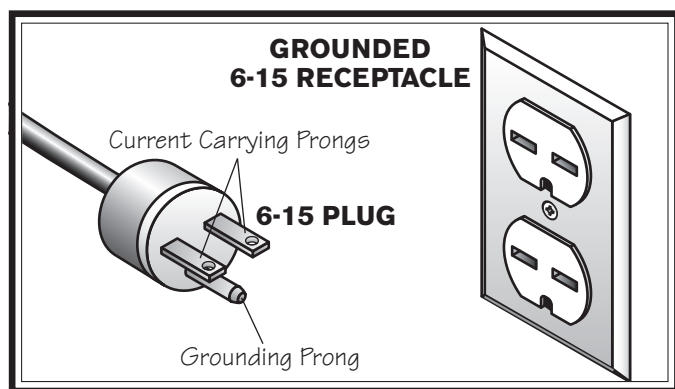
**Note:** The circuit requirements in this manual are for a dedicated circuit—where only one machine will be running at a time. If this machine will be connected to a shared circuit where multiple machines will be running at the same time, consult a qualified electrician to ensure the circuit is properly sized.



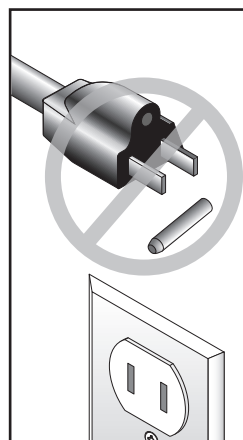
## Grounding Requirements

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 in order to reduce the risk of electric shock.

This machine is equipped with a power cord that has an equipment-grounding wire and a grounding plug (similar to the figure below). The plug must only be inserted into a matching receptacle (outlet) that is properly installed and grounded in accordance with all local codes and ordinances.



**Figure 7. NEMA 6-15 plug and receptacle.**



**⚠ CAUTION**  
**DO NOT** modify the included plug or use an adapter if it will not fit your receptacle. Instead, have a qualified electrician install the proper receptacle on a power supply circuit that is grounded and meets the requirements for this machine.

Improper connection of the equipment-grounding wire can result in a risk of electric shock. The wire with green insulation (with or 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 an electrician or qualified 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.

## Extension Cords

We do not recommend using an extension cord with this machine. If you must use one, only use it if absolutely necessary and only on a temporary basis.

Extension cords cause voltage drop, which may damage electrical components and shorten motor life. Voltage drop increases as the extension cord size gets longer and the gauge size gets smaller (higher gauge numbers indicate smaller sizes).

Any extension cord used with this machine must contain a ground wire, match the required plug and receptacle listed in the **Circuit Requirements** for the applicable voltage, and meet the following requirements:

- Minimum Gauge Size.....16 AWG**
- Maximum Length (Shorter is Better) ....50 ft.**



# Unpacking

This item was carefully packaged to prevent damage during transport. If you discover any damage, please immediately call Customer Service at (360) 734-1540 for advice. You may need to file a freight claim, so save the containers and all packing materials for possible inspection by the carrier or its agent.

# Inventory

Wood Crate (Figure 8)	Qty
A. Drill Press (not shown) .....	1
B. Downfeed Handles .....	3
C. Downfeed Levers .....	3
D. Table Height Crank Assembly .....	1
E. Arbor MT#3 x JT6 .....	1
F. Drill Chuck JT6 3/64"-5/8" .....	1
G. Drill Chuck Key .....	1
H. Drift Key .....	1
I. Hex Wrench 5mm .....	1
J. Hex Wrench 4mm .....	1
K. Hex Wrench 3mm .....	1

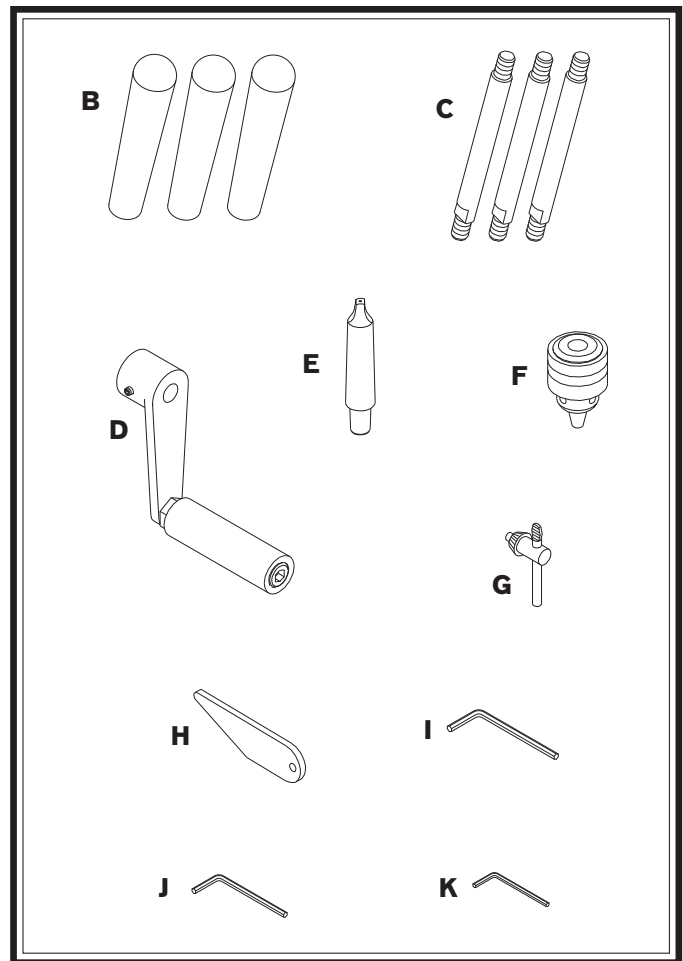


Figure 8. Loose items inventory.

## NOTICE

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.

## Cleaning & Protecting

The unpainted surfaces are coated at the factory with a heavy-duty rust preventative that prevents corrosion during shipment and storage. The benefit of this rust preventative is that it works very well. The downside is that it can be time-consuming to thoroughly remove.

Be patient and do a careful job when cleaning and removing the rust preventative. The time you spend doing this will reward you with smooth-sliding parts and a better appreciation for the proper care of the unpainted surfaces.

Although there are many ways to successfully remove the rust preventative, the following process works well in most situations.

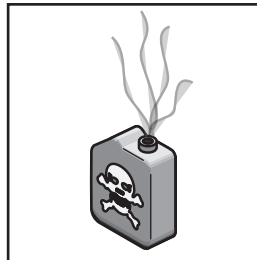
### Before cleaning, gather the following:

- Disposable rags
- Cleaner/degreaser (certain citrus-based degreasers work extremely well and they have non-toxic fumes)
- Safety glasses & disposable gloves

**Note:** Automotive degreasers, mineral spirits, or WD•40 can be used to remove rust preventative. Before using these products, though, test them on an inconspicuous area of a painted surface to make sure they will not damage it.



**!WARNING**  
Gasoline and petroleum products have low flash points and can explode or cause fire if used for cleaning. Avoid using these products to remove rust preventative.



**!CAUTION**  
Many cleaning solvents are toxic if inhaled. Minimize your risk by only using these products in a well ventilated area.

## NOTICE

**Avoid chlorine-based solvents, such as acetone or brake parts cleaner that may damage painted surfaces. Always follow the manufacturer's instructions when using any type of cleaning product.**

### Basic steps for removing rust preventative:

1. Put on safety glasses and disposable gloves.
  2. Coat all surfaces that have rust preventative with a liberal amount of your cleaner or degreaser and let them soak for a few minutes.
  3. Wipe off the surfaces. If your cleaner or degreaser is effective, the rust preventative will wipe off easily.
- Note:** To clean off thick coats of rust preventative on flat surfaces, such as beds or tables, 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 it may scratch the surface.)
4. Repeat **Steps 2–3** as necessary until clean, then coat all unpainted surfaces with a quality metal protectant or light oil to prevent rust.

### T23692—Orange Power Degreaser

A great product for removing the waxy shipping grease from the **non-painted** parts of the machine during clean up.



Figure 9. T23692 Orange Power Degreaser.

## Location

### Physical Environment

The physical environment where your machine is operated is important for safe operation and longevity of parts. For best results, operate this machine in a dry environment that is free from excessive moisture, hazardous or flammable chemicals, airborne abrasives, or extreme conditions. Extreme conditions for this type of machinery are generally those where the ambient temperature is outside the range of 41°–104°F; the relative humidity is outside the range of 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 to perform operations safely. Shadows, glare, or strobe effects that may distract or impede the operator must be eliminated.

### 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.

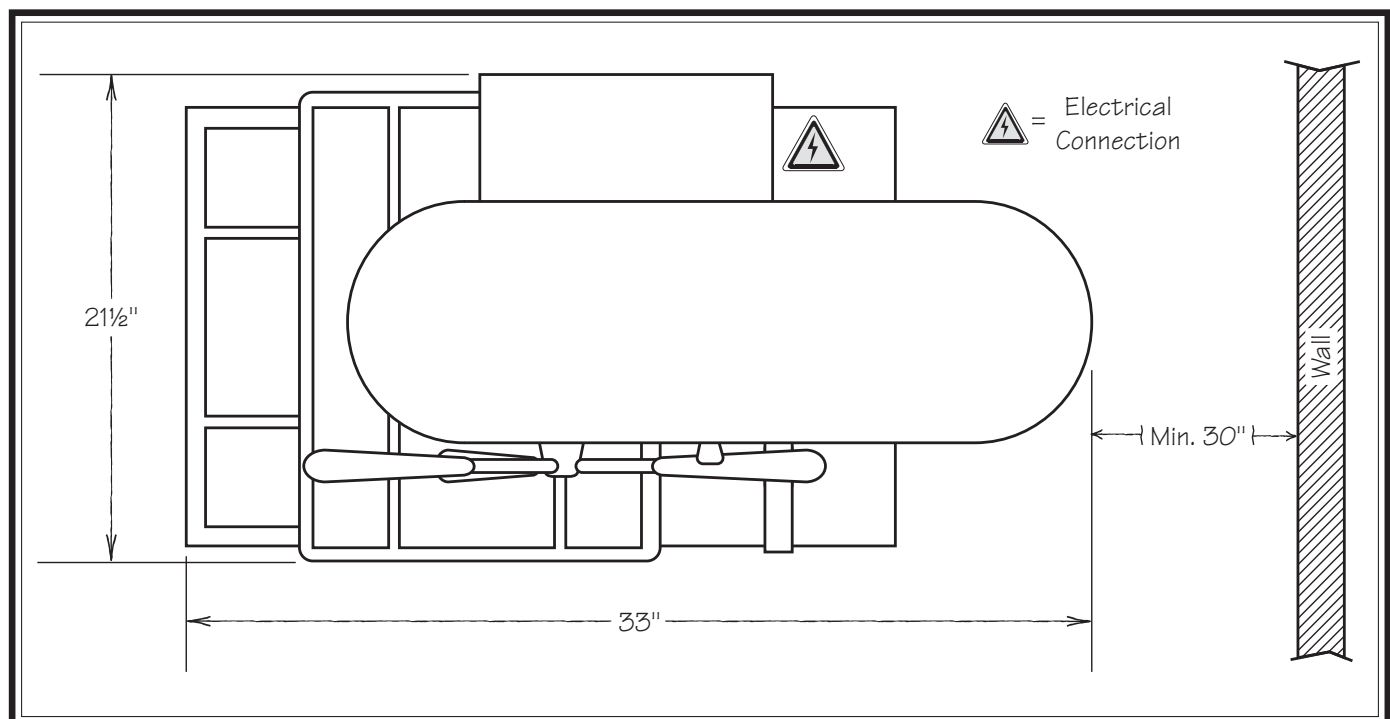
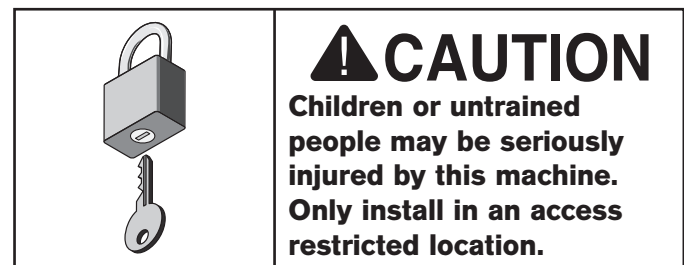
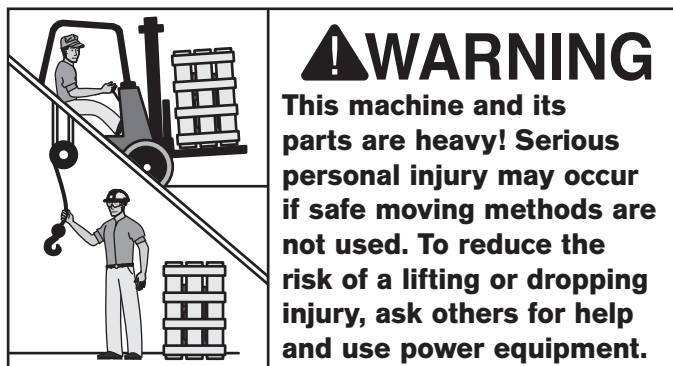


Figure 10. Minimum working clearances.

# Placing & Anchoring Machine

Use a forklift to lift the machine off the pallet and onto a suitable location, then secure the machine to the shop floor.

## Placing Machine



### To place machine:

1. Place shipping crate near final machine mounting location.
2. Remove top and sides of crate from shipping pallet.
3. Unbolt machine from pallet by removing (4) hex nuts and fender washers shown in **Figure 11**, and remove shipping support braces.

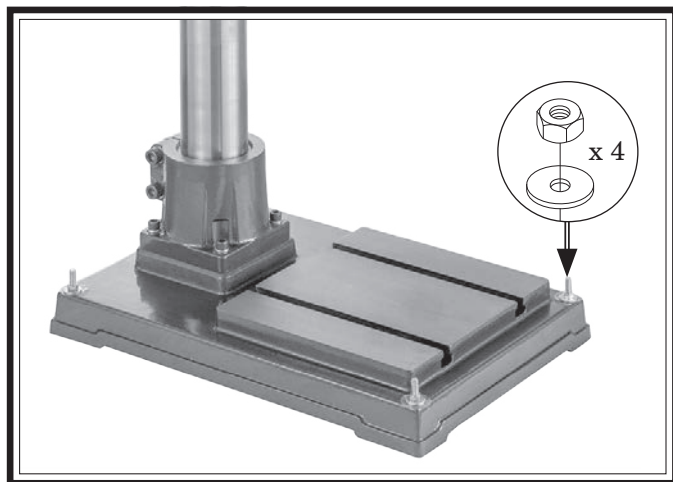


Figure 11. Location of hex nuts and flat washers.

4. Install table height crank assembly on table height worm shaft, then tighten set screw to secure (see **Figure 12**).
5. To help balance table when moving, loosen table height lock handle shown in **Figure 12**, then use table height crank to lower table as close to base as possible.

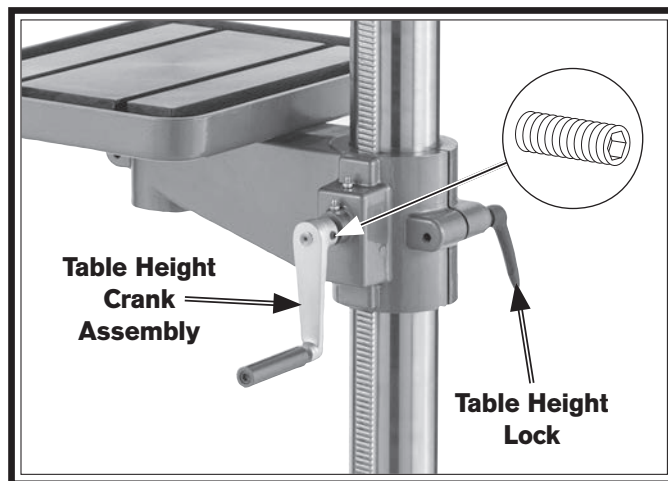


Figure 12. Table height crank assembly installed on table height worm shaft.

6. Tighten table height lock handle.
7. Place lifting sling around headstock (see **Figure 13**), and attach sling securely to forklift (or other power lifting equipment).



Figure 13. Lifting sling properly placed around headstock.

**Note:** *Be sure sling does not put pressure on belt cover or belt cover can become damaged from force of sling while lifting.*

8. Tighten all lock handles to keep moving parts from shifting suddenly and unbalancing machine.
9. With another person to help to steady machine, lift machine just enough to clear pallet and any floor obstacles, then place machine in its final position in its final position on shop floor.

### Anchoring to Concrete Floors

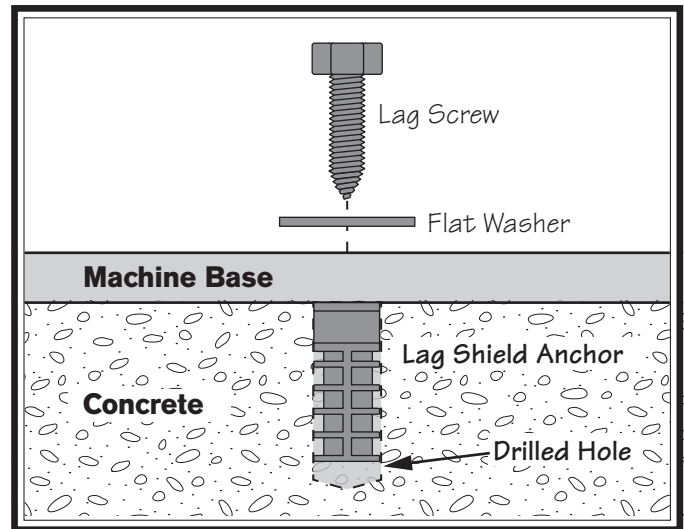
Anchoring machinery to the floor prevents tipping or shifting and reduces vibration that may occur during operation, resulting in a machine that runs slightly quieter and feels more solid.

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.

**Number of Mounting Holes .....4**  
**Diameter of Mounting Hardware .....<sup>5</sup>/<sub>16</sub>"**

Lag shield anchors with lag screws (see below) 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.



**Figure 14. Popular method for anchoring machinery to a concrete floor.**

## Joining Drill Chuck & Arbor

An arbor is included for the drill chuck that comes with this machine. The following procedure describes how to install the arbor in the chuck.

After the arbor is installed in the drill chuck, it is very difficult to separate the assembly. If you would like to use a different chuck in the future, we recommend obtaining a new arbor.

**IMPORTANT:** *DO NOT* install the drill chuck and arbor assembly into the spindle until **AFTER** the test run.

### To join drill chuck and arbor:

1. Use acetone or lacquer thinner to clean drill chuck and arbor mating surfaces, especially the bore.
2. Retract chuck jaws completely into chuck.
3. Insert small end of arbor into chuck.
4. Hold assembly by the arbor and tap chuck onto a block of wood with medium force, as illustrated below.

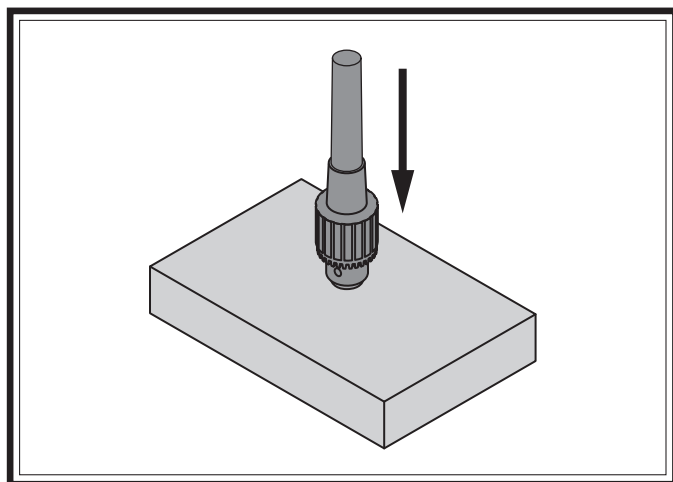


Figure 15. Joining drill chuck and arbor.

5. Attempt to separate drill chuck and arbor by hand—if they separate, repeat **Steps 3–4**.

## Assembly

The machine must be fully assembled before it can be operated. Before beginning the assembly process, refer to **Required for Setup on Page 10** and gather all listed items. To ensure the assembly process goes smoothly, first clean any parts that are covered or coated in heavy-duty rust preventative (if applicable).

### To assemble machine:

1. Thread (3) downfeed handles onto (3) downfeed levers (see **Figure 16**).

**Note:** *Lever end with notch should face away from handle.*

2. Thread (3) downfeed levers into hub on side of headstock (see **Figure 16**).

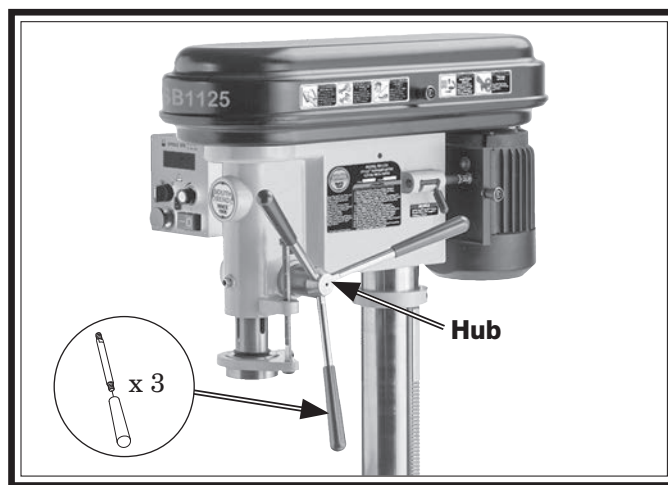


Figure 16. Downfeed handles and levers installed.



## Test Run

After all preparation steps have been completed, the machine and its safety features must be tested to ensure correct operation. If you discover a problem with the operation of the machine or its safety components, do not operate it further until you have resolved the problem.

**Note:** Refer to **Troubleshooting** on **Page 41** for solutions to common problems that may occur. If you need additional help, contact our Tech Support at (360) 734-1540.

The test run consists of verifying the following:

- Motor powers up and runs correctly.
- Spindle rotates in correct direction.
- EMERGENCY STOP button disables the machine properly.

### **!WARNING**

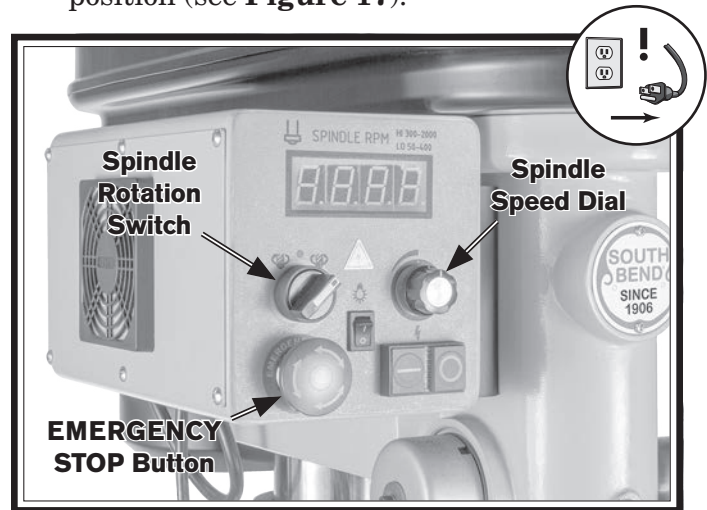
**Serious injury or death can result from using this machine BEFORE understanding its controls and related safety information. DO NOT operate, or allow others to operate, machine until the information is understood.**

### **!WARNING**

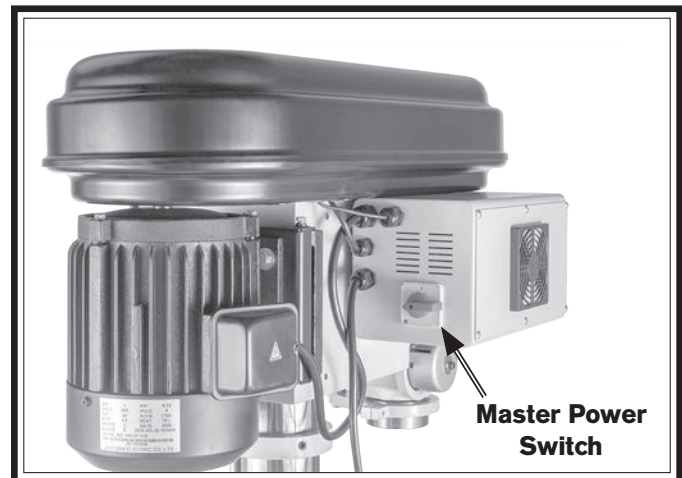
**DO NOT start machine until all preceding setup instructions have been performed. Operating an improperly set up machine may result in malfunction or unexpected results that can lead to serious injury, death, or machine/property damage.**

#### To test run machine:

1. Clear away all tools and objects used during preparation and assembly.
2. Press EMERGENCY STOP button (see **Figure 17**).
3. Turn spindle speed dial all the way counterclockwise (see **Figure 17**).
4. Turn spindle rotation switch to neutral (0) position (see **Figure 17**).
5. Turn master power switch to OFF (0) position (see **Figure 18**).
6. Connect machine to power.
7. Turn master power switch to ON (1) position. ON/OFF buttons will illuminate.

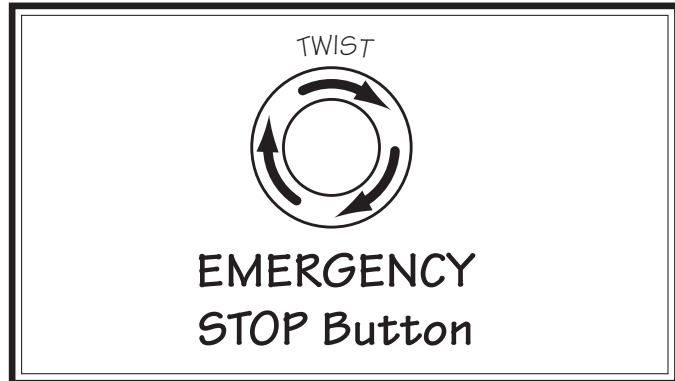


**Figure 17. Control panel controls.**




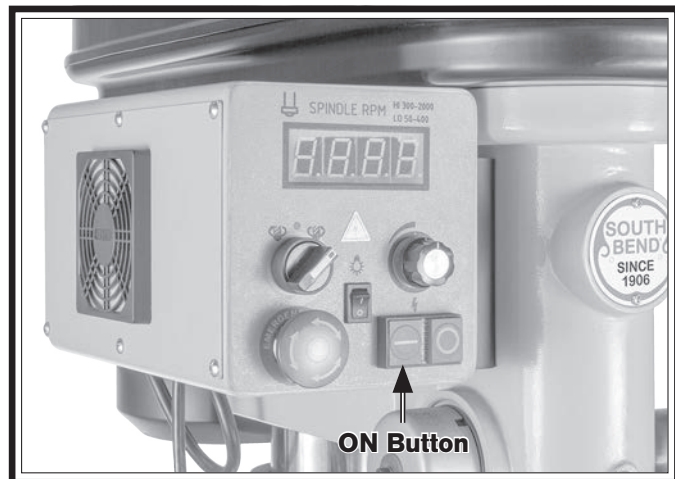
**Figure 18. Location of master power switch.**

8. Twist EMERGENCY STOP button clockwise until it springs out (see **Figure 19**). This resets the switch so machine can start.



**Figure 19. Resetting the switch.**

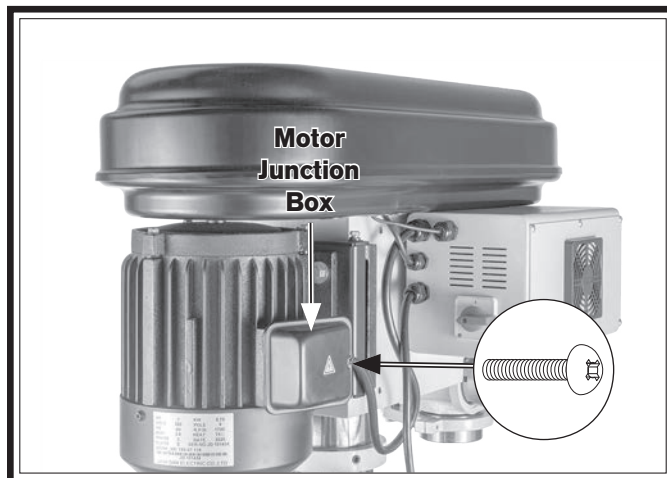
9. Turn spindle rotation switch clockwise to forward  rotation.
10. Press green ON (-) button to start spindle rotation (see **Figure 20**). Verify motor starts up and runs smoothly without any unusual problems or noises.



**Figure 20. Location of ON button.**

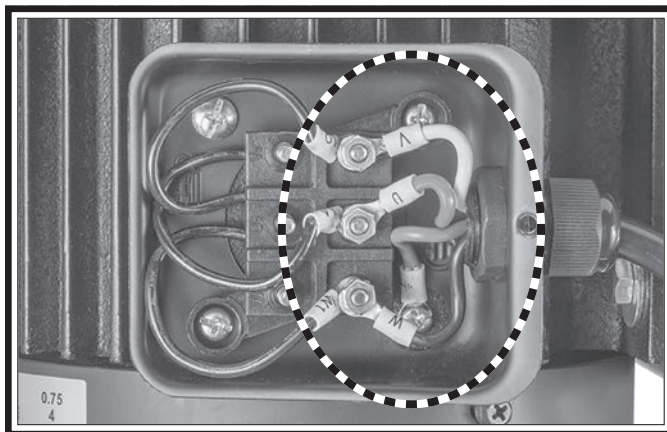
11. Observe spindle rotation direction.
- If spindle rotates clockwise, as viewed from below, proceed to **Step 16**.
  - If spindle rotates counterclockwise, as viewed from below, phase polarity of motor needs to be reversed. Proceed to **Step 12**.
12. DISCONNECT MACHINE FROM POWER!

13. Remove Phillips head screw shown in **Figure 21** to open motor junction box.




**Figure 21. Location of motor junction box and Phillips head screw.**

14. Swap any (2) incoming power wires labeled U, V, and W in junction box (see **Figure 22**).



**Figure 22. U, V, and W wires.**

15. Close motor junction box and reconnect machine to power. Repeat **Steps 10–11**.
16. Turn spindle rotation switch to neutral (0) position and allow spindle to come to a complete stop.
17. Turn spindle rotation switch counterclockwise to reverse  setting, then press ON (-) button to start spindle rotation. Verify motor starts up and runs smoothly without any unusual problems or noises.
18. Verify speed controls by slowly turning spindle speed dial clockwise. Rotate dial back and forth to test variable-speed function.

19. Press EMERGENCY STOP button to stop spindle rotation.
20. WITHOUT resetting EMERGENCY STOP button, try to start machine by pressing ON button. Machine should not start.
  - If machine *does not* start, safety feature of EMERGENCY STOP button is working correctly. Congratulations! Test run is complete. Continue to the next section to perform the **Spindle Break-In** and **Inspections & Adjustments** procedures.
  - If machine *does* start, immediately turn it **OFF** and disconnect power. Safety feature of EMERGENCY STOP button is NOT working correctly and must be replaced before further using machine. Contact Technical Support.

## Spindle Break-In


### NOTICE

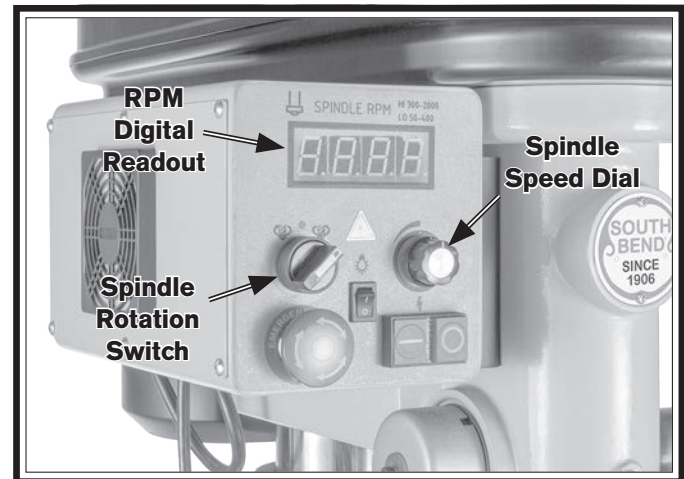
**You must complete this procedure to maintain the warranty. Failure to do this could cause rapid wear-and-tear of spindle bearings once they are placed under load.**

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 procedure:

1. Turn spindle rotation switch clockwise to forward  rotation (see **Figure 23**).
2. Start spindle rotation and adjust speed dial so RPM digital readout (see **Figure 23**) reads 50 RPM.



**Figure 23. Control panel controls.**

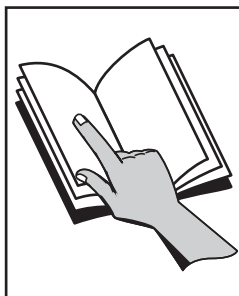
3. Allow spindle to run for 10 minutes, then stop spindle rotation.
4. Turn spindle rotation switch counterclockwise to reverse  rotation, run spindle at 50 RPM for another 10 minutes, then stop spindle rotation.
5. Repeat **Steps 1–4** with spindle at 200 RPM.
6. Repeat **Steps 1–4** with spindle at 400 RPM.
7. Remove and install drive belt for high speed range (see **Setting Spindle Speed** on **Page 25**).
8. Repeat **Steps 1–4** with spindle at 1000 RPM.
9. Repeat **Steps 1–4** with spindle at 2000 RPM.

Congratulations, the **Spindle Break-In** is now complete!

## Operation Overview

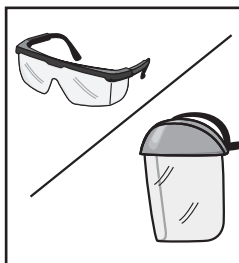
The purpose of this overview is to provide the novice machine operator with a basic understanding of how the machine is used during operation, so they can more easily understand the controls discussed later in this manual.

**Note:** Due to the generic nature of this overview, it is not intended to be an instructional guide for performing actual machine operations. To learn more about specific operations and machining techniques, seek training from people experienced with this type of machine, and do additional research outside of this manual by reading "how-to" books, trade magazines, or websites.



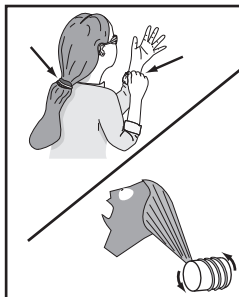
### ⚠️ WARNING

To reduce the risk of serious injury when using this machine, read and understand this entire manual before beginning any operations.



### ⚠️ WARNING

To reduce risk of eye or face injury from flying chips, always wear safety glasses and a face shield when operating this machine.



### ⚠️ WARNING

Keep hair, clothing, and jewelry away from moving parts at all times. Entanglement can result in death, amputation, or severe crushing injuries!

To complete a typical operation, the operator does the 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 drill bit for operation.
5. Adjusts table to correct height, then locks it in place.
6. Selects appropriate spindle speed according to drilling speed chart located on **Page 27** and adjusts drive belt to required pulley sheaves.
7. Connects machine to power, and starts spindle rotation in proper direction for cutting tool installed.
8. Performs drilling operation.
9. When finished, turns machine **OFF** and disconnects it from power.

## NOTICE

If you are not experienced with this type of machine, **WE STRONGLY RECOMMEND** that you seek additional training outside of this manual. Read books/magazines or get formal training before beginning any projects. Regardless of the content in this section, **South Bend Tools** will not be held liable for accidents caused by lack of training.



# Installing/Removing Arbor

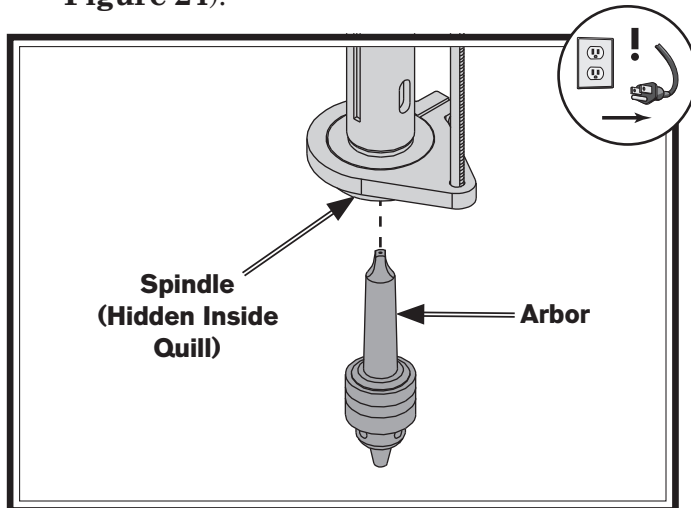
Usually, once the chuck and arbor have been properly mounted together, they are considered semi-permanent connections. If you would like to install a different chuck, we recommend getting a new arbor for that chuck.

## Installing Arbor in Spindle

Items Needed	Qty
Acetone or Lacquer Thinner .....	As Needed
Rubber Mallet .....	1

### To install arbor in spindle:

1. DISCONNECT MACHINE FROM POWER!
2. Join chuck and arbor (refer to **Joining Drill Chuck & Arbor** on Page 18).
3. Rotate chuck on arbor until chuck jaws retract into drill chuck body.
4. Use acetone or lacquer thinner to clean mating surfaces of arbor and spindle socket.
5. Slide arbor into spindle socket (see **Figure 24**).



**Figure 24. Inserting arbor into spindle socket.**

6. Strike face of chuck from below with rubber mallet to seat arbor in spindle.
7. Check seat by gently pulling down on chuck.

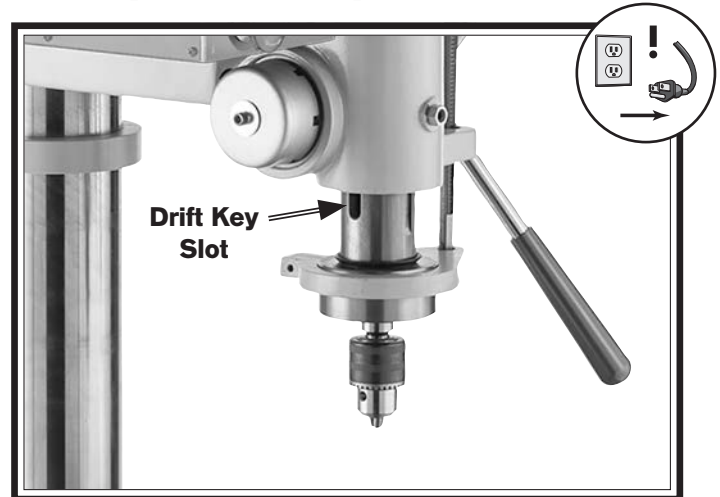
## Removing Arbor from Spindle

The arbor can be removed to install other Morse Taper #3 tooling in the spindle. A drift key is included to help remove the arbor or other tooling from the spindle.

Items Needed	Qty
Towel or Cloth .....	1
Metal Hammer .....	1
Drift Key .....	1

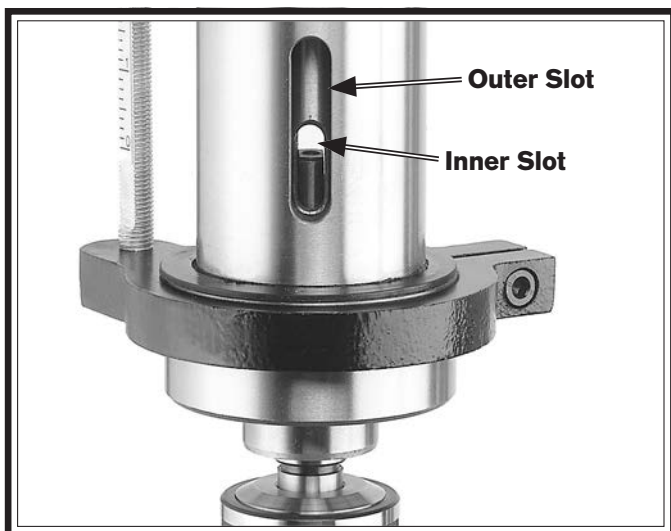
### To remove arbor from spindle:

1. DISCONNECT MACHINE FROM POWER!
2. Rotate downfeed handles until drift key slot is exposed in side of quill (see **Figure 25**).



**Figure 25. Location of drift key slot.**

3. Move table up until it is 1/4" below bottom of chuck, and place a towel or cloth under chuck.
4. Rotate spindle until inner drift key slot is aligned with outer slot (see **Figure 26** on Page 24). You will see through the spindle when the slots are properly aligned.



**Figure 26. Example of inner and outer key slots aligned.**

5. Insert drift key into drift key slot, and allow quill to rise, trapping drift key.
6. Tap drift key with metal hammer (see **Figure 27**) until arbor releases.



**Figure 27. Example of using drift key to remove arbor from spindle.**

7. Carefully retract quill back into headstock.

## Installing/Removing Drill Bit

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

## Installing Drill Bit

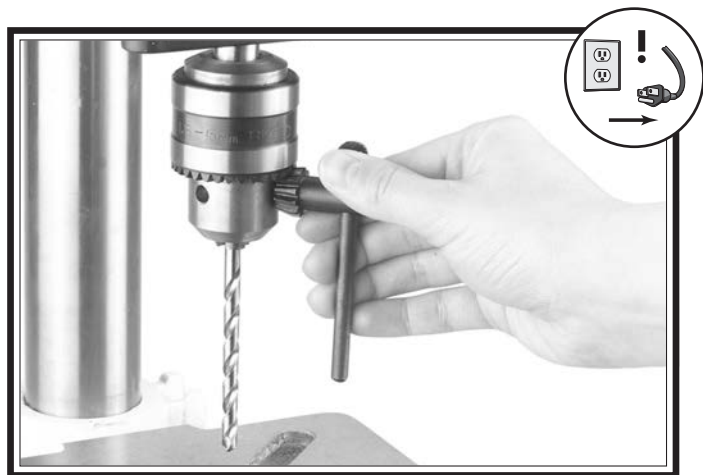
Item Needed	Qty
Chuck Key .....	1

### To install drill bit:

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

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

4. Tighten chuck firmly with chuck key (see **Figure 28**), then remove chuck key from chuck.



**Figure 28. Example of tightening chuck with chuck key. (Always remove chuck key after use.)**

## Removing Drill Bit

Item Needed	Qty
Rag .....	1

### To remove drill bit:

1. **DISCONNECT MACHINE FROM POWER!**
2. Use chuck key to open drill chuck, and catch drill bit with rag to protect hands.



## Spindle Speed

Using the correct spindle speed is important for safe and satisfactory results, as well as maximizing tool life.

To set the spindle speed for your operation, you will need to: 1) Determine the best spindle speed for the cutting task, and 2) configure drive belt on the appropriate speed range pulleys, and 3) adjust the spindle speed dial to produce the required spindle speed.

### Determining Spindle Speed

Many variables affect the optimum spindle speed to use for any given operation, but the two most important are the recommended cutting speed for the workpiece material and the diameter of the cutting tool, as noted in the formula shown in **Figure 29**.

$\frac{\text{*Recommended Cutting Speed (FPM)} \times 12}{\text{Tool Dia. (in inches)} \times 3.14} = \text{Spindle Speed (RPM)}$ <p>*Double if using carbide cutting tool</p>
--

**Figure 29. Spindle speed formula.**

Cutting speed, typically defined in feet per minute (FPM), is the speed at which the edge of a tool moves across the material surface.

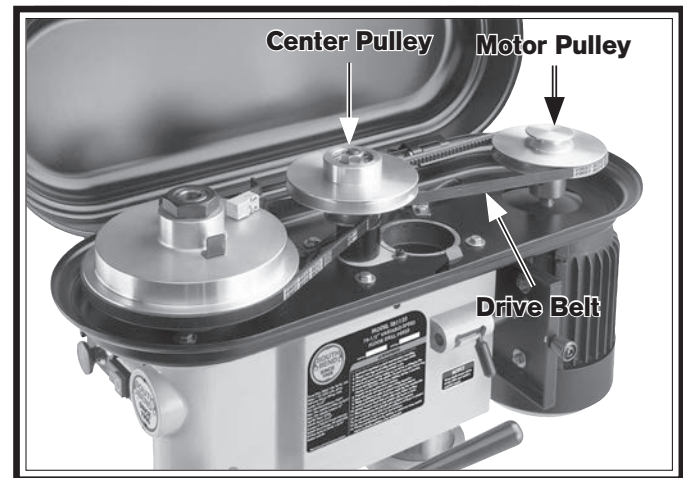
A recommended cutting speed is an ideal speed for cutting a type of material in order to produce the desired finish and optimize tool life. Refer to **Calculating Spindle Speed Drilling on Page 27** for a guide.

The books **Machinery's Handbook** or **Machine Shop Practice**, and some internet sites, provide excellent recommendations for which cutting speeds to use when calculating the spindle speed. These sources also provide a wealth of additional information about the variables that affect cutting speed and they are a good educational resource.

Also, there are a large number of easy-to-use spindle speed calculators that can be found on the internet. These sources will help you take into account the applicable variables in order to determine the best spindle speed for the operation.

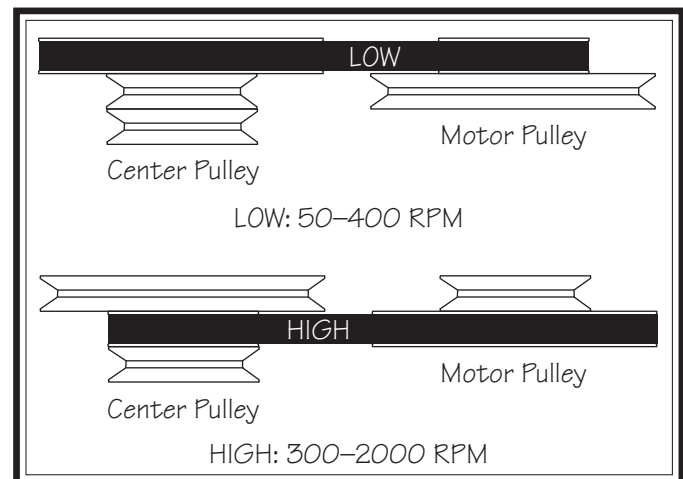
### Setting Spindle Speed

The Model SB1125 has two speed ranges that operate between 50–2000 RPM. The speed range is determined by how the drive belt is installed on the motor and center pulleys (see **Figure 30**).



**Figure 30. Location of drive belt and speed pulleys.**

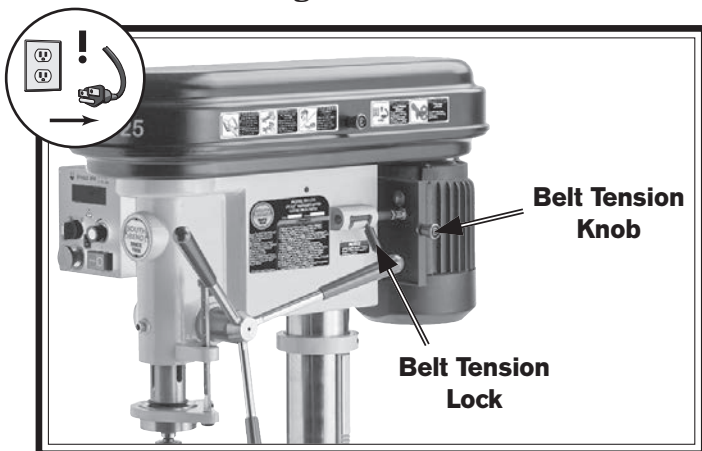
The high-speed range is obtained when the drive belt is positioned on the lower pulley sheaves, and the low-speed range is obtained when the drive belt is positioned on the upper pulley sheaves, as shown in **Figure 31**.



**Figure 31. Belt configuration chart.**

**To set spindle speed:**

1. **DISCONNECT MACHINE FROM POWER!**
2. Lift belt tension lock, then use belt tension knob to pull motor forward and release belt tension (see **Figure 32**).



**Figure 32.** Location of belt tension lock and belt tension knob.

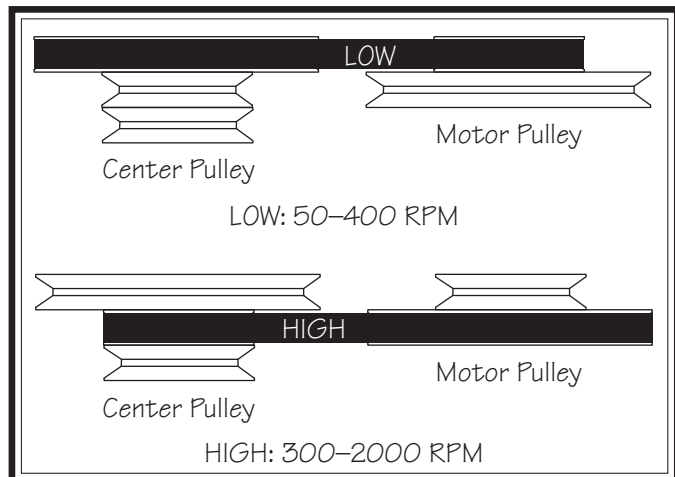
3. Open belt cover.

**⚠ CAUTION**

**Use care when handling V-belts as they could pinch your fingers against a pulley. They may also get hot after extended use so wait to handle if machine has been in use.**

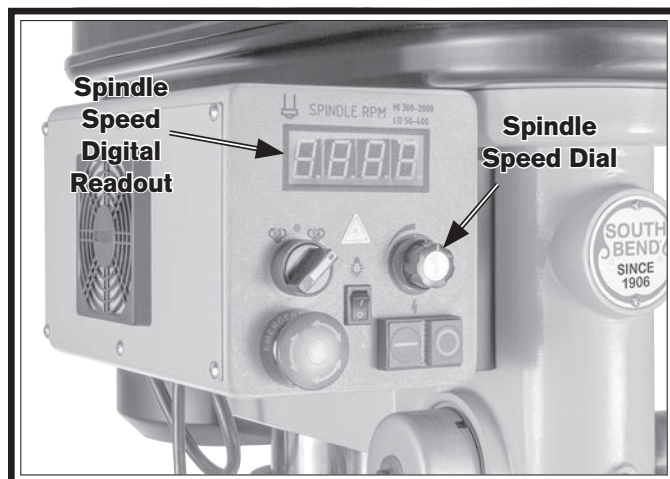
4. Refer to belt configuration chart shown in **Figure 33** to configure belt on pulleys for selected speed range.

— If belt is worn or damaged, replace.



**Figure 33.** Belt configuration chart.

5. After belt is properly positioned on pulleys, use belt tension knob to push motor away from center pulley and engage belt tension.
6. Secure motor position with belt tension lock.
7. Refer to **Checking V-Belts** on **Page 35** to ensure belt does not need to be replaced.
8. Close belt cover.
9. Connect machine to power, turn machine **ON**, and set spindle rotation direction.
10. Adjust spindle speed dial until desired RPM is displayed on spindle speed digital readout (see **Figure 34**).



**Figure 34.** Spindle speed controls.

# Calculating Spindle Speed for Drilling

The chart shown in **Figure 35** is intended as a guide only. Always follow the manufacturer's speed recommendations if provided with your drill bits, cutters, or hole saws. Exceeding the recommended speeds may be dangerous to the operator or cause damage to the tooling.

The speeds shown here are intended to get you started. The optimum speed will always depend on various factors, including tool diameter, drilling pressure, material hardness, material quality, and desired finish.

Often, when drilling materials other than wood, some type of lubrication is necessary.

## Lubrication Suggestions

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

**⚠ 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.**

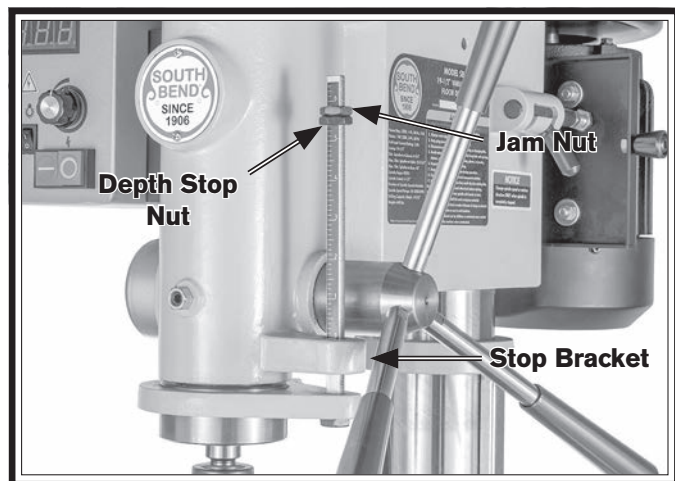
Twist/Brad Point Drill Bits	Soft Wood	Hard Wood	Plastic	Brass	Aluminum	Mild Steel
1/16" – 3/16"	3000	2500	2500	2500	3000	2500
13/64" – 3/8"	2000	1500	2000	1250	2500	1250
25/64" – 5/8"	1500	750	1500	750	1500	600
11/16" – 1"	750	500	1000	400	1000	350
Spade/Forstner Bits	Soft Wood	Hard Wood	Plastic	Brass	Aluminum	Mild Steel
1/4" – 1/2"	2000	1500				
9/16" – 1"	1500	1250				
1 1/8" – 1 7/8"	1000	750				
2" – 3"	500	350				
Hole Saws	Soft Wood	Hard Wood	Plastic	Brass	Aluminum	Mild Steel
1/2" – 7/8"	500	500	600	600	600	500
1" – 1 7/8"	400	400	500	500	500	400
2" – 2 7/8"	300	300	400	400	400	300
3" – 3 7/8"	200	200	300	300	300	200
4" – 5"	100	100	200	200	200	100
Rosette Cutters	Soft Wood	Hard Wood	Plastic	Brass	Aluminum	Mild Steel
Carbide Insert Type	350	250				
One-Piece Type	1800	500				
Tenon/Plug Cutters	Soft Wood	Hard Wood	Plastic	Brass	Aluminum	Mild Steel
3/8" – 1/2"	1200	1000				
5/8" – 1"	800	600				

Figure 35. Drilling speed chart.

## Adjusting Depth Stop

The Model SB1125 has a depth stop that allows you to drill repeat non-through holes to the same depth every time. The scale on front of the depth stop shows the depth in inches.

The depth stop consists of a threaded rod attached to the quill with a depth stop nut that can be lowered or raised against a stop bracket to control drilling depth. **Figure 36** shows the various components of the depth stop.



**Figure 36. Depth stop components.**

Tool Needed	Qty
Open-End Wrench 3/4" .....	1

### To adjust depth stop:

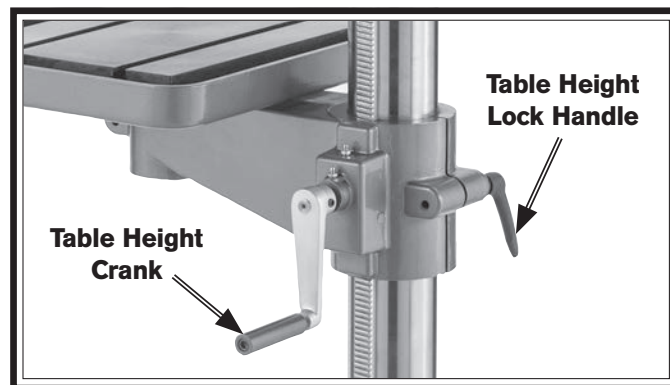
1. Lower drill bit to desired depth.
2. Thread depth stop nut down against stop bracket.
3. Adjust jam nut down against depth stop nut to secure position.

## Positioning Table

The table moves vertically, rotates 30° left and right, and swivels around the column. Remove any loose objects from the table surface before adjusting the table position.

## Raising/Lowering Table

1. Loosen table height lock handle (see **Figure 37**).
2. Raise or lower table by rotating table height crank (see **Figure 37**), then tighten table height lock to secure.



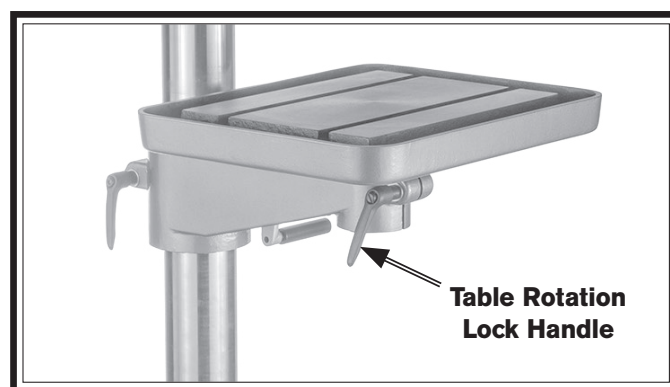
**Figure 37. Table height controls.**

## Rotating Table on Its Axis

1. Loosen table rotation lock handle (see **Figure 37**).
2. Rotate table left or right up to 30°, then tighten table rotation lock handle to secure.

## Swiveling Table Around Column

1. Loosen table height lock handle (see **Figure 38**).



**Figure 38. Table rotation lock handle.**

2. Swivel table to desired location on column, making sure to guide column rack with table, then tighten table height lock handle to secure position.



## Accessories

This section includes the most common accessories available for your machine, which are available through our exclusive dealer, **Grizzly Industrial, Inc.**, at [grizzly.com](http://grizzly.com).

### ⚠ WARNING

Installing unapproved accessories may cause machine to malfunction, resulting in serious personal injury or machine damage. To reduce this risk, only install accessories recommended by South Bend or Grizzly.

### NOTICE

Refer to Grizzly's website or latest catalog for additional recommended accessories.

#### H8203—Professional Drill Bit Sharpening Machine

This precision made Drill Bit Sharpening Machine is so simple to use, anyone can sharpen dull, smaller bits in three easy steps. Just set the drill bit in the collet, grind the taper relief angle, then grind the web thinning angle to reduce the center point width. It features a depth adjustment gauge, tapered diamond wheel, 90°–140° angle setting adjustment, and built-in collet tray. Collet sizes include 1/8", 5/32", 3/16", 1/4", 5/32", 5/16", 3/8", 25/64", 7/16", 15/32", and 1/2". Patented in the US!

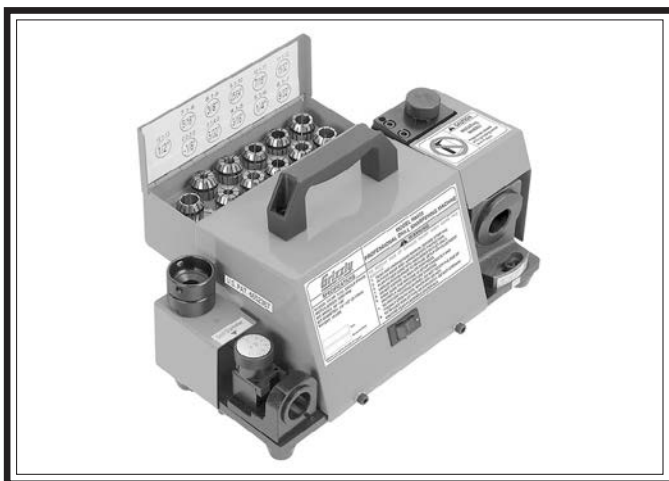


Figure 39. H8203 Professional Drill Bit Sharpening Machine.

#### G3658—TiN-Coated 115-Pc. Drill Bit Set

Titanium nitride-coated bits last up to six times as long as uncoated bits. This 115-piece set features 29 fractional bits, from 1/16"–1/2" in increments of 1/64", letter bits from A–Z, and 60 number bits. Housed in a rugged steel case.

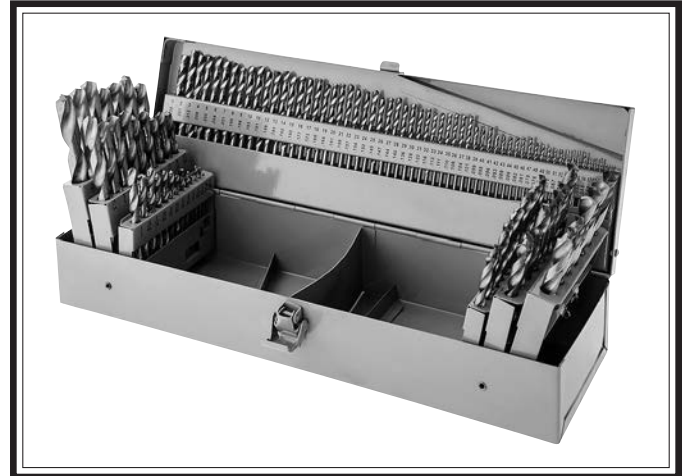


Figure 40. G3658 TiN-Coated 115-Pc. Drill Bit Set.

#### G1076—58-Pc. Clamping Kit for 5/8" T-Slots

This clamping kit is among the best in the world. All the blocks, bolts, nuts, and hold-downs are case hardened. Each kit includes: (24) studs (four studs each: 3", 4", 6", 7", and 8" long), (12) step blocks (3 sizes), (6) T-nuts, (6) flange nuts, (4) coupling nuts, and (6) end hold-downs. This kit fits 5/8" T-slots and includes 1/2"-13 studs. Racks can be bolted to the wall or side of machine for easy access.

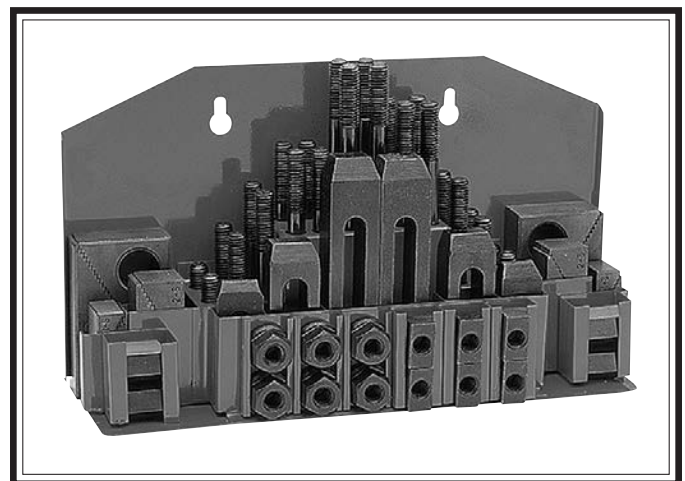


Figure 41. G1076 58-Pc. Clamping Kit for 5/8" T-Slots.

**order online at [www.grizzly.com](http://www.grizzly.com) or call 1-800-523-4777**



**SB1376— $\frac{1}{32}$ "— $\frac{5}{8}$ " Keyless Chuck, JT6**

These keyless chucks are produced to the highest standards which has earned them the South Bend name. The jaws open and close with ultra-smooth motion and the cut-knurling lets you get a positive grip. Like all South Bend chucks, it comes with a 2-year warranty which assures the unit is free from factory defects.



Figure 42. SB1376  $\frac{1}{32}$ "— $\frac{5}{8}$ " Keyless Chuck, JT6.

**H8140—7-Gallon Coolant Tank System**

Add this complete tank system to any metal cutting machine for efficient cutting, reduced tool wear, and better finishes. Includes pump, switch, enclosed tank, coolant return hose, and flexible nozzle with magnetic base. Made in an ISO 9001 factory. Pump motor  $\frac{1}{16}$  HP, 110V; maximum flow 3.17 gallons per minute; maximum capacity of 7 gallons.

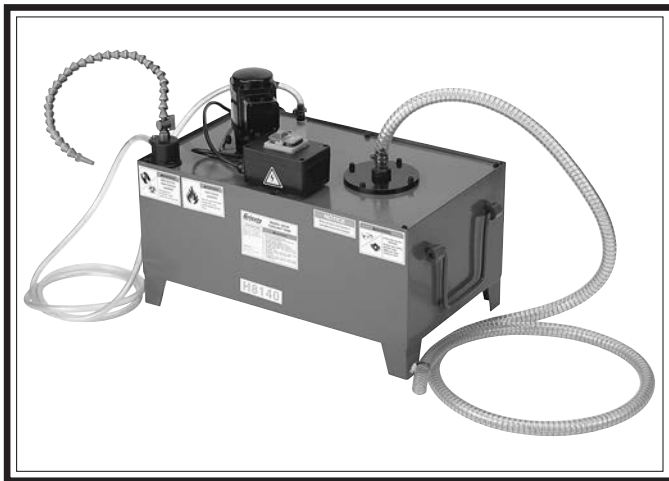


Figure 43. H8140 7-Gallon Coolant Tank System.

**H6572—Grease-Resistant Mat 3' x 3' x  $\frac{3}{4}$ "**

These black grease-resistant mats are engineered for proper back and leg support. The non-slip surface features a modular interlock design, which enables the user to create a custom floor. Mats measure 3' x 3' x  $\frac{3}{4}$ ".

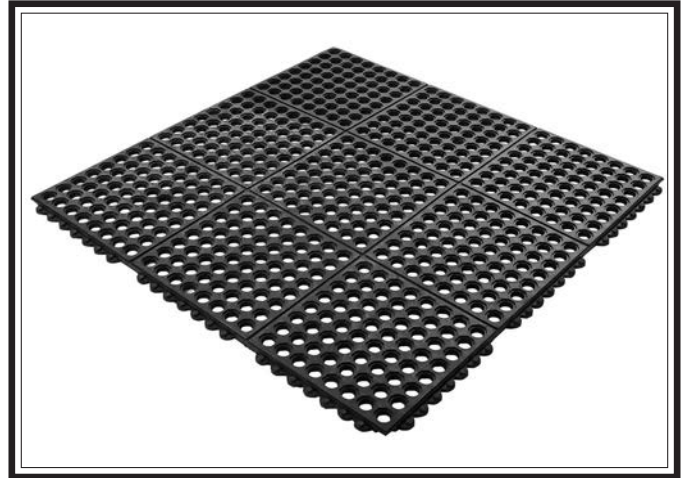


Figure 44. H6572 Grease-Resistant Mat 3' x 3' x  $\frac{3}{4}$ ".

**T10169—Adjustable Circle Cutter**

Produce precision circles in sheet metal, brass, wood, plastic, aluminum, and soft steel with this adjustable circle cutter. The diameter is adjustable up to 8" and includes HSS center and drill bit and double-ended tool bit. Always use the appropriate cutting speed for the circle diameter to prolong tool life.

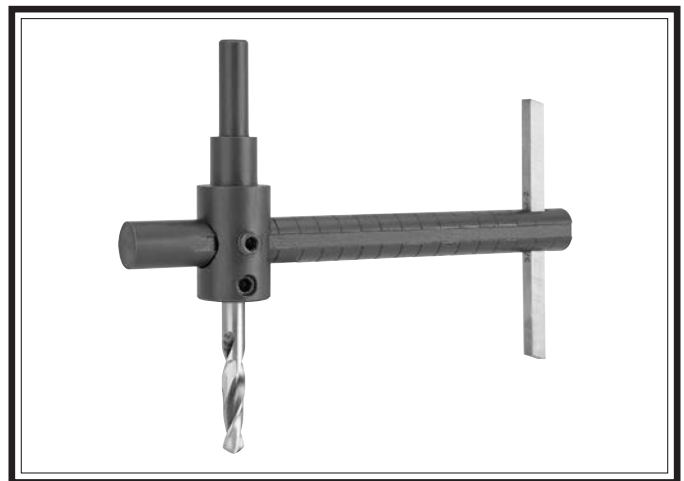


Figure 45. T10169 Adjustable Circle Cutter.

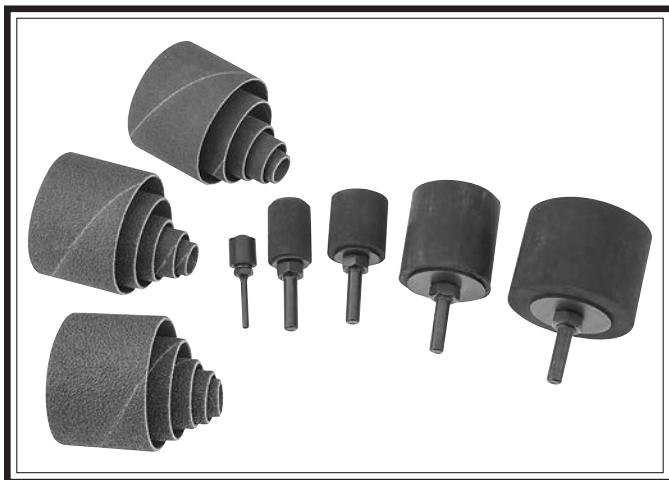
**order online at [www.grizzly.com](http://www.grizzly.com) or call 1-800-523-4777**

**H2942—Magnetic Base w/Eye Shield 8" x 10"**  
**H2943—Magnetic Base w/Eye Shield 12" x 16"**  
 Need a shield? This is just the thing for setting up extra protection. Powerful magnetic base allows placing the shield just about anywhere and the ball and socket joint allows a large range of positioning choices.



**Figure 46. H2943 Magnetic Base w/Eye Shield 12" x 16".**

**G2500—20-Pc. Regular Sanding Drum Set**  
 Use on your drill press, lathe, or hand drill. This kit consists of 5 drums in popular 1/2" x 1/2", 3/4" x 1", 1" x 1", 1 1/2" x 1 1/2", and 2" x 1 1/2" sizes. Comes with 3 grits for each drum.



**Figure 47. G2500 20-Pc. Regular Sanding Drum Set.**

**Recommended Metal Protectants**

- G5562—SLIPIT® 1 Qt. Gel**
- G5563—SLIPIT® 12 Oz. Spray**
- G2870—Boeshield® T-9 4 Oz. Spray**
- G2871—Boeshield® T-9 12 Oz. Spray**
- H3788—G96® Gun Treatment 12 Oz. Spray**
- H3789—G96® Gun Treatment 4.5 Oz. Spray**



**Figure 48. Recommended products for protecting unpainted cast iron/steel parts on machinery.**

**Basic Eye Protection**

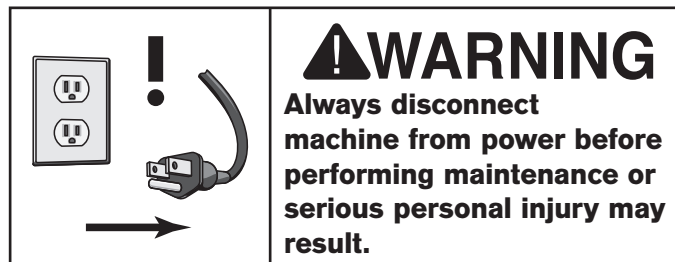
- T20501—Face Shield Crown Protector 4"**
- T20502—Face Shield Crown Protector 7"**
- T20503—Face Shield Window**
- T20451—"Kirova" Clear Safety Glasses**
- T20452—"Kirova" Anti-Reflective S. Glasses**
- T20456—DAKURA Safety Glasses, Black/Clear**



**Figure 49. Assortment of basic eye protection.**

**order online at [www.grizzly.com](http://www.grizzly.com) or call 1-800-523-4777**

# Maintenance Schedule **Cleaning & Protecting**



For optimum performance from this machine, this maintenance schedule must be strictly followed.

## Ongoing

To minimize your risk of injury and maintain proper machine operation, shut down the machine immediately if you ever observe any of the items below, and fix the problem before continuing operations:

- Loose mounting bolts.
- Worn switches/buttons/dial.
- Worn or damaged wires.
- Damaged V-belt.
- Any other unsafe condition.

## Weekly

- Lubricate quill and column surfaces (**Page 33**).
- Lubricate ball oilers (**Page 34**).

## Monthly

- Check for V-belt tension, damage, or wear (**Page 35**).
- Clean/vacuum dust buildup off motor.
- Lubricate quill and column racks (**Page 34**).

Cleaning the Model SB1125 is relatively easy. Vacuum excess metal or wood chips and wipe off 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 and base by wiping it clean after every use—this ensures moisture from wood dust does not remain on bare metal surfaces. Keep the table rust-free with regular applications of products like SLIPIT® or Boeshield® T-9 (see **Figure 48** in **Accessories**).

## Lubrication

Since all bearings on the Model SB1125 are sealed and permanently lubricated, simply leave them until they need to be replaced. **DO NOT** lubricate them.

An essential part of lubrication is cleaning the parts before lubricating them. This step is critical because grime and chips build up on lubricated components, which makes them hard to move. Simply adding more lubricant will not result in smooth moving parts.

Clean components before lubricating them with recommended products like those in **Figures 50–52** on **Page 33**.

**T26419—Syn-O-Gen Synthetic Grease**

Formulated with 100% pure synthesized hydrocarbon basestocks that are compounded with special thickeners and additives to make Syn-O-Gen non-melt, tacky, and water-resistant. Extremely low pour point, extremely high temperature oxidation, and thermal stability produce a grease that is unmatched in performance.



**Figure 50. T26419 Syn-O-Gen Synthetic Grease (NLGI#2 equivalent).**

**Moly-D Oils**

Moly-D oils are some of the best we've found for maintaining the critical components of machinery because they tend to resist run-off and maintain their lubricity under a variety of conditions—as well as reduce chatter or slip.

**T26685—ISO 32 Moly-D Machine/Way Oil 1-Gal.**

**T23963—ISO 32 Moly-D Machine/Way Oil 5-Gal.**



**Figure 51. ISO 32 Moly-D Machine/Way Oil.**

**T27914—ISO 68 Moly-D Machine/Way Oil 1-Gal.**

**T23962—ISO 68 Moly-D Machine/Way Oil 5-Gal.**



**Figure 52. ISO 68 Moly-D Machine/Way Oil.**

**Quill & Column Surfaces**

Lubrication ..... T23962 or ISO 68 Equiv.  
 Amount ..... Thin Coat  
 Frequency ..... 8 Hrs. of Operation

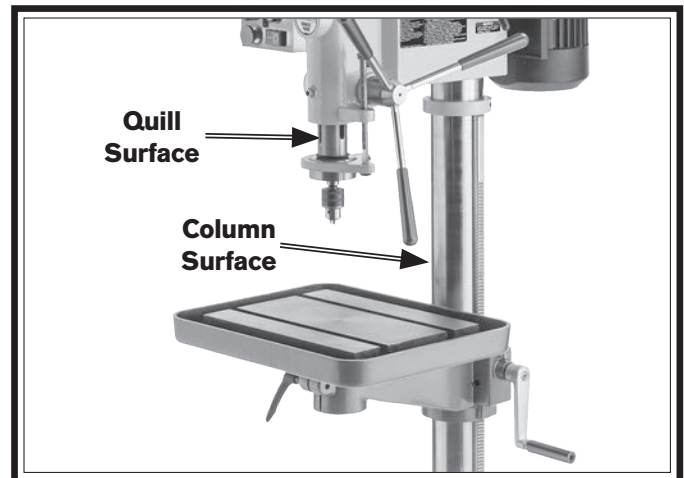
**Items Needed**

**Qty**

Mineral Spirits ..... As Needed  
 Shop Rags ..... As Needed

Use downfeed handles to move quill all the way down to access the smooth outer surface (see **Figure 53**). Adjust table height as necessary to access entire length of column (see **Figure 53**). Clean both with mineral spirits and shop rags.

**Note:** Avoid removing the grease from the quill and column racks while cleaning.



**Figure 53. Location of quill and column surfaces.**

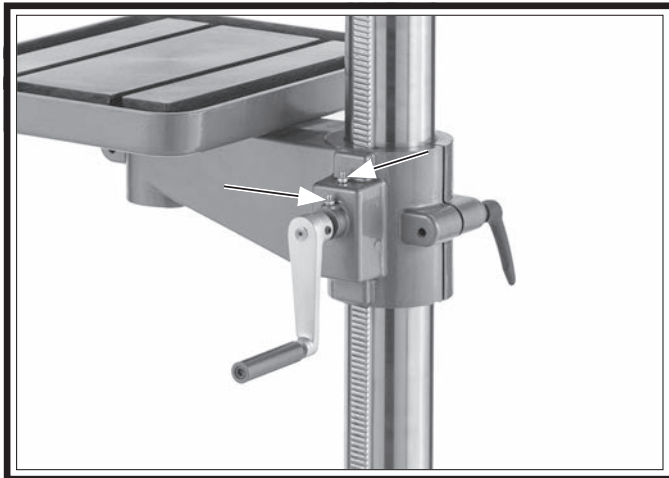


**Ball Oilers**

Lubrication .....T23963 or ISO 32 Equiv.  
 Amount ..... 1–2 Pumps  
 Frequency ..... 8 Hrs. of Operation

<b>Items Needed</b>	<b>Qty</b>
Mineral Spirits .....	As Needed
Shop Rags .....	As Needed

This machine has two ball oilers, as shown in **Figure 54**. Use an oil gun fitted with a tip wide enough to seal the ball oiler inlet. We do not recommend using metal needle or lance-type tips, as they can push the ball too far into the oiler, break the spring seat, and lodge the ball in the oil galley.



**Figure 54. Location of ball oilers.**

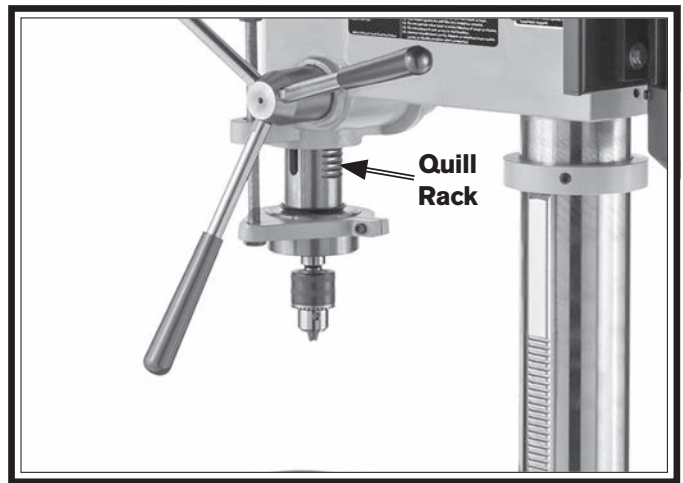
Push the tip of the oil gun against the ball oiler to create a seal, then pump the oil gun once or twice. If you see sludge coming out of the lubrication area, continue pumping the oil until the oil runs clear. When finished, wipe away excess oil.

**Quill & Column Racks**

Lubrication .....Model T26419 or NLGI#2 Equiv.  
 Amount ..... Thin Coat  
 Frequency ..... 90 Hrs. of Operation

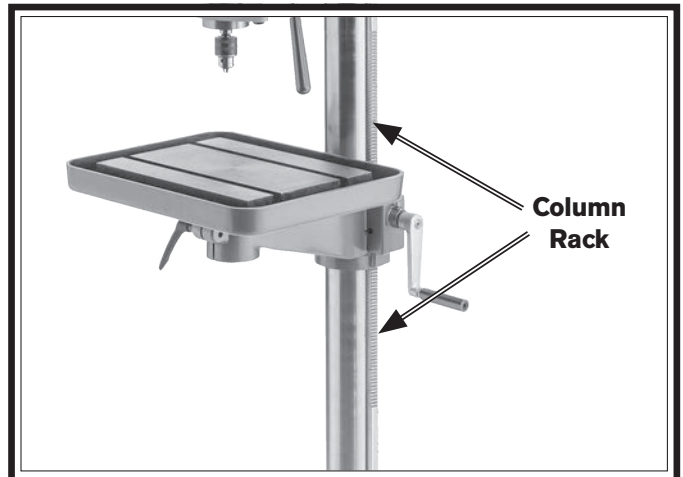
<b>Items Needed</b>	<b>Qty</b>
Mineral Spirits .....	As Needed
Shop Rags .....	As Needed
Stiff Brushes.....	2

Use downfeed handles to move spindle all the way down to gain full access to quill rack (see **Figure 55**), then clean the teeth with mineral spirits, shop rags, and a brush.



**Figure 55. Location of quill rack.**

Next, clean the column rack teeth (see **Figure 56**) using the same method. When racks are dry, use a clean brush to apply a thin coat of grease to the teeth, then raise and lower the quill and table to distribute the grease.



**Figure 56. Location of column rack.**



## Machine Storage

All machinery will develop serious rust problems and corrosion damage if it is not properly prepared for storage. If decommissioning this machine, use the steps in this section to ensure that it remains in good condition.

### Preparing Machine for Storage

Items Needed	Qty
Mineral Spirits .....	As Needed
Shop Rags .....	As Needed
Rust Preventative .....	As Needed
Tarp/Plastic Sheet.....	1

#### To prepare machine for storage:

1. Disconnect all power sources to machine.
2. Thoroughly clean all unpainted, bare metal surfaces, then coat them with light weight grease or rust preventative. Take care to ensure surfaces are completely covered but that grease or rust preventative is kept off of painted surfaces.
 

**Note:** *If machine will be out of service for short period of time, use way oil or good grade of medium-weight machine oil (not auto engine oil) in place of grease or rust preventative.*
3. Loosen or remove V-belts so they do not stretch while machine is not in use.
4. Completely cover machine with tarp or plastic sheet that will keep out dust and resist liquid or moisture. If machine will be stored in/near direct sunlight, use cover that will block sun's rays.

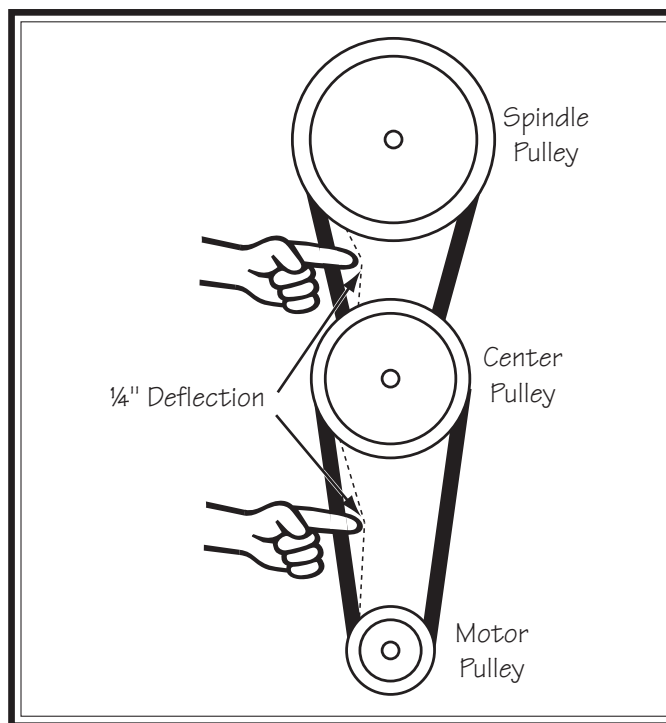
### Bringing Machine Out of Storage

Items Needed	Qty
Safety Glasses .....	1 Pr.
Cleaner/Degreaser .....	As Needed
Shop Rags .....	As Needed

1. Put on safety glasses
2. Coat rust preventative with cleaner/degreaser, then let it soak for 5–10 minutes.
3. Wipe off surfaces. If cleaner/degreaser is effective, rust preventative will wipe off easily.
4. Repeat **Steps 2–3** as necessary until clean.
5. Install/tension V-belts as described in **Replacing V-Belts on Page 37**.
6. Perform **Test Run and Spindle Break-In** beginning on **Page 19**.

## Checking V-Belts


Inspect the V-belts regularly for tension and damage. Refer to **Figure 57** for proper belt tension. Belt deflection should be approximately  $\frac{1}{4}$ " under moderate pressure. If belt deflection is *more than*  $\frac{1}{4}$ ", belt is worn and must be replaced (refer to **Replacing V-Belts on Page 37**).



**Figure 57. Correct belt deflection.**

# Adjusting Return Spring Tension

The spring tension for automatic quill recoil has been pre-set at the factory. In most cases, it will never need to be re-adjusted during the life of the machine. However, if the quill stops automatically recoiling, the spring may need to be adjusted for additional tension. If it does need adjustment, the spring housing is located on the left side of the headstock.

	<p><b>⚠ WARNING</b> If return spring should come loose from the spring cover and rapidly unwind, laceration or impact injuries could occur. Always wear heavy leather gloves and safety glasses when adjusting return spring tension.</p>
	

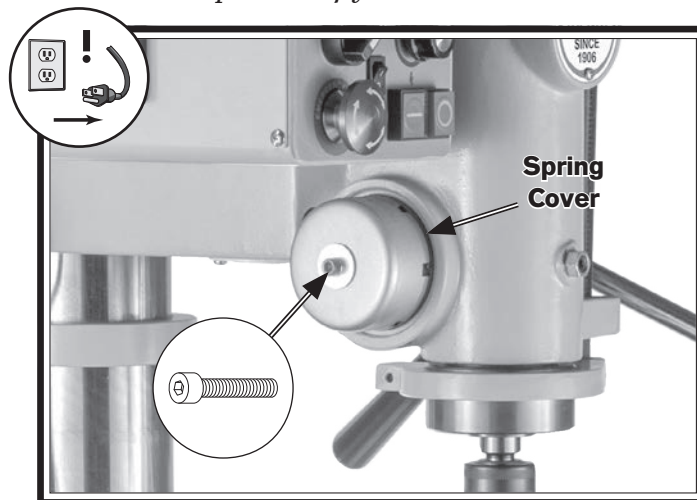
Items Needed	Qty
Heavy Leather Gloves.....	1 Pr.
Safety Glasses .....	1 Pr.
Shop Rags .....	As Needed
Hex Wrench 5mm .....	1

**To adjust return spring tension:**

1. DISCONNECT MACHINE FROM POWER!
2. Wipe any oil off spring cover so it does not slip in your fingers in following steps (see **Figure 58**).

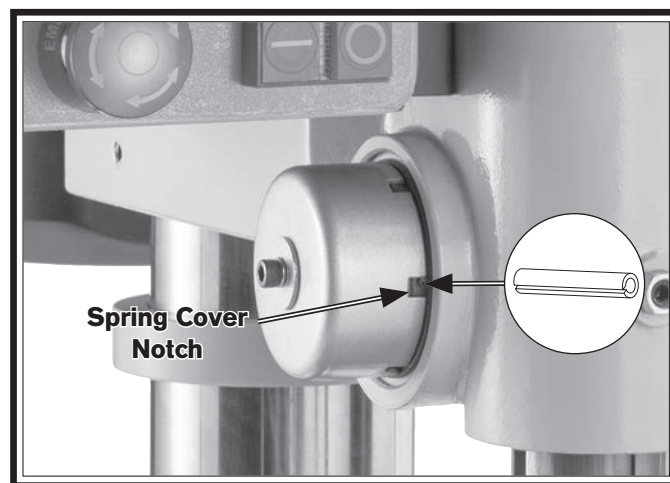
3. Hold spring cover against side of headstock so cover stays splined with locking lug, as shown in **Figure 58**, then loosen cap screw approximately 1/4".

**IMPORTANT:** Hold spring cover tightly during **Step 4**, or force of spring will cause cover to spin out of your hands.



**Figure 58. Location of spring cover and cap screw.**

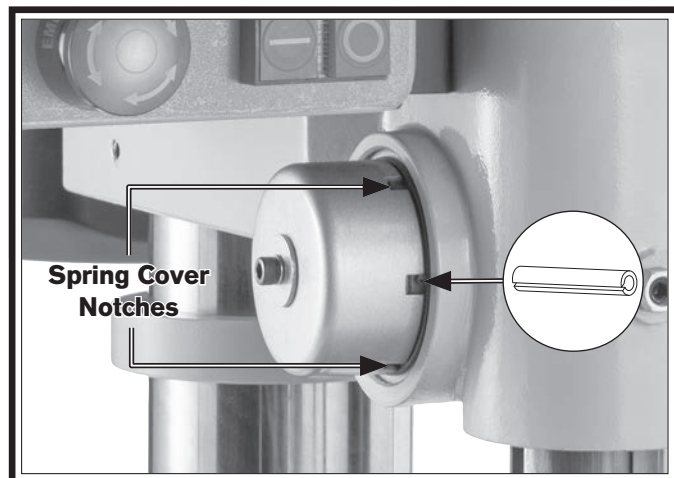
4. Wearing gloves, pull spring cover outward just enough to disengage spring cover notch from roll pin shown in **Figure 59**.



**Figure 59. Location of spring cover notch and roll pin.**

5. Rotate spring cover counterclockwise to increase tension, or clockwise to reduce tension.

6. Engage next available spring cover notch with roll pin (see **Figure 60**), and hold spring cover tightly to side of headstock.



**Figure 60.** Location of spring cover notches and roll pin.

7. Tighten cap screw from **Step 3** ¼".
8. Check tension adjustment by downfeeding spindle. Spindle should return quickly when downward pressure is released.

— If spindle does not retract quickly, repeat **Steps 3–8**, and re-check tension until return speed is accurate.

## Replacing V-Belts

The V-belts transfer power from the motor to the spindle. If either of the V-belts are worn or damaged in any way, the drill press will not operate optimally, and unnecessary wear on the moving parts will occur.

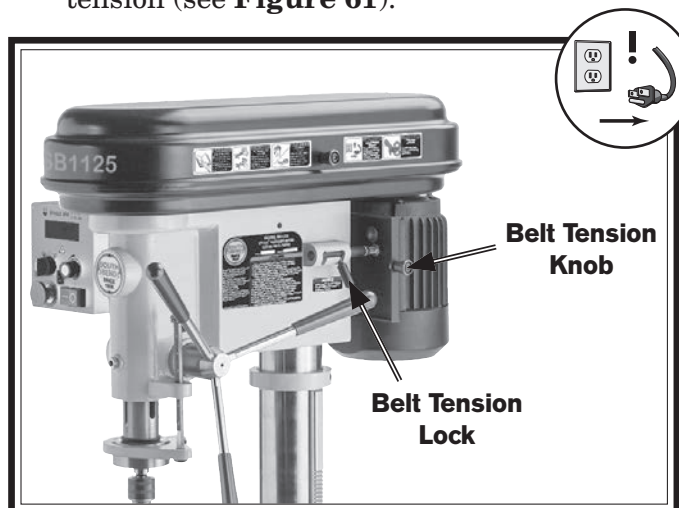
### Replacing Drive Belt

The V-belt installed on the motor and center pulleys can be replaced by simply releasing the tension and replacing the old belt with a new one.

Item Needed	Qty
Replacement Drive V-Belt (#PSB1125056) .....	1

#### To replace drive belt:

1. DISCONNECT MACHINE FROM POWER!
2. Lift belt tension lock, then use belt tension knob to pull motor forward and release belt tension (see **Figure 61**).



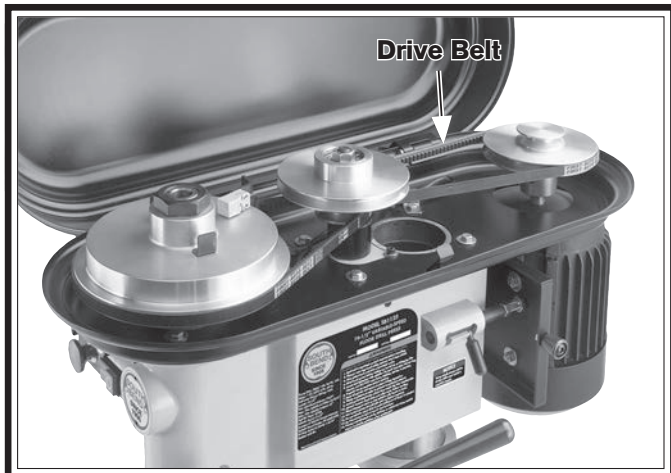
**Figure 61.** Location of belt tension lock and belt tension knob.

3. Open belt cover.

## CAUTION

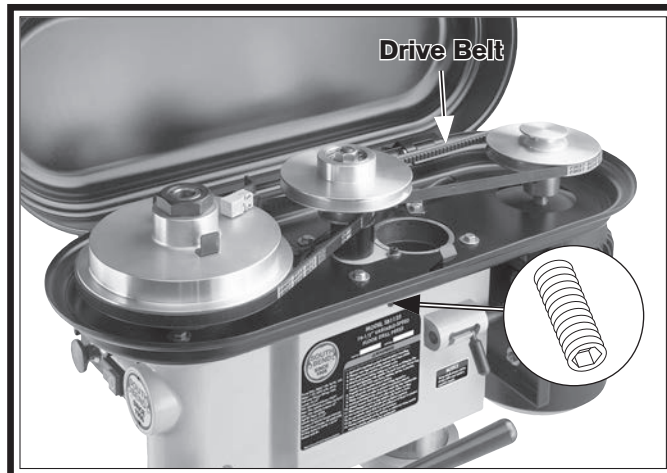
Use care when handling V-belts as they could pinch your fingers against a pulley. They may also get hot after extended use so wait to handle if machine has been in use.

- Remove old drive belt (see **Figure 62**).



**Figure 62. Location of drive belt.**

- Loosen set screw shown in **Figure 63**.



**Figure 63. Location of drive belt and center pulley set screw.**

- Install new drive belt on pulleys for desired speed range (see **Setting Spindle Speed** on **Page 25**).
- After belt is properly positioned on pulleys, use belt tension knob to push motor away from center pulley and engage belt tension.
- Secure motor position with belt tension lock.
- Close belt cover.

- Push center pulley towards spindle pulley to release spindle V-belt tension (see **Figure 64**).

- Remove old spindle V-belt (see **Figure 64**) and replace with new one.

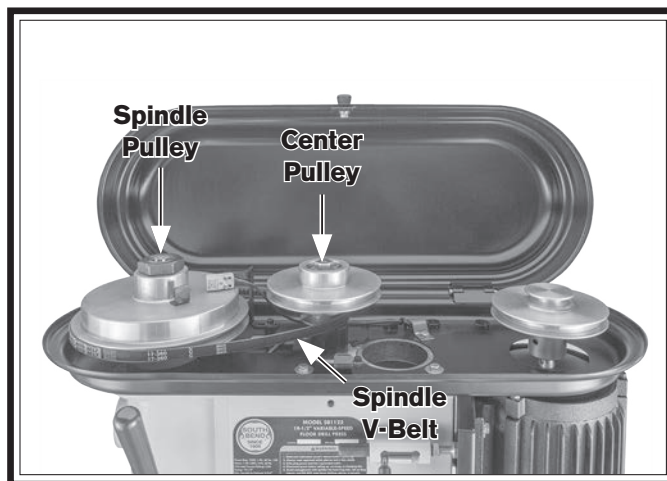
## Replacing Spindle V-Belt

Use the following steps to replace the spindle V-belt if it is worn, damaged, or if belt deflection is incorrect.

Items Needed	Qty
Hex Wrench 4mm .....	1
Replacement Spindle V-Belt (#PSB1125055).....	1

### To replace spindle V-belt:

- Perform **Steps 1–3** of **Replacing Drive Belt**.
- Remove drive belt (see **Figure 63**).



**Figure 64. Location of spindle V-belt and pulleys.**

- Push center pulley towards motor pulley to tension spindle V-belt and tighten set screw from **Step 3**.
- Install drive belt on pulleys for desired speed range (see **Setting Spindle Speed** on **Page 25**).
- Close belt cover.



# Aligning Motor Pulley

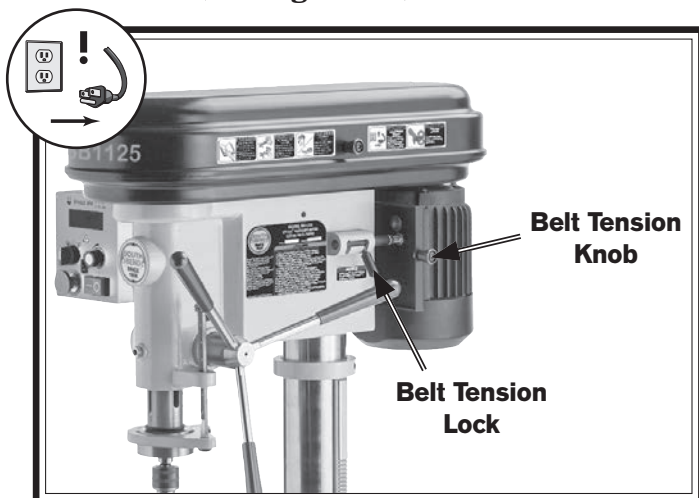
Pulley alignment is an important factor in power transmission and belt life. The pulleys should be parallel to each other and in the same plane (coplanar) for optimum performance.

The motor pulley alignment can be adjusted by loosening the set screws that secure it to the motor shaft.

Tools Needed	Qty
Straightedge 12" .....	1
Hex Wrench 5/32" .....	1

### To align motor pulley:

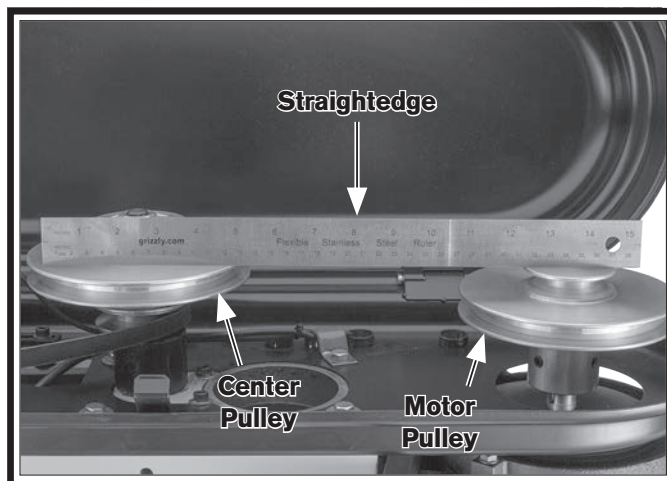
1. DISCONNECT MACHINE FROM POWER!
  
2. Lift belt tension lock, then use belt tension knob to pull motor forward and release belt tension (see **Figure 65**).



**Figure 65. Location of belt tension lock and belt tension knob.**

3. Open belt cover and remove drive belt.

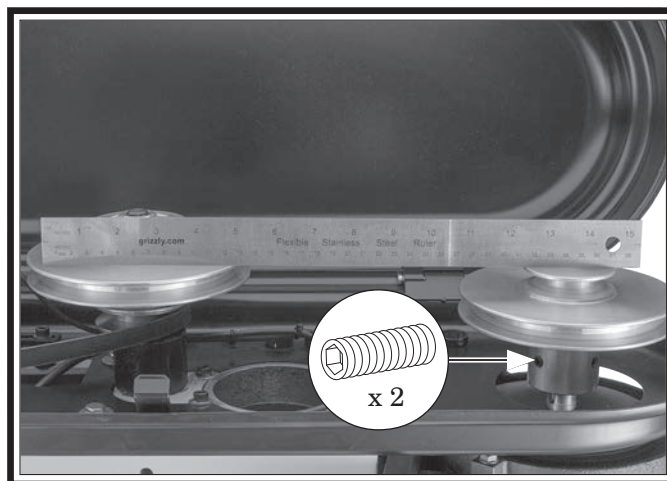
4. Place straightedge against motor pulley and center pulley (see **Figure 66**) and check that they are aligned. There should be no space anywhere between straightedge or pulleys.



**Figure 66. Checking pulley alignment.**

- If pulleys *are* aligned, no adjustment is necessary. Proceed to **Step 7**.
- If pulleys *are not* aligned, proceed to **Step 5**.

5. Loosen set screws on motor pulley (see **Figure 67**).



**Figure 67. Location of set screws.**



- 6. Use straightedge to adjust motor pulley on shaft until it aligns with center pulley, then tighten set screws.
- 7. Refer to **Steps 4–7 of Setting Spindle Speed on Page 25** to install drive belt for desired speed range.

- 3. Remove burnt bulb from socket and replace with new one (see **Figure 69**).

## Replacing Worklight Bulb

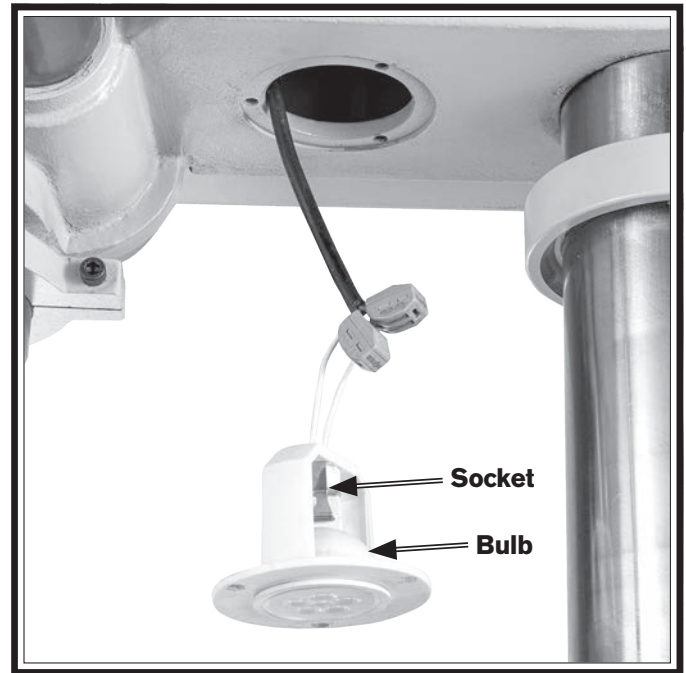
The worklight bulb on this machine is a 85–265V 7W two-pronged LED bulb.

Items Needed	Qty
Phillips Head Screwdriver #2.....	1
Replacement Bulb (#PSB1125018) .....	1

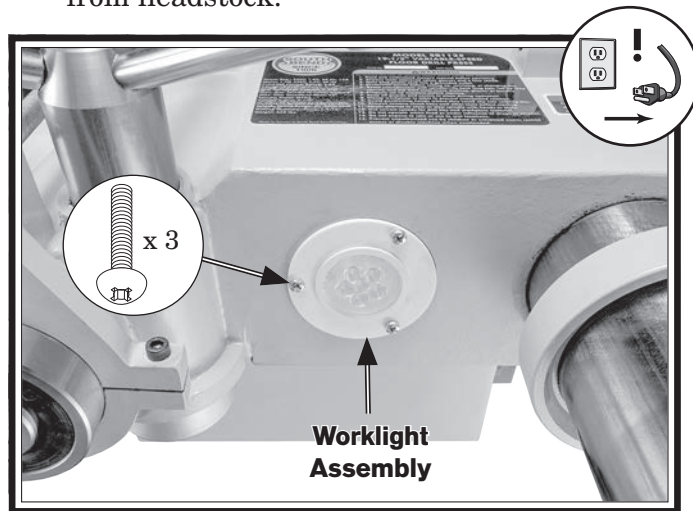
### To replace worklight bulb:

- 1. **DISCONNECT MACHINE FROM POWER!**
- 2. Remove (3) Phillips head screws shown in **Figure 68** to remove worklight assembly from headstock.

- 4. Push worklight assembly back into headstock and secure with Phillips head screws removed in **Step 2**.



**Figure 69. Location of bulb and socket.**



**Figure 68. Location of worklight assembly screws.**

If you need replacement parts, or if you are unsure how to do any of the solutions given here, feel free to call us at (360) 734-1540.

Symptom	Possible Cause	Possible Solution
Machine does not start or a breaker trips immediately after startup.	<ol style="list-style-type: none"> <li>1. Master power switch in OFF (0) position.</li> <li>2. EMERGENCY STOP button depressed/at fault.</li> <li>3. Blown machine fuse.</li> <li>4. Incorrect power supply voltage or circuit size.</li> <li>5. Power supply circuit breaker tripped or fuse blown.</li> <li>6. Motor wires connected incorrectly.</li> <li>7. Wiring broken, disconnected, or corroded.</li> <li>8. ON/OFF switch at fault.</li> <li>9. Spindle rotation switch at fault.</li> <li>10. VFD/inverter at fault.</li> <li>11. Motor or motor bearings at fault.</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn master power switch to ON (1) position.</li> <li>2. Rotate EMERGENCY STOP button head to reset. Replace if at fault.</li> <li>3. Replace fuse/ensure no shorts.</li> <li>4. Ensure correct power supply voltage and circuit size (<b>Page 11</b>).</li> <li>5. Ensure circuit is free of shorts. Reset circuit breaker or replace fuse.</li> <li>6. Correct motor wiring connections.</li> <li>7. Fix broken wires or disconnected/corroded connections.</li> <li>8. Replace switch.</li> <li>9. Test/replace switch.</li> <li>10. Test/replace VFD/inverter.</li> <li>11. Replace motor.</li> </ol>
Machine stalls or is underpowered.	<ol style="list-style-type: none"> <li>1. Dull bit/cutter.</li> <li>2. Machine undersized for task.</li> <li>3. Belt(s) slipping/pulleys misaligned.</li> <li>4. Pulley slipping on shaft.</li> <li>5. Motor overheated.</li> <li>6. Extension cord too long.</li> <li>7. Spindle rotation switch at fault.</li> <li>8. Motor or motor bearings at fault.</li> </ol>	<ol style="list-style-type: none"> <li>1. Sharpen bit/cutter or replace.</li> <li>2. Use correct bit/cutter; reduce feed rate; reduce spindle speed (<b>Page 25</b>); use cutting fluid if possible.</li> <li>3. Clean/tension/replace belt(s) (<b>Page 37</b>); ensure pulleys are aligned (<b>Page 39</b>).</li> <li>4. Tighten/replace loose pulley/shaft.</li> <li>5. Clean motor, let cool, and reduce workload.</li> <li>6. Move machine closer to power supply; use shorter extension cord.</li> <li>7. Test/replace switch.</li> <li>8. Replace motor.</li> </ol>
Machine has vibration or noisy operation.	<ol style="list-style-type: none"> <li>1. Motor or component loose.</li> <li>2. V-belt(s) worn, loose, pulleys misaligned, or belt slapping cover.</li> <li>3. Pulley loose.</li> <li>4. Motor mount loose/broken.</li> <li>5. Spindle loose, improperly installed, or damaged.</li> <li>6. Workpiece loose.</li> <li>7. Motor fan rubbing on fan cover.</li> <li>8. Chuck or bit/cutter at fault.</li> <li>9. Spindle bearings at fault.</li> <li>10. Motor bearings at fault.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace damaged or missing bolts/nuts or tighten if loose.</li> <li>2. Inspect/replace belts with a new matched set (<b>Page 37</b>). Realign pulleys if necessary (<b>Page 39</b>).</li> <li>3. Secure pulley on shaft.</li> <li>4. Tighten/replace.</li> <li>5. Tighten loose spindle; re-install spindle, ensuring mating surfaces are clean; replace spindle if damaged.</li> <li>6. Use correct holding fixture and reclamp workpiece.</li> <li>7. Fix/replace fan cover; replace loose/damaged fan.</li> <li>8. Replace unbalanced chuck; replace/resharpen bit/cutter; use correct feed rate.</li> <li>9. Test by rotating spindle; rotational grinding/loose shaft requires bearing replacement.</li> <li>10. Replace motor.</li> </ol>

<b>Symptom</b>	<b>Possible Cause</b>	<b>Possible Solution</b>
Spindle turns opposite way of spindle rotation switch setting.	<ol style="list-style-type: none"> <li>1. Motor connections wired out of phase.</li> </ol>	<ol style="list-style-type: none"> <li>1. Swap two incoming motor wires (<b>Page 20</b>).</li> </ol>
Worklight does not illuminate.	<ol style="list-style-type: none"> <li>1. Lens covered with dust.</li> <li>2. Master power switch in OFF (0) position.</li> <li>3. Bulb burnt out.</li> <li>4. Wiring broken, disconnected, or corroded.</li> <li>5. Worklight switch at fault.</li> <li>6. Worklight at fault.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean lens.</li> <li>2. Turn master power switch to ON (1) position.</li> <li>3. Replace bulb (<b>Page 40</b>).</li> <li>4. Fix broken wires or disconnected/corroded connections.</li> <li>5. Replace switch.</li> <li>6. Replace worklight assembly.</li> </ol>
RPM digital readout does not work/display is incorrect.	<ol style="list-style-type: none"> <li>1. RPM sensor catching on pulley.</li> <li>2. Wiring broken, disconnected, or corroded.</li> <li>3. Digital readout circuit board at fault.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust position/replace if at fault.</li> <li>2. Fix broken wires or disconnected/corroded connections.</li> <li>3. Replace.</li> </ol>
Lack of power at spindle.	<ol style="list-style-type: none"> <li>1. Wrong voltage.</li> <li>2. V-belt(s) worn or loose.</li> </ol>	<ol style="list-style-type: none"> <li>1. Ensure correct voltage (<b>Page 11</b>).</li> <li>2. Check belt tension/replace belts with a new matched set (<b>Page 37</b>).</li> </ol>
Tool/arbor falls out or loose in spindle.	<ol style="list-style-type: none"> <li>1. Debris on tool/arbor or in spindle taper.</li> <li>2. Excessive feed pressure.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean tool/arbor and spindle taper; then re-install (<b>Page 23</b>).</li> <li>2. Decrease feed pressure and allow chips to clear.</li> </ol>
Breaking tools or bits/cutters.	<ol style="list-style-type: none"> <li>1. Spindle speed/feed rate too fast.</li> <li>2. Taking too big of a cut at one time.</li> <li>3. Improper cutting technique or type of cut for tool/machine.</li> <li>4. Cutting tool too small.</li> <li>5. Cutting tool getting too hot.</li> <li>6. Spindle extended too far down during or at beginning of operation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce spindle speed (<b>Page 25</b>)/feed rate.</li> <li>2. Decrease feed pressure and allow chips to clear.</li> <li>3. Use right technique, tool, or machine for job.</li> <li>4. Use larger cutting tool and slower feed rate.</li> <li>5. Use cutting fluid for appropriate application; reduce spindle speed (<b>Page 25</b>).</li> <li>6. Fully retract spindle and raise table to increase rigidity.</li> </ol>
Workpiece or tool vibrates or chatters during operation.	<ol style="list-style-type: none"> <li>1. Spindle extended too far down during or at beginning of operation.</li> <li>2. Table locks not tight.</li> <li>3. Workpiece not secure.</li> <li>4. Spindle speed/feed rate too fast.</li> </ol>	<ol style="list-style-type: none"> <li>1. Fully retract spindle and raise table to increase rigidity.</li> <li>2. Tighten table locks.</li> <li>3. Properly clamp workpiece on table.</li> <li>4. Reduce spindle speed (<b>Page 25</b>)/feed rate.</li> </ol>
Table hard to move.	<ol style="list-style-type: none"> <li>1. Table locked.</li> <li>2. Column dirty/needs lubrication.</li> <li>3. Dirty or dry column rack and pinion.</li> </ol>	<ol style="list-style-type: none"> <li>1. Disengage table locks.</li> <li>2. Clean/lubricate (<b>Page 33</b>).</li> <li>3. Clean away chips/debris. Lubricate rack and ball oilers (<b>Page 34</b>).</li> </ol>
Spindle does not fully retract.	<ol style="list-style-type: none"> <li>1. Poorly adjusted return spring.</li> <li>2. Debris on spindle/quill rack.</li> <li>3. Worn return spring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Increase return spring tension (<b>Page 36</b>).</li> <li>2. Clean and lubricate spindle/quill rack (<b>Page 34</b>).</li> <li>3. Replace return spring.</li> </ol>

<b>Symptom</b>	<b>Possible Cause</b>	<b>Possible Solution</b>
Spindle overheats.	<ol style="list-style-type: none"> <li>1. Machine operated at high speeds for extended period.</li> </ol>	<ol style="list-style-type: none"> <li>1. Allow drill to cool; avoid operating at high speeds for extended periods.</li> </ol>
Excessive runout or wobbling in chuck/drill bit.	<ol style="list-style-type: none"> <li>1. Debris between chuck-to-spindle mating surfaces.</li> <li>2. Bit/cutter bent.</li> <li>3. Bit/cutter installed incorrectly.</li> <li>4. Spindle bearings worn.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove chuck, clean, deburr tapered chuck and spindle mating surfaces, reassemble (<b>Page 23</b>).</li> <li>2. Replace with straight bit/cutter.</li> <li>3. Install bit/cutter correctly (<b>Page 24</b>) or replace.</li> <li>4. Replace spindle bearings.</li> </ol>
Bad surface finish.	<ol style="list-style-type: none"> <li>1. Spindle speed/feed rate too fast.</li> <li>2. Dull or incorrect cutting tool/bit.</li> <li>3. Wrong rotation direction of cutting tool.</li> <li>4. Workpiece not secure.</li> <li>5. Spindle extended too far down during or at beginning of operation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce spindle speed (<b>Page 25</b>)/feed rate.</li> <li>2. Sharpen cutting tool or select one that better suits operation.</li> <li>3. Reverse cutting tool rotation.</li> <li>4. Properly clamp workpiece on table.</li> <li>5. Fully retract spindle and raise table to increase rigidity.</li> </ol>
Drill bit drifts.	<ol style="list-style-type: none"> <li>1. Dull/incorrectly sharpened drill bit.</li> <li>2. Tool/bit/chuck incorrectly installed.</li> <li>3. Wrong rotation direction of cutting tool.</li> </ol>	<ol style="list-style-type: none"> <li>1. Correctly sharpen/replace drill bit.</li> <li>2. Correctly re-install tool/bit (<b>Page 24</b>)/chuck (<b>Page 23</b>).</li> <li>3. Reverse cutting tool rotation.</li> </ol>
Drill bit stuck in workpiece.	<ol style="list-style-type: none"> <li>1. Workpiece squeezing drill bit, or feed rate too fast.</li> <li>2. Spindle speed/feed rate too slow.</li> </ol>	<ol style="list-style-type: none"> <li>1. Properly clamp workpiece on table; decrease feed rate.</li> <li>2. Increase spindle speed (<b>Page 25</b>)/feed rate.</li> </ol>
Workpiece thrown from table.	<ol style="list-style-type: none"> <li>1. Workpiece not secure; tool/bit too large for feed speed.</li> </ol>	<ol style="list-style-type: none"> <li>1. Properly clamp workpiece on table.</li> </ol>
Drill bit slips in chuck.	<ol style="list-style-type: none"> <li>1. Chuck jaws loose.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten chuck jaws.</li> </ol>
Backside of workpiece splinters.	<ol style="list-style-type: none"> <li>1. Scrap board not installed between table and workpiece.</li> </ol>	<ol style="list-style-type: none"> <li>1. Install scrap board between table and workpiece.</li> </ol>

# Electrical Safety Instructions

These pages are accurate at the time of printing. In the constant effort to improve, however, we may make changes to the electrical systems of future machines. Study this section carefully. If you see differences between your machine and what is shown in this section, call Technical Support at (360) 734-1540 for assistance BEFORE making any changes to the wiring on your machine.

**Shock Hazard:** It is extremely dangerous to perform electrical or wiring tasks while the machine is connected to the power source. Touching electrified parts will result in personal injury including but not limited to severe burns, electrocution, or death. For your own safety, disconnect machine from the power source before servicing electrical components or performing any wiring tasks!

**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.

**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.

**Circuit Requirements:** Connecting the machine to an improperly sized circuit will greatly increase the risk of fire. To minimize this risk, only connect the machine to a power circuit that meets the minimum requirements given in this manual.

**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.

**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.

**Experiencing Difficulties:** If you are experiencing difficulties understanding the information included in this section, contact our Technical Support at (360) 734-1540.

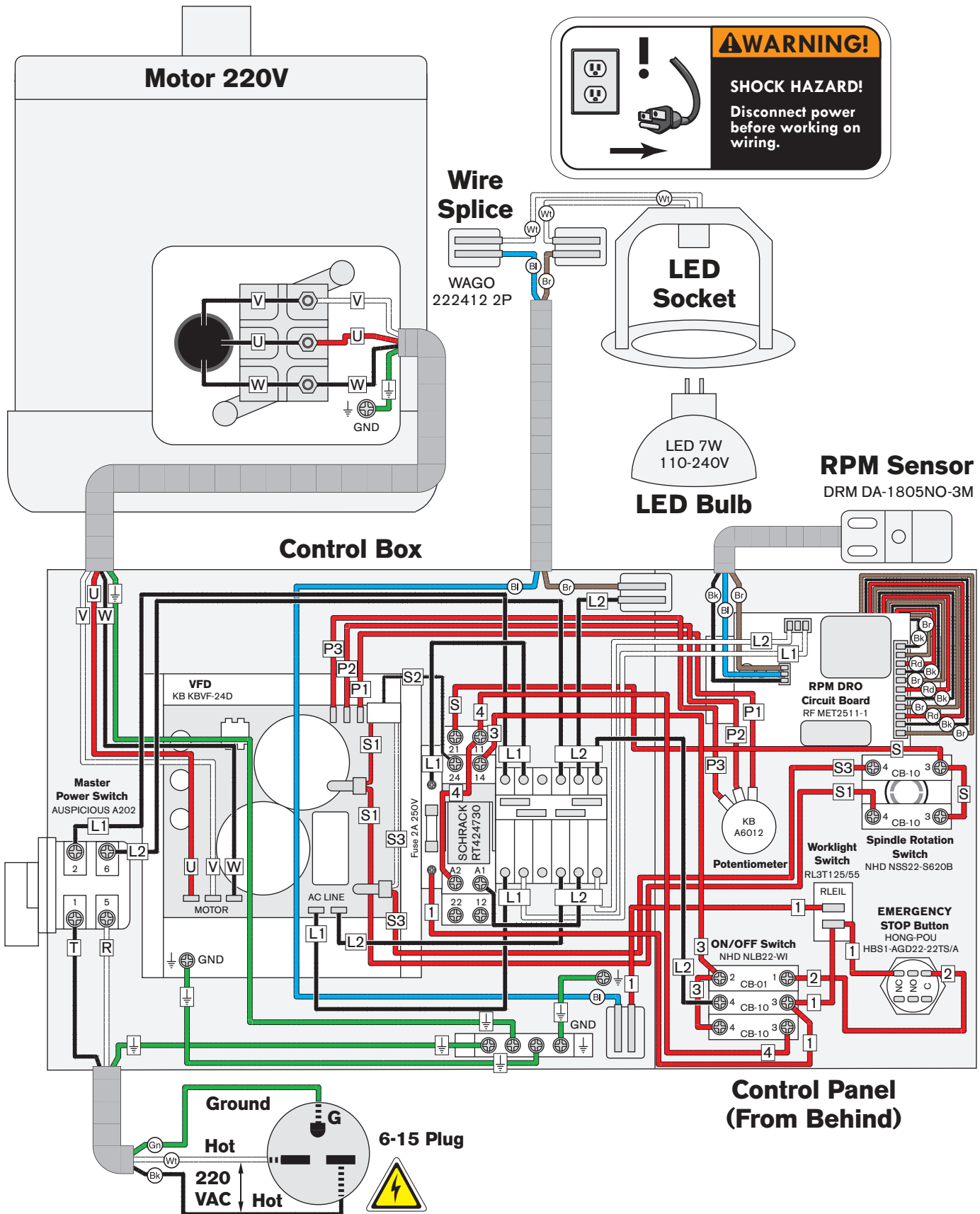
## WIRING DIAGRAM COLOR KEY

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

**NOTICE:** The photos and diagrams included in this section are best viewed in color. You can see them in color at [www.southbendtools.com](http://www.southbendtools.com).



# Wiring Diagram



# Electrical Component Pictures



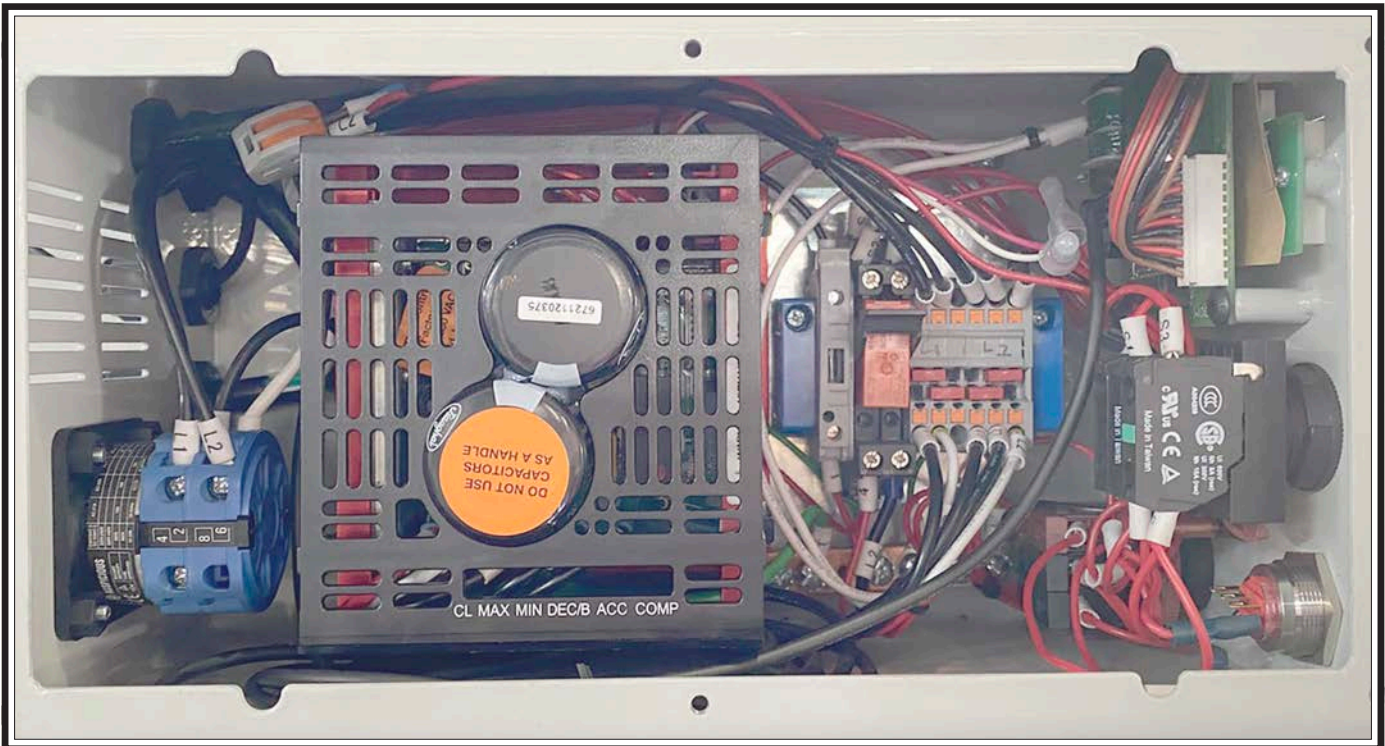
**Figure 70. Motor junction box wiring.**



**Figure 72. Worklight wiring.**

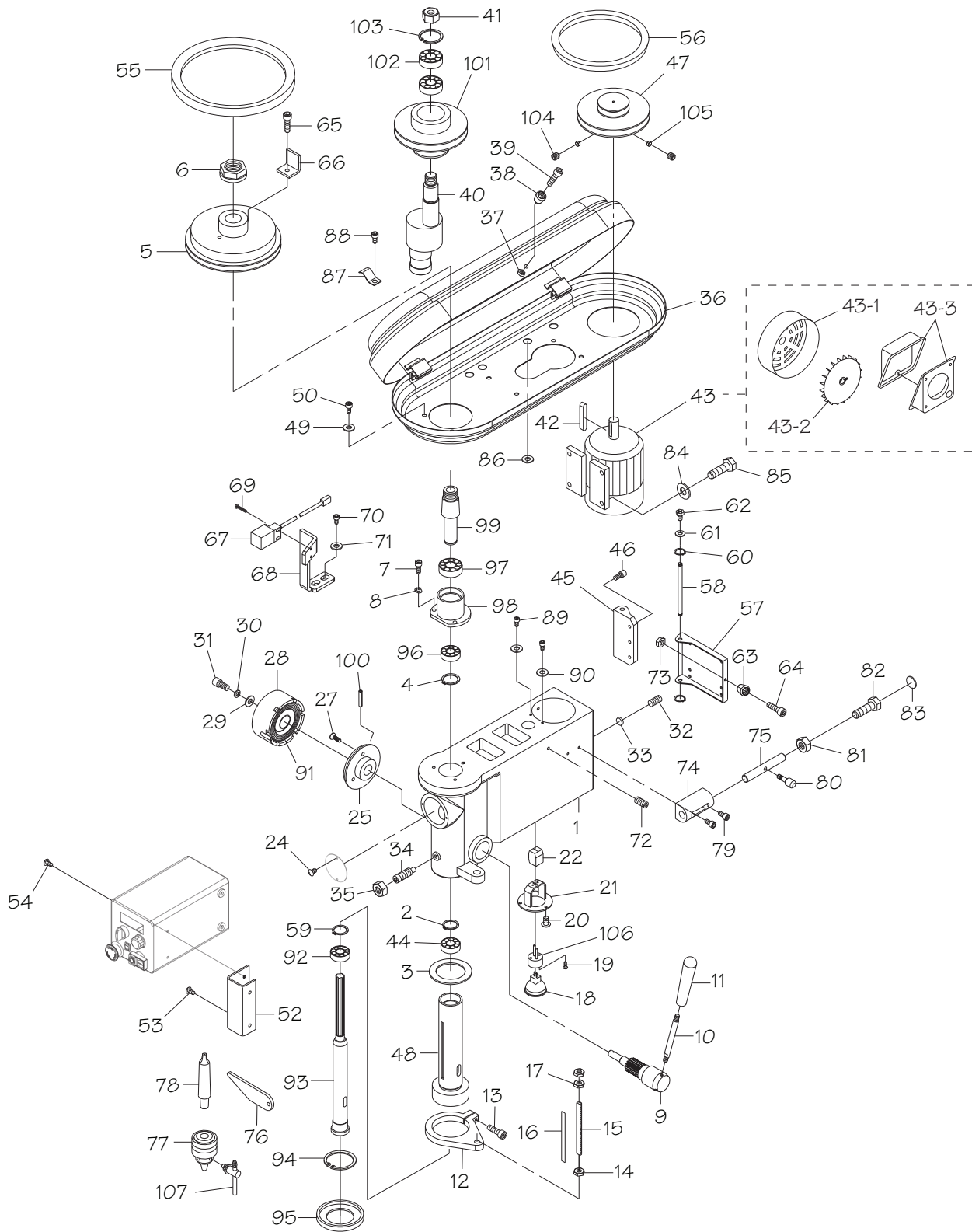


**Figure 71. RPM sensor.**



**Figure 73. Control box wiring.**

# Headstock



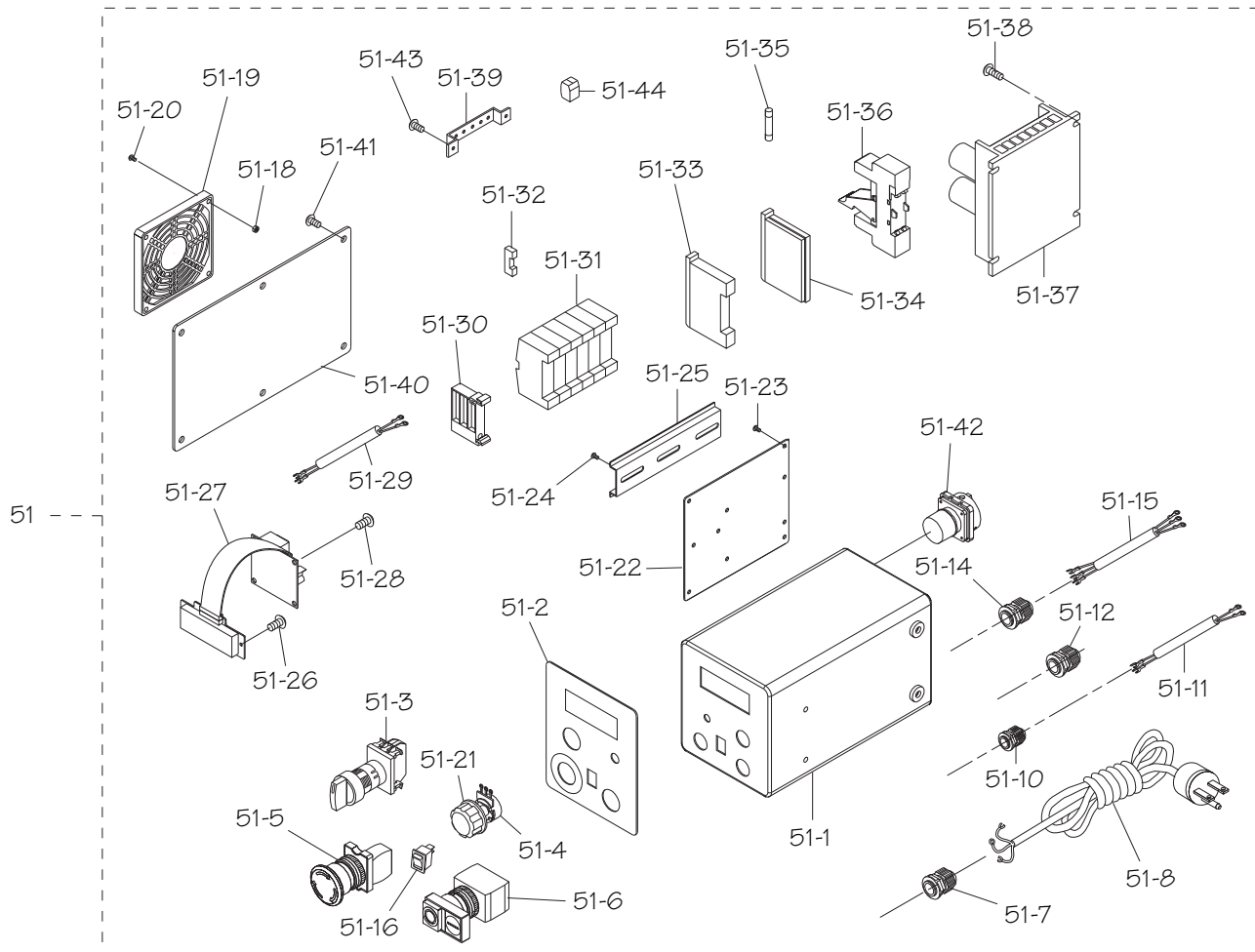
# Headstock Parts List

REF	PART #	DESCRIPTION
1	PSB1125001	HEADSTOCK
2	PSB1125002	EXT RETAINING RING 20MM
3	PSB1125003	RUBBER FLANGE 55 X 80 X 3
4	PSB1125004	EXT RETAINING RING 30MM
5	PSB1125005	SPINDLE PULLEY
6	PSB1125006	SPINDLE LOCK NUT 1-5/16"-16
7	PSB1125007	CAP SCREW M8-1.25 X 30
8	PSB1125008	LOCK WASHER 8MM
9	PSB1125009	PINION SHAFT
10	PSB1125010	STUD-DE 1/2-13 X 3/4
11	PSB1125011	KNOB 1/2-13, D1-1/16, TAPERED
12	PSB1125012	DEPTH STOP BRACKET
13	PSB1125013	CAP SCREW M6-1 X 30
14	PSB1125014	HEX NUT 1/2-20 THIN
15	PSB1125015	THREADED DEPTH ROD
16	PSB1125016	SCALE
17	PSB1125017	HEX NUT 1/2-20 THIN
18	PSB1125018	BULB LED 7W 110-240V BI-PIN
19	PSB1125019	PHLP HD SCR M3-.5 X 10
20	PSB1125020	PHLP HD SCR M5-.8 X 10
21	PSB1125021	LAMP MOUNTING BRACKET
22	PSB1125022	WIRE SPLICE WAGO 222412 2P
24	PSB1125024	PHLP HD SCR M5-.8 X 10
25	PSB1125025	SPRING BASE
27	PSB1125027	FLAT HD SCR M5-.8 X 10
28	PSB1125028	RETURN SPRING COVER
29	PSB1125029	FLAT WASHER 6.5 X 13 X 0.8MM
30	PSB1125030	LOCK WASHER 6MM
31	PSB1125031	CAP SCREW M6-1 X 15
32	PSB1125032	SET SCREW M8-1.25 X 8
33	PSB1125033	BUSHING 6 X 3MM
34	PSB1125034	SET SCREW M10-1.5 X 30 DOG-PT
35	PSB1125035	HEX NUT M10-1.5
36	PSB1125036	BELT COVER
37	PSB1125037	HEX NUT M8-1.25
38	PSB1125038	HOLLOW HANDLE 25 X 26, 9.5
39	PSB1125039	CAP SCREW M8-1.25 X 30
40	PSB1125040	CENTER PULLEY SHAFT
41	PSB1125041	HEX NUT 5/8-11
42	PSB1125042	KEY 6 X 6 X 40 RE
43	PSB1125043	MOTOR 1HP 220V 3-PH
43-1	PSB1125043-1	MOTOR FAN COVER
43-2	PSB1125043-2	MOTOR FAN
43-3	PSB1125043-3	MOTOR JUNCTION BOX
44	PSB1125044	BALL BEARING 6204ZZ
45	PSB1125045	MOTOR BRACKET BASE
46	PSB1125046	CAP SCREW M8-1.25 X 20
47	PSB1125047	MOTOR PULLEY
48	PSB1125048	QUILL
49	PSB1125049	FLAT WASHER 8MM
50	PSB1125050	CAP SCREW M8-1.25 X 15
52	PSB1125052	CONTROL BOX MOUNTING BRACKET
53	PSB1125053	PHLP HD SCR M5-.8 X 10
54	PSB1125054	PHLP HD SCR M5-.8 X 10

REF	PART #	DESCRIPTION
55	PSB1125055	V-BELT 17-360 COGGED
56	PSB1125056	V-BELT 17-360 COGGED
57	PSB1125057	MOTOR MOUNTING BRACKET
58	PSB1125058	MOTOR PIVOT SHAFT
59	PSB1125059	EXT RETAINING RING 35MM
60	PSB1125060	EXT RETAINING RING 12MM
61	PSB1125061	FENDER WASHER 6MM
62	PSB1125062	HEX BOLT 1/4-20 X 3/8
63	PSB1125063	HOLLOW HANDLE 25 X 26, 9.5
64	PSB1125064	CAP SCREW M8-1.25 X 30
65	PSB1125065	CAP SCREW M6-1 X 15
66	PSB1125066	RPM SENSOR MOUNTING BRACKET
67	PSB1125067	RPM SENSOR DRM DA-1805N0-3M 24G 3W 118"
68	PSB1125068	RPM SENSOR SUPPORT
69	PSB1125069	PHLP HD SCR M3-.5 X 16
70	PSB1125070	CAP SCREW M6-1 X 15
71	PSB1125071	FLAT WASHER 6.5 X 13 X 0.8MM
72	PSB1125072	SET SCREW M8-1.25 X 35
73	PSB1125073	HEX NUT M8-1.25
74	PSB1125074	PINION SUPPORT
75	PSB1125075	TENSION SHAFT
76	PSB1125076	DRIFT KEY
77	PSB1125077	DRILL CHUCK JT6 X 3/64-5/8
78	PSB1125078	DRILL CHUCK ARBOR MT#3 X JT6
79	PSB1125079	CAP SCREW M6-1 X 15
80	PSB1125080	TENSION SHAFT LEVER
81	PSB1125081	HEX NUT M10-1.5
82	PSB1125082	HEX BOLT M10-1.5 X 45
83	PSB1125083	FRICTION PAD
84	PSB1125084	FLAT WASHER 5/16
85	PSB1125085	HEX BOLT M8-1.25 X 20
86	PSB1125086	STRAIN RELIEF TYPE-1 9/16"
87	PSB1125087	CORD CLAMP
88	PSB1125088	CAP SCREW M8-1.25 X 15
89	PSB1125089	CAP SCREW M6-1 X 15
90	PSB1125090	FLAT WASHER 6.5 X 16 X 2MM
91	PSB1125091	FLAT COIL SPRING
92	PSB1125092	BALL BEARING 6207ZZ
93	PSB1125093	SPINDLE MT#3
94	PSB1125094	INT RETAINING RING 72MM
95	PSB1125095	SPINDLE END CAP
96	PSB1125096	BALL BEARING 6006ZZ
97	PSB1125097	BALL BEARING 6006ZZ
98	PSB1125098	BEARING HOUSING
99	PSB1125099	SPINDLE TAPER SLEEVE
100	PSB1125100	ROLL PIN 3 X 23
101	PSB1125101	CENTER PULLEY
102	PSB1125102	BALL BEARING 6204ZZ
103	PSB1125103	INT RETAINING RING 47MM
104	PSB1125104	SET SCREW 5/16-18 X 3/8
105	PSB1125105	BUSHING 6 X 3MM
106	PSB1125106	LED PORT GT MET2429
107	PSB1125107	DRILL CHUCK KEY 5/16" STD 11T 9/16"



# Control Box



REF	PART #	DESCRIPTION
51	PSB1125051	CONTROL BOX ASSEMBLY
51-1	PSB1125051-1	CONTROL BOX
51-2	PSB1125051-2	CONTROL PANEL
51-3	PSB1125051-3	SPINDLE ROTATION SWITCH NHD NS522-5320B
51-4	PSB1125051-4	POTENTIOMETER KB A6012
51-5	PSB1125051-5	E-STOP BUTTON HONG-POU HBS1-AGD22-22TS/A
51-6	PSB1125051-6	ON/OFF SWITCH NHD NLB22-WI
51-7	PSB1125051-7	STRAIN RELIEF TYPE-3 PG11
51-8	PSB1125051-8	POWER CORD 14G 3W 80" 6-15P
51-10	PSB1125051-10	STRAIN RELIEF TYPE-3 PG9
51-11	PSB1125051-11	LED WORKLIGHT CORD 18G 2W 35"
51-12	PSB1125051-12	STRAIN RELIEF TYPE-3 PG11
51-14	PSB1125051-14	STRAIN RELIEF TYPE-3 PG11
51-15	PSB1125051-15	MOTOR CORD 14G 4W 33"
51-16	PSB1125051-16	WORKLIGHT SWITCH MIDAS MET1242
51-18	PSB1125051-18	HEX NUT M4-.7
51-19	PSB1125051-19	AIR FILTER 3-1/2"
51-20	PSB1125051-20	PHLP HD SCR M4-.7X10
51-21	PSB1125051-21	SPINDLE SPEED DIAL
51-22	PSB1125051-22	ELECTRICAL MOUNTING BOARD
51-23	PSB1125051-23	PHLP HD SCR M4-.7X10

REF	PART #	DESCRIPTION
51-24	PSB1125051-24	PHLP HD SCR M4-.7X10
51-25	PSB1125051-25	DIN RAIL 35 X 35 X 7.5MM
51-26	PSB1125051-26	PHLP HD SCR M3-.5 X 6
51-27	PSB1125051-27	RPM DRO RF MET2511-1
51-28	PSB1125051-28	PHLP HD SCR M5-.8 X 10
51-29	PSB1125051-29	TACHOMETER CORD 18G 2W 12"
51-30	PSB1125051-30	TERMINAL END BRACKET MIDAS MET1517
51-31	PSB1125051-31	TERMINAL BLOCK PHOENIX PT2.5
51-32	PSB1125051-32	TERMINAL JUMPER PHOENIX FB52.5
51-33	PSB1125051-33	TERMINAL END PLATE PHOENIX D-5T2.5
51-34	PSB1125051-34	FUSE HOLDER NHD HTF-1/EPF-1A
51-35	PSB1125051-35	FUSE 2A 250V
51-36	PSB1125051-36	RELAY SCHRACK RT424730-230V
51-37	PSB1125051-37	INVERTER/VFD KB KBVF-24D
51-38	PSB1125051-38	PHLP HD SCR M4-.7X10
51-39	PSB1125051-39	GROUND TERMINAL BAR
51-40	PSB1125051-40	SIDE PANEL
51-41	PSB1125051-41	PHLP HD SCR M4-.7X10
51-42	PSB1125051-42	MASTER POWER SWITCH AUSPICIOUS A202
51-43	PSB1125051-43	PHLP HD SCR M4-.7X 6
51-44	PSB1125051-44	WIRE SPLICE WAGO 222412 2P



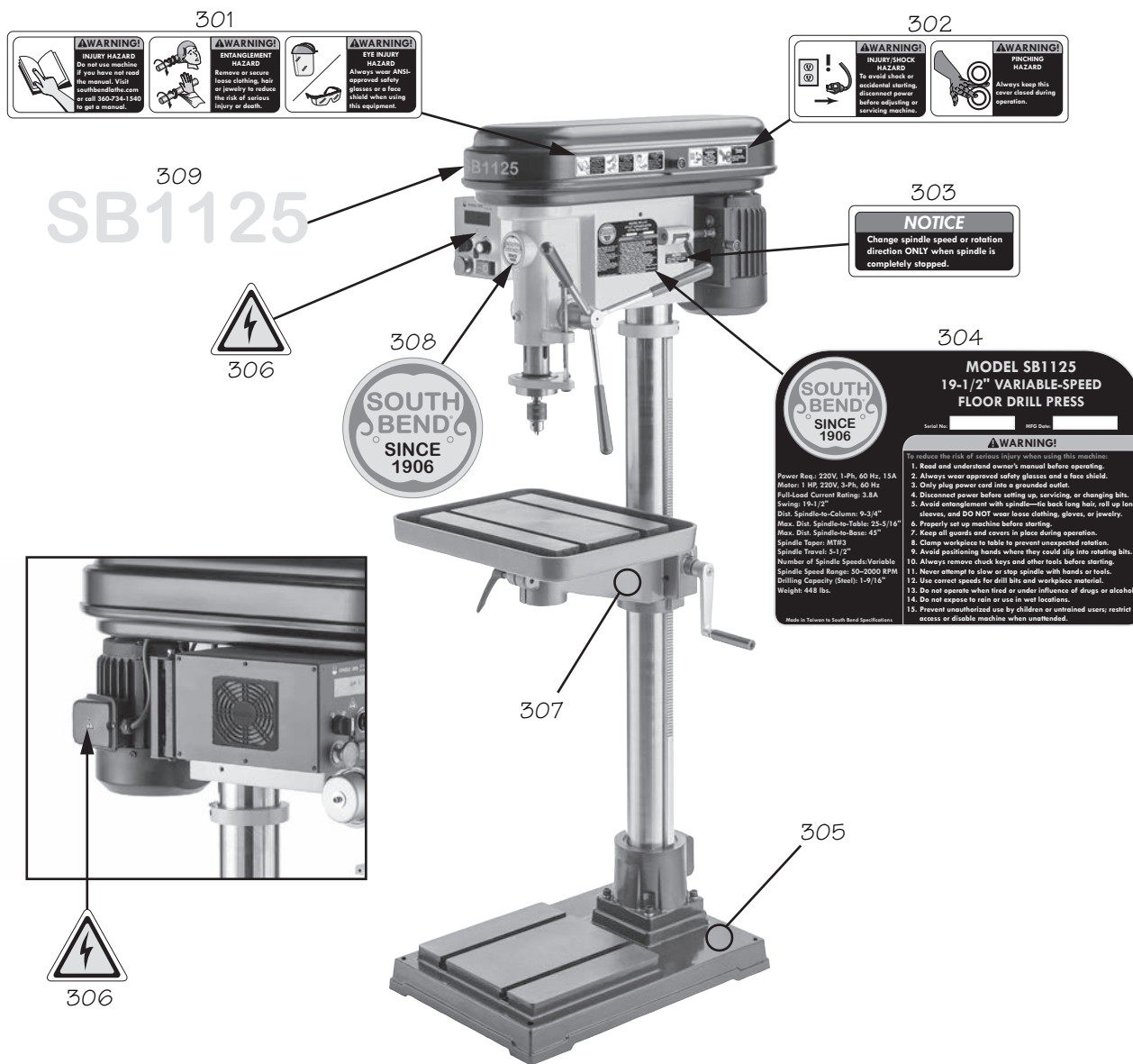


# Column Parts List

REF	PART #	DESCRIPTION
201	PSB1125201	BASE
202	PSB1125202	COLUMN BASE
203	PSB1125203	LOCK WASHER 12MM
204	PSB1125204	CAP SCREW M12-1.75 X 60
205	PSB1125205	LOCK WASHER 16MM
206	PSB1125206	CAP SCREW M16-2 X 50
207	PSB1125207	COLUMN
208	PSB1125208	RACK
209	PSB1125209	TABLE ARM
210	PSB1125210	WORM SHAFT
212	PSB1125212	TABLE HEIGHT CRANK
213	PSB1125213	SET SCREW 3/8-16 X 1/2
214	PSB1125214	HEX NUT 3/8-16
215	PSB1125215	HOLLOW HANDLE 23 X 100, 9.7
216	PSB1125216	CAP SCREW 3/8-16 X 4-5/16
217	PSB1125217	BALL OILER 1/8" NPT THREADED

REF	PART #	DESCRIPTION
218	PSB1125218	SPACER 5 X 20 X 5
219	PSB1125219	WORM GEAR SHAFT
220	PSB1125220	WORM GEAR
221	PSB1125221	SPACER 5 X 20 X 5
222	PSB1125222	FLAT WASHER 12MM
223	PSB1125223	ADJUSTABLE HANDLE M12-1.75 X 52, 70L
224	PSB1125224	TABLE
225	PSB1125225	FLAT WASHER 12MM
226	PSB1125226	ADJUSTABLE HANDLE M12-1.75 X 70, 80L
227	PSB1125227	COLUMN COLLAR
228	PSB1125228	BUSHING 8 X 3MM
229	PSB1125229	SET SCREW M10-1.5 X 10
231	PSB1125231	HEX WRENCH 5MM
232	PSB1125232	HEX WRENCH 4MM
233	PSB1125233	HEX WRENCH 3MM

# Machine Labels



REF PART #	DESCRIPTION
301	PSB1125301 MANUAL/ENTANGLEMENT/EYE LABEL
302	PSB1125302 DISCONNECT/PINCH LABEL
303	PSB1125303 SPINDLE SPEED NOTICE LABEL
304	PSB1125304 MACHINE ID LABEL
305	PSB1125305 TOUCH-UP PAINT, SB DARK BLUE

REF PART #	DESCRIPTION
306	PSB1125306 ELECTRICITY LABEL
307	PSB1125307 TOUCH-UP PAINT, SB LIGHT BLUE
308	PSB1125308 SOUTH BEND NAMEPLATE Ø2MM
309	PSB1125309 MODEL NUMBER LABEL

## ⚠️ WARNING

The safety labels provided with your machine are used to make the operator aware of the machine hazards and ways to prevent injury. The owner of this machine **MUST** maintain the original location and readability of these safety labels. If any label is removed or becomes unreadable, **REPLACE** that label before using the machine again. Contact South Bend Tools at (360) 734-1540 or [www.southbendtools.com](http://www.southbendtools.com) to order new labels.

# Warranty

This quality product is warranted by South Bend Tools to the original buyer for **2 years** from the date of purchase. This warranty does not apply to consumable parts, or defects due to any kind of misuse, abuse, negligence, accidents, repairs, alterations or lack of maintenance. We do not reimburse for third party repairs. In no event shall we be liable for death, injuries to persons or property, or for incidental, contingent, special or consequential damages arising from the use of our products.

We do not warrant or represent that this machine complies with the provisions of any law, act, code, regulation, or standard of any domestic or foreign government, industry, or authority. In no event shall South Bend's liability under this warranty exceed the original purchase price paid for this machine. Any legal actions brought against South Bend Tools shall be tried in the State of Washington, County of Whatcom.

This is the sole written warranty for this machine. Any and all warranties that may be implied by law, including any merchantability or fitness, for any purpose, are hereby limited to the duration of this warranty.

Thank you for your business and continued support.

To take advantage of this warranty, register at <https://www.grizzly.com/forms/warranty>, or you can scan the QR code below to be automatically directed to our warranty registration page. Enter all applicable information for the product.





[southbendtools.com](http://southbendtools.com)

