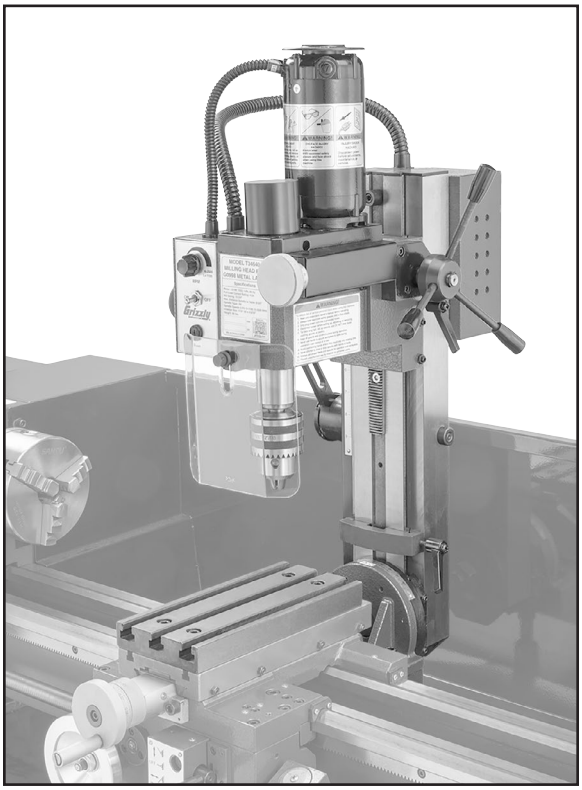
MODEL T34640
MILLING HEAD FOR
G0998 METAL LATHE

OWNER'S MANUAL

(For models manufactured since 11/25)



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WARNING: NO PORTION OF THIS MANUAL MAY BE REPRODUCED IN ANY SHAPE OR FORM WITHOUT THE WRITTEN APPROVAL OF GRIZZLY INDUSTRIAL, INC.
#CS24041 PRINTED IN CHINA V1.07.26

******Keep for Future Reference******

⚠ WARNING!

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

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

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

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

⚠ WARNING!

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

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

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

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INTRODUCTION

Contact Info

We stand behind our machines! If you have questions or need help, contact us with the information below. Before contacting, make sure you get the **serial number** and **manufacture date** from the machine ID label. This will help us help you faster.

Grizzly Technical Support
1815 W. Battlefield
Springfield, MO 65807
Phone: (570) 546-9663
Email: techsupport@grizzly.com

We want your feedback on this manual. What did you like about it? Where could it be improved? Please take a few minutes to give us feedback.

Grizzly Documentation Manager
P.O. Box 2069
Bellingham, WA 98227-2069
Email: manuals@grizzly.com

⚠WARNING

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

⚠CAUTION

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

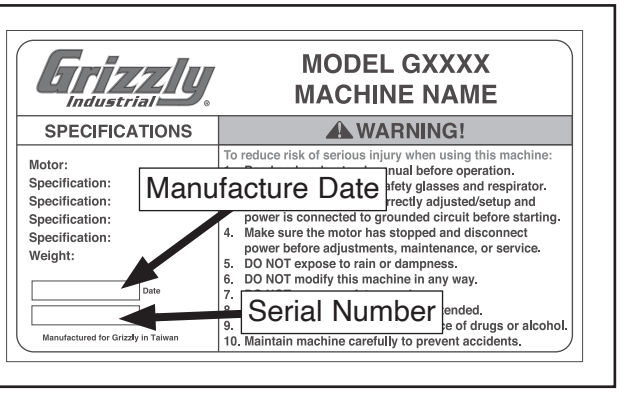
Manual Accuracy

We are proud to provide a high-quality owner's manual with your new machine!

We made every effort to be exact with the instructions, specifications, drawings, and photographs in this manual. Sometimes we make mistakes, but our policy of continuous improvement also means that **sometimes the machine you receive is slightly different than shown in the manual**.

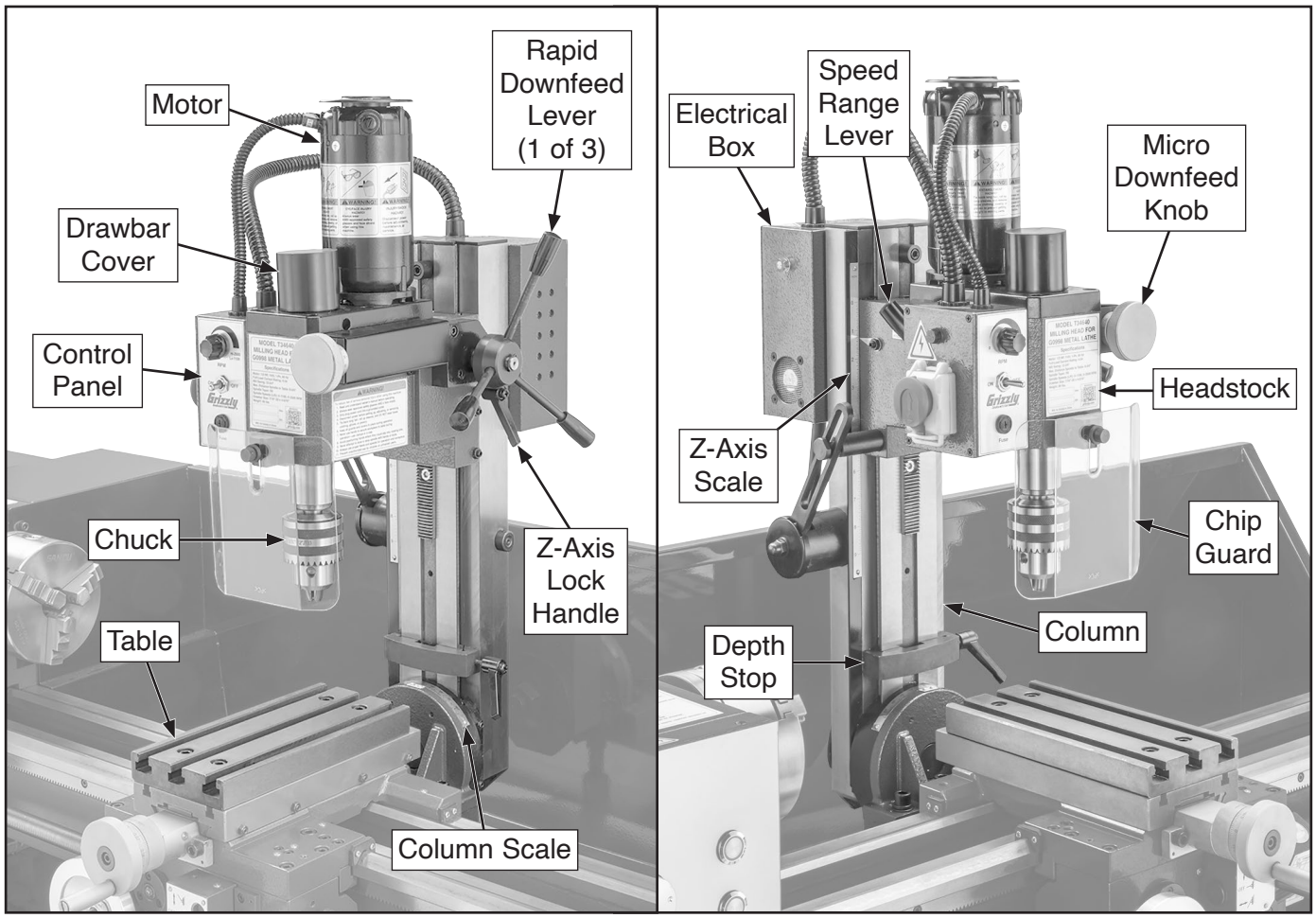
If you find this to be the case, and the difference between the manual and machine leaves you confused or unsure about something, check our website for an updated version. We post current manuals and manual updates for free on our website at **www.grizzly.com**.

Alternatively, you can call our Technical Support for help. Before calling, make sure you write down the **manufacture date** and **serial number** from the machine ID label (see below). This information is required for us to provide proper tech support, and it helps us determine if updated documentation is available for your machine.

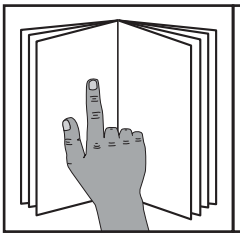


Identification

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



Controls & Components



⚠WARNING

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

Refer to the following figures and descriptions to become familiar with the basic controls and components of this machine. Understanding these items and how they work will help you understand the rest of the manual and minimize your risk of injury when operating this machine.

Power

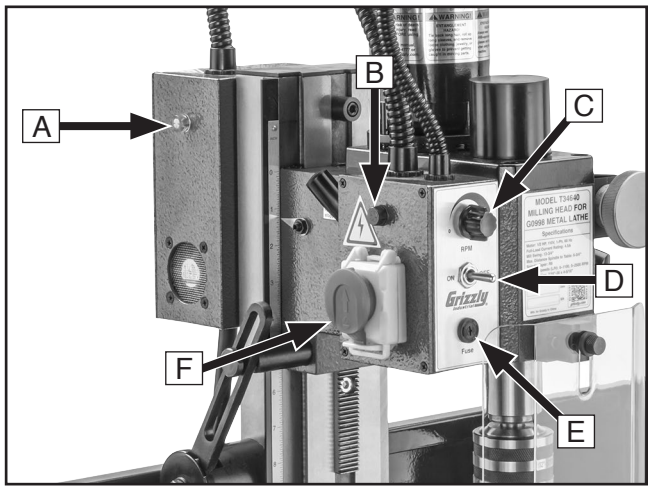


Figure 1. Power controls and components.

A. Spindle Power Reset Indicator: Illuminates when power is ON but spindle speed dial needs to be reset in order to start spindle rotation. To reset spindle power, rotate spindle speed dial all the way counterclockwise.

B. Power Indicator: Illuminates when power is connected to machine and Emergency Stop button cover is open.

C. Spindle Speed Dial: Rotates clockwise to increase spindle RPM; rotates counterclockwise to decrease spindle RPM. Spindle speed ranges from 0–1100 RPM in low speed mode and 0–2500 RPM in high speed mode.

Note: *Spindle speed dial must be rotated all the way counterclockwise to reset spindle power after Emergency Stop button has been used or ON/OFF toggle switch has been moved to OFF position.*

D. ON/OFF Toggle Switch: Turns machine power ***ON*** and ***OFF***.

E. Fuse Socket: Houses 5A fuse.

F. Emergency Stop Button w/Cover: Turns incoming power ***OFF*** and cover clicks into place to prevent accidental startup.

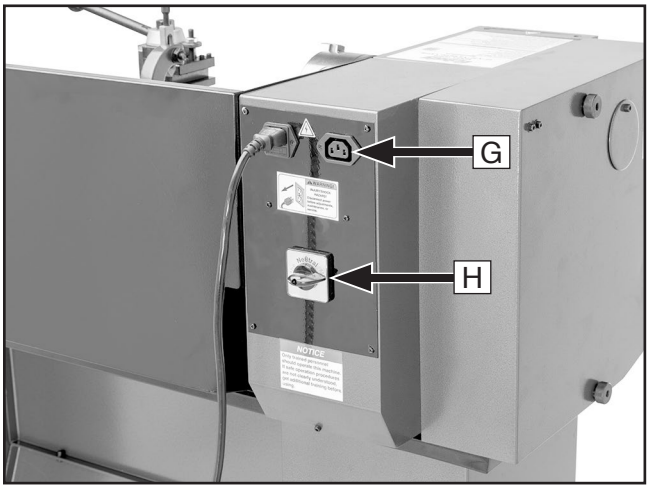


Figure 2. Model G0998 power components.

G. Milling Head Receptacle: Connects milling head attachment to Model G0998 power source.

H. Master Power Switch: Turns incoming power ***ON*** when turned to "Mill," and turns incoming power ***OFF*** when turned to "Neutral."

Spindle

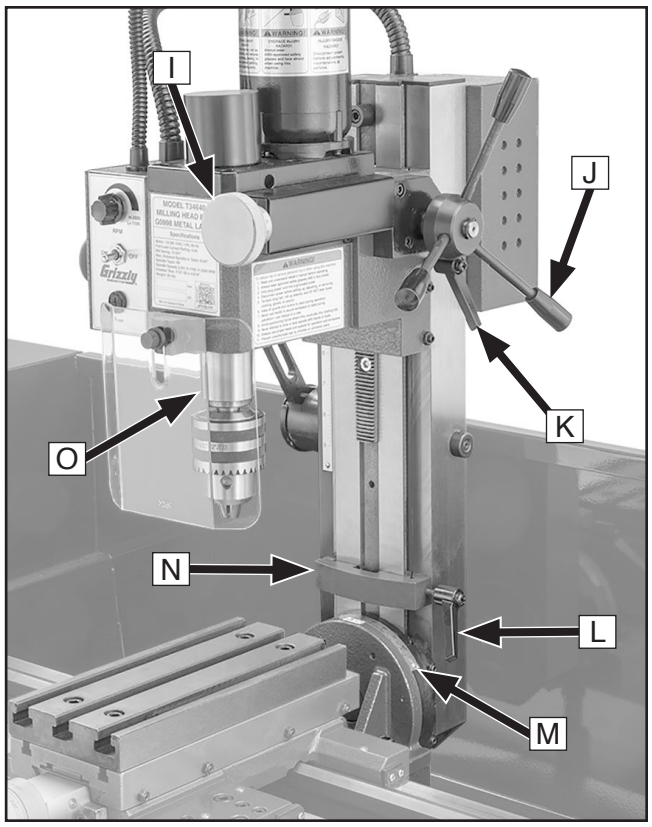


Figure 3. Right spindle components.

I. Micro Downfeed Knob w/Graduated Collar: Moves headstock up and down for precise Z-axis control when milling and displays movement in 0.001" increments. One full revolution represents 0.060" of spindle travel.

J. Rapid Downfeed Lever (1 of 3): Quickly moves headstock up and down for drilling operations.

K. Z-Axis Lock Handle: Secures headstock position on column.

L. Depth Stop Lock Handle: Secures depth stop position on column.

M. Column Tilt Scale: Indicates column tilt in relation to table.

N. Depth Stop: Limits depth of headstock and spindle travel for repeated operations.

O. Spindle: Accepts collets, arbors, and other tool holders with an R8 taper.

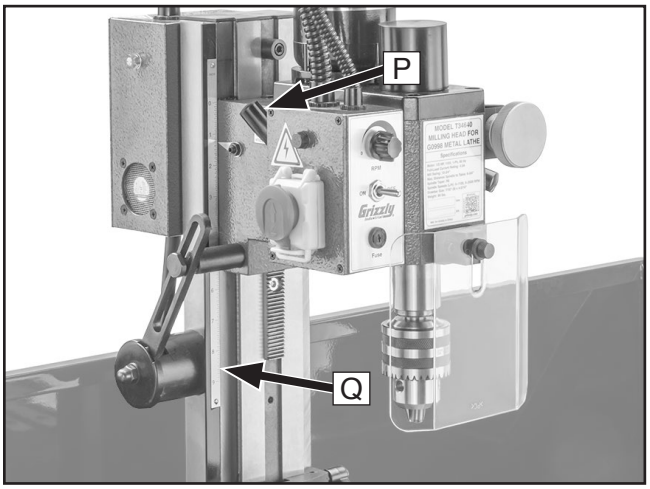


Figure 4. Left spindle components.

P. Speed Range Lever: Selects low or high spindle speed range.

Q. Z-Axis Scale: Indicates spindle and headstock depth.

Table

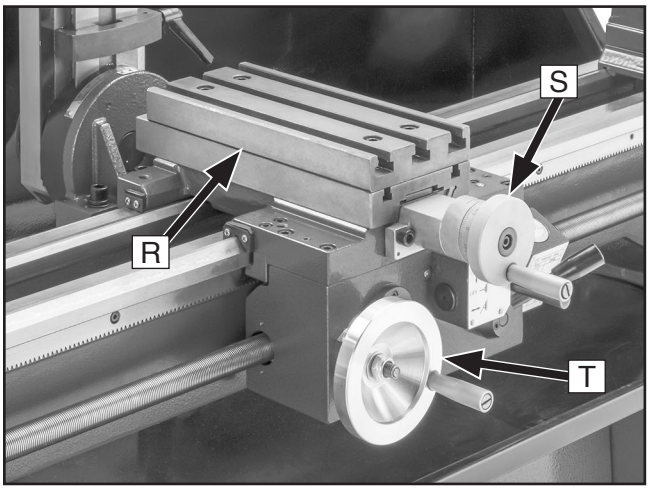


Figure 5. Table components.

R. Table: Replaces compound rest assembly on Model G0998 to support workpieces for milling/drilling operations. Includes T-slots for mounting milling vises or other fixtures.

S. Cross Slide Handwheel (Model G0998): Moves table towards and away from milling head column. Dial is graduated in increments of 0.001" (0.1" per full revolution).

T. Carriage Handwheel (Model G0998): Moves table left and right on lathe bed. Dial is graduated in increments of 0.02" (0.68" per full revolution).

MACHINE DATA SHEET

Customer Service #: (570) 546-9663 · To Order Call: (800) 523-4777 · Fax #: (800) 438-5901

MODEL T34640 MILLING HEAD FOR G0998 METAL LATHE

Product Dimensions:

Weight	89 lbs.
Width (side-to-side) x Depth (front-to-back) x Height	11-1/2 x 15-1/2 x 33-1/2 in.
Footprint (Length x Width)	N/A x N/A
Space Required for Full Range of Movement (Width x Depth)	11-1/2 x 20-1/2 in.

Shipping Dimensions:

Type	Wood Crate
Content	Machine
Weight	113 lbs.
Length x Width x Height	31 x 17 x 19 in.
Must Ship Upright	Yes

Electrical:

Power Requirement	110V, Single-Phase, 60 Hz
Full-Load Current Rating	4.5A
Minimum Circuit Size	15A
Connection Type	Cord & Plug
Power Cord Included	Yes
Power Cord Length	27 in.
Power Cord Gauge	18 AWG
Plug Included	Yes
Included Plug Type	IEC C14
Switch Type	ON/OFF Toggle Switch w/Emergency Stop Button

Motors:

Main

Horsepower	1/2 HP
Phase	Single-Phase
Amps	4.5A
Speed	6000 RPM
Type	DC Brush
Power Transfer	Gear
Bearings	Shielded & Permanently Lubricated

Main Specifications:

Mill Info

Mill Taper	R8
Mill Spindle Travel	7 in.
Mill Swing	12-3/4 in.
Distance Spindle To Work Table	6-3/4 in.
Distance Spindle To Bed	8-7/16 in.
Distance Spindle To Center Line	7 in.
Mill Head Tilt (Left/Right)	45 deg.
Maximum Tool Bit Size	1/2 in.
Drilling Capacity For Steel	1/2 in.
Drilling Capacity For Cast Iron	1/2 in.
Table Size Length	9-3/8 in.
Table Size Width	4-5/16 in.
Table Size Thickness	1 in.
Number of T-Slots	3
T-Slot Size	7/16 in.
T-Slot Centers	1-9/16 in.
Drawbar Diameter	7/16 in.
Drawbar Thread Pitch	20
Drawbar Length	4-5/16 in.
Number of Mill Drill Speeds	Variable
Mill Speed Range	0 - 1100, 0 - 2500 RPM

Construction

Headstock	Cast Iron
Frame	Cast Iron
Paint Type/Finish	Enamel

Other Specifications:

Country of Origin	China
Warranty	1 Year
Approximate Assembly & Setup Time	30 Minutes
Serial Number Location	Machine ID Label
Sound Rating	85 dB
ISO 9001 Factory	Yes

Features:

Adjustable Depth Stop
Clear Chip Guard
Rapid Downfeed Levers Move Head 1.5" per Revolution
Micro Downfeed Knob Moves Head 0.06" per Revolution
1" Face Milling Capacity
1/2" End Milling Capacity
Ground Cast Iron Table

SECTION 1: SAFETY

For Your Own Safety, Read Instruction Manual Before Operating This Machine

The purpose of safety symbols is to attract your attention to possible hazardous conditions. This manual uses a series of symbols and signal words intended to convey the level of importance of the safety messages. The progression of symbols is described below. Remember that safety messages by themselves do not eliminate danger and are not a substitute for proper accident prevention measures. Always use common sense and good judgment.

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

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

⚠CAUTION **Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury. It may also be used to alert against unsafe practices.**

NOTICE **Alerts the user to useful information about proper operation of the machine to avoid machine damage.**

Safety Instructions for Machinery

⚠WARNING

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

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

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

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

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

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

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

⚠WARNING

WEARING PROPER APPAREL. Do not wear loose clothing, gloves, neckties, or jewelry that can become entangled in moving parts. Always tie back or cover long hair. Wear non-slip footwear to reduce risk of slipping and losing control or accidentally contacting cutting tool or moving parts.

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

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

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

USE CORRECT TOOL FOR THE JOB. Only use this tool for its intended purpose—do not force it or an attachment to do a job for which it was not designed. Never make unapproved modifications—modifying tool or using it differently than intended may result in malfunction or mechanical failure that can lead to personal injury or death!

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

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

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

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

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

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

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

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

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

DAMAGED PARTS. Regularly inspect machine for damaged, loose, or mis-adjusted parts—or any condition that could affect safe operation. Immediately repair/replace BEFORE operating machine. For your own safety, DO NOT operate machine with damaged parts!

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

EXPERIENCING DIFFICULTIES. If at any time you experience difficulties performing the intended operation, stop using the machine! Contact our Technical Support at (570) 546-9663.

Additional Safety for Milling Heads

⚠WARNING

You can be seriously injured or killed by getting clothing, jewelry, or long hair entangled with rotating cutter/spindle. You can be severely cut or have fingers amputated from contact with rotating cutters. You can be blinded or struck by broken cutting tools, metal chips, workpieces, or adjustment tools thrown from the rotating spindle with great force. To reduce your risk of serious injury when operating this machine, completely heed and understand the following:

UNDERSTAND ALL CONTROLS. Make sure you understand the function and proper use of all controls before starting. This will help you avoid making mistakes that result in serious injury.

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

WEAR FACE SHIELD. Always wear a face shield in addition to safety glasses. This provides more complete protection for your face than safety glasses alone.

USE CORRECT SPINDLE SPEED. Follow recommended speeds and feeds for each size and type of cutting tool. This helps avoid tool breakage during operation and ensures best cutting results.

INSPECT CUTTING TOOL. Inspect cutting tools for sharpness, chips, or cracks before each use. Replace dull, chipped, or cracked cutting tools immediately.

PROPERLY SECURE CUTTER. Firmly secure cutting tool or drill bit so it does not fly out of spindle during operation.

POWER DISRUPTION. In the event of a local power outage during operation, turn spindle switch ***OFF*** to avoid a possible sudden startup once power is restored.

CLEAN MACHINE SAFELY. Metal chips or shavings can be razor sharp. DO NOT clear chips by hand or compressed air that can force chips farther into machine—use a brush or vacuum instead. Never clear chips while spindle is turning.

SECURE WORKPIECE TO TABLE. Clamp workpiece to table or secure in a vise mounted to table, so workpiece cannot unexpectedly shift or spin during operation. NEVER hold workpiece by hand during operation.

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

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

REMOVE CHUCK KEY & SPINDLE TOOLS. Always remove chuck key, drawbar wrench, and other tools used on the spindle immediately after use. This will prevent them from being thrown by the spindle upon startup.

SECTION 2: POWER SUPPLY

Availability

This machine is designed to share a power supply circuit with the Model G0998. Despite this shared connection, only one of the machines will operate at a time, and the power requirements for this machine are lower than those required for the Model G0998. When preparing a circuit, refer to the Model G0998 manual and specifications. If an existing circuit does not meet the requirements for the Model G0998, 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 all applicable codes and standards.



⚠WARNING

Electrocution, fire, shock, or equipment damage may occur if machine is not properly grounded and connected to power supply.

Full-Load Current Rating

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

Full-Load Current Rating at 110V .... 4.5 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 specified circuit requirements.

⚠WARNING

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

110V 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 110V, 115V, 120V
Cycle ..... 60 Hz
Phase ..... Single-Phase
Power Supply Circuit ..... 15 Amps
Plug/Receptacle ..... IEC C14/C13

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

⚠CAUTION

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

Note: *Circuit requirements in this manual apply to a dedicated circuit—where only one machine will be running on the circuit at a time. If machine will be connected to a shared circuit where multiple machines may be running at the same time, consult an electrician or qualified service personnel to ensure circuit is properly sized for safe operation.*

Grounding & Plug Requirements

This machine MUST be grounded. In the event of certain malfunctions or breakdowns, grounding reduces the risk of electric shock by providing a path of least resistance for electric current.

This machine is equipped with a power cord that has an equipment-grounding wire and a grounding plug. Only insert plug into a matching receptacle (outlet) that is properly installed and grounded in accordance with all local codes and ordinances. DO NOT modify the provided plug!

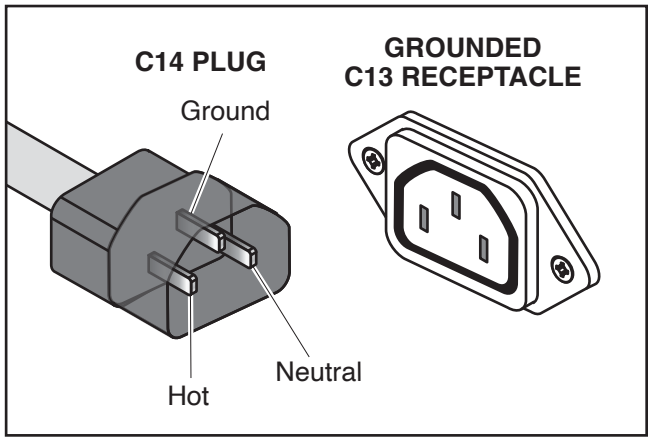
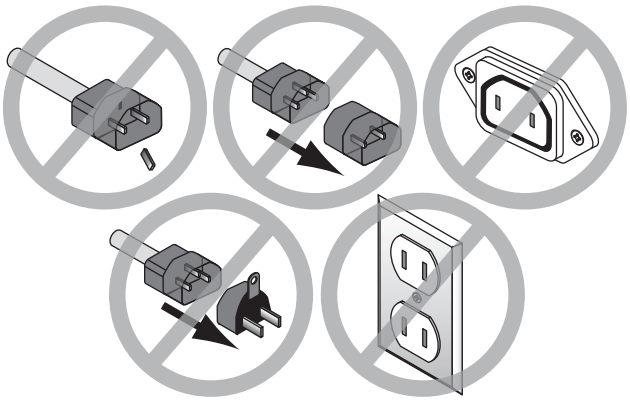


Figure 6. Typical C14 plug and C13 receptacle.

⚠CAUTION



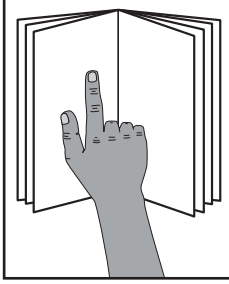
SHOCK HAZARD!

Two-prong outlets do not meet the grounding requirements for this machine. Do not modify or use an adapter on the plug provided—if it will not fit the outlet, have a qualified electrician install the proper outlet with a verified ground.

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 a qualified electrician or service personnel if you do not understand these grounding requirements, or if you are in doubt about whether the machine 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.

SECTION 3: SETUP



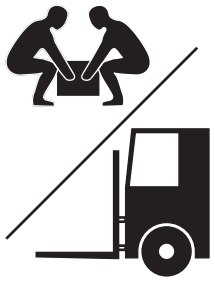
⚠WARNING

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



⚠WARNING

Wear safety glasses during the entire setup process!



⚠WARNING

HEAVY LIFT!

Straining or crushing injury may occur from improperly lifting machine or some of its parts. To reduce this risk, get help from other people and use a forklift (or other lifting equipment) rated for weight of this machine.

Needed for Setup

The following items are needed, but not included, for the setup/assembly of this machine.

Required	Qty
• Another Person	1
• Safety Glasses (For each person)	1
• Cleaner/Degreaser	As Needed
• Disposable Rags	As Needed
• Disposable Gloves	As Needed
• Hex Wrench 8mm	1
• Open-End Wrench 22mm	1
• NLGI #2 Grease	As Needed
• Precision Parallel Block (9"–14" Long)	1
• Dial Test Indicator (0.0005" Resolution)	1
• Indicator Holder (For Spindle/Chuck)	1
• Shims	As Needed

Optional

• Drill w/Drill Bit (5–6mm)	1
• Taper Reamer (1:50 Taper)	1
• Soft-Faced Mallet or Punch	1

Unpacking

This machine was carefully packaged for safe transport. When unpacking, separate all enclosed items from packaging materials and inspect them for shipping damage. ***If items are damaged, please call us immediately at (570) 546-9663.***

IMPORTANT: Save all packaging materials until you are completely satisfied with the machine and have resolved any issues between Grizzly or the shipping agent. *You MUST have the original packaging to file a freight claim. It is also extremely helpful if you need to return your machine later.*

Inventory

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

If any non-proprietary parts are missing (e.g. a nut or a washer), we will gladly replace them; or for the sake of expediency, replacements can be obtained at your local hardware store.

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.

Main Inventory (Figure 7)	Qty
A. Machine (Not Shown)	1
B. Table	1
C. Mounting Bracket	1
D. Tilt Bracket	1

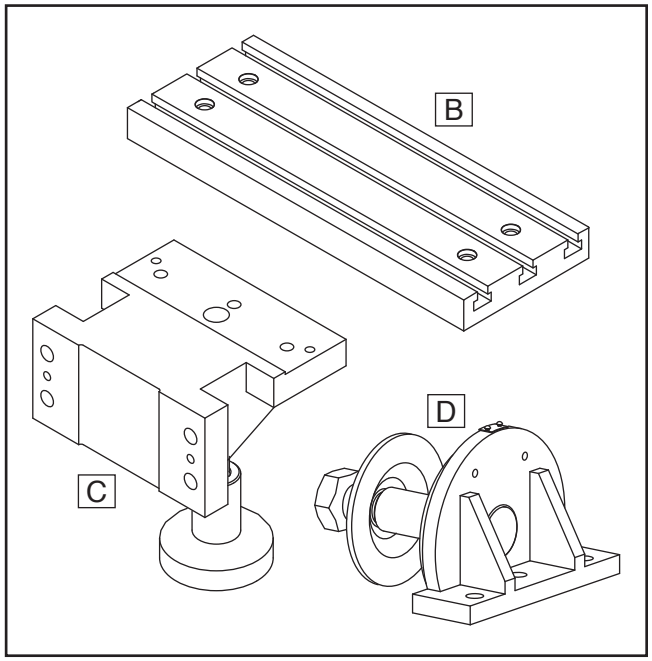


Figure 7. Main inventory.

Loose Items (Figure 8)	Qty
E. Spindle Lock Pin	1
F. Oil Bottle	1
G. Drill Chuck Key	1
H. Spindle Wrench 45–52mm	1
I. Open-End Wrench 17 x 19mm	1
J. Open-End Wrench 8 x 10mm	1
K. Spare Fuse 110V 5A	1
L. Open-End Wrench 36mm	1
M. Hex Wrenches 3, 4, 5, 6mm	1 Ea.
N. T-Slot Nuts M10-1.5	2
O. Taper Pins 6 x 30mm	4
P. Cap Screws M10-1.5 x 35	4
Q. Cap Screws M10-1.5 x 30	3
R. Cap Screws M8-1.25 x 25	4
S. Flat Washers 10mm	7
T. Lock Washers 10mm	3

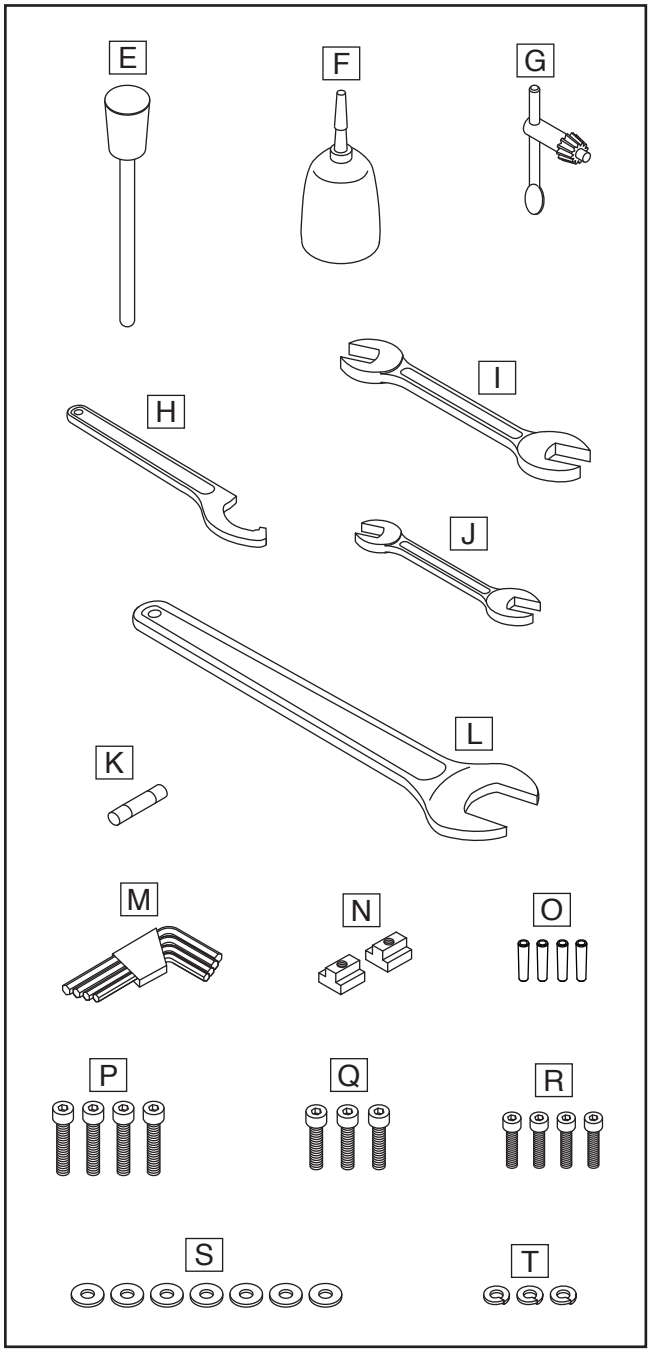


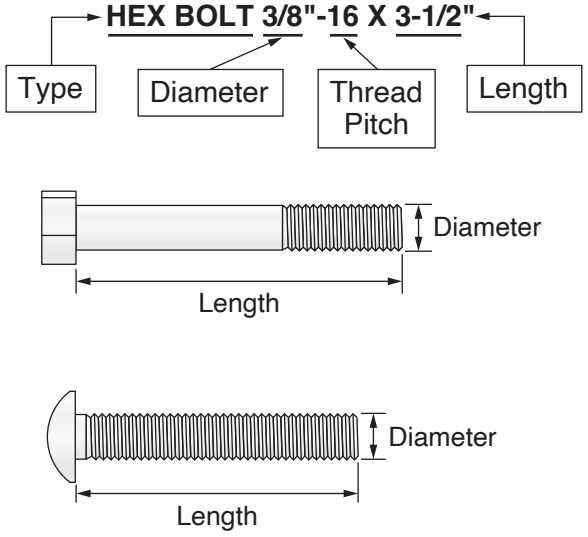
Figure 8. Loose items.

Measuring Hardware

Use this page to understand how hardware is measured in this manual.

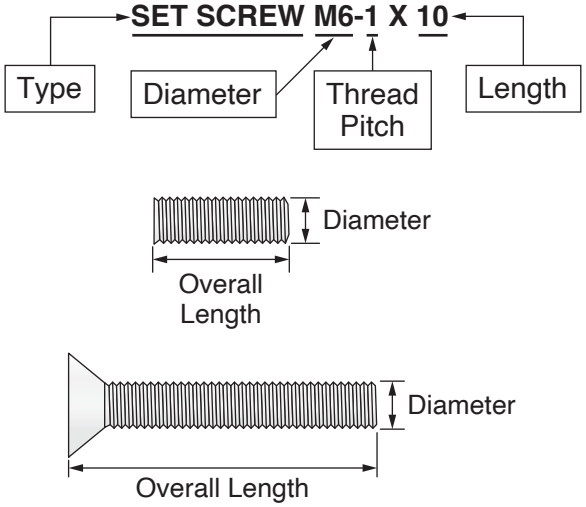
Bolts & Screws

Most bolts and screws are measured by the outside diameter of the threads, thread pitch, and the length from under the head to the opposite end:

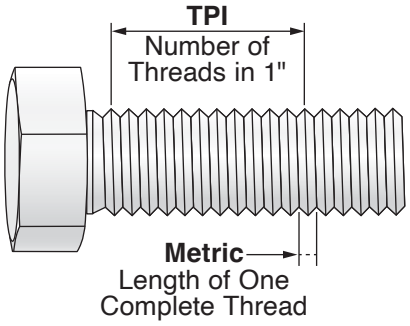


Flat Head & Set Screws

Flat head and set screws are measured by the outside diameter of the threads, thread pitch, and overall length of the fastener. These fasteners are often meant to sit flush with the adjoining surface:



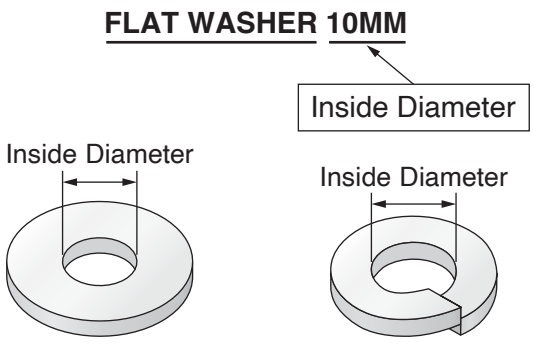
Thread pitch is the distance from the tip of one thread to the tip of the next thread. For US Standard threads, pitch is measured in threads per inch (TPI). Metric thread pitch is the length of one complete thread.



Note: *Grizzly Industrial does not typically list a thread pitch for thread-forming screws and bolts, such as tap screws, wood screws, and lag bolts.*

Washers

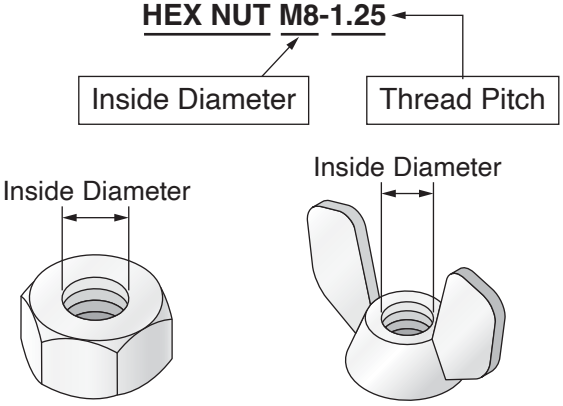
Common washers are measured by their inside diameter.



Note: *Specialized washers may list the inside diameter, outside diameter, and the thickness.*

Nuts

Nuts are measured by the inside diameter of the threads and the thread pitch.



Cleanup

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

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

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

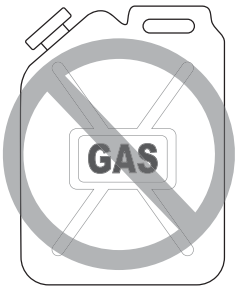
Basic steps for removing rust preventative:

1. Put on safety glasses and disposable gloves.

2. Coat rust preventative with liberal amount of cleaner/degreaser (WD•40 works well), then let it soak for 5–10 minutes.

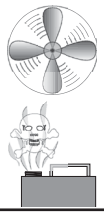
3. Wipe off surfaces. If cleaner/degreaser is effective, rust preventative will wipe off easily. If you have a plastic paint scraper, scrape off as much as you can first, then wipe off the rest with a rag.

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



⚠WARNING

Gasoline and petroleum products have low flash points and can explode or cause fire if used to clean machinery. Avoid using these products to clean machinery.



⚠CAUTION

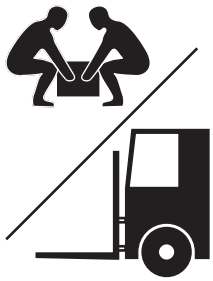
Many cleaning solvents are toxic if inhaled. Only work in a well-ventilated area.

NOTICE

Avoid harsh solvents like acetone or brake parts cleaner that may damage painted surfaces. Always test on a small, inconspicuous location first.

Assembly

The machine must be fully assembled before it can be operated. Before beginning the assembly process, refer to **Needed for Setup** 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).



⚠WARNING

HEAVY LIFT!

Straining or crushing injury may occur from improperly lifting machine or some of its parts. To reduce this risk, get help from other people and use a forklift (or other lifting equipment) rated for weight of this machine.

To assemble machine:

1. DISCONNECT MODEL G0998 FROM POWER!

2. Remove (3) cap screws and flat washers shown in **Figure 9** to remove backsplash from Model G0998.

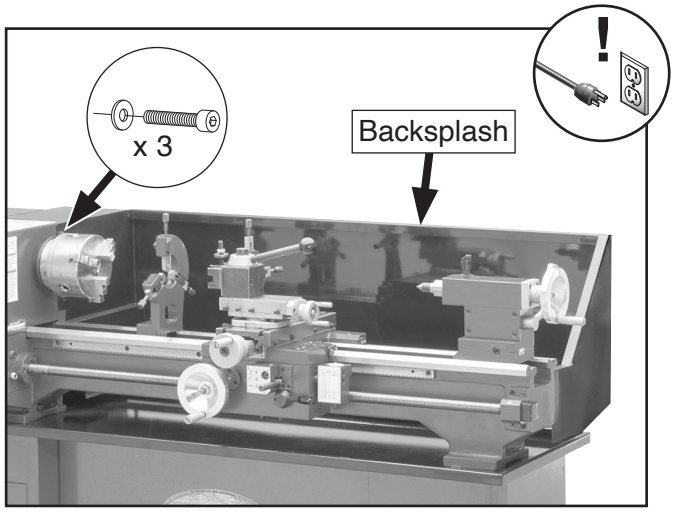


Figure 9. Model G0998 backsplash fasteners.

3. Move lathe carriage toward tailstock on bed so you can fully access mounting holes on rear of lathe bed in the following steps.

4. Turn support foot on milling head mounting bracket clockwise on shaft as far up as it will go (see **Figure 10**).

5. Attach mounting bracket to rear of lathe bed with (4) M10-1.5 x 35 cap screws and 10mm flat washers (see **Figure 10**).

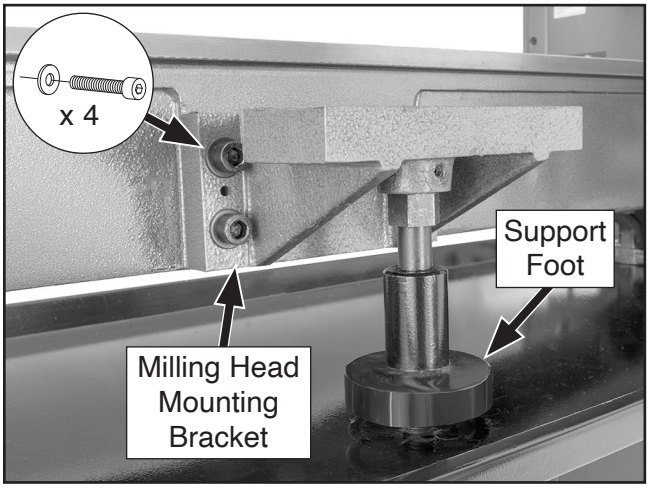


Figure 10. Milling head mounting bracket attached to lathe bed.

6. Remove hex nut shown in **Figure 11** to remove mounting plate from tilt bracket shaft.

7. Generously apply NLGI #2 grease to circular mating surface of tilt bracket (see **Figure 11**).

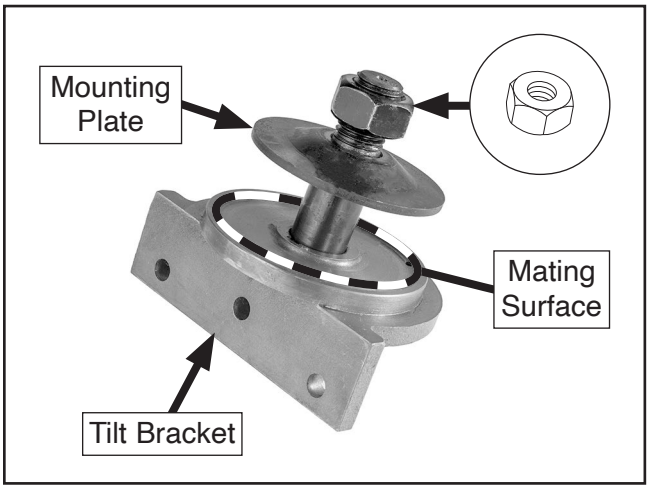


Figure 11. Location of mounting plate and tilt bracket.

8. Insert tilt bracket shaft through milling head column and secure tilt bracket with mounting plate and hex nut removed in **Step 6** (see **Figure 12**). Hand tighten hex nut for now.

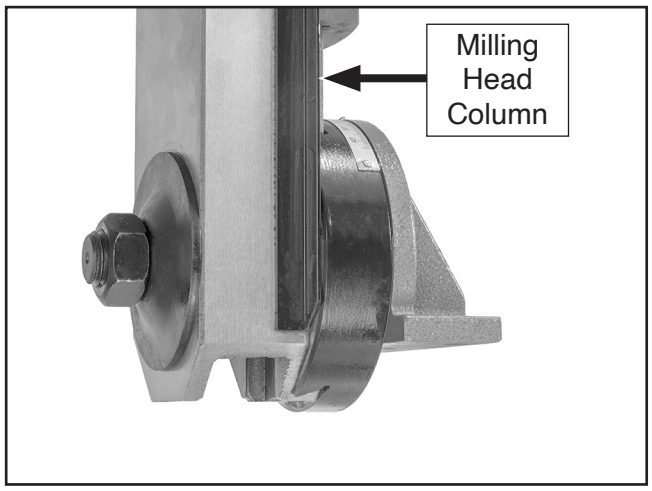


Figure 12. Tilt bracket secured to milling head column.

Note: *Tilt bracket shaft has a key that must stay aligned with keyway of tilt bracket, as shown in* ***Figure 13****.*

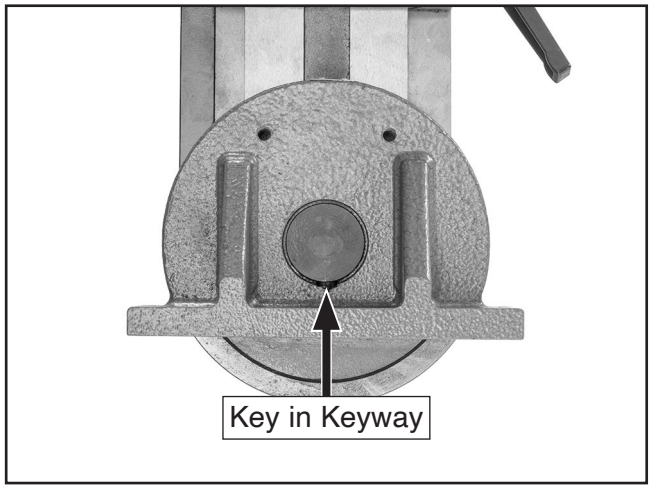


Figure 13. Key aligned with keyway.

9. Align indicator on tilt bracket with 0º on tilt scale (see **Figure 14**), then fully tighten tilt bracket hex nut.

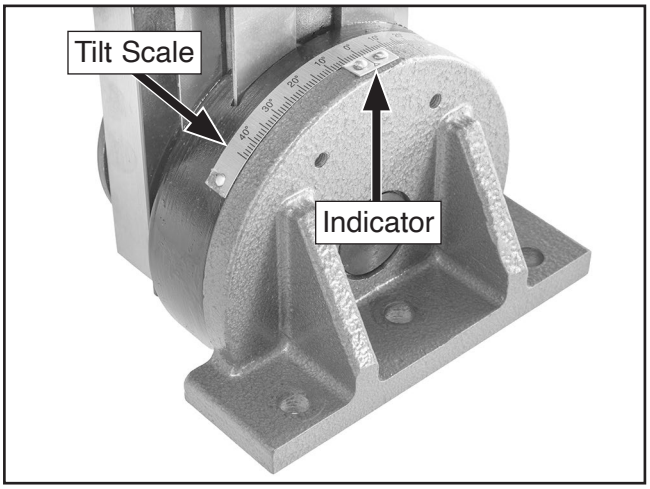


Figure 14. Tilt bracket indicator aligned with 0º.

10. Have assistant help lift milling head and attach it to mounting bracket with (3) M10-1.5 x 30 cap screws, 10mm lock washers, and 10mm flat washers (see **Figure 15**).

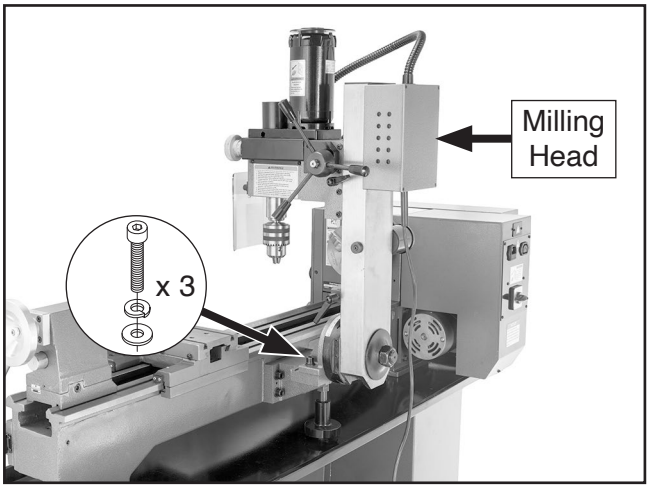


Figure 15. Milling head attached to mounting bracket.

11. Install milling table (see **Installing Milling Table** on **Page 26**).

12. Verify table is clean by running your hand over top of it.

13. Use lathe handwheels to position table under mill headstock.

14. Place precision parallel block on table.

Note: *Precision-ground plate can be substituted for parallel block. Following steps will adjust milling head spindle perpendicular to table Y-axis (see **Figure 16**), and the farther the dial indicator point can be placed from the spindle axis, the more accurate this alignment will be. Block/plate will also allow table to be centered under spindle without T-slots interfering with procedure.*

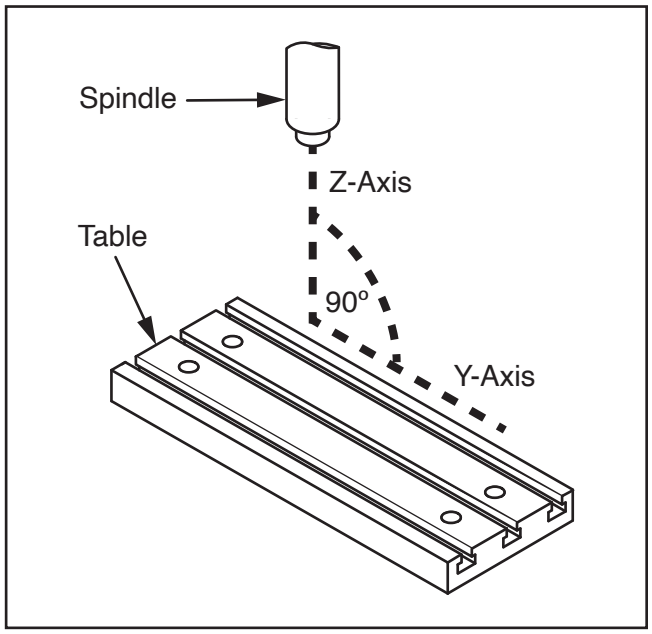


Figure 16. Spindle Z-axis perpendicular to table Y-axis.

15. Install dial test indicator holder in/on mill spindle, then mount indicator so that point is as parallel to block as possible (see **Figure 17**).

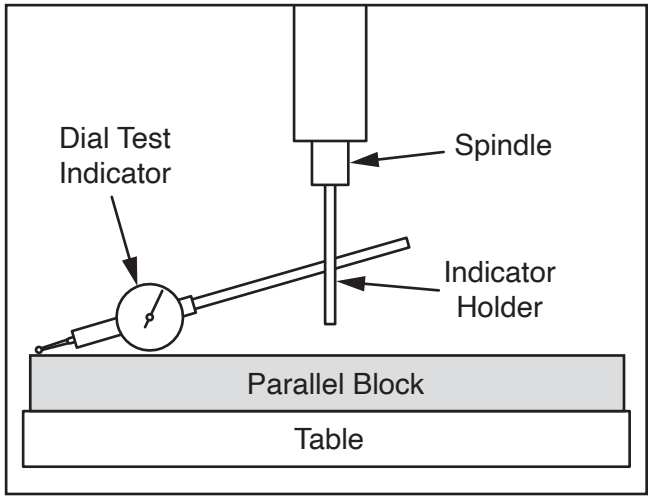


Figure 17. Dial test indicator mounted.

16. To measure spindle alignment along Y-axis, place parallel block directly under spindle and indicator across length of table, as illustrated in **Figure 18**. If you need to adjust headstock height to accomplish this, refer to **Using Spindle Downfeed** on **Page 30**.

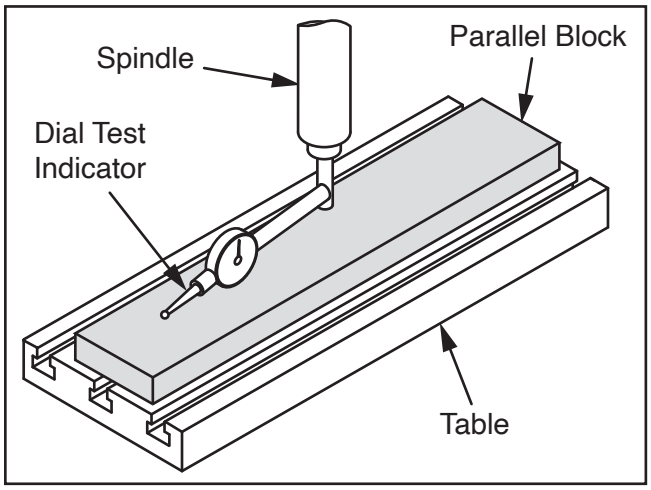


Figure 18. Parallel block and indicator positioned for Y-axis measurement.

Note: *Your general goal in next steps should be to compare indicator readings between two ends of parallel block down to 0.0005". However, acceptable variance will depend on your precision preference.*

17. Rotate spindle by hand so that indicator point rests on one end of parallel block, as illustrated in **Figure 17**–**Figure 18**, then zero dial.

18. Rotate spindle so that indicator point rests in same manner on other end of block, then read dial.

— If indicator dial still reads zero or is within acceptable variance, spindle is precisely perpendicular to table in Y-axis. Proceed to **Step 21**.

— If indicator dial has moved from zero beyond acceptable variance, you will need to compensate for that amount by shimming milling head mounting bracket. Proceed to **Step 19**.

19. Loosen mounting bracket screws so you can install shim(s) (steel shim stock, brass sheets, or feeler gauges cut to size work well for this) between bracket and lathe bed (see **Figure 19**).

— Install shim(s) at top of bracket (see **Figure 19**) if spindle was closer to front of table than it was rear of table.

— Install shim(s) at bottom of bracket (see **Figure 19**) if spindle was closer to rear of table than it was front of table.

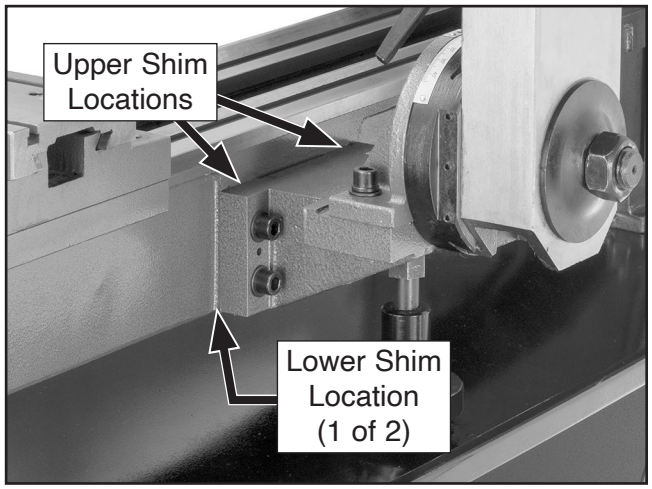


Figure 19. Shim locations for Y-axis spindle alignment.

20. Fully tighten mounting bracket screws, repeat **Steps 16–18** to test adjustment until you are satisfied with shimming results, then proceed to **Step 21**.

21. Remove dial indicator and parallel block.

— If you plan to regularly remove milling head from lathe, we recommend you perform **Steps 22–23**. We have included taper pins that can be installed to minimize spindle alignment adjustments later.

— If you do not plan to regularly remove milling head from lathe, proceed to **Step 24**. Plan to tram spindle to Y-axis if you need to re-install.

22. Drill pilot holes about the full length of taper pins (30mm) at (4) holes shown in **Figure 20**. Existing holes are for location reference, but do not fully extend through parts.

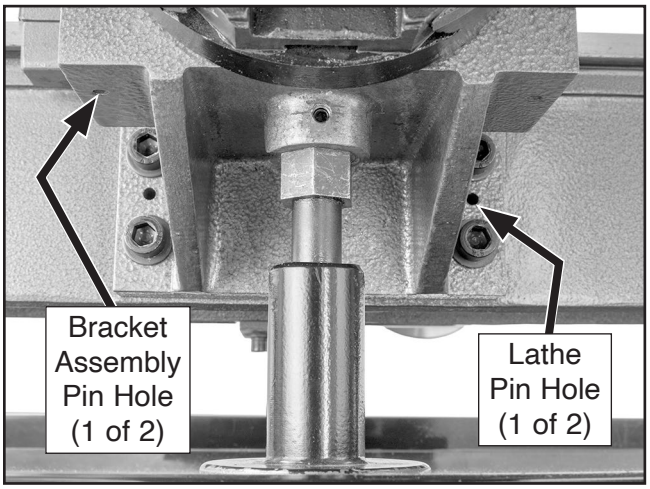


Figure 20. Taper pin location holes.

23. Ream holes for taper pins, then use soft-faced mallet or punch to tap (4) pins into holes.

Note: *Pins have internal threads so they can be easily removed with M4-.7 screw or bolt. Remove (2) pins that go into lathe bed in order to remove milling head, then use them to help wedge milling head back into place when you reinstall.*

24. Adjust support foot down on shaft until it just touches lathe chip tray (see **Figure 21**), then turn jam nut counterclockwise from above to secure.

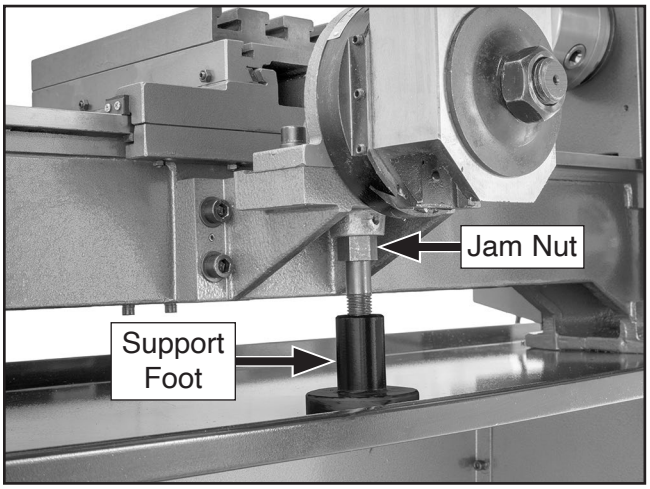


Figure 21. Support foot adjusted down to tray.

25. Install lathe backsplash.

Power Connection

Before the machine can be connected to the power source, all previous setup instructions in this manual must be complete to ensure that the machine has been assembled and installed properly.

To connect machine to power:

1. Press Emergency Stop button cover so it snaps closed (see **Figure 22**).

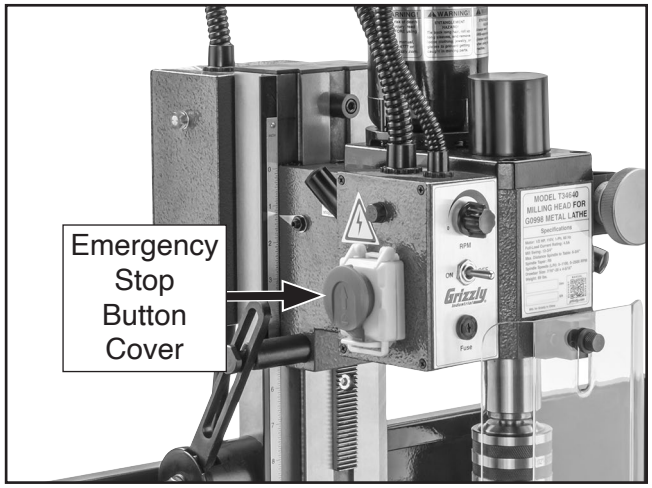


Figure 22. Location of Emergency Stop button cover.

2. Connect milling head power cord to receptacle at rear of Model G0998 (see **Figure 23**).

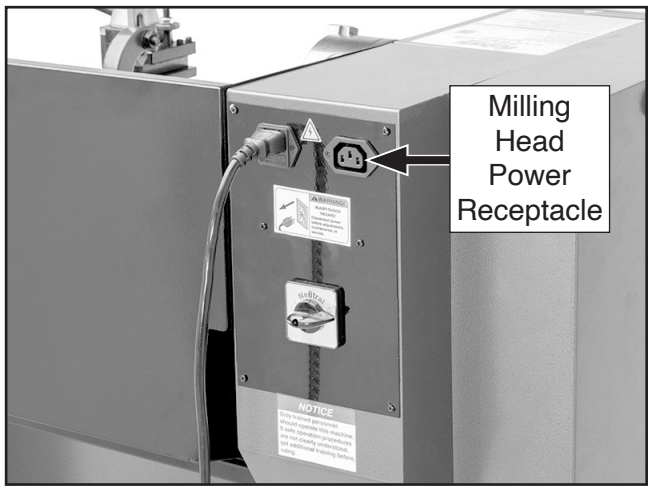


Figure 23. Location of milling head power receptacle.

Test Run

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

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

The Test Run consists of verifying the following: 1) The motor powers up and runs correctly, and 2) the Emergency Stop button works correctly.

⚠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 all setup tools away from machine.

2. If cover on Emergency Stop button is closed, move red button on Emergency Stop button cover up until cover springs open (see **Figure 22**).

3. Turn master power switch on Model G0998 to Neutral (OFF) position (see **Figure 24**).

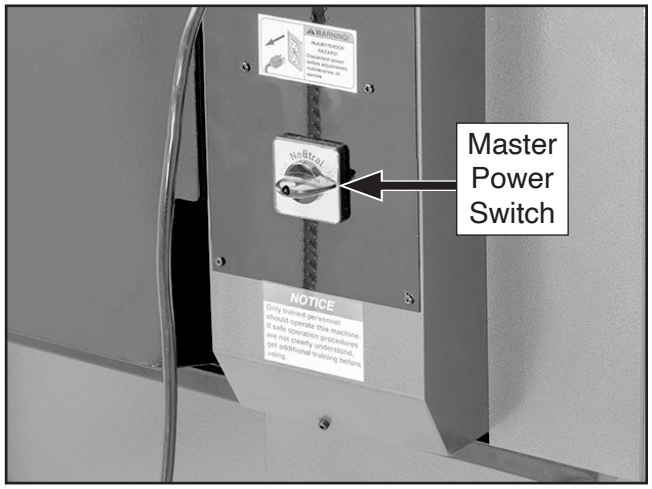


Figure 24. Location of power controls.

4. Move ON/OFF toggle switch to OFF position (see **Figure 25**).

5. Rotate spindle speed dial all the way counterclockwise (see **Figure 25**). This resets power so machine can start.

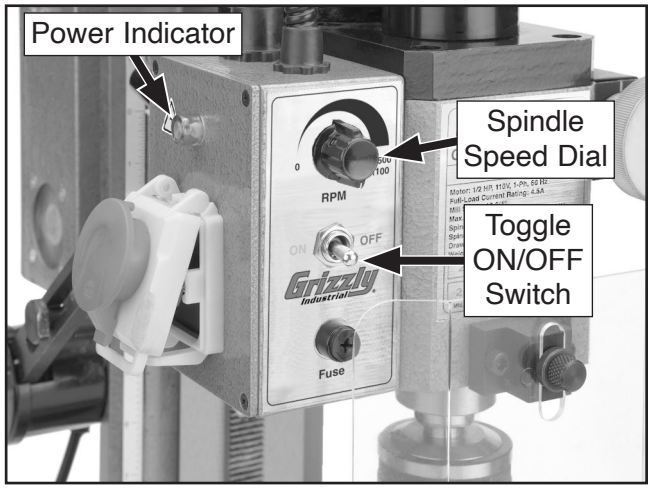


Figure 25. Location of milling head power controls.

6. Connect machine to power.

7. Turn Model G0998 master power switch to Mill (ON) position. Power indicator will illuminate (see **Figure 25**).

8. Move ON/OFF toggle switch to ON position.

9. Rotate spindle speed dial clockwise just enough to start spindle rotation. Verify motor starts up and runs smoothly without any unusual problems or noises.

10. Press Emergency Stop button cover closed to turn machine ***OFF***.

11. Rotate spindle speed dial all the way counterclockwise. Without opening Emergency Stop button, try to start spindle rotation by rotating spindle speed dial clockwise. Spindle should not rotate.

    — If spindle *does not* rotate, safety feature of Emergency Stop button cover is working correctly. Congratulations! Test Run is complete. Perform **Spindle Break-In** on **Page 23** before proceeding with normal operations.

    — If spindle does rotate, immediately turn machine ***OFF*** and disconnect power. Safety feature of Emergency Stop button cover is NOT working properly and must be replaced before further using machine.

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. Successfully perform all steps in **Test Run** section beginning on **Page 21**.

NOTICE

DO NOT attempt to change speed range until spindle has come to complete stop, or spindle gearing will be damaged.

2. With Emergency Stop button closed and machine ***OFF***, move speed range lever to low speed range (see **Figure 26**).

   Note: *If speed range lever will not move fully forward, rotate spindle by hand while holding light pressure on lever. When gears engage, lever will fall into place.*

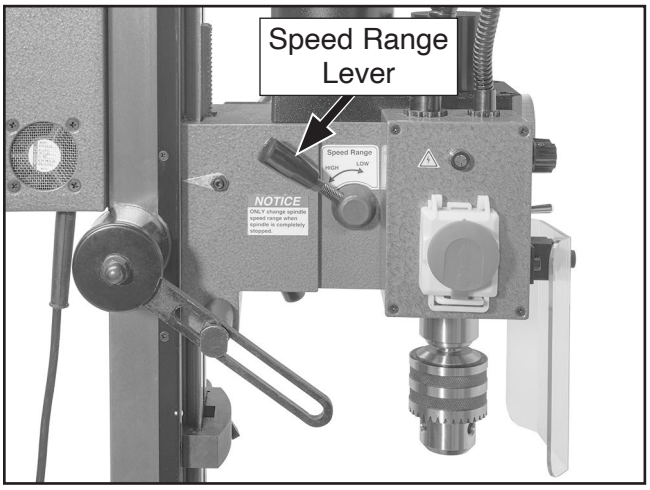


Figure 26. Location of speed range lever.

3. Open Emergency Stop button cover and move ON/OFF toggle switch to ON position.

4. Rotate spindle speed dial clockwise just enough to start spindle at low speed. Let machine run for 5 minutes.

5. Slowly increase spindle RPM to medium speed and allow machine to run for another 5 minutes.

6. Slowly increase spindle RPM until speed dial is all the way clockwise, then allow machine to run at highest speed for another 5 minutes.

7. Rotate spindle speed dial all the way counterclockwise and wait for spindle to stop, then move speed range lever to high speed range.

8. Repeat **Steps 4–6** with spindle in high speed range.

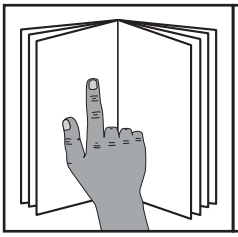
9. Rotate spindle speed dial all the way counterclockwise and move ON/OFF toggle switch to OFF position to turn machine ***OFF***. Congratulations! Spindle break-in is complete!

SECTION 4: OPERATIONS

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 the machine controls/components discussed later in this manual are easier to understand.

Due to the generic nature of this overview, it is **not** intended to be an instructional guide. To learn more about specific operations, read this entire manual, seek additional training from experienced machine operators, and do additional research outside of this manual by reading "how-to" books, trade magazines, or websites.



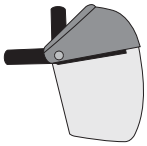
⚠WARNING

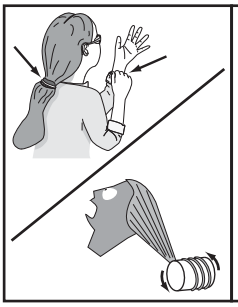
To reduce your risk of serious injury, read this entire manual BEFORE using machine.

⚠WARNING

To reduce risk of eye injury from flying debris, 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 milling/drilling.
2. Securely clamps workpiece to table with T-nuts or other holding fixture/fasteners.
3. With machine disconnected from power, installs correct tooling.
4. Adjusts spindle height and tilt, and moves speed range lever to correct spindle speed range for operation.
5. Rotates spindle speed dial to 0 RPM.
6. Puts on personal protective equipment.
7. Connects machine to power.
8. Opens Emergency Stop button cover and moves ON/OFF toggle switch to ON position.
9. Rotates spindle speed dial clockwise to start spindle rotation, and sets correct spindle speed for operation.
10. Uses downfeed or cross slide table controls to perform operation.
11. Rotates spindle speed dial completely counterclockwise and waits for spindle to completely stop before removing workpiece.
12. Disconnects machine from power before changing/removing tooling.

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, Grizzly Industrial will not be held liable for accidents caused by lack of training.

Installing/Adjusting Table

The Model G0998 compound rest and tool post must be removed so the table included with the Model T34640 can be installed and used as a cross slide table for milling operations (see **Figure 27**). Refer to the following subsections for steps to install and remove the milling table.

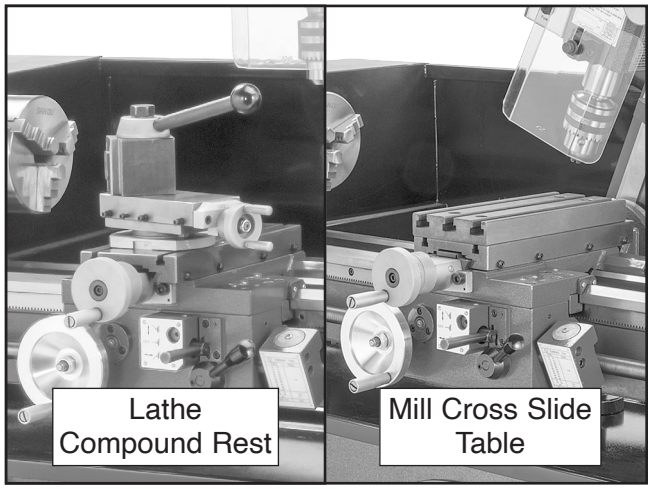


Figure 27. Model G0998 lathe compound rest and Model T34640 cross slide mill table.

Once the milling table has been installed, use the Model G0998 handwheels to adjust the table according to the milling head's X-axis (left and right) and Y-axis (in and out) (see **Figure 28**).

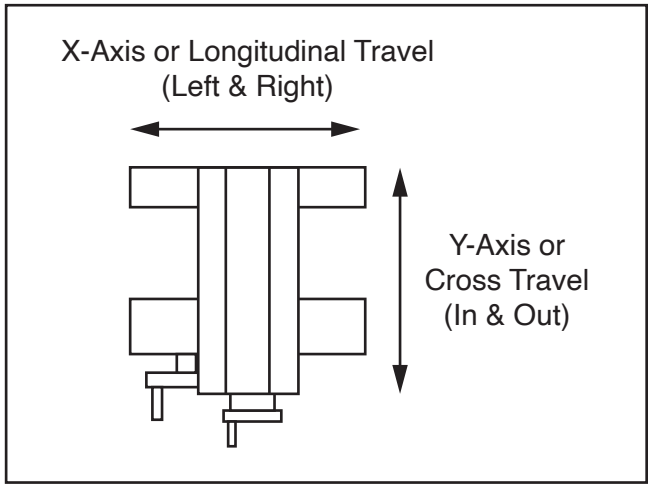


Figure 28. Directions of table movement.

The carriage handwheel (see **Figure 29**) has a graduated dial with 0.02" increments, with one full revolution equaling 0.68" of X-axis table movement. The cross slide handwheel (see **Figure 29**) has a graduated dial with 0.001" increments, with one full revolution equalling 0.1" of Y-axis table movement. These dials provide an easy way to gauge precise table movements while milling.

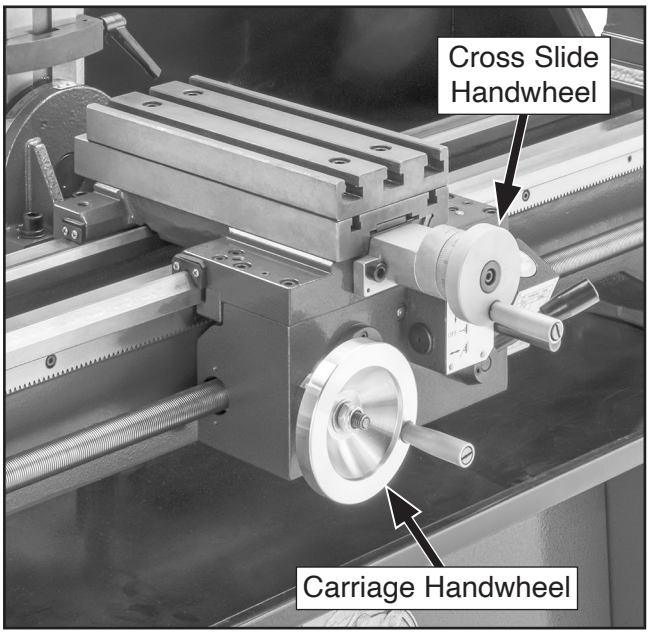


Figure 29. Milling table adjustment handwheels.

When you use the handwheels to change the direction of table travel on either axis, backlash will affect the accuracy of the graduated dial. To account for this, move the table in the opposite direction of your next operation, then turn the handwheel to move the table in the intended direction. The exact moment the leadscrew catches and the table begins to move, the backlash has been eliminated and the graduated dial can be "zeroed."

Installing Milling Table

Items Needed	Qty
Open-End Wrench 10mm	1
Hex Wrench 6mm	1
Cap Screws M8-1.25 x 25 (Included)	4

To install milling table:

1. Remove (2) hex nuts and flat washers shown in **Figure 30** to remove compound rest from cross slide.

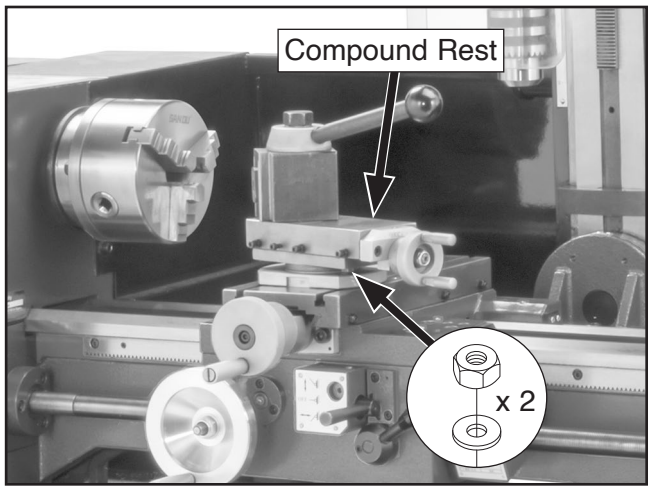


Figure 30. Location of compound rest base hex nuts and flat washers.

2. Slide (2) hex bolts out of cross slide T-slots (see **Figure 31**).

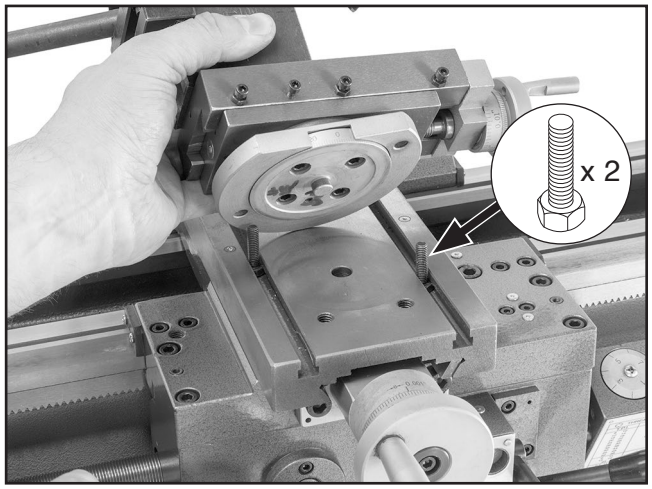


Figure 31. Location of compound rest base hex bolts.

3. Remove any metal shavings, dirt, or grease from cross slide, then attach milling head table with (4) M8-1.25 x 25 cap screws (see **Figure 32**).

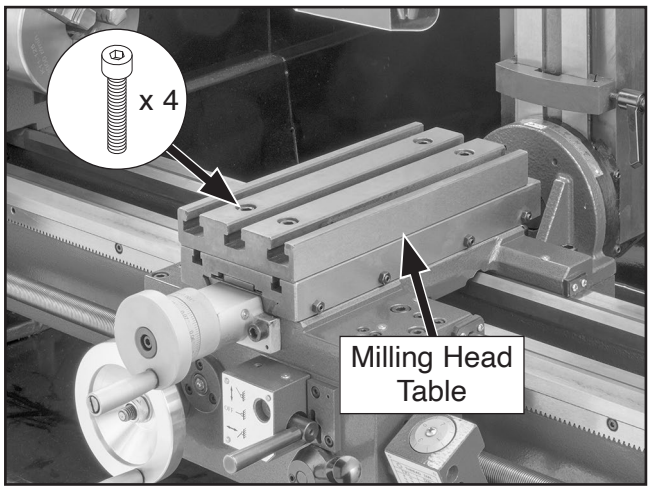


Figure 32. Milling head table attached to Model G0998 cross slide.

Installing Compound Rest Assembly

Items Needed	Qty
Open-End Wrench 10mm	1
Hex Wrench 6mm	1
Hex Bolts M6-1 x 25 (Included with G0998)	2
Flat Washers 6mm (Included with G0998)	2
Hex Nuts M6-1 (Included with G0998)	2

To install compound rest assembly:

1. Remove (4) M8-1.25 x 25 cap screws to remove milling head table from cross slide (see **Figure 33**).

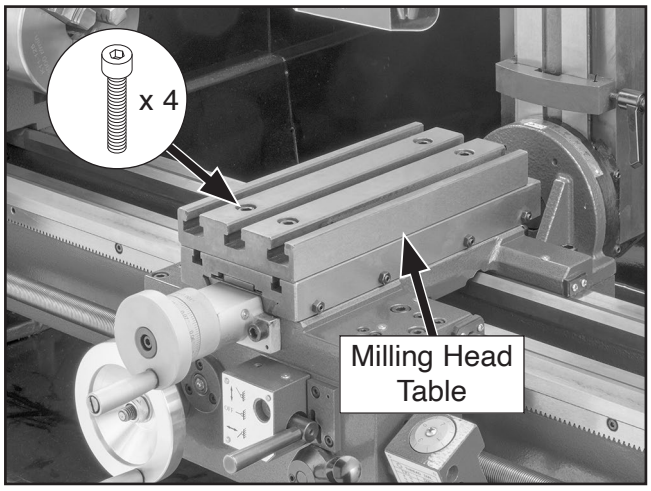


Figure 33. Location of milling head table cap screws.

2. Remove any metal shavings, dirt, or grease from cross slide.

3. Slide (2) M6-1 x 25 hex bolts into cross slide T-slots, then align them with compound rest mounting holes (see **Figure 34**).

4. Place compound rest holes over hex bolts, and fit pivot pin into hole in cross slide (see **Figure 34**).

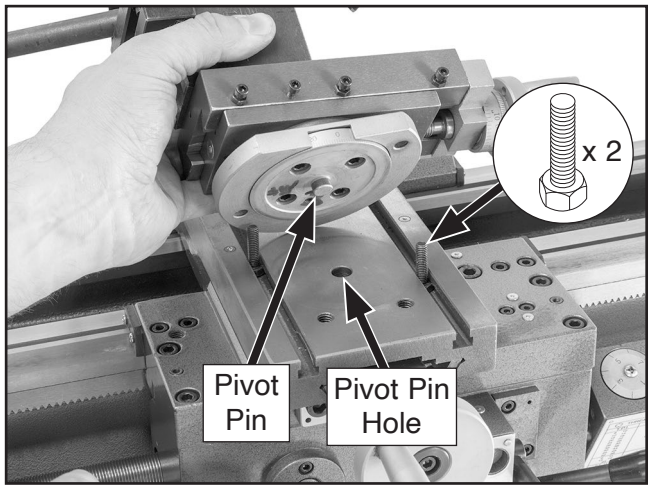


Figure 34. Installing compound rest.

5. Position compound rest as needed on cross slide, then secure with (2) 6mm flat washers and M6-1 hex nuts (see **Figure 35**).

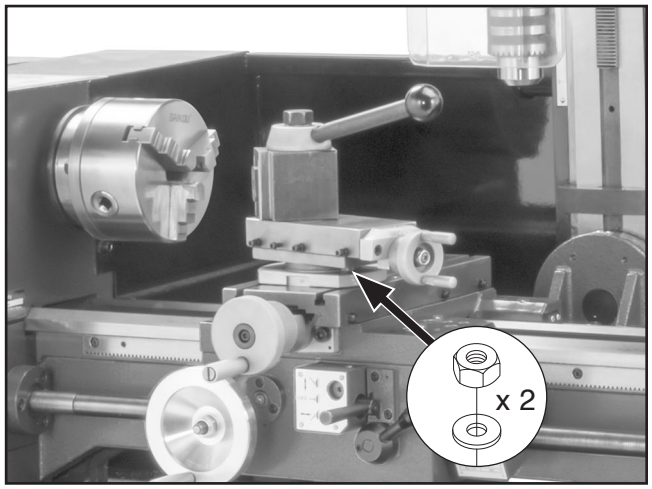


Figure 35. Compound rest base secured with flat washers and hex nuts.

Joining Drill Chuck & Arbor

An arbor and drill chuck come pre-installed on this machine. The following procedure describes how to install a new chuck in the case that you want a different chuck in the future. As it is very difficult to separate an existing chuck and arbor assembly, we recommend obtaining a new arbor and joining the two together.

Items Needed	Qty
Acetone or Lacquer Thinner	As Needed
New Chuck	1
New Arbor	1
Block of Wood	1

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 arbor and tap chuck onto a block of wood with medium force, as illustrated below.

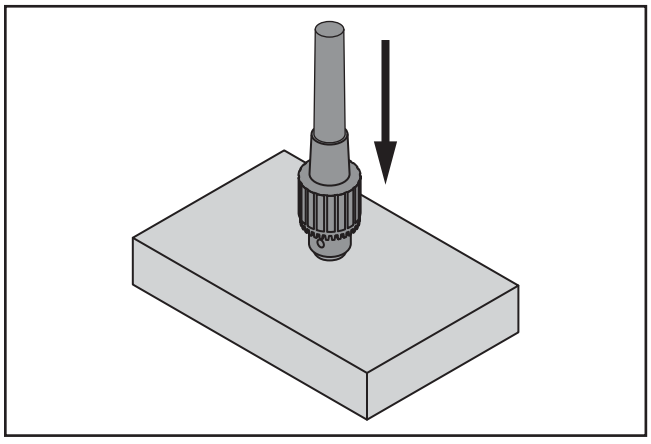


Figure 36. Tapping drill chuck/arbor on block of wood.

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

Removing/Installing Tooling

This machine features an R8 spindle taper and a 7/16"-20 spindle drawbar. R8 tool holders are secured in position from the top end by the drawbar and feature a keyway for easy alignment (see **Figure 37**).

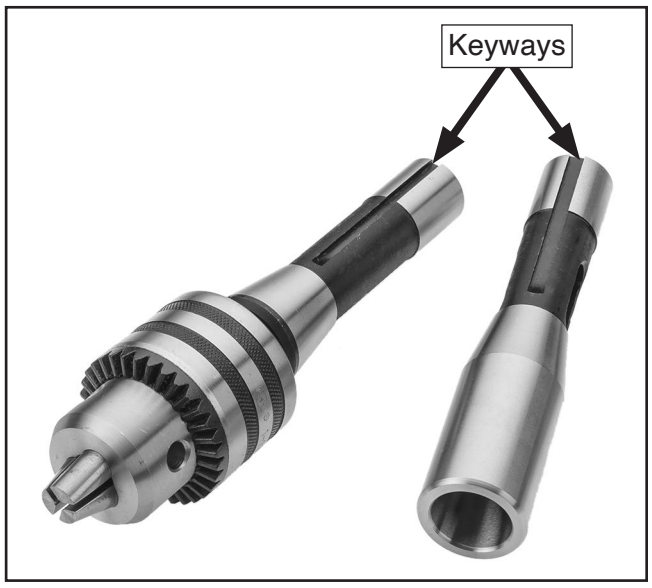


Figure 37. R8 tool holder keyways.

Before installation, always ensure the tapered surfaces of the tool holder and spindle are completely clean and free of any dust, debris, or lint. This will help ensure proper fit and accurate cutting results.

The R8 tool holder supports a wide range of tools, such as machining arbors, end-mill holders, and fly cutters for cutting operations.



⚠CAUTION

Cutting tools are sharp and can easily cause laceration injuries. Always protect your hands with leather gloves or shop rags when handling cutting tools.

Removing Tooling

Items Needed	Qty
Wrench or Socket 17mm	1
Brass-Head or Dead-Blow Hammer	1
Shop Rags or Cardboard	As Needed

To remove tooling:

1. DISCONNECT MACHINE FROM POWER!

2. Tighten Z-axis lock handle to keep headstock from moving in following steps (see **Figure 38**).

3. Remove drawbar cover (see **Figure 38**).

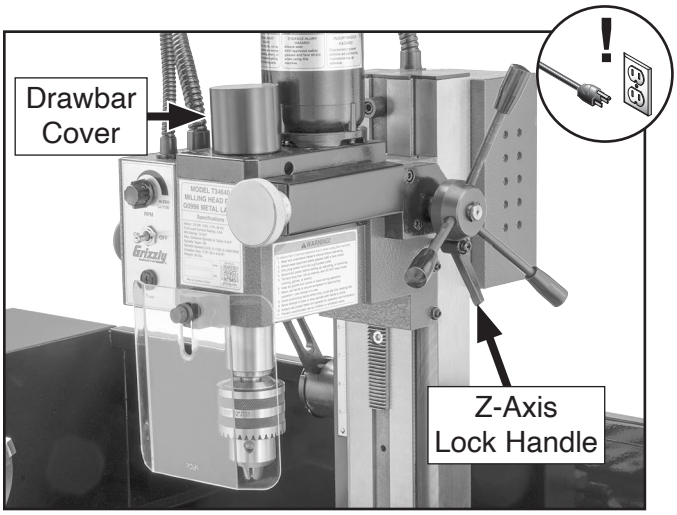


Figure 38. Location of Z-axis lock handle and drawbar cover.

4. Insert spindle locking pin into hole on side of headstock (see **Figure 39**). Turn spindle by hand until locking pin fully seats in spindle so spindle will not rotate.

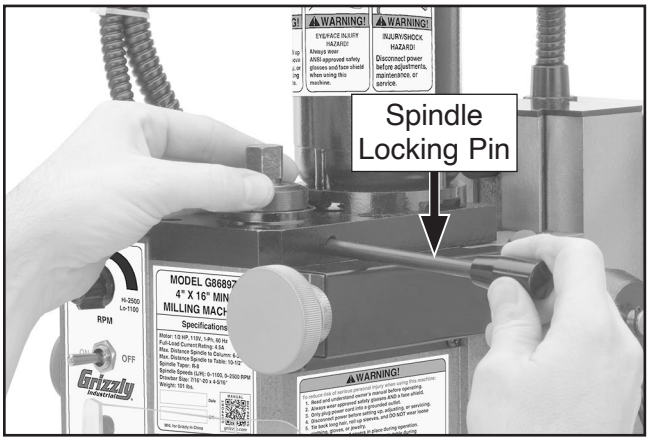


Figure 39. Example of inserted spindle locking pin.

5. Protect table with cardboard or hold tooling with rag to prevent it from falling out of headstock and damaging table in following steps.

6. Loosen drawbar 2–3 turns, but do not remove it (see **Figure 40**).

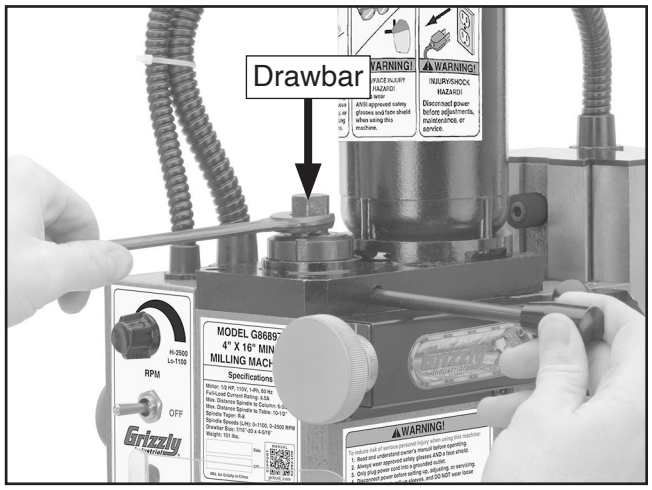


Figure 40. Example of loosening drawbar.

NOTICE

DO NOT completely unscrew drawbar before striking it with hammer in following step. You will damage threads on drawbar and tool holder.

7. Tap top of drawbar with hammer to unseat taper, as shown in **Figure 41**.

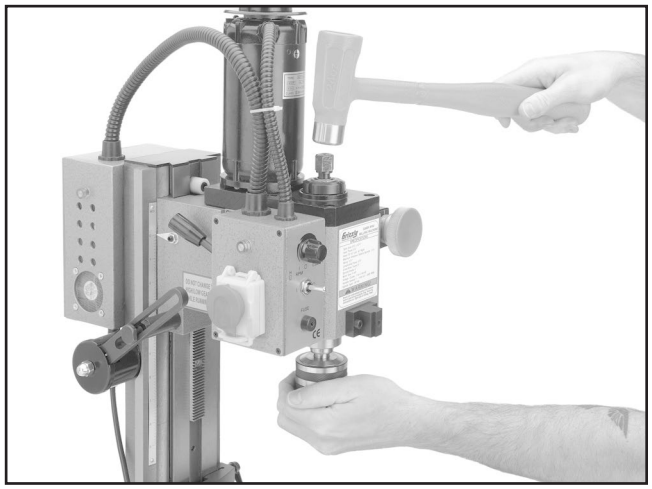


Figure 41. Example of using hammer to unseat taper.

8. Support tool with one hand and fully unthread drawbar with other hand.

Installing Tooling

Items Needed	Qty
Cleaner/Degreaser	As Needed
Shop Rags	As Needed
Wrench or Socket 17mm	1

To install tooling:

1. DISCONNECT MACHINE FROM POWER!

2. Clean debris or oily substances from inside spindle taper and tooling mating surface.

3. Insert tooling up into spindle taper. Rotate tooling until you feel tooling keyway align with protruding pin inside spindle taper so you can fully seat it.

4. With one hand holding tooling in place, thread drawbar into tooling until tooling draws up into spindle taper (see **Figure 42**). Tighten drawbar until snug.

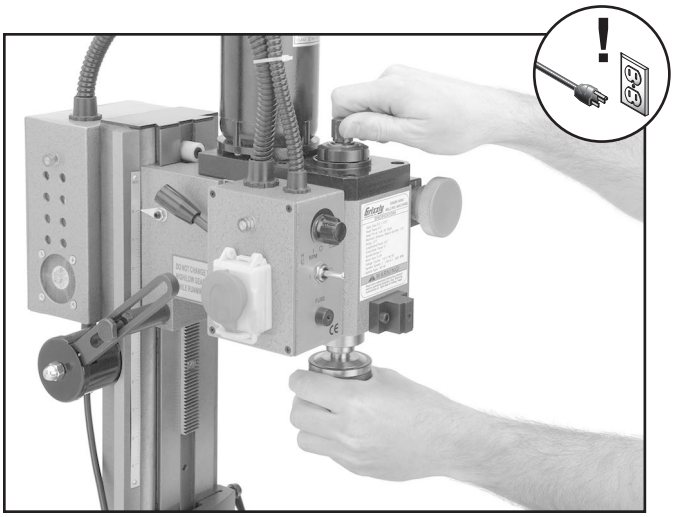


Figure 42. Example of threading drawbar into tooling.

NOTICE

DO NOT overtighten drawbar. Overtightening makes tool removal difficult and may damage tooling and threads.

5. Check seat by gently pulling down on tooling.

   — If tooling comes loose, repeat **Steps 2–5**.

6. Install drawbar cover.

Tilting Column

For machining operations requiring an angle, the column of the Model T34640 can be adjusted up to 45° in either direction of the vertical axis.

After returning column tilt to 0°, you must tram spindle to table X-axis to ensure 90° alignment. Refer to **Tramming Spindle** on **Page 39** for detailed instructions.

Items Needed **Qty**
Wrench or Socket 36mm..... 1

To tilt column:

1. DISCONNECT MACHINE FROM POWER!

⚠CAUTION
Falling headstock can crush or pinch. Keep column supported when adjusting tilt in following steps to prevent personal injury.

2. While supporting weight of column with free hand, loosen nut shown in **Figure 43**.

3. Use column tilt scale (see **Figure 43**) to set column angle as desired, then tighten nut from **Step 2** to secure setting.

Note: *If a high degree of accuracy is required, use additional methods for confirming tilt angle.*

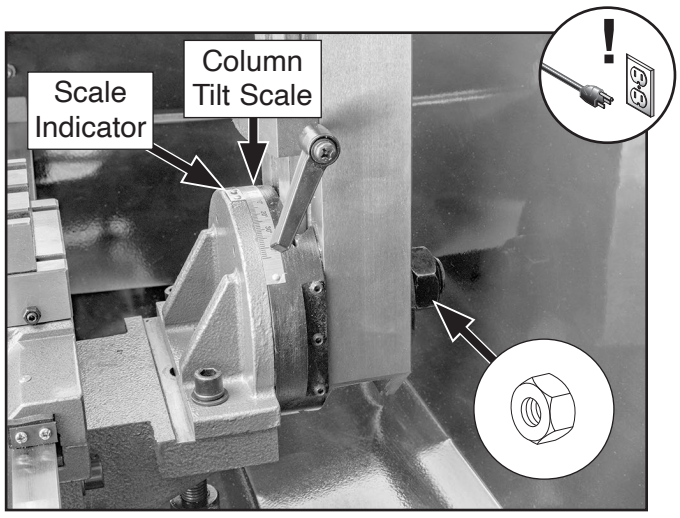


Figure 43. Column tilting components.

Using Spindle Downfeed

The Model T34640 is equipped with rapid and micro spindle downfeed controls, as shown in **Figure 44**. The rapid downfeed levers move the headstock up and down on the column quickly, similar to a drill press. The micro downfeed more precisely adjusts the headstock up and down.

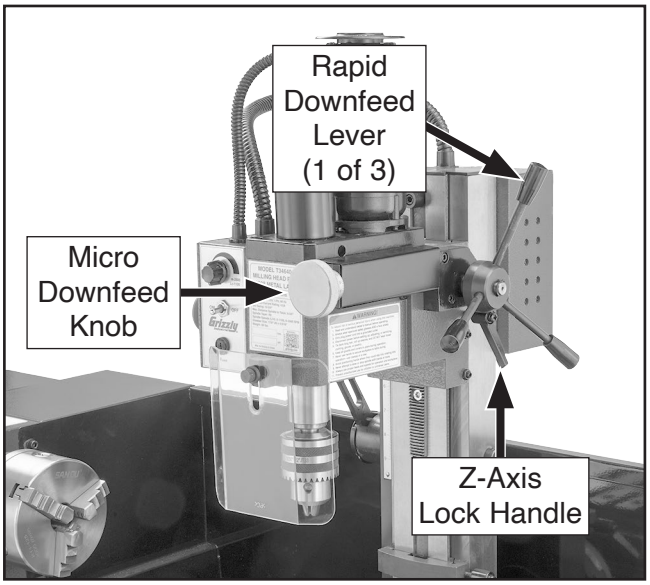


Figure 44. Spindle downfeed controls.

Using Rapid Downfeed

1. Loosen Z-axis lock handle (see **Figure 44**).

2. Pull downfeed lever hub out to disengage teeth, as shown in **Figure 45**.

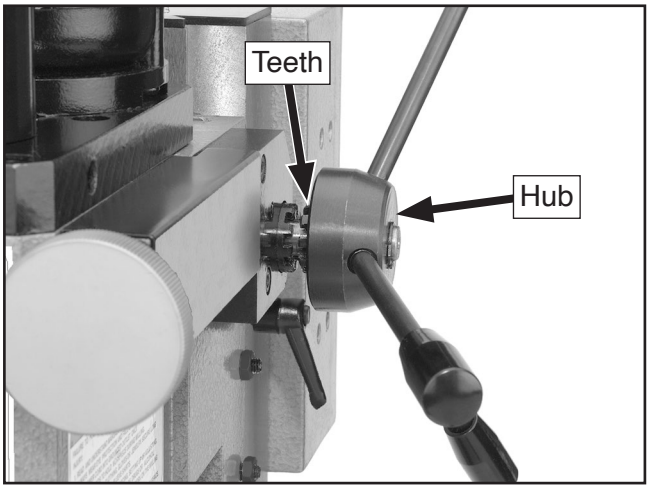


Figure 45. Hub teeth disengaged.

3. Move rapid downfeed handles to lower or raise headstock and spindle (see **Figure 44** on **Page 30**).

   — To secure headstock and spindle depth, like when milling a flat surface across workpiece face, tighten Z-axis lock handle.

Using Micro Downfeed

This micro level of control makes it easy to set the spindle height so a precise amount of material can be removed from the workpiece. The graduated dial measures spindle travel in 0.001" increments, with one full revolution equaling 0.060".

To use micro downfeed:

1. Loosen Z-axis lock handle (see **Figure 44** on **Page 30**).

2. Use rapid downfeed to adjust cutting tool just above workpiece surface.

3. Push downfeed lever hub in to engage teeth, as shown in **Figure 46**.

   Note: *Spindle may need to be rotated by hand to allow micro downfeed to align with downfeed lever hub.*

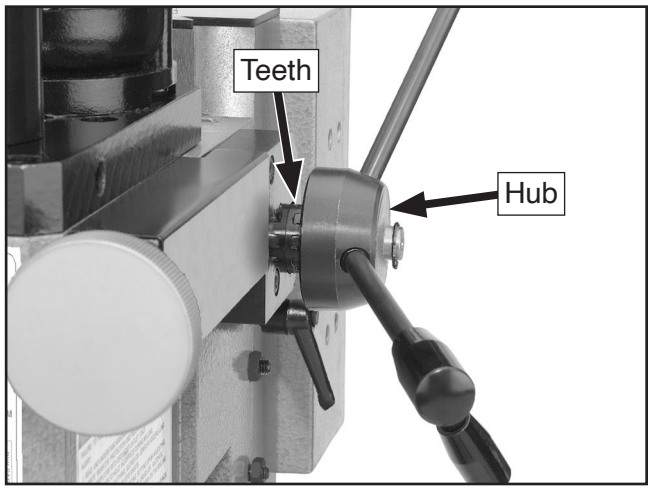


Figure 46. Hub teeth engaged.

4. Turn micro downfeed knob to adjust headstock and spindle to desired depth (see **Figure 44** on **Page 30**).

   — To secure headstock and spindle depth, like when milling a flat surface across workpiece face, tighten Z-axis lock handle.

Adjusting Depth Stop

The depth stop (see **Figure 47**) limits the downward movement of the headstock and cutting tool when performing repeated operations, like drilling the same size hole in multiple workpieces.

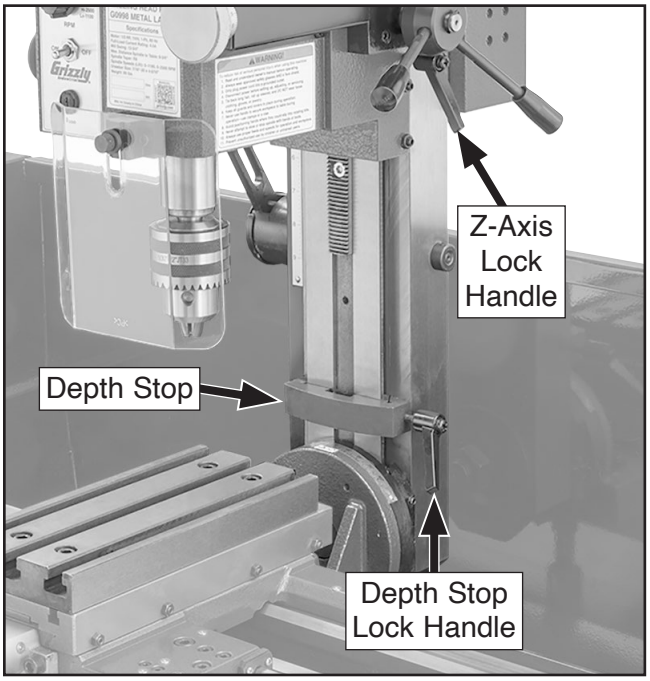


Figure 47. Depth stop components.

To adjust depth stop:

1. DISCONNECT MACHINE FROM POWER!

2. Move headstock to desired depth of cut, then tighten Z-axis lock handle to secure (see **Figure 47**).

3. Loosen depth stop lock handle (see **Figure 47**).

4. Slide depth stop (see **Figure 47**) so it sits tight against bottom of headstock, then tighten depth stop lock handle to secure.

   Note: *Depth stop can lose its position after repeated contact with headstock. To limit this possibility, make sure headstock only makes gentle contact with depth stop. Both rapid and micro downfeed controls can overpower depth stop if excessive force is used.*

Setting 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 the spindle controls to match the closest 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 below.

$$\frac{{}^{*}\text{Recommended Cutting Speed (FPM)} \times 12}{\text{Tool Dia. (in inches)} \times 3.14} = \text{Spindle Speed (RPM)}$$

*Double if using carbide cutting tool

Figure 48. Spindle speed formula for mill/drills.

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

The "Recommended Cutting Speed" varies depending on the type of workpiece material. It is the ideal speed for cutting that material in order to optimize tool life and produce a desirable finish.

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 all applicable variables to determine the best spindle speed for the operation.

Setting Spindle Speed

The Model T34640 has two spindle speed ranges: a low speed range that spans from 0–1100 RPM and a high speed range that spans from 0–2500 RPM.

To set spindle speed range:

1. Rotate spindle speed dial completely counterclockwise and wait for spindle to completely stop.

NOTICE

DO NOT attempt to change speed range until spindle has come to complete stop, or spindle gearing will be damaged.

2. Move speed range lever to desired speed range (see **Figure 49**).

   Note: *If speed range lever will not go into gear, rotate spindle by hand while holding light pressure on lever. When gears engage, lever will slip into place.*

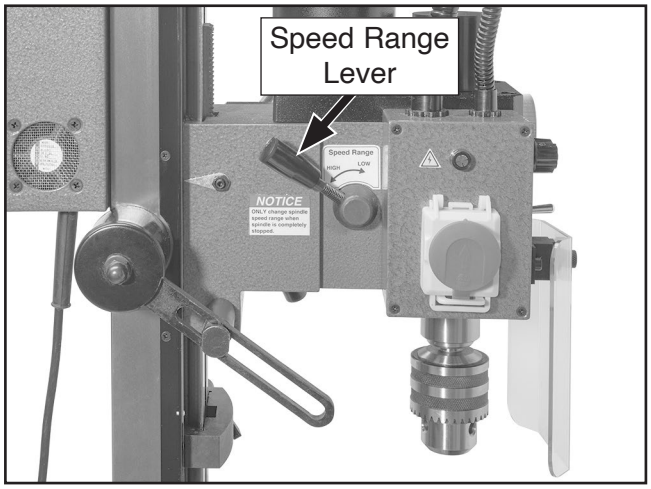
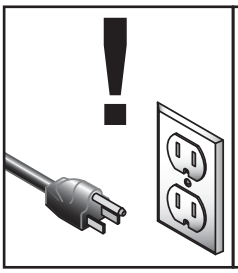


Figure 49. Location of speed range lever.

3. Move ON/OFF toggle switch to ON position, then turn spindle speed dial clockwise to desired speed.

   Note: *Spindle speed dial must be rotated all the way counterclockwise to reset spindle power after Emergency Stop button has been used or ON/OFF toggle switch has been moved to OFF position.*

SECTION 5: MAINTENANCE



⚠WARNING
To reduce risk of shock or accidental startup, always disconnect machine from power before adjustments, maintenance, or service.

Schedule

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.
- Damaged tooling.
- Worn or damaged wires.
- Any other unsafe condition.

Daily Maintenance
- Clean excess cutting fluids and chips, and protect unpainted surfaces.
- Lubricate column tilt components (**Page 34**).
- Lubricate column ways (**Page 34**).

Monthly Maintenance
- Clean and lubricate column rack (**Page 34**).

Cleaning & Protecting

Swarf left on the machine that has been soaked with water-based coolant will invite oxidation and build-up around the moving parts. Use a brush and shop vacuum to remove swarf and debris from the working surfaces of the machine. The small chips left over after vacuuming can be wiped up with a lightly oiled rag. Do not use compressed air to blow off chips, as this may drive them deeper into moving surfaces and could cause sharp chips to fly into your face or hands.

Protect the unpainted cast iron surfaces by wiping them clean after every use. Keep them rust-free with ISO 68 way oil.

Lubrication

The machine has numerous moving metal-to-metal contacts that require regular and proper lubrication to ensure efficient and long-lasting operation.

Other than the lubrication points covered in this section, all other bearings are internally lubricated and sealed at the factory. Simply leave them alone unless they need to be replaced.

DISCONNECT MACHINE FROM POWER BEFORE LUBRICATING COMPONENTS!

NOTICE
Recommended lubrication is based on light-to-medium usage. Lubrication tasks may need to be performed more frequently than recommended, depending on usage.

Failure to follow reasonable lubrication practices as instructed in this manual could lead to premature failure of machine components and will void warranty.

Column Tilt Components

Lubrication Type ... SB1365 or ISO 68 Equivalent
Lubrication Amount ..... 2–3 Drops
Lubrication Frequency ..... Daily

Items Needed	Qty
SB1365 or ISO 68 Equivalent.....	As Needed

Place a few drops of ISO 68 oil at the location shown in **Figure 50** to lubricate column tilt components. Tilt column back and forth over full range of travel to spread lubricant and ensure smooth movement.

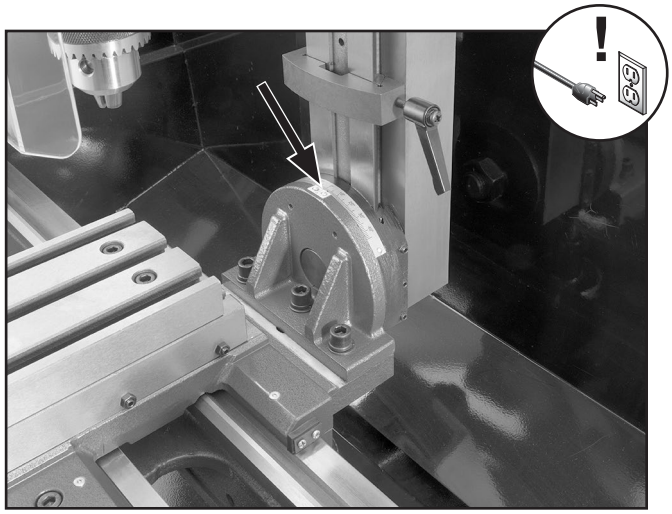


Figure 50. Column tilt lubrication location.

Column Ways

Lubrication Type ... SB1365 or ISO 68 Equivalent
Lubrication Amount .....Thin Coat
Lubrication Frequency ..... Daily

Items Needed	Qty
Shop Rags.....	As Needed
Mineral Spirits.....	As Needed
SB1365 or ISO 68 Equivalent.....	As Needed

Clean the column ways (see **Figure 51**) with shop rags and mineral spirits to remove the grime and old lubrication. Allow the ways to dry, wipe the ways with ISO 68 oil, then move the headstock up and down over the full range of travel to spread the lubricant and ensure smooth movement.

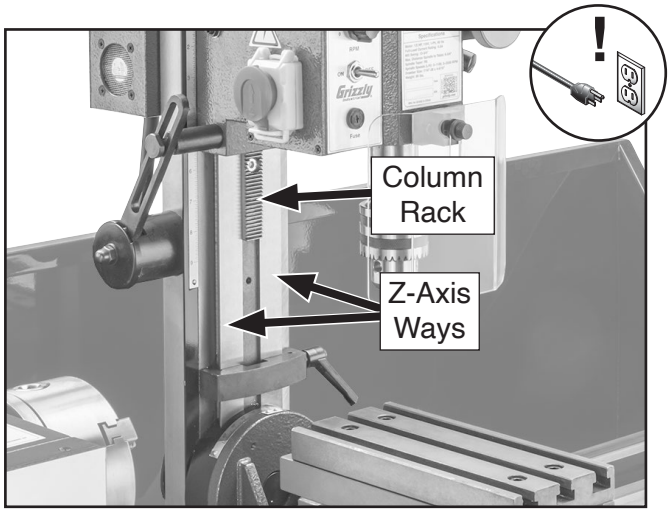


Figure 51. Location of column ways and rack.

Column Rack

Lubrication Type ... T26419 or NLGI#2 Equivalent
Lubrication Amount .....Thin Coat
Lubrication Frequency .....Monthly

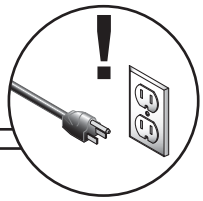
Items Needed	Qty
Stiff Brushes.....	As Needed
Mineral Spirits.....	As Needed
T26419 or NLGI#2 Equivalent	As Needed

Use mineral spirits and a stiff brush to remove the grime and old lubrication on the column rack (see **Figure 51**), moving the headstock up and down as needed. Allow the rack to dry, use a clean brush to wipe a thin coat of grease over the rack teeth, then move the headstock up and down several times over the full range of travel to spread the grease and ensure smooth movement.

SECTION 6: SERVICE

Review the troubleshooting procedures in this section if a problem develops with your machine. If you need replacement parts or additional help with a procedure, call our Technical Support. **Note:** *Please gather the serial number and manufacture date of your machine before calling.*

Troubleshooting



Motor & Electrical

Symptom	Possible Cause	Possible Solution
Machine does not start, or power supply breaker immediately trips after startup.	1. Master power switch is in "Neutral" or "Lathe" position.	1. Move master power switch to "Mill" position.
	2. Emergency Stop button cover depressed.	2. Open Emergency Stop button cover to reset.
	3. Spindle power needs to be reset.	3. Turn spindle speed dial all the way counterclockwise to reset.
	4. Power supply circuit breaker tripped or fuse blown.	4. Ensure circuit is free of shorts. Reset circuit breaker or replace fuse.
	5. Blown machine fuse.	5. Replace fuse/ensure no shorts.
	6. Incorrect power supply voltage or circuit size.	6. Ensure correct power supply voltage and circuit size (**Page 11**).
	7. Wiring broken, disconnected, or corroded.	7. Fix broken wires or disconnected/corroded connections (**Page 41**).
	8. Motor brushes worn out.	8. Replace brushes (**Page 38**).
	9. Motor or motor bearings at fault.	9. Replace motor.
Machine stalls or is underpowered.	1. Motor brushes worn out.	1. Replace brushes (**Page 38**).
	2. Motor overheated.	2. Clean motor, let cool, and reduce workload.
	3. Motor or motor bearings at fault.	3. Replace motor.
Machine has vibration or noisy operation.	1. Motor or component loose.	1. Replace damaged or missing bolts/nuts or tighten if loose.
	2. Motor mount loose/broken.	2. Tighten/replace.
	3. Motor bearings at fault.	3. Test by rotating shaft; rotational grinding/loose shaft requires bearing replacement.

Operation

Symptom	Possible Cause	Possible Solution
Machine stalls or is underpowered.	1. Workpiece material unsuitable for machine. 2. Gear(s) at fault. 3. Machine undersized for task.	1. Use correct type/size of metal. 2. Select appropriate gear ratio; replace broken or slipping gears. 3. Use sharp bits/reduce feed rate/reduce spindle RPM.
Machine has vibration or noisy operation.	1. Spindle extended too far down. 2. Workpiece not secure. 3. Spindle speed/feed rate too fast. 4. Bit chattering. 5. Milling head not secure to lathe. 6. Chuck or cutter at fault. 7. Gear(s) at fault. 8. Spindle loose, improperly installed, or damaged. 9. Spindle bearings at fault.	1. Fully retract spindle and lower headstock. This increases rigidity. 2. Properly clamp workpiece on table or in vise. 3. Reduce spindle speed (**Page 32**)/feed rate. 4. Reduce spindle speed first, then replace/sharpen bit; index bit to workpiece if problem persists. 5. Tighten milling head mounting fasteners. 6. Replace unbalanced chuck; replace/sharpen cutter. 7. Select appropriate gear ratio; replace broken or slipping gears. 8. Tighten loose spindle, reinstall spindle ensuring mating surfaces are clean, replace spindle if damaged. 9. Test by rotating spindle; rotational grinding/loose shaft requires bearing replacement.
Tool loose in spindle.	1. Cutting tool loose. 2. Cutting tool not fully drawn up into spindle taper. 3. Debris on cutting tool or spindle taper. 4. Taking too big of a cut.	1. Secure cutting tool. 2. Tighten drawbar (**Page 28**). 3. Clean cutting tool and spindle taper. 4. Lessen depth of cut and allow chips to clear.
Breaking cutting tools.	1. Spindle speed/feed rate too fast for depth of cut, cutting tool size, or workpiece material. 2. Improper/no lubricant; cutting tool getting too hot. 3. Dull/incorrect cutting tool. 4. Cutting tool too small. 5. Spindle extended too far down during or at beginning of operation. 6. Taking too big of a cut.	1. Reduce spindle speed (**Page 32**)/feed rate, take lighter cut. 2. Use proper lubricant for operation. 3. Sharpen/replace cutting tool. 4. Use larger cutting tool and slower feed rate. 5. Fully retract spindle and lower headstock. This increases rigidity. 6. Lessen depth of cut and allow chips to clear.
Headstock hard to move.	1. Headstock lock tightened down. 2. Column ways binding. 3. Gib too tight.	1. Loosen headstock lock (**Page 30**). 2. Clean/lubricate column ways and rack (**Page 33**). 3. Adjust column gib (**Page 37**).
Bad surface finish.	1. Spindle speed/feed rate too fast or slow. 2. Workpiece not secure. 3. Dull/incorrect cutting tool. 4. Wrong rotation direction for cutting tool. 5. Spindle extended too far down during or at beginning of operation.	1. Adjust spindle speed (**Page 32**)/feed rate. 2. Properly clamp workpiece on table or in vise. 3. Sharpen/replace cutting tool; select better tool for operation. 4. Use cutting tool designed for spindle rotation direction. 5. Fully retract spindle and lower headstock. This increases rigidity.
Cutting results not square.	1. Spindle not exactly 90° to table. 2. Table travel inconsistent; lathe bed twisted.	1. Tram spindle (**Page 39**). If results are still not square, shim milling head mounting bracket as described in **Assembly** (**Page 20**). 2. Adjust compound rest, cross slide, and saddle gibs; level lathe.

Adjusting Column Gib

Screws and jam nuts on the column gib allow adjustments to increase or decrease the friction between the sliding surfaces of the column ways.

The goal of the gib adjustment is to remove unnecessary sloppiness without causing binding in the dovetail ways. Tight gibs make the movements more accurate, but harder to perform. Loose gibs make the movements easier to perform, but make movements less accurate and leaves a poorer finish.

Items Needed	Qty
Open-End Wrench 10mm	1
Hex Wrench 3mm	1

To adjust column gib:

1. DISCONNECT MACHINE FROM POWER!

2. Use hex wrench to prevent set screws from moving while loosening jam nuts on column gib (see **Figure 52**).

3. Slightly adjust (4) gib set screws shown in **Figure 52** an equal amount and use rapid downfeed levers to test gib adjustments.

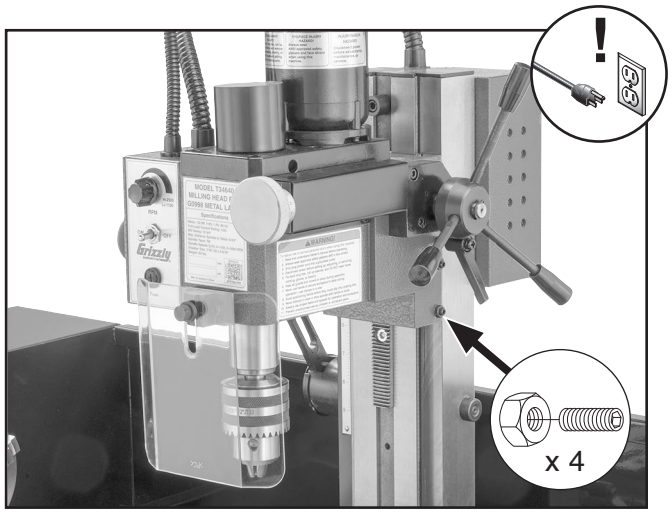


Figure 52. Location of gib screws and jam nuts.

4. When you are satisfied with gib adjustment, tighten jam screws without moving gib set screws.

Replacing Fuse

This machine features a fuse designed to protect sensitive electrical parts in the event of electrical overload. If the fuse burns out, replace it.

Items Needed	Qty
Phillips Head Screwdriver #2	1
Replacement Fuse 5A 250V (PT34640074)	1

To replace fuse:

1. DISCONNECT MACHINE FROM POWER!

2. Turn fuse holder cap counterclockwise to remove (see **Figure 53**).



Figure 53. Location of fuse holder cap.

3. Replace fuse, install fuse holder cap, and turn clockwise to secure.

Replacing Motor Brushes

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

Replace both carbon brushes at the same time when the motor no longer reaches full power, or when the brushes measure less than ¼" long (new brushes are ⅝").

Items Needed	Qty
Flat Head Screwdriver 3/16"	1
Replacement Brush Pair (PT34640127-2)	1

To replace motor brushes:

1. DISCONNECT MACHINE FROM POWER!

2. Turn each brush cap counterclockwise to remove (see **Figure 54**).

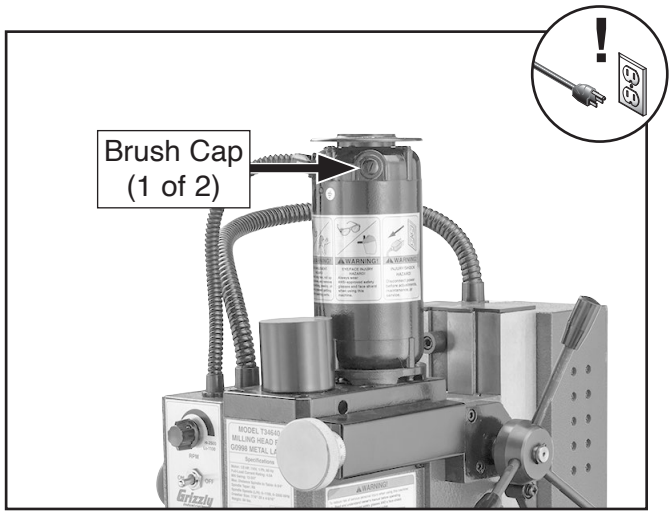


Figure 54. Location of brush caps.

3. Remove and inspect old brush assemblies (see **Figure 55**).

   — If brushes are intact and longer than ¼", brushes do not need to be replaced.

   — If either brush is broken or worn down to less than ¼", replace both assemblies with new ones.

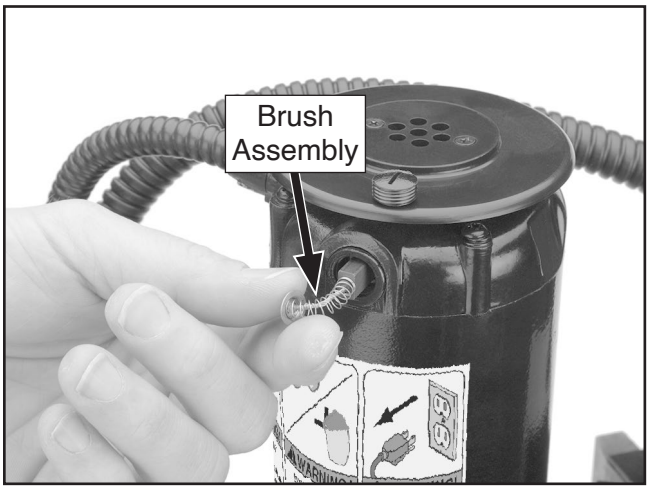


Figure 55. Example of removing brush assembly.

4. Install brush assemblies, then secure with brush caps.

Tramming Spindle

After positioning the column at an angle and when your operation requires that the spindle axis be precisely perpendicular to the table, you must tram or align the spindle with the table to ensure the spindle is exactly 90° to the table.

This procedure involves mounting a dial test indicator to the spindle, rotating it around the table, and adjusting the spindle axis (Z-axis) 90° to the table X-axis, as illustrated in **Figure 56**.

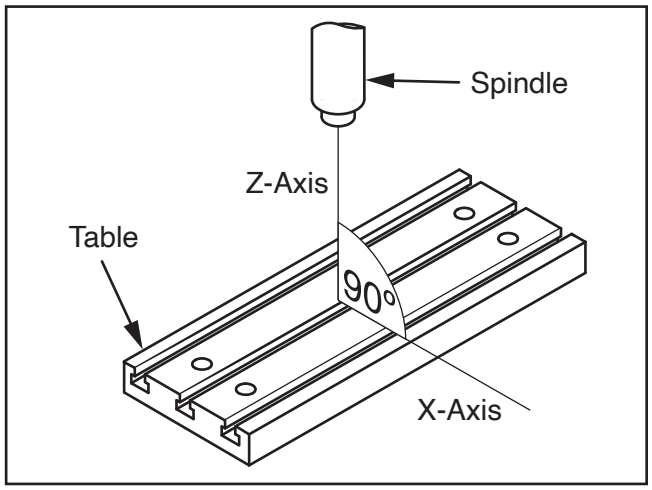


Figure 56. Spindle Z-axis perpendicular to table X-axis.

We encourage you to research the many variations of spindle tramming to find the one that works best for you. If you do not already have a preference for performing this operation, use the following widely used procedure for accurately tramming the spindle to the table.

Keep in mind that all workpiece top surfaces are not exactly parallel with the table top. You may choose to tram the spindle to the top surface of the workpiece after it is mounted rather than tramming the spindle to the table.

Items Needed	**Qty**
Dial Test Indicator (w/at least 0.0005" resolution)	1
Indicator Holder (mounted on the quill/spindle)	1
Precision Parallel Block (at least 9" in length)	1

Note: *A precision-ground plate can be substituted for the parallel block. Keep in mind that the farther the indicator point can be placed from the spindle axis, the more accurate the alignment measurements will be.*

To tram spindle to table:

1. DISCONNECT MACHINE FROM POWER!

2. Prepare machine for tramming by performing following tasks:

   - Verify table is clean by running your hand over top of it. If necessary, stone table to remove all nicks and burrs, then clean off all debris.

   - Position table for milling operation you intend to perform after tramming—preferably centered with headstock.

   - Tighten Z-axis lock handle.

3. Place parallel block underneath spindle.

4. Install indicator holder in spindle, then mount indicator so that point is as parallel to block as possible (see **Figure 57**).

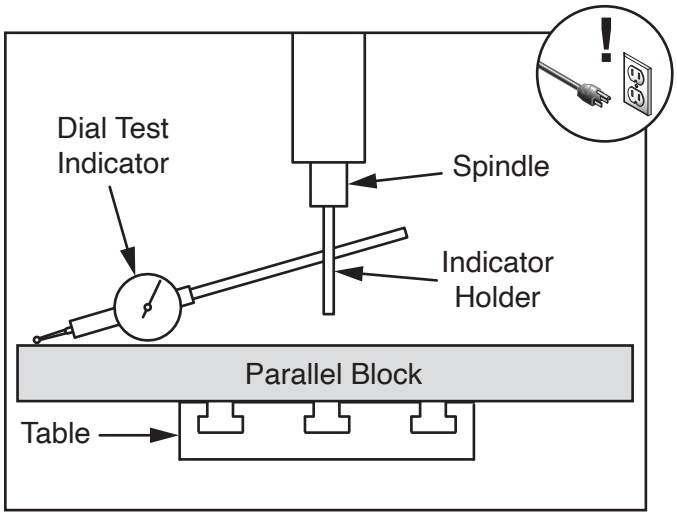


Figure 57. Dial test indicator mounted.

5. To measure spindle alignment along X-axis, place parallel block directly under spindle and indicator across width of table, as illustrated in **Figure 58**.

Note: *If you must re-position headstock to accommodate above step, then review tasks in **Step 2** to make sure machine is properly prepared for tramming.*

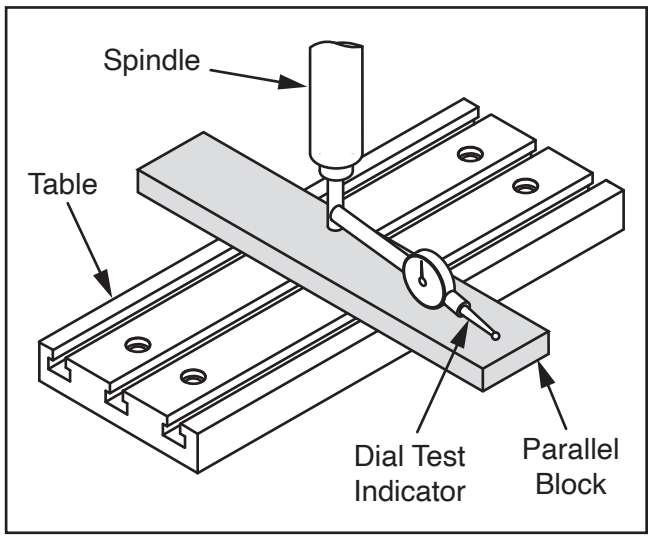


Figure 58. Parallel block and indicator positioned for X-axis measurement.

Note: *Your general goal in next steps should be to compare indicator readings between two ends of parallel block down to 0.0005". However, acceptable variance will depend on requirements for operation.*

6. Rotate spindle by hand so that indicator point rests on one end of parallel block, as illustrated in **Figure 57**–**Figure 58**, then zero dial.

7. Rotate spindle so that indicator point rests in same manner on other end of block, then read dial.

— If indicator dial still reads zero or is within acceptable variance, spindle is precisely perpendicular to table in X-axis and tramming procedure is complete.

— If indicator dial has moved from zero beyond acceptable variance, you will need to compensate for that amount by tilting column left or right. Repeat **Steps 6–7** until you are satisfied with spindle axis alignment along table X-axis.

SECTION 7: WIRING

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

If there are differences between your machine and what is shown in this section, call Technical Support at (570) 546-9663 for assistance BEFORE making any changes to the wiring on your machine. An updated wiring diagram may be available. **Note:** *Please gather the serial number and manufacture date of your machine before calling. This information can be found on the main machine label.*

⚠WARNING
Wiring Safety Instructions

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

MODIFICATIONS. Modifying the wiring beyond what is shown in the diagram may lead to unpredictable results, including serious injury or fire. This includes the installation of unapproved aftermarket parts.

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.

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

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.

MOTOR WIRING. The motor wiring shown in these diagrams is current at the time of printing but may not match your machine. If you find this to be the case, use the wiring diagram inside the motor junction box.

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

EXPERIENCING DIFFICULTIES. If you are experiencing difficulties understanding the information included in this section, contact our Technical Support at (570) 546-9663.

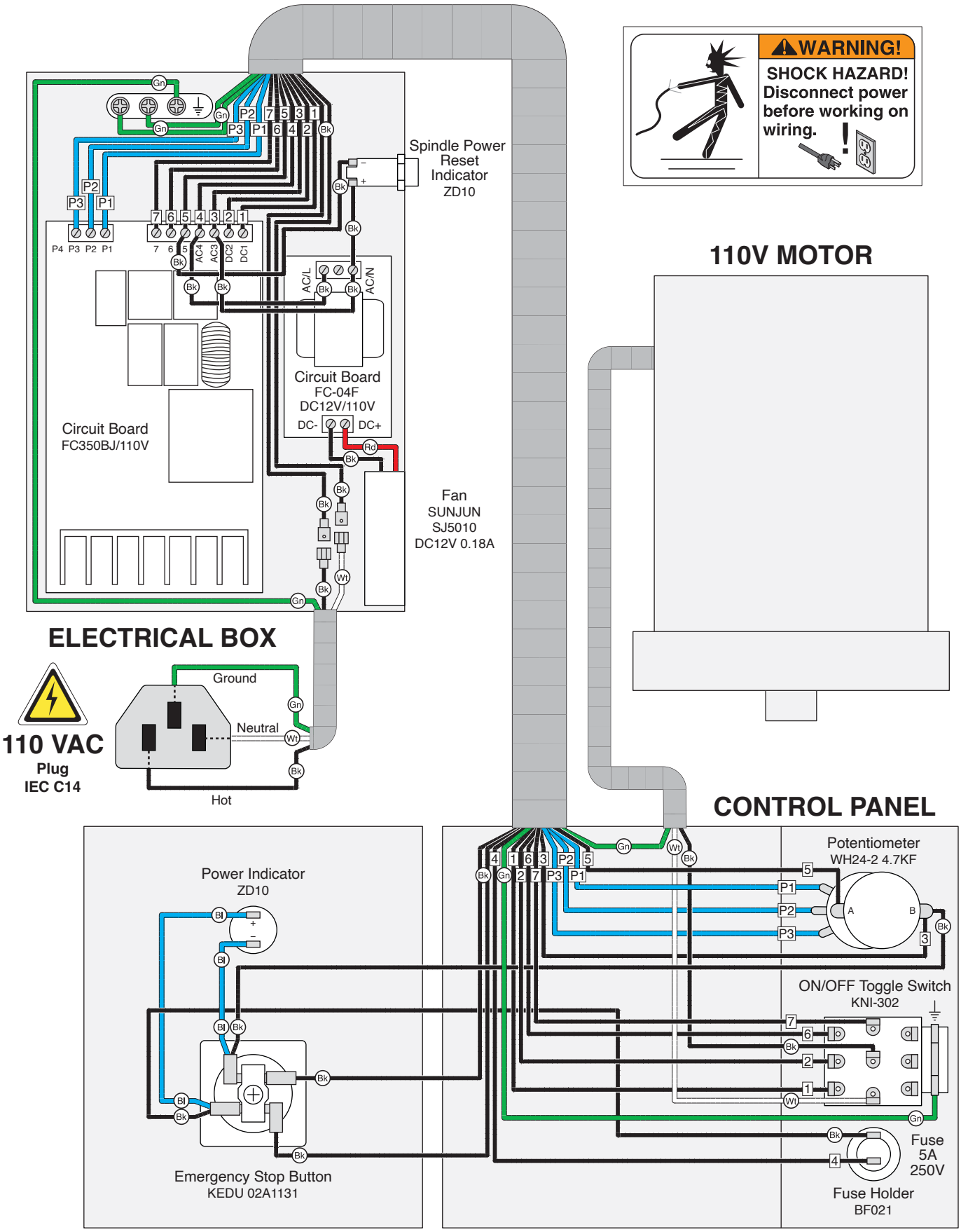
NOTICE

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

COLOR KEY

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

Wiring Diagram



STOP

READ WIRING SAFETY ON PAGE 41!

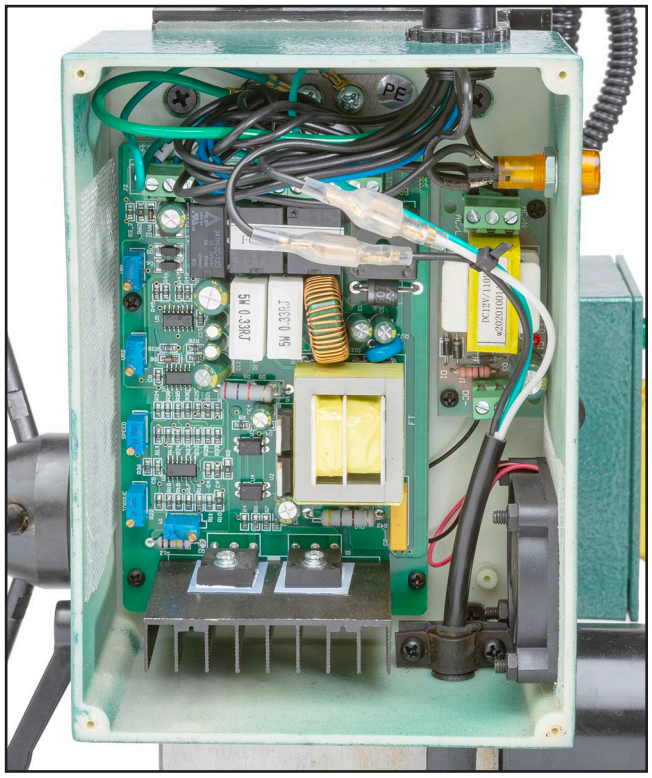


Figure 59. Electrical box wiring.

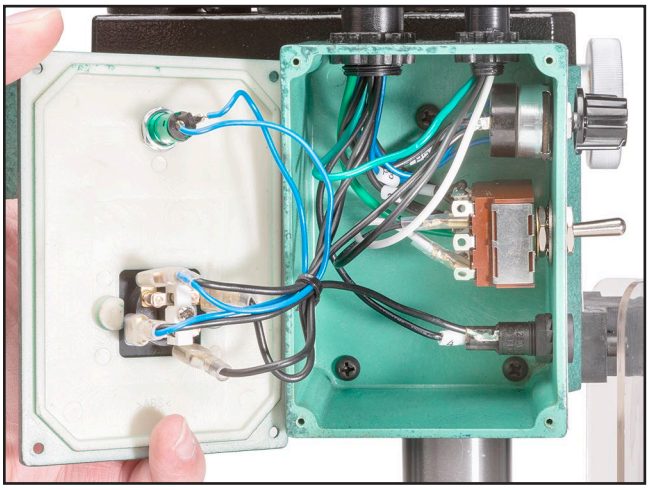
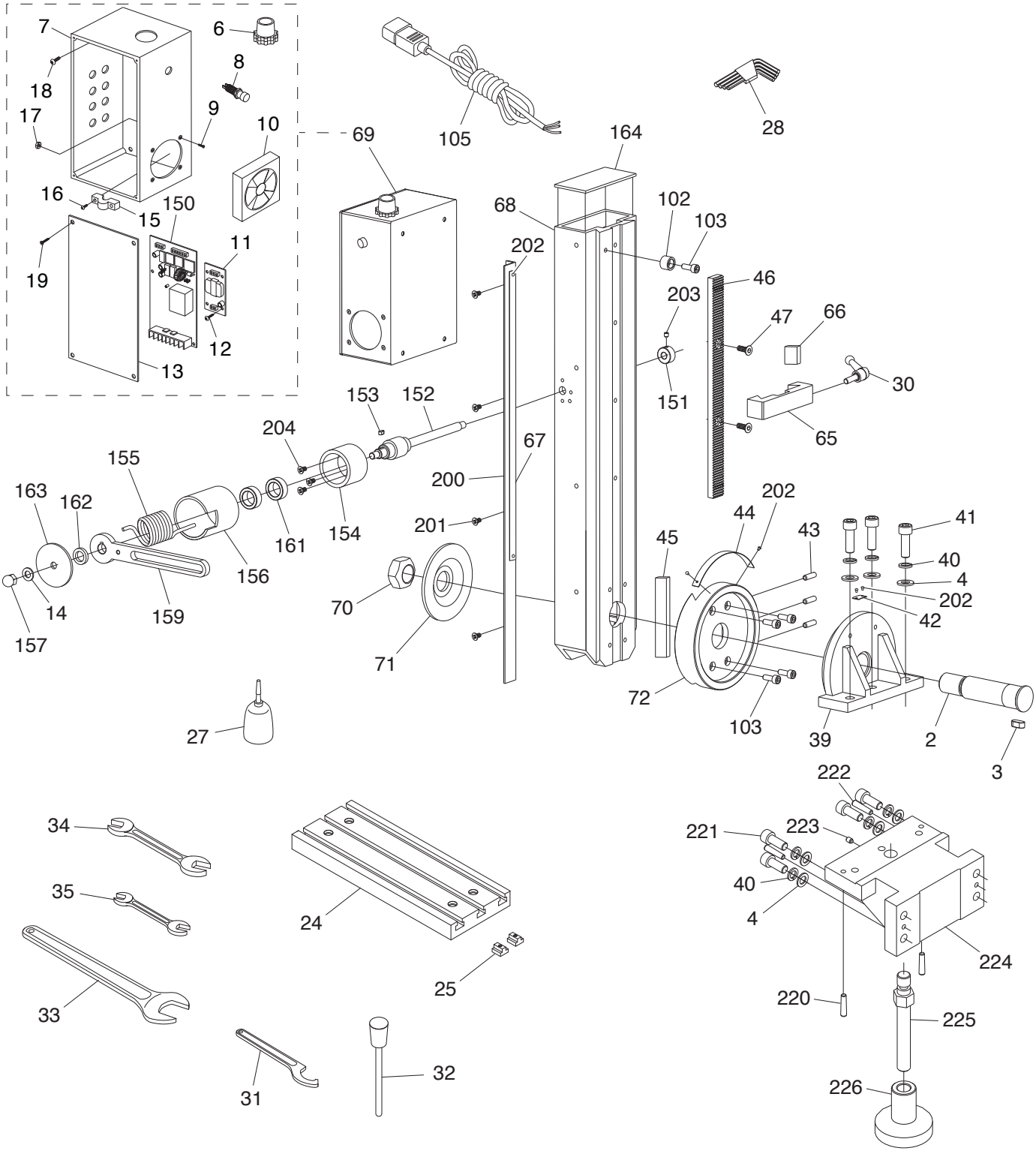


Figure 60. Control box wiring.

SECTION 8: PARTS

We do our best to stock replacement parts when possible, but we cannot guarantee that all parts shown are available for purchase. Call **(800) 523-4777** or visit **www.grizzly.com/parts** to check for availability.

Column



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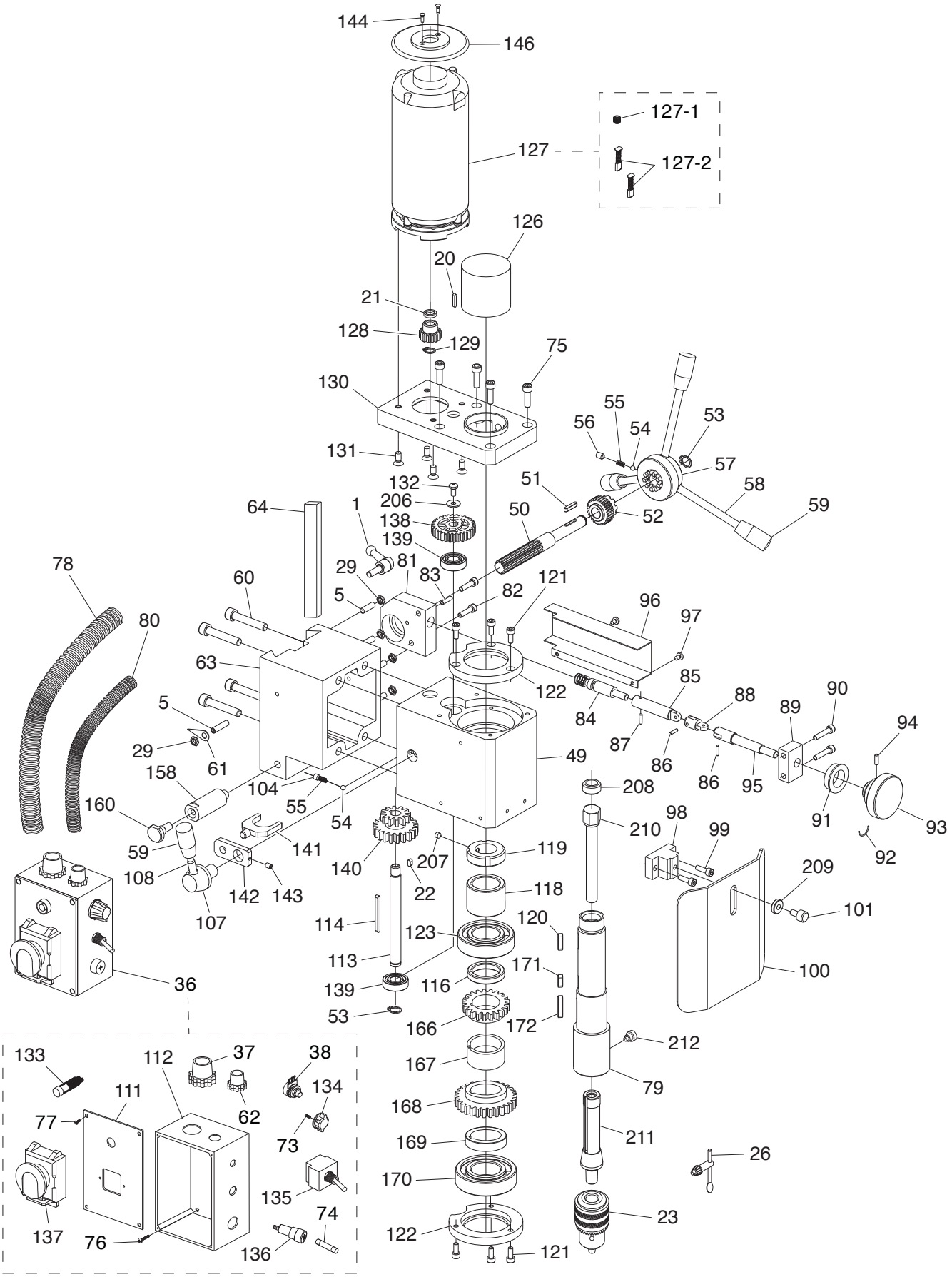
Column Parts List

REF	PART #	DESCRIPTION
2	PT34640002	PIVOT SHAFT
3	PT34640003	KEY 8 X 8 X 12 RE
4	PT34640004	FLAT WASHER 10MM
6	PT34640006	STRAIN RELIEF M20
7	PT34640007	ELECTRICAL BOX
8	PT34640008	LAMP ZD10 YELLOW
9	PT34640009	FLAT HD SCR M4-.7 X 20
10	PT34640010	FAN SUNJUN SJ5010 DC12V 0.18A
11	PT34640011	CIRCUIT BOARD FC-04F DC12V/110V
12	PT34640012	TAP SCREW M2.9 X 6.5
13	PT34640013	ELECTRICAL BOX COVER
14	PT34640014	FLAT WASHER 8MM
15	PT34640015	CORD CLAMP
16	PT34640016	PHLP HD SCR M4-.7 X 6
17	PT34640017	HEX NUT M4-.7
18	PT34640018	PHLP HD SCR M5-.8 X 8
19	PT34640019	TAP SCREW M2.9 X 6.5
24	PT34640024	CROSS SLIDE TABLE
25	PT34640025	T-SLOT NUT 7/16", M10-1.5
27	PT34640027	OIL BOTTLE
28	PT34640028	HEX WRENCH SET (3, 4, 5, 6MM)
30	PT34640030	ADJUSTABLE HANDLE M8-1.25 X 16
31	PT34640031	SPANNER WRENCH 45-52MM
32	PT34640032	SPINDLE LOCKING PIN
33	PT34640033	WRENCH 36MM OPEN-END
34	PT34640034	WRENCH 17 X 19MM OPEN-ENDS
35	PT34640035	WRENCH 8 X 10MM OPEN-ENDS
39	PT34640039	PIVOT PLATE
40	PT34640040	LOCK WASHER 10MM
41	PT34640041	CAP SCREW M10-1.5 X 30
42	PT34640042	POINTER
43	PT34640043	SET SCREW M6-1 X 22
44	PT34640044	COLUMN TILT SCALE
45	PT34640045	TILT GIB
46	PT34640046	GEAR RACK 11"
47	PT34640047	FLAT HD CAP SCR M6-1 X 12

REF	PART #	DESCRIPTION
65	PT34640065	DEPTH STOP
66	PT34640066	DEPTH STOP GIB
67	PT34640067	Z-AXIS SCALE
68	PT34640068	COLUMN
69	PT34640069	ELECTRICAL BOX ASSEMBLY
70	PT34640070	HEX NUT M24-3
71	PT34640071	MOUNTING PLATE
72	PT34640072	CONNECTING STRUT
102	PT34640102	SPACER 7 X 17 X 16MM
103	PT34640103	CAP SCREW M6-1 X 16
105	PT34640105	POWER CORD 18G 3W 27" IEC C14
150	PT34640150	CIRCUIT BOARD FC350BJ/110V
151	PT34640151	LOCK COLLAR
152	PT34640152	ROTOR SHAFT
153	PT34640153	KEY 4 X 4 X 8 RE
154	PT34640154	SPRING SUPPORT
155	PT34640155	TORSION SPRING
156	PT34640156	SPRING HOUSING
157	PT34640157	ACORN NUT M8-1.25
159	PT34640159	SUPPORT GUIDE
161	PT34640161	SPACER 18 X 26.5 X 10MM
162	PT34640162	FLAT WASHER 8MM
163	PT34640163	SPRING COVER
164	PT34640164	COLUMN COVER
200	PT34640200	SCALE MOUNT
201	PT34640201	FLAT HD SCR M3-.5 X 8
202	PT34640202	RIVET 2 X 3MM NAMEPLATE, ALUMINUM
203	PT34640203	SET SCREW M5-.8 X 6 CONE-PT
204	PT34640204	FLAT HD SCR M5-.8 X 8
220	PT34640220	TAPER PIN W/INT THREADS 6 X 30
221	PT34640221	CAP SCREW M10-1.5 X 35
222	PT34640222	TAPER PIN W/INT THREADS 6 X 30
223	PT34640223	SET SCREW M6-1 X 8 DOG-PT
224	PT34640224	MOUNTING BRACKET
225	PT34640225	FLANGED LEVELING BOLT
226	PT34640226	SUPPORT FOOT M16-2

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Headstock



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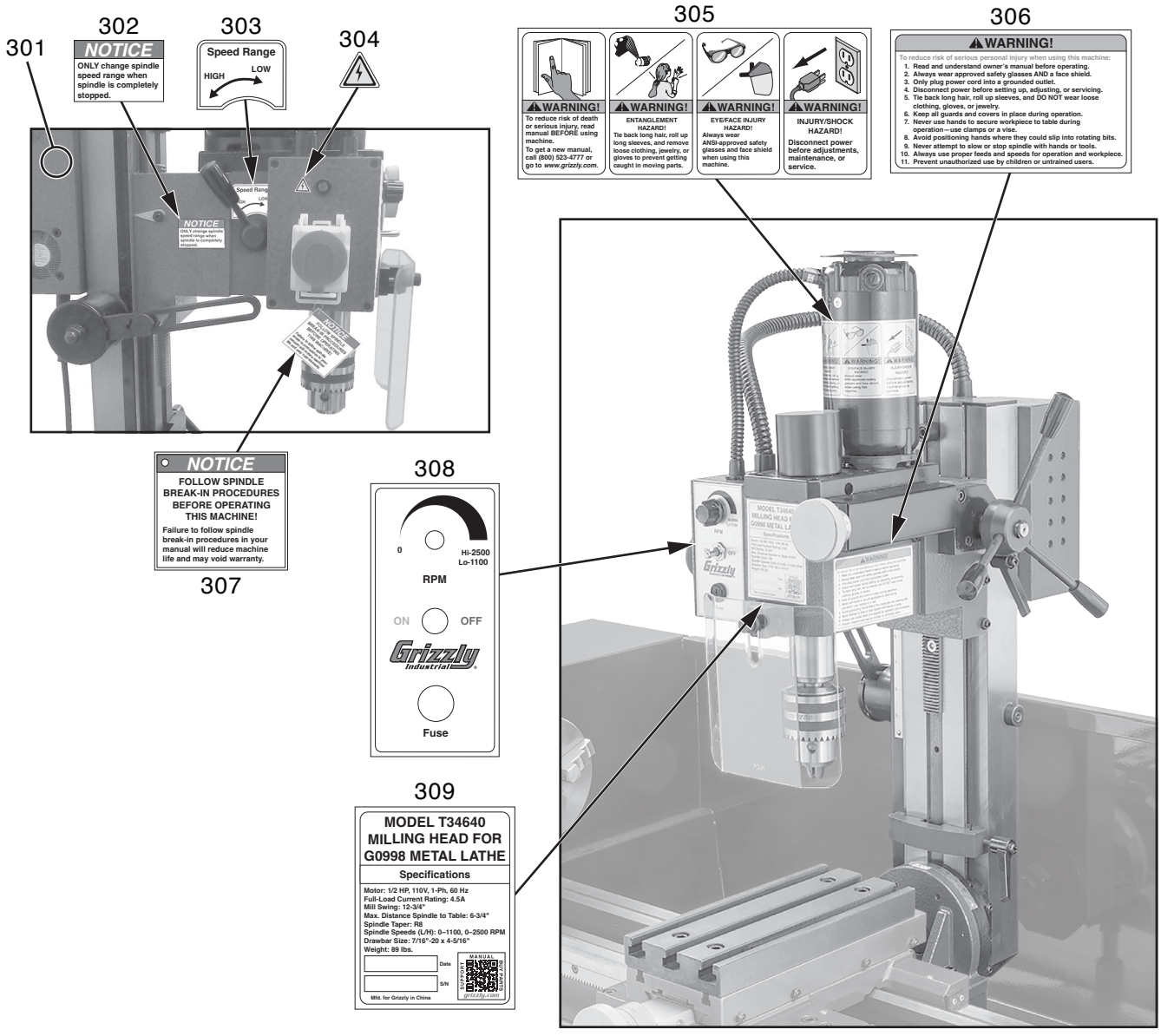
Headstock Parts List

REF	PART #	DESCRIPTION
1	PT34640001	ADJUSTABLE HANDLE M8-1.25 X 16
5	PT34640005	SET SCREW M6-1 X 22
20	PT34640020	KEY 3 X 3 X 16 RE
21	PT34640021	SPACER 9.2 X 14 X 3MM
22	PT34640022	KEY 4 X 4 X 8 RE
23	PT34640023	DRILL CHUCK JT33 1/32"-1/2"
26	PT34640026	DRILL CHUCK KEY 5/16" TH 11T SD-9/16"
29	PT34640029	HEX NUT M6-1 THIN
36	PT34640036	CONTROL BOX ASSEMBLY
37	PT34640037	STRAIN RELIEF 13MM
38	PT34640038	POTENTIOMETER WH24-2 4.7K
49	PT34640049	SPINDLE BOX
50	PT34640050	PINION
51	PT34640051	KEY 4 X 4 X 20 RE
52	PT34640052	BEVEL GEAR 29T
53	PT34640053	EXT RETAINING RING 12MM
54	PT34640054	STEEL BALL 5MM
55	PT34640055	COMPRESSION SPRING 0.4 X 0.8 X 10MM
56	PT34640056	SET SCREW M6-1 X 8
57	PT34640057	DOWNFEED LEVER HUB
58	PT34640058	STUD-UDE M8-1 X 120, 20, 10
59	PT34640059	KNOB M8-1
60	PT34640060	CAP SCREW M8-1.25 X 80
61	PT34640061	POINTER
62	PT34640062	STRAIN RELIEF 8MM
63	PT34640063	SPINDLE BOX SEAT
64	PT34640064	GIB
73	PT34640073	SET SCREW M2-.4 X 3 SLOTTED
74	PT34640074	FUSE 5A 250V 0.25" FAST-ACTING, GLASS
75	PT34640075	CAP SCREW M6-1 X 20
76	PT34640076	PHLP HD SCR M5-.8 X 8
77	PT34640077	TAP SCREW M2.8 X 6.5
78	PT34640078	CONDUIT 13 X 17 X 600MM
79	PT34640079	SPINDLE R8
80	PT34640080	CONDUIT 8 X 12 X 300MM
81	PT34640081	SUPPORT BLOCK
82	PT34640082	CAP SCREW M5-.8 X 20
83	PT34640083	DOWEL PIN 4 X 16
84	PT34640084	WORM SHAFT
85	PT34640085	SLEEVE
86	PT34640086	DOWEL PIN 3 X 12
87	PT34640087	TAPER PIN 3 X 12
88	PT34640088	ADJUSTABLE UNION
89	PT34640089	MICRO DOWNFEED BRACKET
90	PT34640090	CAP SCREW M5-.8 X 25
91	PT34640091	DIAL
92	PT34640092	FLAT SPRING
93	PT34640093	MICRO DOWNFEED DIAL
94	PT34640094	SET SCREW M4-.7 X 12
95	PT34640095	MICRO DOWNFEED SHAFT
96	PT34640096	MICRO DOWNFEED COVER
97	PT34640097	PHLP HD SCR M4-.7 X 6
98	PT34640098	CHIP GUARD COVER
99	PT34640099	CAP SCREW M5-.8 X 16

REF	PART #	DESCRIPTION
100	PT34640100	CHIP GUARD
101	PT34640101	THUMB SCREW M6-1 X 12
104	PT34640104	SET SCREW M6-1 X 6
107	PT34640107	SHIFT LEVER HUB
108	PT34640108	STUD-DE M8-1 X 70, 20
111	PT34640111	CONTROL BOX COVER
112	PT34640112	CONTROL BOX
113	PT34640113	IDLER SHAFT
114	PT34640114	KEY 4 X 4 X 45 RE
116	PT34640116	SPACER 30.2 X 41 X 7.5MM
118	PT34640118	SPACER 30 X 42 X 32MM
119	PT34640119	SPANNER NUT M27-1.5
120	PT34640120	KEY 5 X 5 X 18 RE
121	PT34640121	CAP SCREW M5-.8 X 12
122	PT34640122	BEARING COVER
123	PT34640123	BALL BEARING 6206ZZ
126	PT34640126	DRAWBAR COVER
127	PT34640127	MOTOR 1/2HP 110VDC
127-1	PT34640127-1	BRUSH CAP
127-2	PT34640127-2	CARBON BRUSH ASSEMBLY (2-PC)
128	PT34640128	MOTOR GEAR 14T
129	PT34640129	EXT RETAINING RING 9MM
130	PT34640130	MOTOR SEAT
131	PT34640131	FLAT HD CAP SCR M6-1 X 10
132	PT34640132	PHLP HD SCR M5-.8 X 10
133	PT34640133	LAMP ZD10 GREEN
134	PT34640134	SPINDLE SPEED DIAL
135	PT34640135	TOGGLE SWITCH KNI-302
136	PT34640136	FUSE HOLDER BF021 6A 250VAC
137	PT34640137	E-STOP BUTTON KEDU 02A1131
138	PT34640138	GEAR 30T
139	PT34640139	BALL BEARING 6001ZZ
140	PT34640140	TRANSMISSION GEAR
141	PT34640141	SHIFT FORK
142	PT34640142	GEAR SHIFT LINK
143	PT34640143	SET SCREW M5-.8 X 8
144	PT34640144	TAP SCREW M2.9 X 6
146	PT34640146	MOTOR COVER
158	PT34640158	STANDOFF-HEX MF M10-1.5 X 8, M8-1.25
160	PT34640160	SHOULDER BOLT M8-1.25 X 13, 11 X 12
166	PT34640166	GEAR 21T
167	PT34640167	BUSHING
168	PT34640168	GEAR 29T
169	PT34640169	SPACER 35.1 X 42 X 17.5MM
170	PT34640170	BALL BEARING 6007ZZ
171	PT34640171	KEY 5 X 5 X 16 RE
172	PT34640172	KEY 5 X 5 X 20 RE
206	PT34640206	FLAT WASHER 5MM
207	PT34640207	SET SCREW M6-1 X 8 CONE-PT
208	PT34640208	BUSHING
209	PT34640209	FLAT WASHER 6 X 16 X 4MM
210	PT34640210	DRAWBAR 7/16-20 X 5/8, 4-5/16
211	PT34640211	ARBOR R8 X JT33
212	PT34640212	SHOULDER PIN

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Labels & Cosmetics



REF	PART #	DESCRIPTION
301	PT34640301	TOUCH-UP PAINT, GRIZZLY GREEN
302	PT34640302	SPEED RANGE NOTICE LABEL
303	PT34640303	HIGH/LOW LABEL
304	PT34640304	ELECTRICITY LABEL
305	PT34640305	COMBO WARNING LABEL

REF	PART #	DESCRIPTION
306	PT34640306	WARNING LIST LABEL
307	PT34640307	SPINDLE BREAK-IN HANG TAG
308	PT34640308	CONTROL PANEL LABEL
309	PT34640309	MACHINE ID LABEL

⚠WARNING

Safety labels help reduce the risk of serious injury caused by machine hazards. If any label comes off or becomes unreadable, the owner of this machine MUST replace it in the original location before resuming operations. For replacements, contact (800) 523-4777 or www.grizzly.com.

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WARRANTY & RETURNS

Grizzly Industrial, Inc. warrants every product it sells for a period of **1 year** to the original purchaser from the date of purchase. This warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence, accidents, repairs or alterations or lack of maintenance. This is Grizzly's sole written warranty and any and all warranties that may be implied by law, including any merchantability or fitness, for any particular purpose, are hereby limited to the duration of this written warranty. We do not warrant or represent that the merchandise complies with the provisions of any law or acts unless the manufacturer so warrants. In no event shall Grizzly's liability under this warranty exceed the purchase price paid for the product and any legal actions brought against Grizzly shall be tried in the State of Washington, County of Whatcom.

We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special, or consequential damages arising from the use of our products.

The manufacturers reserve the right to change specifications at any time because they constantly strive to achieve better quality equipment. We make every effort to ensure that our products meet high quality and durability standards and we hope you never need to use this warranty.

In the event you need to use this warranty, contact us by mail or phone and give us all the details. We will then issue you a "Return Number," which must be clearly posted on the outside as well as the inside of the carton. We will not accept any item back without this number. Proof of purchase must accompany the merchandise.

Please feel free to write or call us if you have any questions about the machine or the manual.

Thank you again for your business and continued support. We hope to serve you again soon.

For further information about the warranty, visit **https://www.grizzly.com/forms/warranty** or scan the QR code below to be automatically directed to our warranty page.



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