Grizzly Industrial, Inc.®

MODEL G0619
DELUXE SMALL MILL/DRILL
OWNER'S MANUAL

#CR8850 PRINTED IN CHINA

⚠ WARNING!

This manual provides critical safety instructions on the proper setup, operation, maintenance and service of this machine/equipment.

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

The owner of this machine/equipment 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, blade/cutter 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

Foreword

We are proud to offer the Model G0619 Deluxe Small Mill/Drill. This machine is part of a growing Grizzly family of fine metalworking machinery. When used according to the guidelines set forth in this manual, you can expect years of trouble-free, enjoyable operation and proof of Grizzly's commitment to customer satisfaction.

The specifications, drawings, and photographs illustrated in this manual represent the Model G0619 when the manual was prepared. However, owing to Grizzly's policy of continuous improvement, changes may be made at any time with no obligation on the part of Grizzly.

For your convenience, we always keep current Grizzly manuals available on our website at **www.grizzly.com**. Any updates to your machine will be reflected in these manuals as soon as they are complete. Visit our site often to check for the latest updates to this manual!

Contact Info

If you have any comments regarding this manual, please write to us at the address below:

Grizzly Industrial, Inc.
C/O Technical Documentation Manager
P.O. Box 2069
Bellingham, WA 98227-2069
Email: manuals@grizzly.com

We stand behind our machines. If you have any service questions or parts requests, please call or write us at the location listed below.

Grizzly Industrial, Inc.
1203 Lycoming Mall Circle
Muncy, PA 17756
Phone: (570) 546-9663
Fax: (800) 438-5901
E-Mail: techsupport@grizzly.com
Web Site: http://www.grizzly.com

MACHINE DATA SHEET

Grizzly Industrial, Inc.®

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

Product Dimensions:

Weight..... 364 lbs.
Length/Width/Height.....27"L x 30"W x 33¾"H
Foot Print (Length/Width).....16" x 13"

Shipping Dimensions:

Type..... Wood Crate
Content..... Machine
Weight..... 437 lbs.
Length/Width/Height.....33"L x 32"W x 42"H

Electrical:

Switch..... Forward/Reverse
Switch Voltage..... 110V
Cord Length..... 7 ft.
Cord Gauge.....14 gauge
Recommended Breaker Size..... 15 amp
Plug.....NEMA 5-15
Power Supply.....110V, Single-Phase

Motor:

Type.....IP44, Class F, Brushless DC Motor (BLDC)
Horsepower.....1HP
Amps.....12A
Speed.....3500 RPM
Cycle.....60 Hz
Power Transfer .....Belt
Bearings.....Sealed, Permanently Lubricated

Main Specifications:

Spindle Travel	2¾"
Drawbar	7/16" x 20 TPI
Spindle Taper	R8
Swing	18"
Longitudinal Table Travel	15⅞"
Cross Table Travel	5¾"
Head Travel	14⅞"
Max. Distance Spindle To Column	8"
Max. Distance Spindle To Table	14¾"
Max. Drilling Capacity	1"
Max. Tapping Capacity	½"
Max. End Mill Capacity	1"
Max. Face Mill Capacity	2"
Spindle Speed Range	100-1750 RPM, +/- 10%
Quill Diameter	2.362"

Table Info

Table Length	21⅝"
Table Width	6¼"
Table Thickness	1½"
No. of T-Slots	3
T-Slot Width	0.470"
T-Slot Height	0.750"
T-Slot Centers	1-11/16"
Stud Size	⅜"
Lead Screw Diameter	⅝"
Lead Screw TPI	12
Lead Screw Length	26"

Construction

Spindle Housing Construction	Cast Iron
Table Construction	Surface Ground Cast Iron
Head Construction	Cast Iron
Column Construction	Surface Ground Cast Iron
Base Construction	Cast Iron
Paint	Epoxy

Features

3-16mm Drill Chuck with Key R-8/JT-6 Arbor
Leveling Feet
Digital RPM Readout
Digital Milling Depth Readout
Digital Tapping Controls and RPM Adjustment
Tapping Direction Quick-Shift Buttons on Quill Levers
Manual Micro Depth Adjustment
Dovetailed Table Ways
Dovetailed Column Ways

Identification

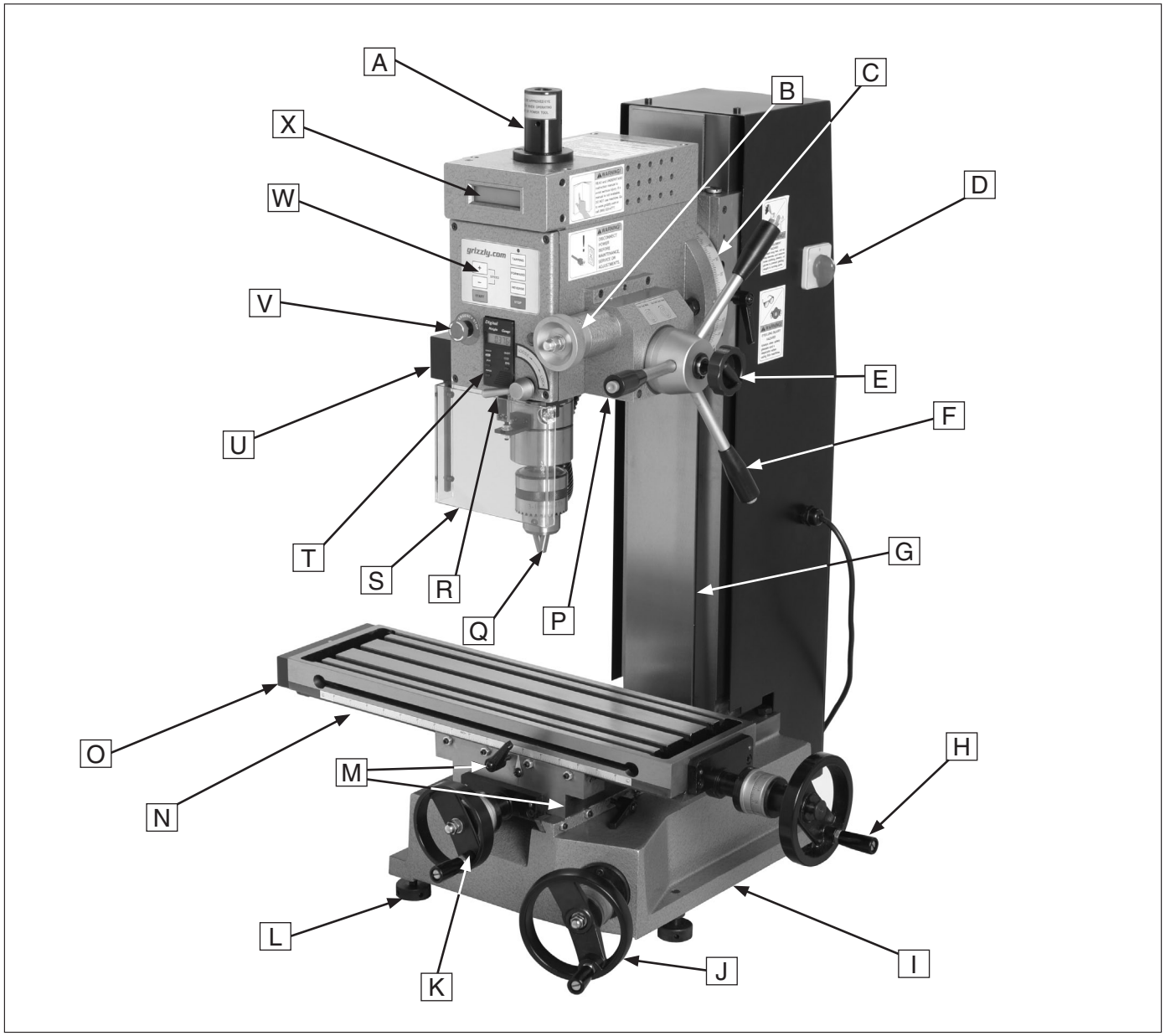


Figure 1. G0619 Identification.

A. Safety Cover and Drawbar
B. Fine Feed Knob
C. Headstock Tilt Scale
D. Main Power Switch
E. Fine Feed Lock Knob w/Assist Lever
F. Quill Feed Lever
G. Precision Dovetailed Column
H. Longitudinal (X-Axis) Handwheel
I. Cast-Iron Base
J. Vertical (Z-Axis) Handwheel
K. Cross (Y-Axis) Handwheel
L. Adjustable Foot
M. Table Locks
N. Longitudinal Scale
O. Milling Table
P. Quill Handle Tapping Button
Q. Drill Chuck
R. Spindle Lock Lever
S. Chip Guard
T. Digital Spindle Depth Unit and Readout
U. Chip Guard Safety Kill Switch
V. Emergency Stop Button
W. Control Panel
X. Digital Spindle RPM Readout

SECTION 1: SAFETY

⚠WARNING

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 which are 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.

⚠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 **This symbol is used to alert the user to useful information about proper operation of the machine.**

⚠WARNING

Safety Instructions for Machinery

1. **READ THROUGH THE ENTIRE MANUAL BEFORE STARTING MACHINERY.** Machinery presents serious injury hazards to untrained users.
2. **ALWAYS USE ANSI APPROVED SAFETY GLASSES WHEN OPERATING MACHINERY.** Everyday eyeglasses only have impact resistant lenses, they are NOT safety glasses.
3. **ALWAYS WEAR AN ANSI APPROVED RESPIRATOR WHEN OPERATING MACHINERY THAT PRODUCES DUST.** Wood dust is a carcinogen and can cause cancer and severe respiratory illnesses.
4. **ALWAYS USE HEARING PROTECTION WHEN OPERATING MACHINERY.** Machinery noise can cause permanent hearing damage.
5. **WEAR PROPER APPAREL.** DO NOT wear loose clothing, gloves, neckties, rings, or jewelry which may get caught in moving parts. Wear protective hair covering to contain long hair and wear non-slip footwear.
6. **NEVER OPERATE MACHINERY WHEN TIRED, OR UNDER THE INFLUENCE OF DRUGS OR ALCOHOL.** Be mentally alert at all times when running machinery.

⚠WARNING
Safety Instructions for Machinery

7. **ONLY ALLOW TRAINED AND PROPERLY SUPERVISED PERSONNEL TO OPERATE MACHINERY.** Make sure operation instructions are safe and clearly understood.

8. **KEEP CHILDREN AND VISITORS AWAY.** Keep all children and visitors a safe distance from the work area.

9. **MAKE WORKSHOP CHILD PROOF.** Use padlocks, master switches, and remove start switch keys.

10. **NEVER LEAVE WHEN MACHINE IS RUNNING.** Turn power ***OFF*** and allow all moving parts to come to a complete stop before leaving machine unattended.

11. **DO NOT USE IN DANGEROUS ENVIRONMENTS.** DO NOT use machinery in damp, wet locations, or where any flammable or noxious fumes may exist.

12. **KEEP WORK AREA CLEAN AND WELL LIT.** Clutter and dark shadows may cause accidents.

13. **USE A GROUNDED EXTENSION CORD RATED FOR THE MACHINE AMPERAGE.** Undersized cords overheat and lose power. Replace extension cords if they become damaged. DO NOT use extension cords for 220V machinery.

14. **ALWAYS DISCONNECT FROM POWER SOURCE BEFORE SERVICING MACHINERY**. Make sure switch is in OFF position before reconnecting.

15. **MAINTAIN MACHINERY WITH CARE.** Keep blades sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.

16. **MAKE SURE GUARDS ARE IN PLACE AND WORK CORRECTLY BEFORE USING MACHINERY.**

17. **REMOVE ADJUSTING KEYS AND WRENCHES.** Make a habit of checking for keys and adjusting wrenches before turning machinery ***ON***.

18. **CHECK FOR DAMAGED PARTS BEFORE USING MACHINERY.** Check for binding and alignment of parts, broken parts, part mounting, loose bolts, and any other conditions that may affect machine operation. Repair or replace damaged parts.

19. **USE RECOMMENDED ACCESSORIES.** Refer to the instruction manual for recommended accessories. The use of improper accessories may cause risk of injury.

20. **DO NOT FORCE MACHINERY.** Work at the speed for which the machine or accessory was designed.

21. **SECURE WORKPIECE.** Use clamps or a vise to hold the workpiece when practical. A secured workpiece protects your hands and frees both hands to operate the machine.

22. **DO NOT OVERREACH.** Keep proper footing and balance at all times.

23. **MANY MACHINES WILL EJECT THE WORKPIECE TOWARD THE OPERATOR.** Know and avoid conditions that cause the workpiece to "kickback."

24. **ALWAYS LOCK MOBILE BASES (IF USED) BEFORE OPERATING MACHINERY**.

25. **BE AWARE THAT CERTAIN DUST MAY BE HAZARDOUS** to the respiratory systems of people and animals, especially fine dust. Make sure you know the hazards associated with the type of dust you will be exposed to and always wear a respirator approved for that type of dust.

⚠WARNING
Additional Safety for Mill/Drills

1. **UNDERSTANDING CONTROLS.** Make sure you understand the use and operation of all controls.

2. **SAFETY ACCESSORIES.** Always use a chip guard in addition to your safety glasses when milling to prevent bodily injury.

3. **WORK HOLDING.** Before starting the machine, be certain the workpiece has been properly clamped to the table. NEVER hold the workpiece by hand when using the mill.

4. **CHUCK KEY SAFETY.** Always remove your chuck key, drawbar wrench, and any service tools immediately after use.

5. **SPINDLE SPEEDS.** Select the spindle speed that is appropriate for the type of work and material. Allow the mill/drill to gain full speed before beginning a cut.

6. **POWER DISRUPTION.** In the event of a local power outage during use of the mill, turn ***OFF*** all switches to avoid possible sudden start up once power is restored.

7. **SPINDLE DIRECTION CHANGES.** Never reverse spindle direction when milling, boring, or facing a workpiece.

8. **STOPPING SPINDLE.** DO NOT stop the mill/drill using your hand against the chuck.

9. **BE ATTENTIVE.** DO NOT leave mill/drill running unattended for any reason.

10. **MACHINE CARE AND MAINTENANCE.** Never operate the mill/drill with damaged or worn parts. Maintain your mill/drill in proper working condition. Perform routine inspections and maintenance promptly. Put away adjustment tools after use.

11. **DISCONNECT POWER.** Make sure the mill is turned ***OFF***, disconnected from its power source and all moving parts have come to a complete stop before starting any inspection, adjustment, or maintenance procedure.

12. **AVOIDING ENTANGLEMENT.** Keep loose clothing articles such as sleeves, belts or jewelry items away from the mill spindle. Never wear gloves when operating the mill.

13. **TOOL HOLDING.** Always use the proper tools for the material you are milling. Make sure they are held firmly in the proper tool holder for the job.

14. **CLEAN-UP.** DO NOT clear chips by hand. Use a brush, and never clear chips while the mill is turning.

15. **CUTTING TOOL INSPECTION.** Inspect drills and end mills for sharpness, chips, or cracks before each use. Replace dull, chipped, or cracked cutting tools immediately. Handle new cutting tools with care. Leading edges are very sharp and can cause lacerations.

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

⚠WARNING

No list of safety guidelines can be complete. Every shop environment is different. Like all machines there is danger associated with the Model G0619. Accidents are frequently caused by lack of familiarity or failure to pay attention. Use this machine with respect and caution to lessen the possibility of operator injury. If normal safety precautions are overlooked or ignored, serious personal injury may occur.

SECTION 2: CIRCUIT REQUIREMENTS

110V Operation

⚠WARNING

Serious personal injury could occur if you connect the machine to the power source before you have completed the set up process. DO NOT connect the machine to the power source until instructed to do so.

Amperage Draw

The Model G0619 motor draws the following amps under maximum load:

Motor Draw ..... 12 Amps

Circuit Recommendations

We recommend connecting your machine to a dedicated and grounded circuit that is rated for the amperage given below. Never replace a circuit breaker on an existing circuit with one of higher amperage without consulting a qualified electrician to ensure compliance with wiring codes. **If you are unsure about the wiring codes in your area or you plan to connect your machine to a shared circuit, consult a qualified electrician.**

Circuit Breaker ..... 15 Amps

Plug/Receptacle Type

Included Plug Type ..... NEMA 5-15

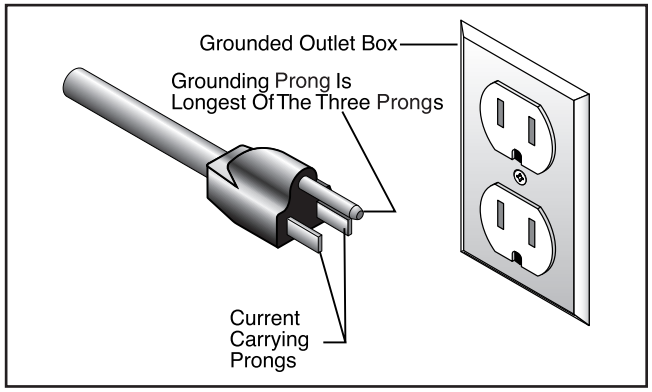
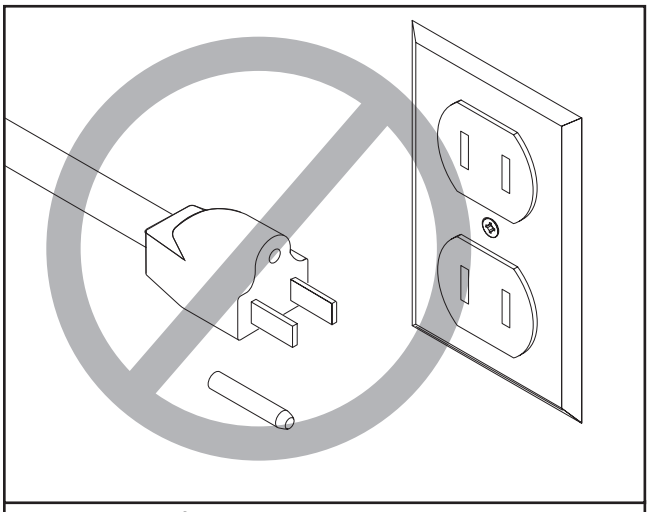


Figure 2. A 5-15 plug and receptacle.

⚠WARNING

Electrocution or fire could result if this machine is not grounded correctly or if your electrical configuration does not comply with local and state codes. Ensure compliance by checking with a qualified electrician!



⚠CAUTION

This machine must have a ground prong in the plug to help ensure that it is grounded. DO NOT remove ground prong from plug to fit into a two-pronged outlet! If the plug will not fit the outlet, have the proper outlet installed by a qualified electrician.

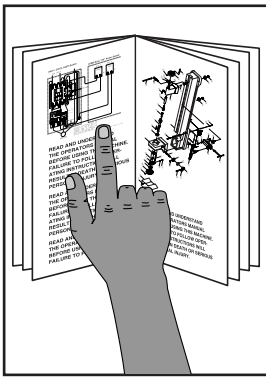
Extension Cords

We do not recommend the use of extension cords, if you find it absolutely necessary:

- Use at least a 14 gauge cord that does not exceed 50 feet in length!
- The extension cord must also contain a ground wire and plug pin.
- A qualified electrician MUST size cords over 50 feet long to prevent motor damage.

SECTION 3: SET UP

Setup Safety



⚠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 set up process!

⚠WARNING

The Model G0619 is a heavy machine. DO NOT over-exert yourself while unpacking or moving your machine—get assistance.

Items Needed for Setup

The following items are needed to complete the setup process, but are not included with your machine:

Description	Qty
• Precision Level	1
• Safety Glasses (for each person)	1
• Solvent	1
• Shop Rags	1
• Metal Shim Stock	1
• Brass Hammer	1
• Power Drill (optional)	1
• Drill Bit 9/16" (optional)	1
• Hex Bolts M12-1.75 (length as needed)	4
• Flat Washers 12mm	8
• Lock Washers 12mm	4
• Hex Nuts M12-1.75	4
• An Assistant	1

Unpacking

The Model G0619 was carefully packed when it left our warehouse. If you discover the machine is damaged after you have signed for delivery, *please immediately call Customer Service at (570) 546-9663 for advice.*

Save the containers and all packing materials for possible inspection by the carrier or its agent. *Otherwise, filing a freight claim can be difficult.*

When you are completely satisfied with the condition of your shipment, you should inventory the contents.

Inventory

After all the parts have been removed from the crate, you should have the following items shown in **Figures 3 & 4**:

Contents		Qty
A.	Assembled Mill/Drill	1
B.	Drill Chuck and JT6 x R8 Arbor	1
C.	Oil Bottle	1
D.	T-Nuts	2
E.	Chuck Key	1
F.	End Wrenches 8/10, 14/17, 17/19mm	1 ea
G.	Spindle Spanner Wrench	1
H.	Hex Wrench Set 3, 4, 5, & 6mm	1 ea
I.	Drawbar Hex Wrench	1

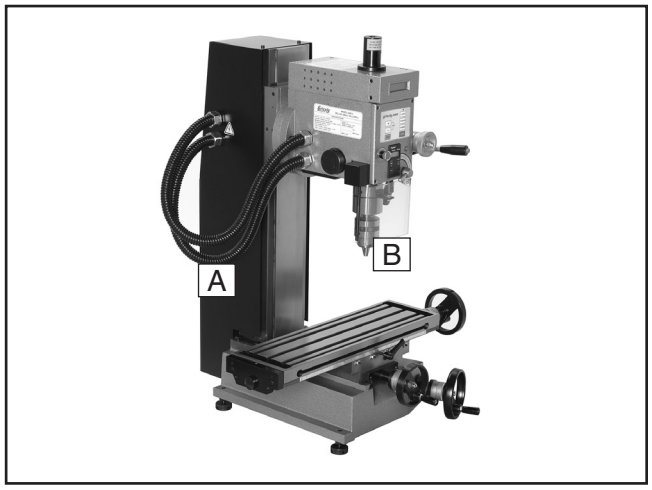


Figure 3. G0619 out of the crate.

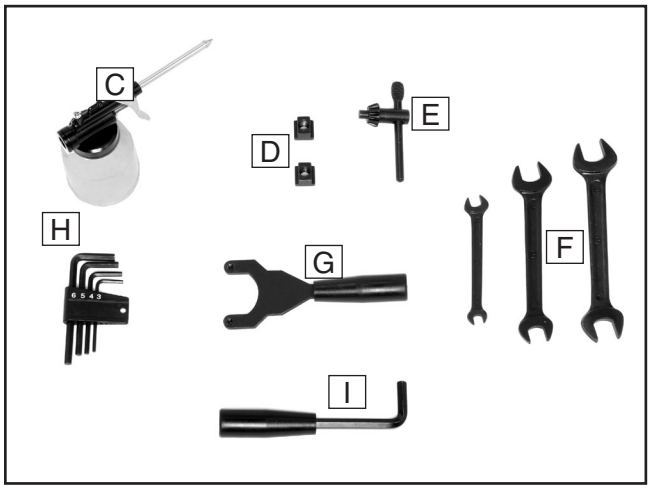


Figure 4. Inventory.

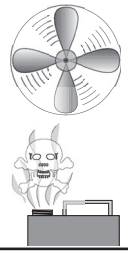
In the event that any nonproprietary parts are missing (e.g. a nut or a washer), we would be glad to replace them, or for the sake of expediency, replacements can be obtained at your local hardware store.

Clean Up

The unpainted surfaces are coated with a waxy oil to prevent corrosion during shipment. Remove this protective coating with a solvent cleaner or citrus-based degreaser such as Grizzly's G7895 Citrus Degreaser. To clean thoroughly, some parts must be removed. **For optimum performance from your machine, clean all moving parts or sliding contact surfaces.** Avoid chlorine-based solvents, such as acetone or brake parts cleaner that may damage painted surfaces. Always follow the manufacturer's instructions when using any type of cleaning product.

⚠WARNING

Gasoline and petroleum products have low flash points and can explode or cause fire if used to clean machinery. DO NOT use these products to clean the machinery.



⚠CAUTION

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

G7895—Grizzly Citrus Degreaser

This natural, citrus-based degreaser is a great solution for removing export grease, and it's much safer to work around than nasty solvents.

Figure 5. Grizzly citrus degreaser.

Site Considerations

Floor Load

Refer to the Machine Data Sheet for the weight and footprint specifications of your machine. Some residential floors may require additional reinforcement to support both the machine and operator.

Placement Location

Consider existing and anticipated needs, size of material to be processed through each machine, and space for auxiliary stands, work tables or other machinery when establishing a location for your new machine. See **Figure 6** for the minimum working clearances.

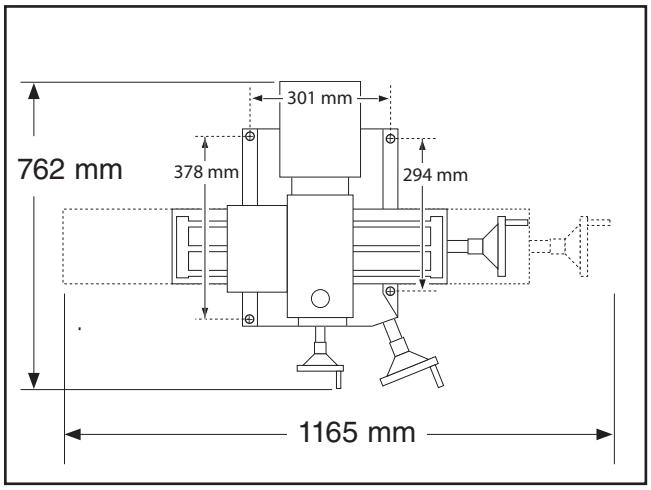
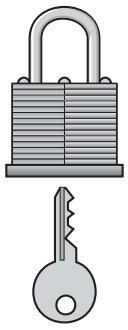


Figure 6. Minimum working clearances and mill/drill mounting bolt pattern.



⚠CAUTION

Children and visitors may be seriously injured if unsupervised. Lock all entrances to the shop when you are away. DO NOT allow unsupervised children or visitors in your shop at any time!

Feet

Four leveling feet have been included with your mill/drill. However, for greater safety and better performance, we recommend bolting your machine to a sturdy workbench.

Components and Hardware Needed: **Qty**
Feet with Hex Nut M12-1.75..... 4

To adjust the feet on the mill/drill:

1. Place your precision level on the mill/drill table.

2. Adjust the hex nut(s), as shown in **Figure 7**, until the mill/drill is level side-to-side and front-to-back**.**

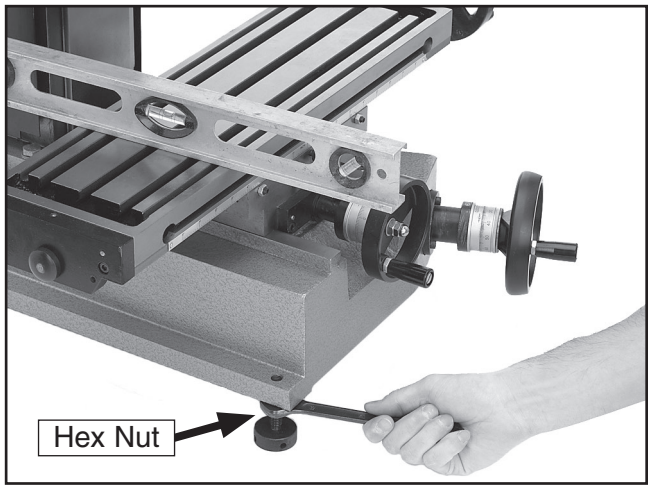


Figure 7. Leveling the mill/drill.

Mounting to Workbench

Your mill/drill should be bolted to a workbench to provide maximum rigidity and safety.

Components and Hardware Needed: **Qty**
Hex Bolts M12-1.75 x (length as needed).....4
Flat Washers 12mm 8
Lock Washers 12mm.....4
Hex Nuts M12-1.75 4

To mount the mill/drill to the workbench:

1. Determine the best position for the mill/drill on the workbench.

   Note: *For the best performance, make sure the cross feed and the longitudinal handwheels extend out beyond the edge of the table surface. This will allow unrestricted handwheel operation.*

2. Mark your hole locations using the mounting holes in the base as a guide.

3. Drill the holes needed in the workbench.

4. Place a precision level on the mill/drill table and shim the mill/drill until it is level side-to-side and front-to-back.

5. Bolt the mill/drill to the top of the workbench (**Figure 8**).

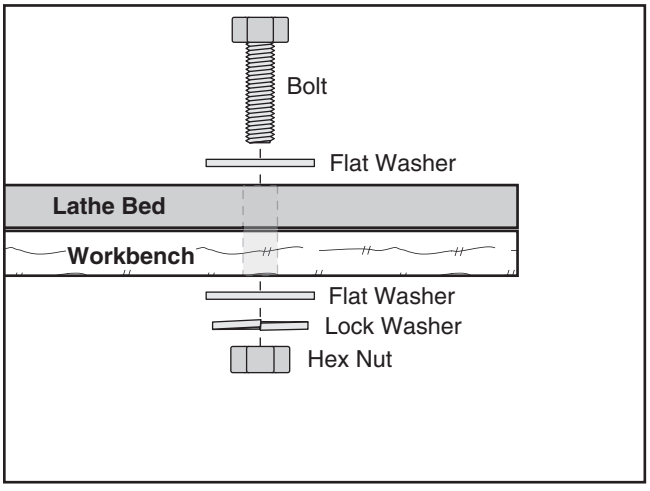


Figure 8. Example of a through mount setup.

Test Run and Spindle Break-in

The Model G0619 spindle speed can be set from 100–1750 RPM. You must follow the proper break-in procedures to ensure the spindle bearings break-in and seat before putting any milling load on the machine.

To test run and break-in the spindle bearings:

1. Do all lubrication procedures highlighted in **Lubrication** in **Section 6: MAINTENANCE** on **Page 25.**

2. Make sure there are no obstructions around or underneath the spindle.

3. Remove the drawbar if there is no arbor or collet in the spindle.

Figure 9. Control panel.

4. Make sure all switches are ***OFF*** and connect the mill/drill to the power source**.**

5. Turn the main power switch ***ON***, and push the **START** button on the control panel. The spindle will begin to turn at a low RPM.

6. Now push the **+** button until the mill/drill reaches approximately 600 RPM, then let it run for a minimum of 10 minutes.

   —If you suspect the mill/drill is not working correctly, shut the mill/drill ***OFF*** , disconnect it from power, and use the **Troubleshooting** table on **Page 26** to correct the problem before proceeding further.

   —If the mill/drill is running smoothly, proceed to **Step 7**.

NOTICE

DO NOT leave the area while break-in procedure is under way. You must be ready to stop the machine if any problem occurs.

7. Increase the speed to 1000 RPM and let it run for another ten minutes.

8. Increase the speed to 1750 RPM and let it run for another ten minutes.

9. Turn the mill/drill ***OFF.***

10. Set the spindle to rotate in the opposite direction, and let it run at 1750 RPM for another ten minutes.

NOTICE

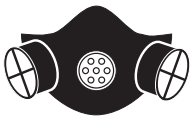
Failure to follow start up and spindle break-in procedures will likely cause rapid deterioration of spindle and other related parts.

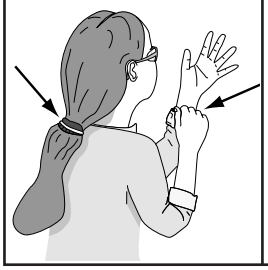
SECTION 4: OPERATIONS

Operation Safety

⚠WARNING

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

⚠WARNING

Loose hair and clothing could get caught in machinery and cause serious personal injury. Keep loose clothing and long hair away from moving machinery.

NOTICE

If you have never used this type of machine or equipment before, WE STRONGLY RECOMMEND that you read books, trade 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.

Spindle Height Control

Spindle height is changed by unlocking the quill lock and using the down feed handles or the fine feed knob (**Figure 10**). The digital spindle height readout indicates the spindle height.

To change the spindle position:

1. Unlock the quill lock lever and loosen the fine feed lock knob.

   Tip: *Use the comfort lever (**Figure 10**) for additional leverage to unlock the fine feed lock knob if the knob is too tight. Do not use the comfort lever to tighten the knob.*

2. Pull down on the quill feed levers to lower or raise the spindle. Lock the quill lock to hold the spindle in a particular position if you choose.

   Tip: *Milling with the quill fully extended, can cause tool chatter. For maximum spindle rigidity when milling, it is better to keep the spindle retracted into the headstock as far as possible with the quill lock lever locked, and the fine feed lock knob tightened.*

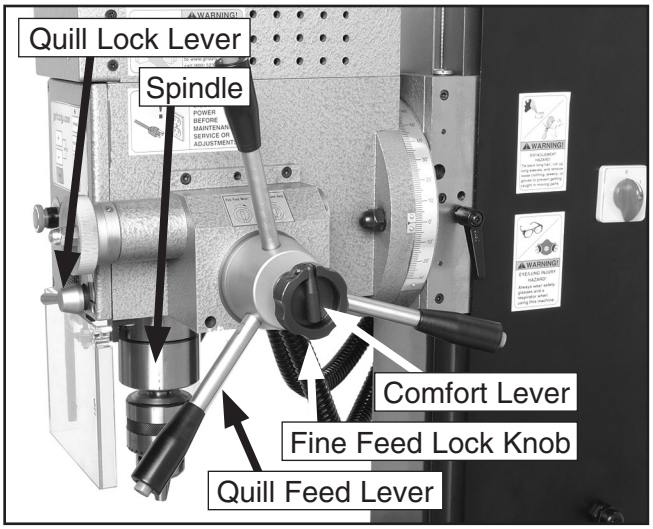


Figure 10. Spindle controls.

Drill Chuck

To install the drill chuck and arbor:

1. DISCONNECT THE MILL/DRILL FROM POWER!

2. Insert the chuck arbor into the spindle so it engages the alignment pin inside of the spindle and makes contact with the drawbar threads.

3. Thread the drawbar into the arbor until the arbor seated up into the spindle taper.

4. While supporting the chuck and arbor with one hand, snug the drawbar with the drawbar hex wrench.

   Note: *Do not overtighten the drawbar. Overtightening makes arbor removal difficult and will damage the arbor and threads.*

To remove the chuck and arbor from the spindle:

1. DISCONNECT THE MILL/DRILL FROM POWER!

2. Remove the plastic cap that covers the drawbar.

3. Lock the quill in place with the quill lock.

4. Insert the pin spanner into the two holes at the bottom of the spindle (see **Figure 11**).

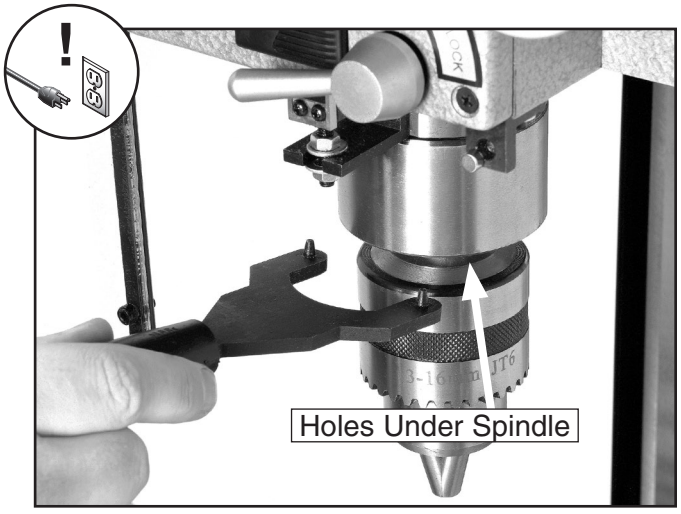


Figure 11. Spindle holes.

5. Using the 17mm wrench, loosen the drawbar one turn only. DO NOT remove it.

NOTICE

DO NOT completely unscrew the drawbar before striking it with the hammer. You will damage the threads on the drawbar and the arbor.

6. Tap the top of the drawbar with the hammer. This will unseat the taper of the arbor from the spindle (see **Figure 12**).

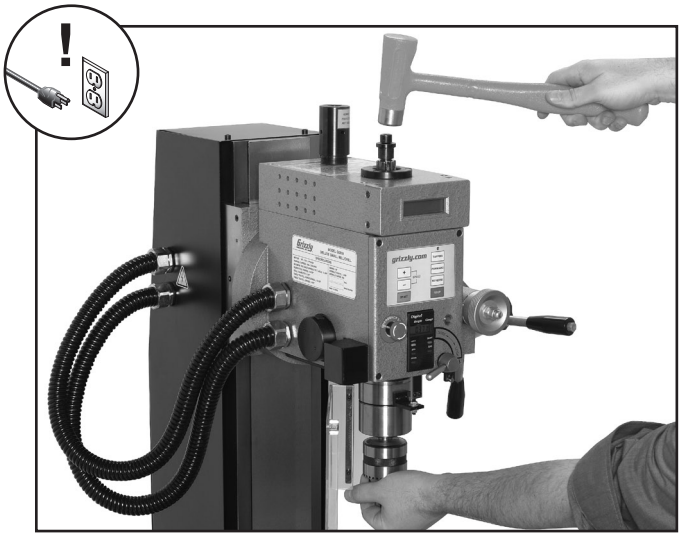


Figure 12. Tapping on the drawbar.

7. Hold one hand under the chuck and finish loosening the drawbar by hand until it falls out of the spindle.

   Note: *The chuck is attached to the arbor using a JT6 taper. This attachment is considered to be semi-permanent. There should be no need to remove the chuck from the arbor. Inspect the chuck from time to time to make sure it is still tight on the arbor. If it is loose, use a dead-blow or other soft headed hammer to re-seat the taper.*

R-8 Collets

If you do not use the drill chuck and arbor, you need to use a collet to insert the cutting tool into the spindle. Your Model G0619 features an R-8 spindle taper, which gives the freedom to use standard R-8 collets. These optional collets come in many sizes, typically ranging from 1/16" to 7/8" and 3mm to 20mm, and should be matched to your cutting tool shank size.

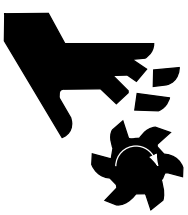
To install the R-8 collet:

1. DISCONNECT THE MILL/DRILL FROM POWER!
2. Unscrew the drawbar cap.
3. Carefully clean the surface of the collet and spindle taper. Ensure that it is free of debris and is lightly oiled.
4. Insert the cutting tool into the collet, then insert the collet up into the spindle taper.
5. Rotate the collet so it engages the alignment pin inside of the spindle, then slide the collet upward until it makes contact with the drawbar threads.
6. Thread the drawbar into the collet until the collet draws up into the spindle taper.
7. While supporting the tool in the collet with one hand, snug the drawbar with the drawbar hex wrench in your opposite hand.

   Note: *Do not overtighten the drawbar. Overtightening makes collet removal difficult and will damage the drawbar threads, collet, and the spindle taper. Keep in mind that the taper keeps the collet and tool in place. The drawbar simply aids in seating the taper.*

To remove the collet:

1. DISCONNECT THE MILL/DRILL FROM POWER!
2. Tighten the headstock lock.



⚠CAUTION

LACERATION HAZARD! Leading edges of end mills and other cutting tools can be very sharp. Protect your hands with gloves or a shop towel when handling.

3. Protect the table surface with a piece of cardboard or hold the cutter/tool with a shop towel to prevent it from falling out of the collet.
4. Using the drawbar hex wrench, loosen the drawbar but DO NOT remove it.

NOTICE

DO NOT completely unscrew the drawbar before striking it with the hammer. You will damage the threads on the drawbar and the arbor.

5. Using the brass hammer, tap the drawbar to unseat the taper.
6. Unscrew the rest of the drawbar by hand and remove the collet.

   Note: *When not in use, always remove collets and cutting tools from the spindle taper. Oxidation may cause the collet to seize and make it hard to remove later.*

Headstock Travel (Z-Axis and Rotation)

Headstock height is adjustable in the vertical Z-axis to accept large workpieces. For unique milling operations, the headstock can be tilted right or left between 0° and 90°. Your mill/drill has a dovetailed slide that allows you to reposition the headstock and change tooling without losing your alignment with a hole or milling path.

To raise or lower the headstock:

1. Unlock the headstock slide lock lever shown in **Figure 13**.

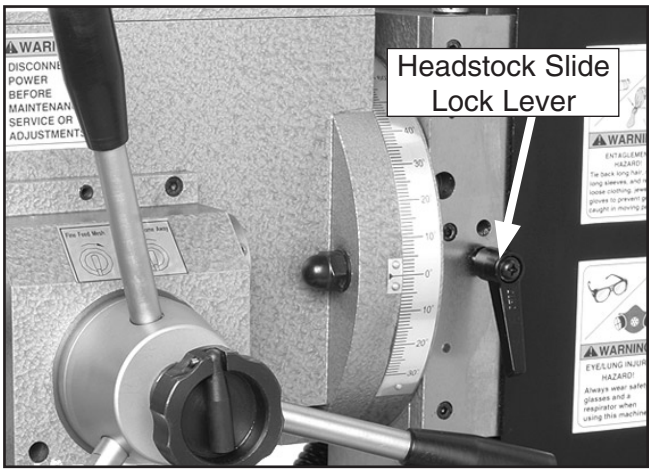


Figure 13. Headstock slide controls.

2. Turn the Z-axis handwheel shown in **Figure 14** to raise or lower the headstock, then lock the headstock slide lock lever.

   Note: *For maximum spindle rigidity when milling, keep the spindle retracted into the headstock as far as possible with the quill lock lever locked and with the fine feed lock knob tightened.*

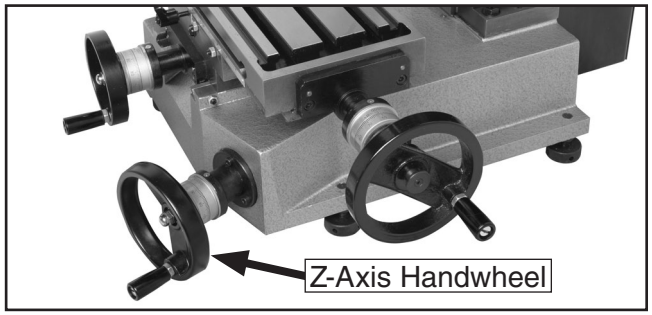


Figure 14. Z-axis control.

To tilt the headstock to the left or right:

1. DISCONNECT THE MILL/DRILL FROM POWER.

2. Using a 17mm wrench, loosen both headstock tilt acorn lock nuts (**Figure 15**).

3. Insert a 6mm hex wrench into the index pin release port (**Figure 15**), and turn the hex wrench clockwise to disengage the spring-loaded index pin from the headstock.

4. While watching the tilt scale, rotate the headstock to the required angle, and retighten the tilt acorn lock nuts to hold the headstock in place.

   Note: *The index pin is spring loaded and serves only as a quick way to return the headstock close to zero. It is not intended to be an absolute zero degree stop. No other index holes exist at other angles in the headstock.*

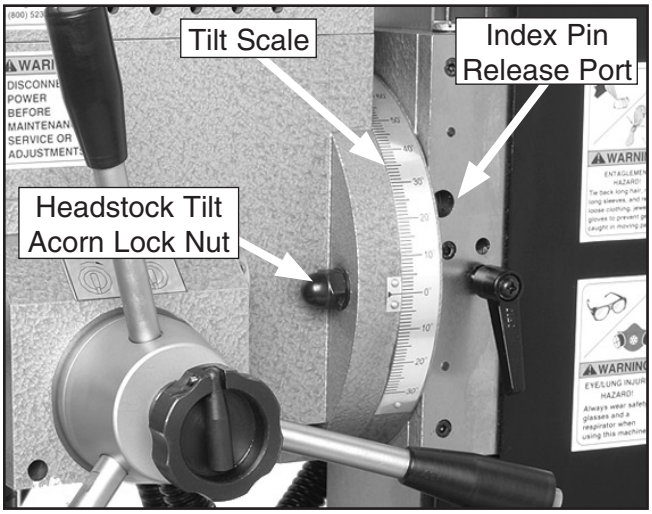


Figure 15. Headstock tilt controls.

Table Travel (X-Axis and Y-Axis)

The mill/drill table can be moved in the X-axis and Y-axis.

Longitudinal Feed
The longitudinal feed or (X-axis) is moved by the handwheel shown in **Figure 16** at the end of the table. The handwheel will move the table in both directions side-to-side. One complete revolution of the handwheel moves the longitudinal feed 0.100". There is also a scale on the front of the table for use when a tight tolerance is not required. The longitudinal feed can be locked in position by a table lock located on the front of the table (see **Figure 17**).

Cross Feed
The cross feed or (Y-axis) in **Figure 16**, is moved with the handwheel on the front of the table base. One complete revolution of the handwheel moves the cross slide 0.100". The cross feed can be locked into position by a table lock located on the right side of the cross slide underneath the table (see **Figure 17**).

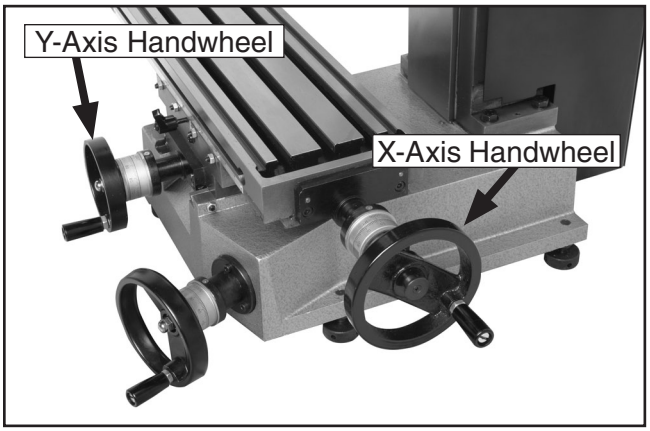


Figure 16. Table X and Y-axis controls.

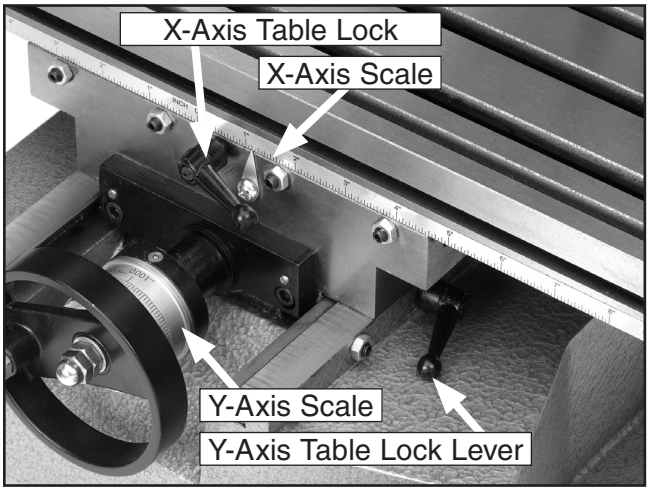


Figure 17. Table locks and scales.

Control Panel

It is vital that you become familiar with the power controls before operating the Model G0619 (see **Figure 18**).

A. Spindle RPM Display: Shows spindle RPM with an accuracy of +/- 10%.

B. Spindle Rotation Mode: Shows the direction the spindle is turning.

C. Spindle Mode: Shows STOP when the spindle is stopped. When spindle is rotating, the "STOP" indication disappears.

D. Spindle START Button: Press START, and the spindle will rotate at 200 RPM in the milling/drilling mode, and the spindle rotation buttons on the control panel are enabled. The Green LED tapping lamp will not glow, and the spindle rotation buttons on the ends of the rack handles are disabled.

E. SPEED Buttons: Press to select a milling/drilling or tapping RPM. In the milling/drilling mode the range is between 200 and 1750 RPM. In the tapping mode, the range is between 100 and 500 RPM.

F. Spindle Rotation Buttons: Press these buttons to change spindle rotation direction for milling/drilling operations. Spindle direction can be changed at any RPM without stopping the spindle first.

G. Spindle STOP Button: Stops spindle rotation. If you press the START button, the spindle speed will return to the last spindle RPM setting.

H. Tapping Button: Switches the mill/drill into tapping mode only when the motor is running. When in tapping mode, the LED tapping lamp glows and the RPM automatically drops to approximately 500 RPM. The spindle rotation buttons on the ends of the rack handles are also enabled and the spindle rotation buttons on the control panel are disabled.

I. Green LED Lamp: Glows when the machine is in the tapping mode, and does not glow in the milling/drilling mode.

J. Emergency Stop Button: Stops the mill/drill. Rotate the button clockwise until it pops back out to reset it.

K. Green Main Power Lamp: Glows when the main power switch is turned to the to the ON position.

L. Digital Spindle Scale ON/OFF Button: Turns the digital spindle scale ***ON*** or ***OFF***.

M. Spindle Height Digital Display: Shows height of spindle.

N. Zero Button: Zeros the digital spindle scale.

O. mm/in Button: Toggles units of measure between metric and inch conventions.

P. Plus Minus Buttons: Allows you to adjust digital display value without moving the spindle or pressing the zero button.

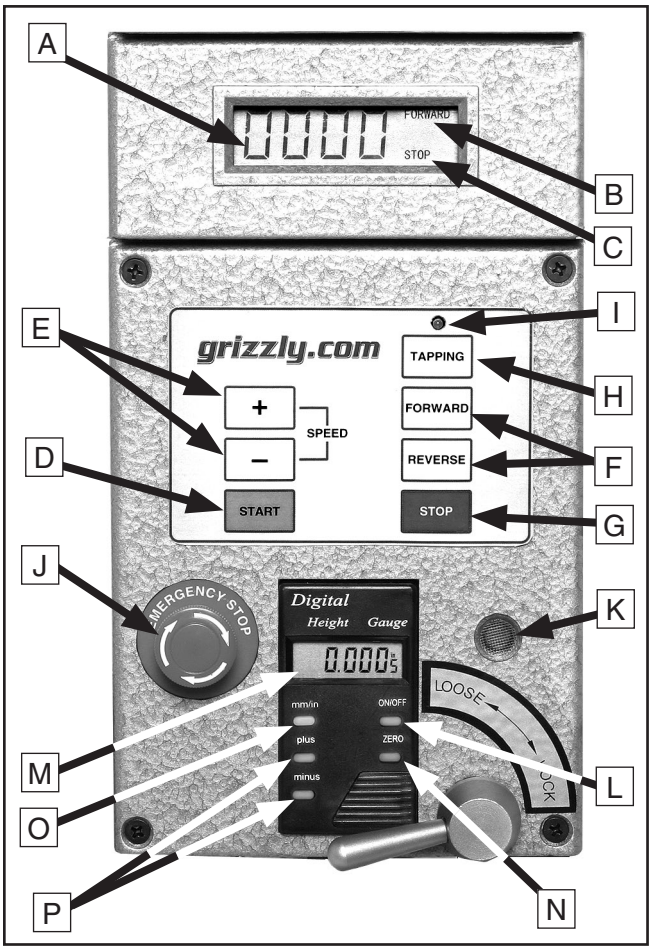


Figure 18. Control panel.

Calculating Spindle RPM

Closely follow the proper cutting speed and proper feed to reduce undue strain on all moving parts and increase operator safety.

Prior to milling, determine the RPM needed to cut your workpiece, then set the RPM on the machine.

To determine the needed RPM:

1. Use the table in **Figure 19** to determine the cutting speed required for the material of your workpiece.

2. Measure the diameter of your cutting tool in inches.

3. Use the following formula to determine the needed RPM for your operation:

   (Cutting Speed x 4) /Tool Diameter = RPM

Cutting Speeds for High Speed Steel (HSS) Cutting Tools	
Workpiece Material	Cutting Speed (sfm)
Aluminum & alloys	300
Brass & Bronze	150
Copper	100
Cast Iron, soft	80
Cast Iron, hard	50
Mild Steel	90
Cast Steel	80
Alloy Steel, hard	40
Tool Steel	50
Stainless Steel	60
Titanium	50
Plastics	300-800
Wood	300-500
Note: For carbide cutting tools, double the cutting speed. These values are a guideline only. Refer to the *MACHINERY'S HANDBOOK* for more detailed information.	

Figure 19. Cutting speed table for HSS cutting tools.

Milling/Drilling Mode

This mill/drill is designed to use most end mills, drill bits, and face cutters that are 2" in diameter or less. The milling table has a coolant trough with drain for an optional cutting fluid system.

⚠WARNING

Failure to follow RPM and Feed Rate Guidelines may threaten operator safety from ejected parts or broken tools.

To mill a workpiece:

1. Refer to **Control Panel** on **Page 20**, and learn the how to use the machine controls.

2. Zero the spindle height scale and select units of measure.

3. Clamp the workpiece to the milling table, and adjust the headstock to the needed height, depth of cut, and milling path.

   Remember: Milling with the quill fully extended, can cause tool chatter. For maximum spindle rigidity, keep the spindle retracted into the headstock as far as possible with the quill lock lever locked and the fine feed lock knob tightened.

4. Refer to **Calculating Spindle RPM** on **Page 22** to find the best spindle RPM.

5. Put on your safety glasses, turn the power switch ***ON***, and press the **START** button.

6. Push the **FORWARD** or **REVERSE** button to select the appropriate cutting direction for the type of cutter that you are using.

7. Press the **SPEED** button to select the appropriate milling speed for the diameter of cutter and type of material to be cut.

8. Use the X-axis or Y-axis handwheels to feed the workpiece into the cutter slowly. If you are only milling in one direction, lock the unused table slide in place. Refer to **Table Travel** on **Page 19** for lock lever location.

Tapping Mode

This mill/drill is designed to change spindle direction without stopping the spindle first. The wayed column allows for drill and tap changes and headstock repositioning without loosing the tool registration. Using the mill/drill in the tapping mode takes some level of skill, so make sure to practice using this feature. Avoid cutting threads in blind holes where the tap may bottom out and break before you can push the **REVERSE** button.

⚠WARNING

Failure to follow RPM and Feed Rate Guidelines may threaten operator safety from ejected parts or broken tools.

To drill and thread a hole:

1. Refer to **Control Panel** on **Page 20,** and learn the how to use the machine controls.

2. Zero the spindle height scale and select units of measure, and calculate your maximum tapping depth without bottoming-out the tap.

3. Clamp the workpiece to the milling table, and adjust the headstock to the needed height for drilling and tapping.

4. Put on your safety glasses, turn the power switch ***ON***, and press the **START** button.

5. Drill your hole with the appropriate speed and drill bit size for the tap. For large holes you may have to drill a pilot hole.

6. Install the tap, and apply tapping fluid or oil when needed.

7. Push **START**, then the **TAPPING** button, and then the **SPEED** button. The safest tapping speed is 100 RPM.

8. Begin threading, but without disengaging the threads, frequently push the **FORWARD** and **REVERSE** buttons on the downfeed handles to cut and back-out the tap to eject the chips from the hole and prevent thread galling.

SECTION 5: ACCESSORIES

H8178—Variable Speed Power Feed Kit
For those repetitive power-fed milling operations, this fantastic 110V power feed retrofit kit offers consistent speed control in both left and right directions for your Model G0619 Deluxe Small Mill/Drill machine. Let it do your work!

Figure 20. Variable speed power feed kit.

H8179—Horizontal Milling Table
Take advantage of the G0619 mill/drill 90° tilting headstock feature. Install this lifted cast-iron horizontal milling table for the correct clearance when making those side-milling operations.

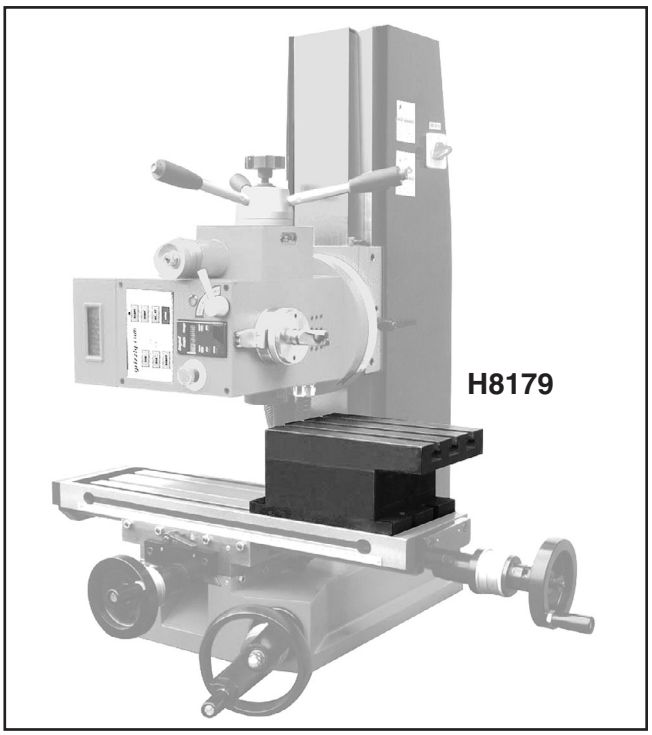


Figure 21. Horizontal milling worktable.

H8177—Worktable with Angle
Enjoy having an economical way to support your workpiece at an array of angles. This high-quality tilting worktable is quick and easy to setup and use.

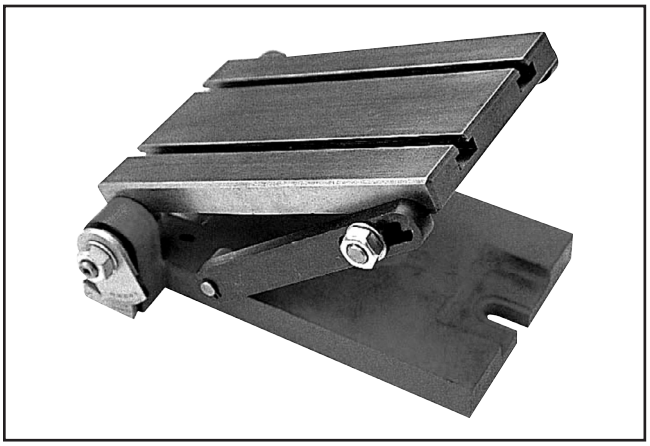


Figure 22. Worktable with angle.

G9002—2½" Swivel Base Milling Vise
G5971— 3½" Swivel Base Milling Vise
G5972—4" Swivel Base Milling Vise
G5973—5" Swivel Base Milling Vise
G5974—6" Swivel Base Milling Vise
G5975—8" Swivel Base Milling Vise
Vises feature 360° rotation with fine graduations, drop forged handle, precision ground jaw faces, enclosed acme screw and detachable swivel base.

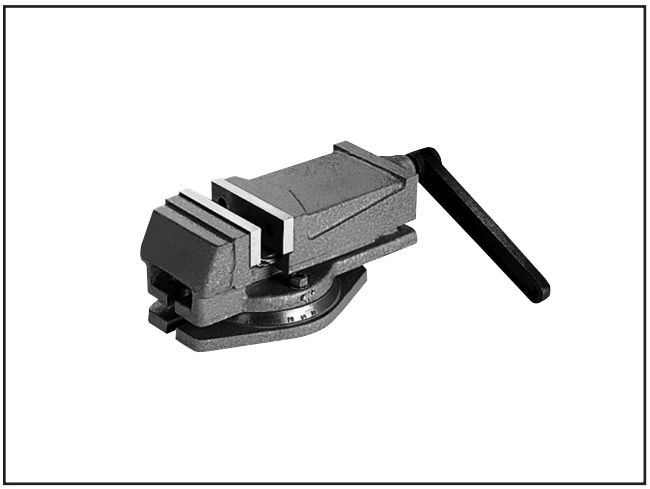


Figure 23. Swivel base milling vise.

G9322—Boring Head Combo Set
Hardened and ground adjusting screws along with a wide base design guarantee a long life and trouble-free use. Includes a 2" boring head, R-8 arbor with 7/16"-20 TPI, and a 12 piece 3/4" boring bar set.

Figure 24. G9324 Boring Head Combo Set.

G9760—20-PC. 2 & 4 Flute TiN End Mill Set.
Includes these sizes and styles in two and four flute styles: 3/16", 1/4", 5/16", 3/8", 7/16", 1/2", 9/16", 5/8", 3/8", 11/16", and 3/4".

Figure 25. G9760 20-PC End Mill Set.

G1075—52-Pc Clamping Kit.
This superior case-hardened clamping kit is among the best in the world! The T-nut size is 1/2" with accompanying 3/8"-16 threaded studs.

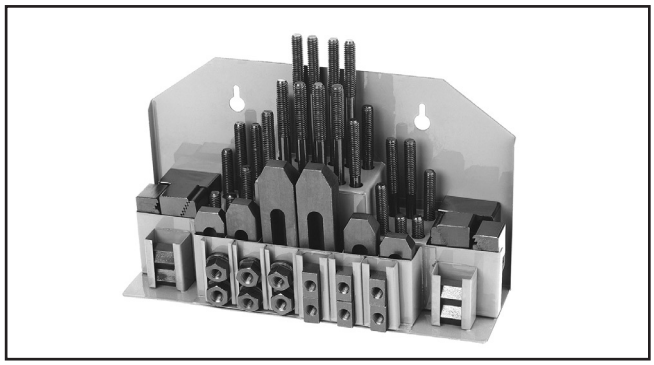


Figure 26. G1075 52-Pc Clamping Kit.

H2689—R-8 Quick Change Collet Set
An affordable quick change collet system with ultra precision. These spring collets are hardened and ground to exacting tolerances and offer incredible holding power. This set includes an R-8 arbor and nut, spanner wrench, plastic carrying case and collets sized 1/8", 1/4", 3/8", 1/2", 5/8", 3/4", 7/8", and 1". What's more, the nut features a self-ejecting rim! A set like this will truly speed up any tool changing process. Drawbar size is 7/16" x 20.

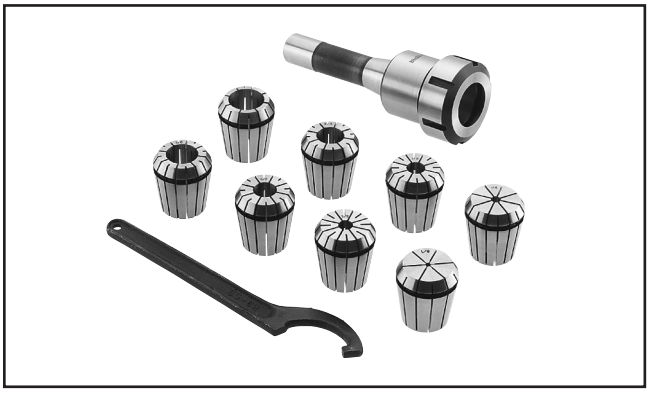
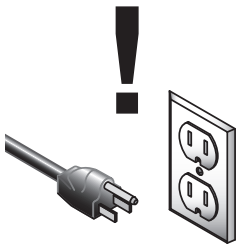


Figure 27. H2689 R-8 Quick Change Collet Set.

H5685—4" Rotary Table
The perfect rotary table for all you model makers and those doing smaller precision work. Comes with clamping kit.

Figure 28. H5685 4" Rotary Table.

SECTION 6: MAINTENANCE



⚠WARNING

Always disconnect power to the machine before performing maintenance. Failure to do this may result in serious personal injury.

Schedule

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

Daily Check:
- Mill/drill is disconnected from power when not in use.
- Loose mounting bolts.
- Mill/drill is clean and lubricated.
- Worn or damaged wires.
- Any other unsafe condition.

Monthly Check:
- Gibs are adjusted properly.

Annual or Biannual Check:
- Lubricate headstock lead screw and gears.

Lubrication

Regular lubrication will ensure your mill/drill performs at its highest potential. Place two to three drops of a general machine oil directly on the ways of the cross slide and saddle. An oil bottle has been provided for this purpose. Nine ball oilers (**Figures 29**–**31**) should be lubricated daily with several drops of oil.

Protect the unpainted cast iron surfaces with regular applications of products like G96® Gun Treatment, SLIPIT®, or Boeshield® T-9.

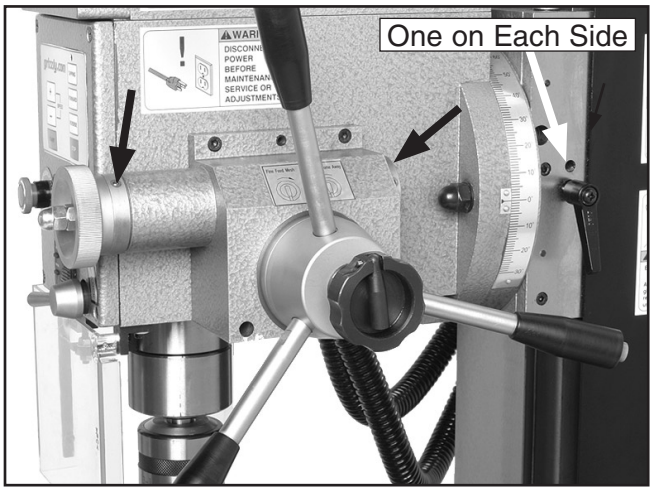


Figure 29. Headstock ball oiler locations.

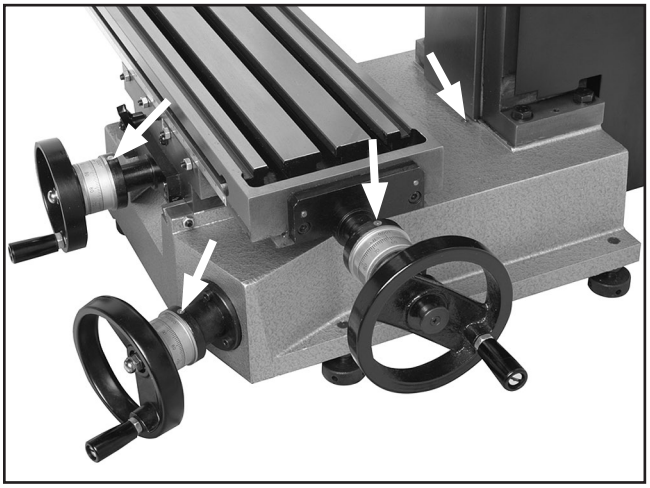


Figure 30. Table and base ball oiler locations.

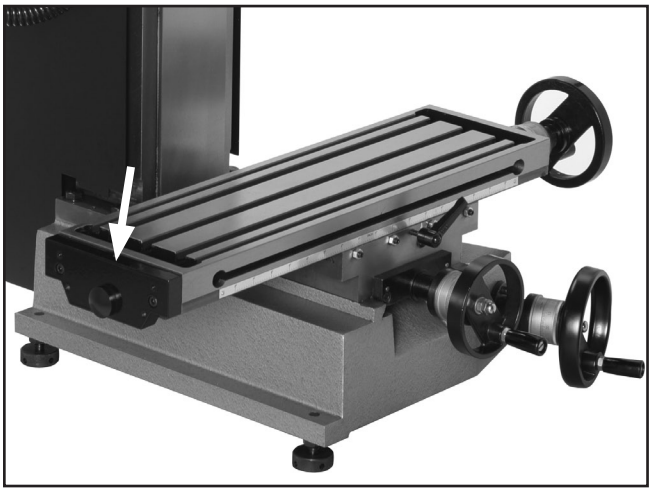


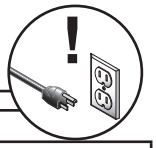
Figure 31. Table ball oiler location.

SECTION 7: SERVICE

About Service

Review the troubleshooting and procedures in this section to fix your machine if a problem develops. If you need replacement parts or you are unsure of your repair skills, then feel free to call our Technical Support at (570) 546-9663.

Troubleshooting



Symptom	Possible Cause	Possible Solution
Motor will not start.	1. Emergency stop button is pressed. 2. Chip guard switch at fault (**Figure 40**). 3. Main power switch at fault (**Figure 37**). 4. Blown power supply fuse (**Figure 37**). 5. Blown inverter fuse (**Figure 36**). 6. Shorted capacitor (**Figure 36**). 7. Shorted transformer (**Figure 36**). 8. Open circuit in motor or loose connections.	1. Reset switch or replace bad switch. 2. Fully close chip guard, or replace bad switch. 3. Turn dial on, or replace bad switch. 4. Repair short and replace 20A fuse. 5. Repair short and replace 15A fuse. 6. Replace both capacitors. 7. Replace transformer. 8. Inspect circuit boards, wiring connections, plugs, and repair/replace as required (**Page 31**).
Feed handle tapping button does not work.	1. Machine is not in "Tapping Mode." 2. **Tapping** button slip ring switch is at fault (**Figure 40**). 3. General electrical problem.	1. Press the **START** and then the **TAPPING** buttons (**Page 20**). 2. Replace tapping button slip ring switch. 3. Inspect circuit boards, wiring connections, plugs, and repair/replace as required (**Page 31**).
Control panel **FORWARD** and **REVERSE** buttons do not work.	1. Machine is not in "Mill/Drill Mode." 2. General electrical problem.	1. Press the **STOP** and then the **START** buttons (**Page 20**). 2. Inspect circuit boards, wiring connections, plugs, and repair/replace as required (**Page 31**).
Poor surface finishes.	1. Feed rate too fast. 2. Dull cutter. 3. Lock not tightened down. 4. Gibs loose.	1. Slow feed rate. 2. Always use newly sharpened cutters. 3. Tighten column and table locks when possible to maintain rigidity. 4. Adjust gib (**Page 27**).
Vibration when running or cutting.	1. Feed rate too high. 2. Loose table. 3. Loose gibs.	1. Slow feed rate or adjust RPM. 2. Tighten table locks. 3. Adjust gib (**Page 27**).
Headstock hard to raise.	1. Headstock lock or gib is at fault. 2. Headstock lead screw is binding.	1. Loosen/replace lock lever and adjust gib (**Page 27**). 2. Clean and relubricate headstock leadscrew and gears (**Page 28**).

Gibs and Backlash

During the life of your mill drill, you may have to adjust the gibs and the handwheels to remove any lash or looseness that is a result of normal wear. Do not overtighten the gibs or half-nuts, or premature wear will occur.

Tools Needed:	**Qty**
Wrench 10mm	1
Hex Wrench 3mm	1
#3 Flat Tip Screwdriver	1

To adjust the table gibs and the handwheel backlash:

1. DISCONNECT MACHINE FROM POWER!

2. Loosen the lock nuts (see **Figure 32**).

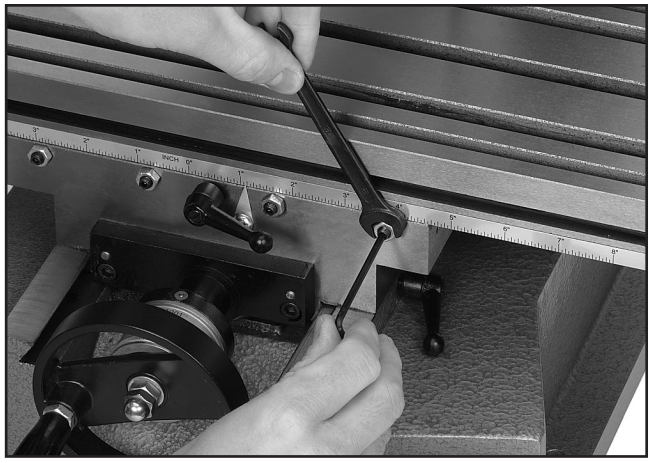


Figure 32. Gib adjustment.

3. When properly adjusted, the table should move with slight resistance as felt in the handwheel. Each gib has multiple lock nuts and set screws that must also be adjusted. Make your adjustments equally and in small increments.

4. Tighten the lock nuts.

5. Locate the X-axis lead screw half-nut (see **Figure 33**), and adjust both cap screws until the handwheel has approximately 0.003" backlash as shown by the dial.

6. Repeat **Step 5** on the Y-axis leadscrew half-nut and lubricate the lead screws and gibs.

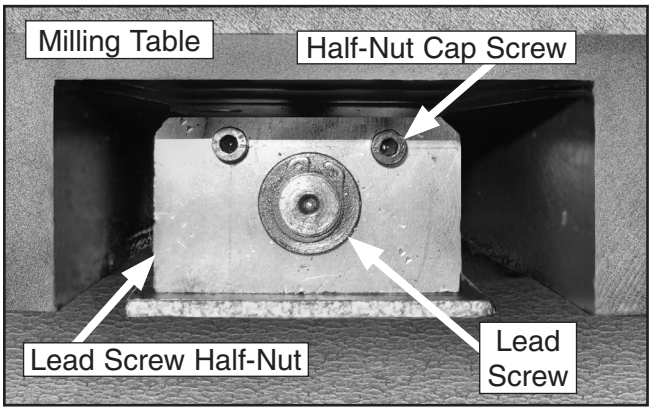


Figure 33. Handwheel backlash adjustment.

To adjust the headstock gibs:

1. DISCONNECT MACHINE FROM POWER!

2. Loosen the headstock lock lever (see **Figure 34**).

3. Loosen or tighten the upper and lower gib screws (**Figure 34**) in an alternating manner to adjust the headstock gib.

   The headstock should slide smoothly with no play or looseness. Do not overtighten the gibs or premature slide and gib wear will occur.

4. Lubricate the headstock way and gib.

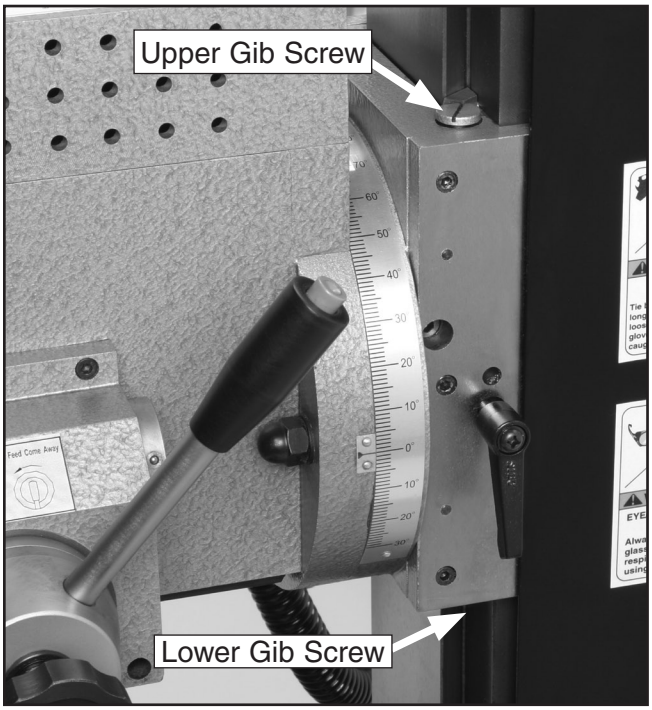


Figure 34. Headstock gib adjustment.

Service Lubrication

On an annual basis, or every six months under heavy use, we recommend that you clean and lubricate the headstock leadscrew and gears with white lithium grease and a light machine oil.

Tools Needed: **Qty**
Hex Wrench 4mm..... 1
Tube of White Lithium Grease 1
Paint Brush for Grease Application..... 1
Oil Bottle of General Machine Oil..... 1
Mineral Spirits..... 1 cup

To lubricate the leadscrew and gears:

1. DISCONNECT THE MILL/DRILL FROM POWER!

2. Use the hex wrench to remove the two lower cap screws from the cabinet assembly (see **Figure 35**).

3. Hold the cabinet assembly, and remove the two upper cap screws (see **Figure 35**).

4. Carefully lift and swing the cabinet assembly out of the way from the column, and rest it aside.

5. Using mineral spirits, a toothbrush, and rags, thoroughly clean the leadscrew and gears.

6. Paint the headstock leadscrew and gear teeth with lithium grease, and oil the bearings as outlined in **Figure 35**.

7. Reinstall the cabinet assembly on the column.

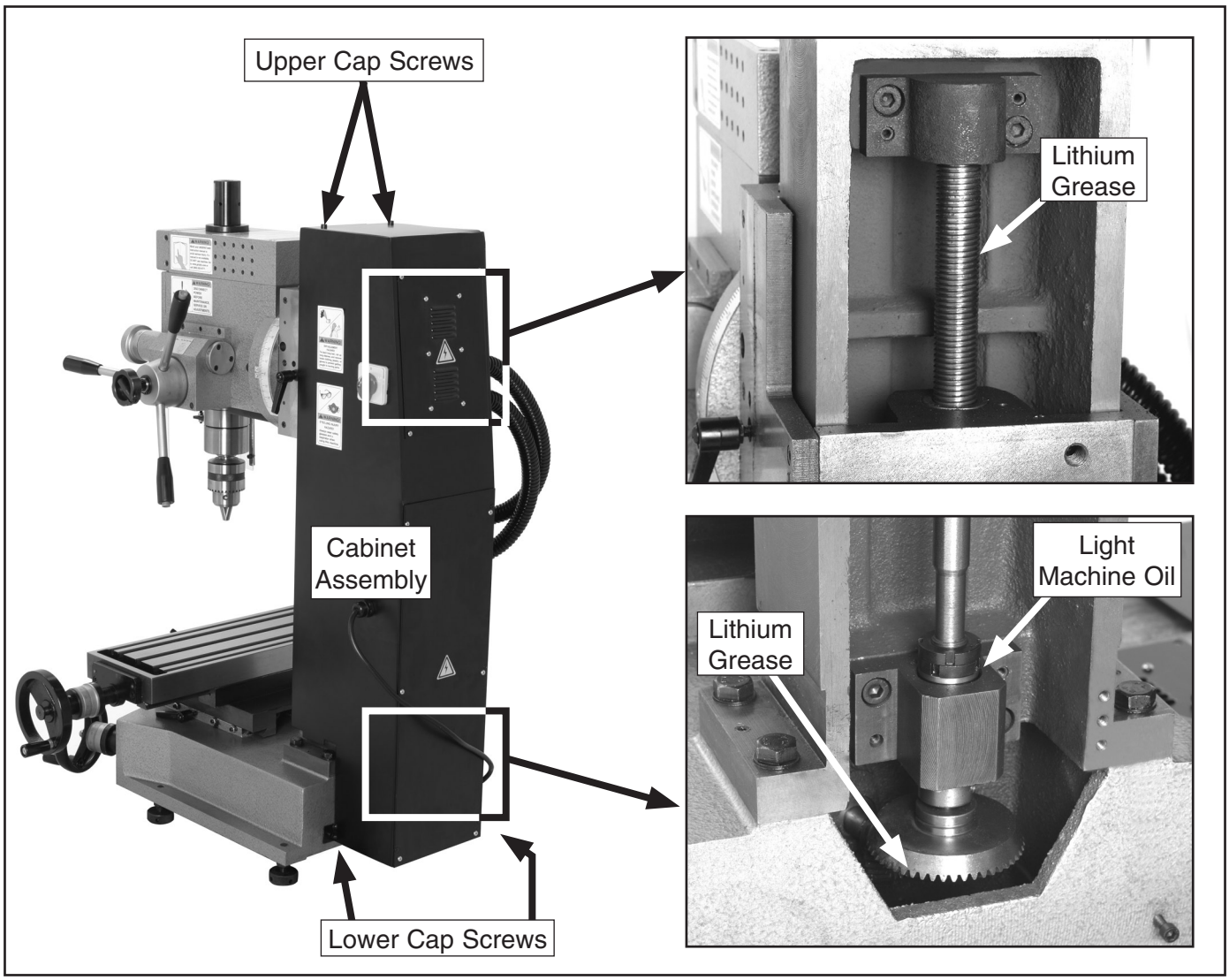


Figure 35. Headstock leadscrew access and lubrication.

Electrical Components

Note: *Available in color online at* ***grizzly.com***

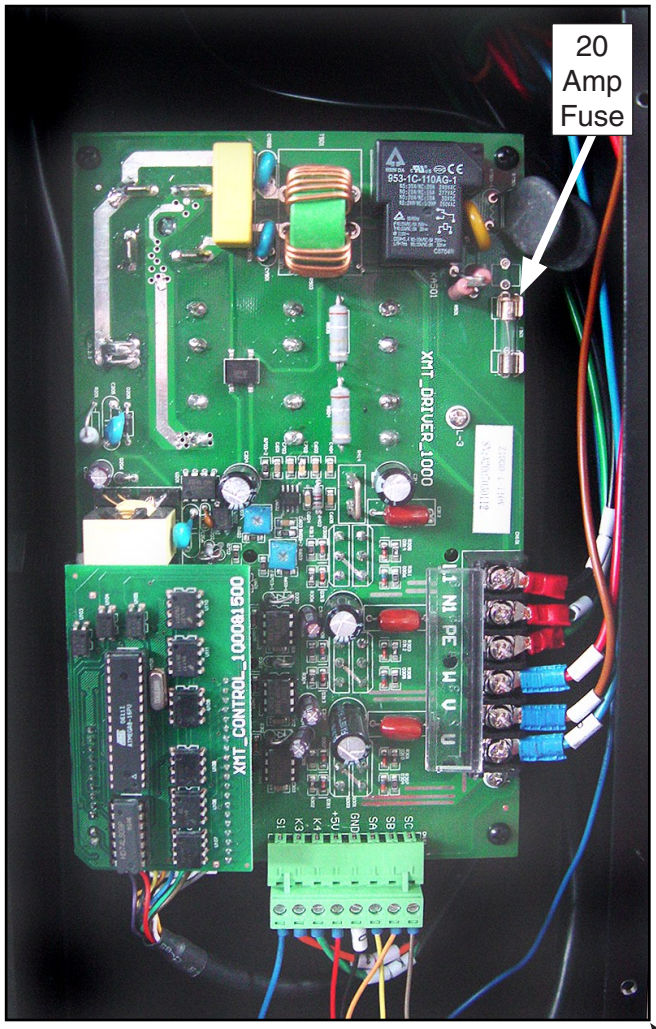


Figure 36. Motor power supply circuit board.

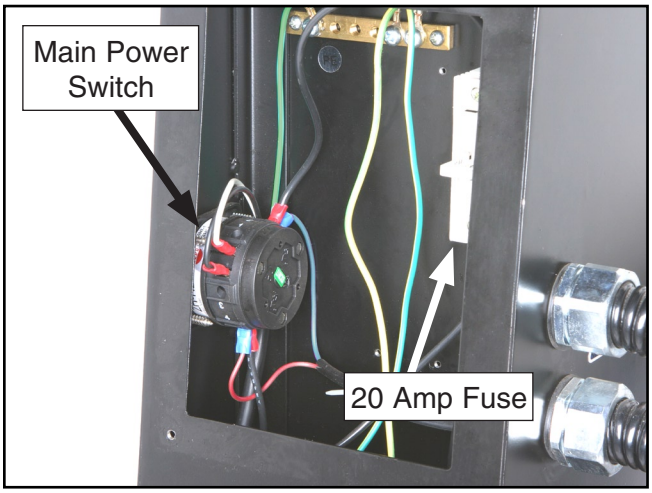
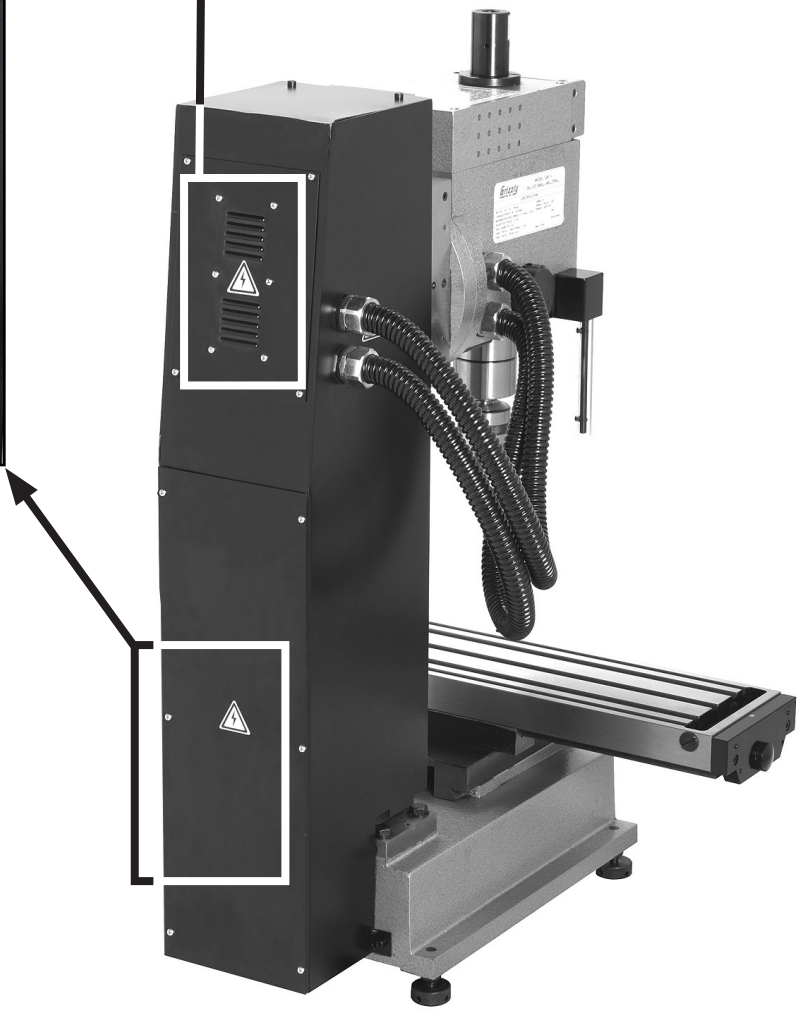


Figure 37. Main power switch and fuse.



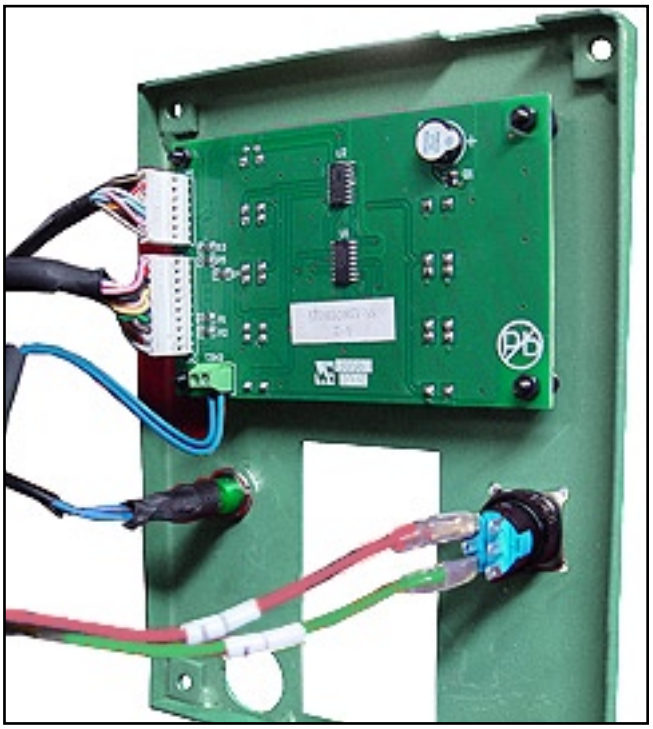


Figure 38. Control panel electrical.

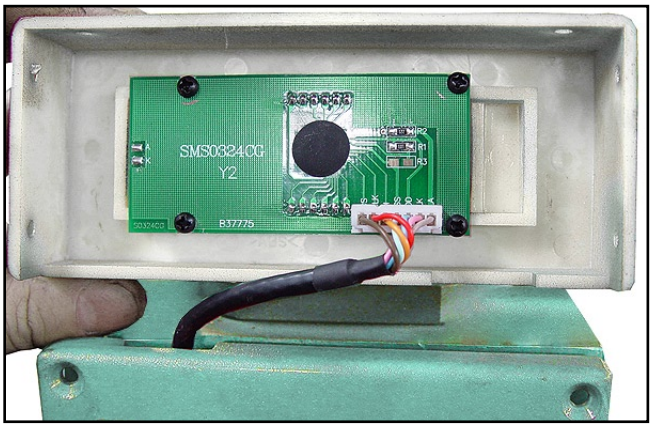


Figure 41. Tachometer electrical.

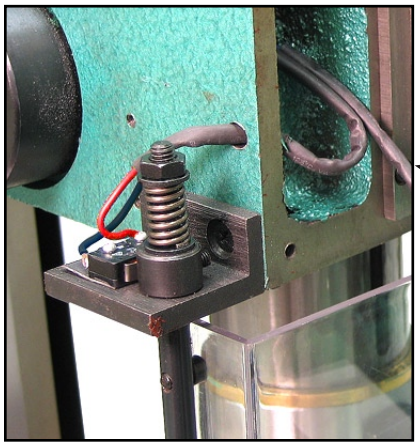


Figure 39. Chip guard safety switch.

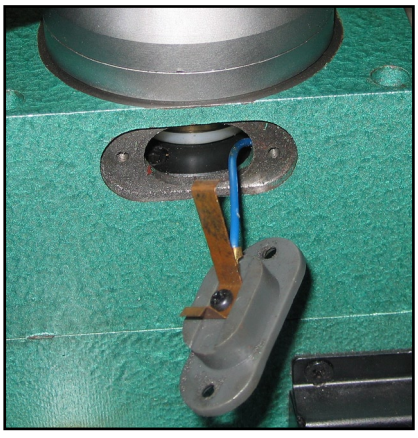
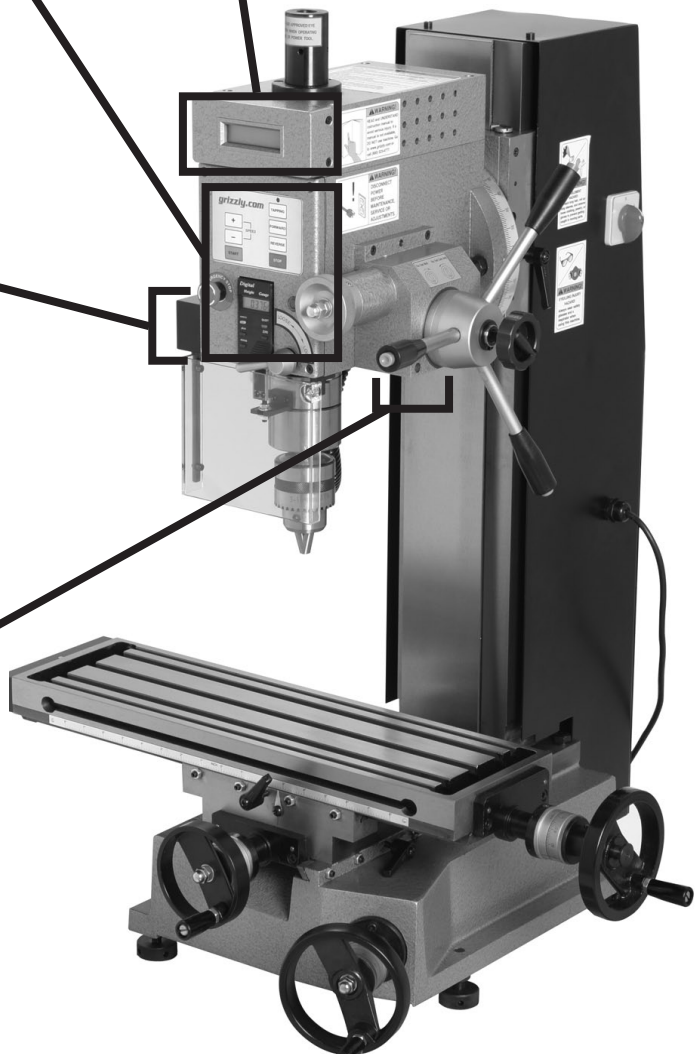
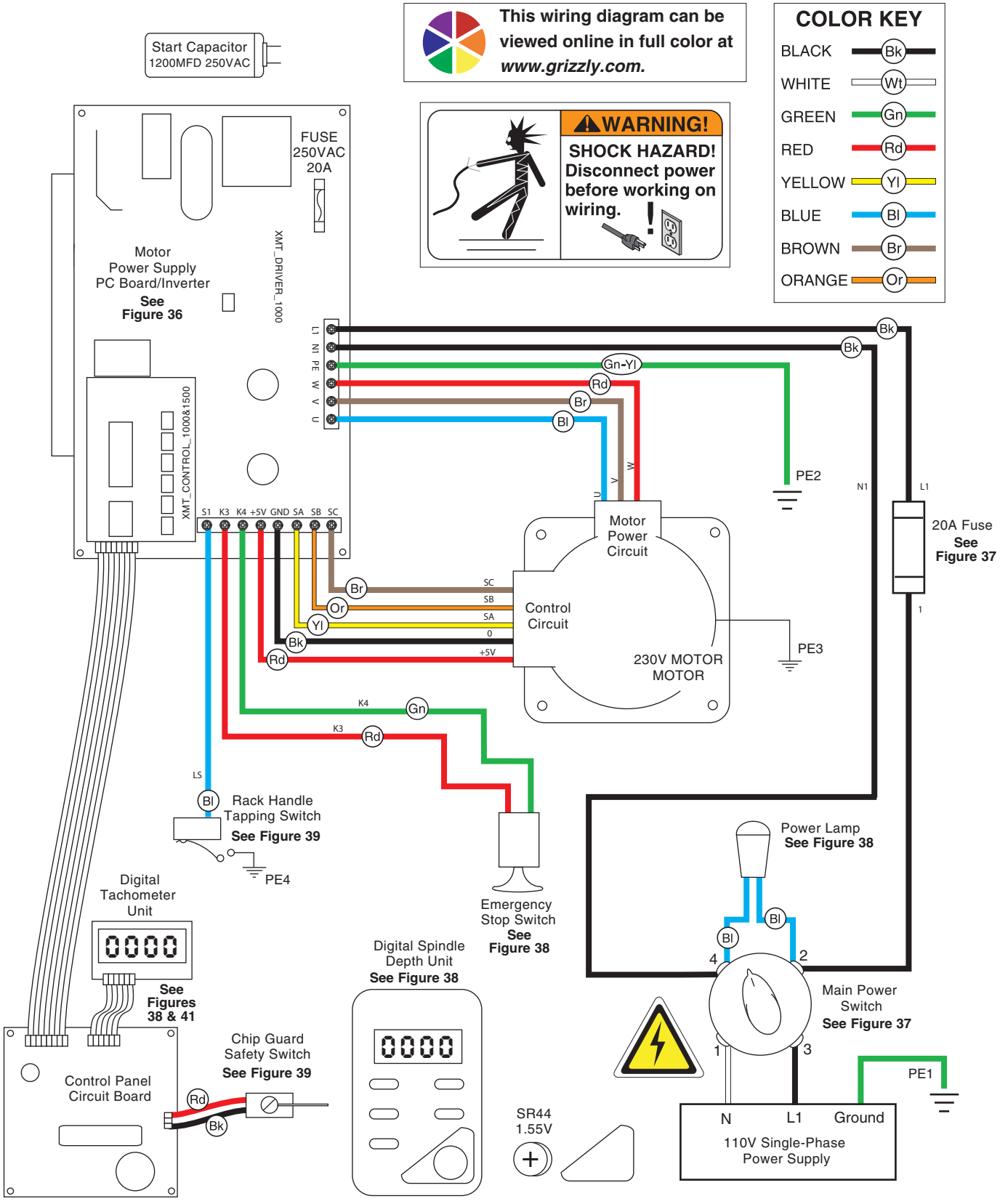


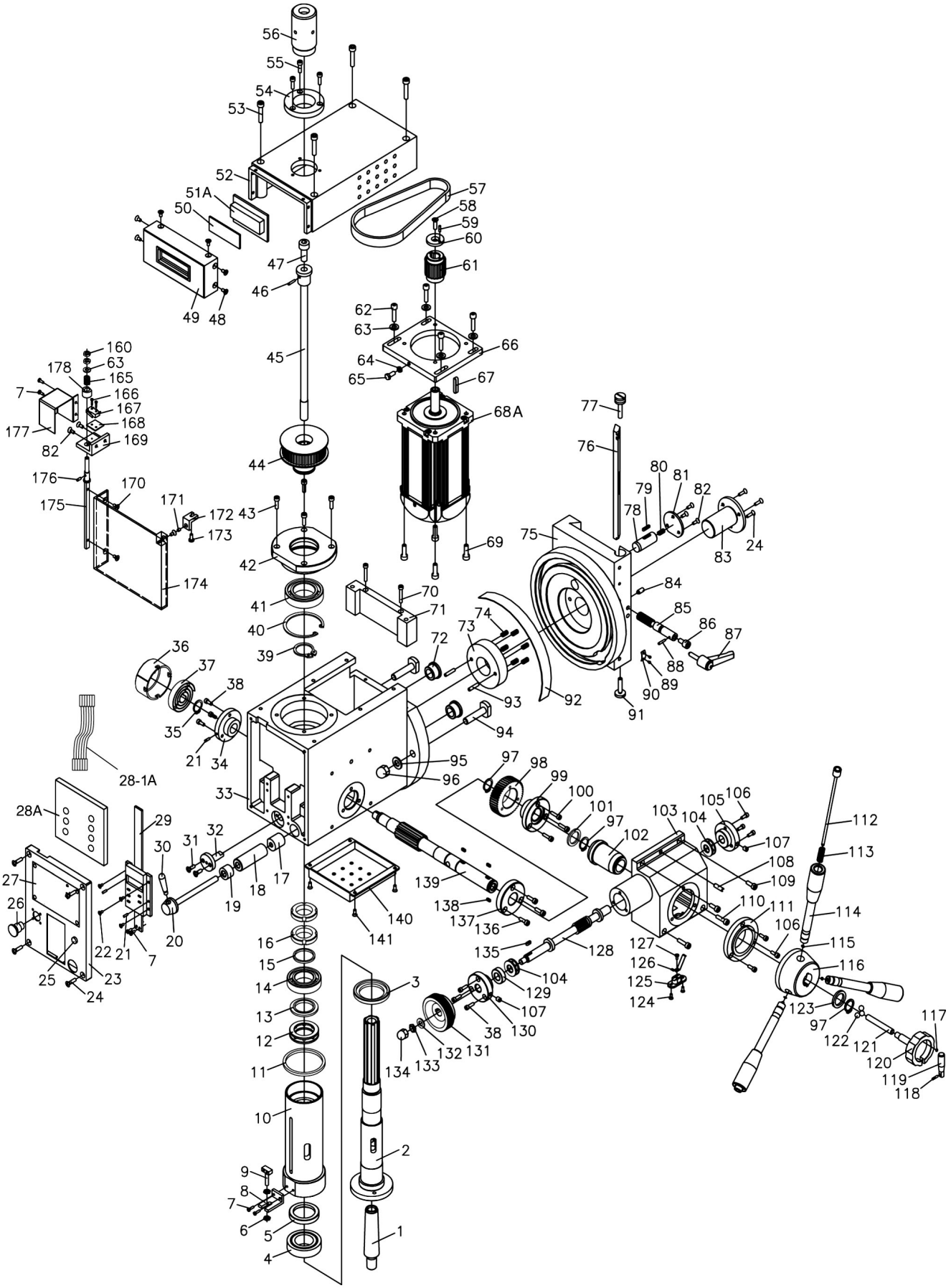
Figure 40. Tapping button slip ring contact.



Wiring Diagram (G0619)



Parts Breakdown



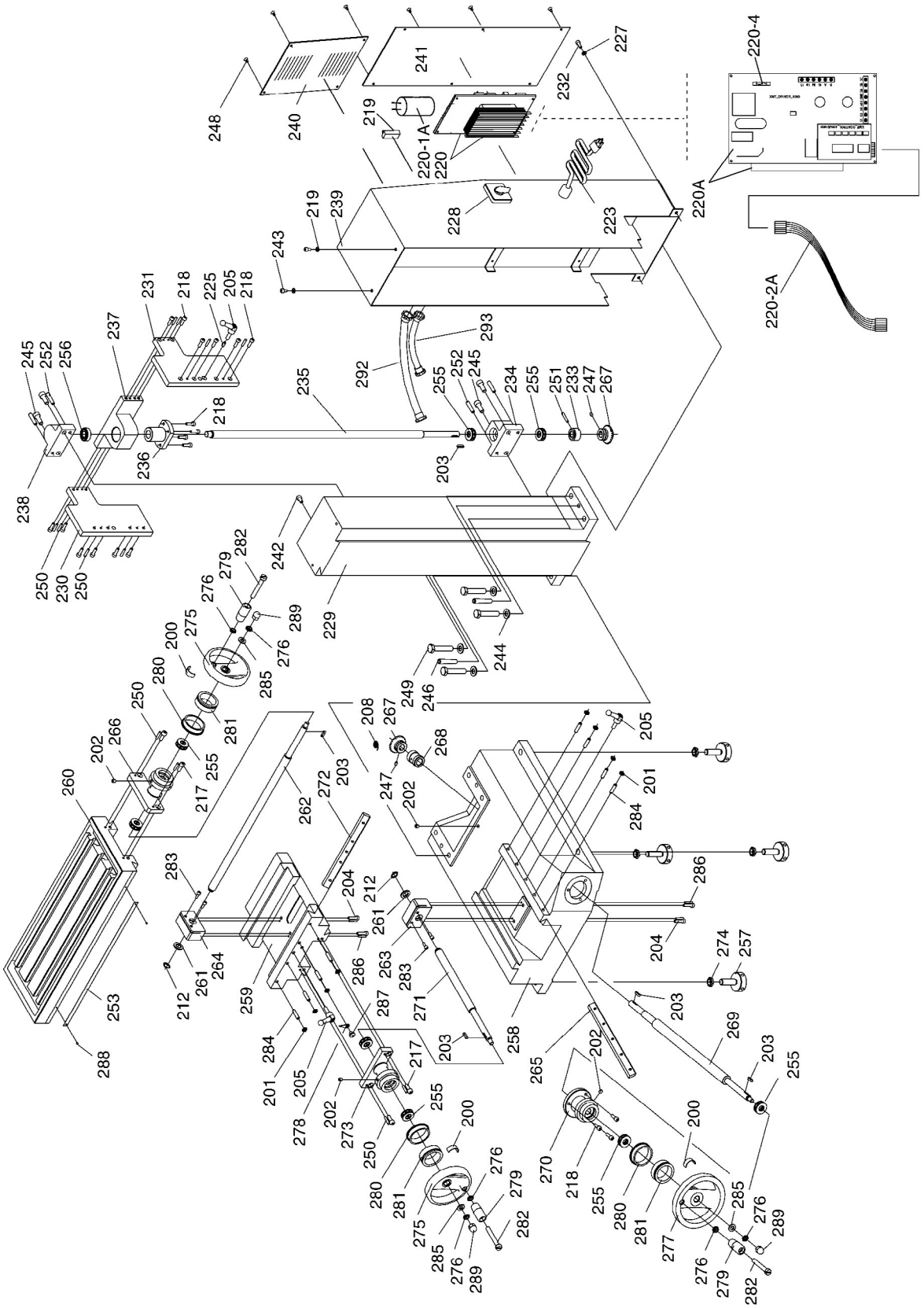
REF	PART #	DESCRIPTION
1	P0619001	ARBOR (R-8/JT-6)
2	P0619002	SPINDLE
3	P0619003	OIL SEAL
4	P0619004	TAPER ROLLER BEARING 32907
5	P0619005	OIL SEAL
6	P0619006	HEX NUT M5-.8
7	PS79M	PHLP HD SCR M3-.5 X 8
8	P0619008	DISPLAY BRACKET
9	P0619009	BLOCK AND STUD
10	P0619010	SPINDLE SLEEVE
11	P0619011	SLEEVE LIMIT PAD
12	P8106	BALL BEARING 8106
13	P0619013	THRUST WASHER
14	P80106	BALL BEARING 80106
15	P0619015	THRUST WASHER
16	P0619016	SPANNER NUT M2-.4 X 1.5
17	P0619017	SHORT LOCK SLEEVE
18	P0619018	LONG LOCK SLEEVE
19	P0619019	LOCK SPACER
20	P0619020	HUB AND LOCK BOLT
21	PRP15M	ROLL PIN 3 X 8
22	PS79M	PHLP HD SCR M3-.5 X 8
23	P0619023	CONTROL PANEL
24	PFH41M	FLAT HD SCR M4-.7 X 16
25	P0619025	INDICATOR LIGHT
26	P0619026	EMERGENCY STOP SWITCH
27	P0619027	TOUCH PANEL
28A	P0619028A	CNTRL PANEL PC BOARD N/S
28-1A	P0619028-1A	HARNESS WITH PLUGS N/S
29	P0619029	DIGITAL SPINDLE DEPTH UNIT
30	P0619030	LEVER
31	PFH13M	FLAT HD SCR M3-.5 X 10
32	P0619032	SPINDLE ORIENTATION SHAFT
33	P0619033	HEADSTOCK
34	P0619034	SUPPORT FLANGE
35	PR06M	EXT RETAINING RING 16MM
36	P0619036	TORSION SPRING COVER
37	P0619037	TORSION SPRING
38	PSB23M	CAP SCREW M4-.7 X 12
39	PR12M	EXT RETAINING RING 35MM
40	PR63M	INT RETAINING RING 65MM
41	P80107	BALL BEARING 80107
42	P0619042	BEARING HOUSING
43	PSB24M	CAP SCREW M5-.8 X 16
44	P0619044	COGGED PULLEY
45	P0619045	DRAWBAR 7/16-20 TPI
46	P0619046	TAPER PIN 3 X 18
47	PSB130M	CAP SCREW M10-1.5 X 16
48	PFH32M	FLAT HD SCR M4-.7 X 6
49	P0619049	DISPLAY HOUSING

REF	PART #	DESCRIPTION
50	P0619050	LENS
51A	P0619051A	DIGITAL SPD. DISPLAY UNIT N/S
52	P0619052	BELT COVER
53	PSB29M	CAP SCREW M6-1 X 40
54	P0619054	SPINDLE COVER BASE
55	PSB17M	CAP SCREW M4-.7 X 10
56	P0619056	SPINDLE COVER
57	P0619057	COGGED BELT 5M400
58	P0619058	SPECIAL SCREW M6-1 X 16
59	PRP44M	ROLL PIN 3 X 10
60	P0619060	PINNED WASHER
61	P0619061	COGGED DRIVE PULLY
62	PSB02M	CAP SCREW M6-1 X 20
63	PW03M	FLAT WASHER 6MM
64	PN06M	HEX NUT M5-.8
65	PB94M	HEX BOLT M5-.8 X 25
66	P0619066	MOTOR SUPPORT PLATE
67	PK23M	KEY 5 X 5 X 25
68A	P0619068A	MOTOR 230V N/S
69	PSB15M	CAP SCREW M5-.8 X 20
70	PSB22M	CAP SCREW M4-.7 X 35
71	P0619071	GUIDE
72	P0619072	SLEEVE
73	P0619073	FRICTION DISC
74	P0619074	COMPRESSION SPRING
75	P0619075	VERTICAL SLIDE
76	P0619076	GIB
77	P0619077	ADJUSTING SCREW
78	P0619078	SHORT GEAR SHAFT
79	PK69M	KEY 4 X 4 X 12
80	P0619080	COMPRESSION SPRING
81	P0619081	PLATE
82	PFH19M	FLAT HD SCR M4-.7 X 10
83	P0619083	PIVIOT HUB
84	PSS03M	SET SCREW M6-1 X 8
85	P0619085	INLAY SHAFT
86	P0619086	END SHAFT
87	P0619087	LEVER ASSEMBLY
88	P0619088	TAPER PIN 3 X 10MM
89	P0619089	RIVET
90	P0619090	POINTER PLATE
91	P0619091	ADJUST SCREW
92	P0619092	ANGLE GAUGE
93	PRP03M	ROLL PIN 5 X 20
94	P0619094	T-BOLT
95	PW04M	FLAT WASHER 10MM
96	PN41M	ACORN NUT M10-1.5
97	PR09M	EXT RETAINING RING 20MM
98	P0619098	PINION GEAR
99	P0619099	PINION FLANGE

REF	PART #	DESCRIPTION
100	PSB16M	CAP SCREW M4-.7 X 16
101	P0619101	THRUST WASHER
102	P0619102	SLIP-RING ASSEMBLY
103	P0619103	WORM HOUSING
104	P8101	BALL BEARING 8101
105	P0619105	SUPPORT FLANGE
106	PSB17M	CAP SCREW M4-.7 X 10
107	P0619107	BALL OILER
108	P0619108	SCREW LOCK SLEEVE 6 X 20
109	PSB24M	CAP SCREW M5-.8 X 16
110	PSB15M	CAP SCREW M5-.8 X 20
111	P0619111	FLANGE
112	P0619112	BUTTON CONTROL ROD
113	P0619113	COMPRESSION SPRING
114	P0619114	HANDLE ASSEMBLY
115	PR80M	EXT RETAINING RING 4MM
116	P0619116	RACK HUB
117	PRP37M	ROLL PIN 3 X 14
118	P0619118	SMALL MAGNETIC BLOCK
119	P0619119	UNIVERSAL HANDLE
120	P0619120	SPINDLE LOCK HANDKNOB
121	P0619121	LOCK SHAFT
122	P0619122	STEEL BALL 8MM
123	P0619123	RING
124	PS12M	PHLP HD SCR M3-.5 X 6
125	P0619125	LIMIT SWITCH
126	P0619126	CONTACT ARM
127	PS12M	PHLP HD SCR M3-.5 X 6
128	P0619128	WORM SHAFT

REF	PART #	DESCRIPTION
129	P0619129	SPACER
130	P0619130	SUPPORT FLANGE
131	P0619131	WORM HANDWHEEL
132	PW01M	FLAT WASHER 8MM
133	PN03M	HEX NUT M8-1.25
134	PN18M	ACORN NUT M8-1.25
135	PK05M	KEY 4 X 4 X 10
136	PSB33M	CAP SCREW M5-.8 X 12
137	P0619137	SUPPORT FLANGE
138	PK46M	KEY 6 X 6 X 8
139	P0619139	GEAR SHAFT
140	P0619140	VENT COVER
141	PSB17M	CAP SCREW M4-.7 X 10
160	PN01M	HEX NUT M6-1
165	P0619165	COMPRESSION SPRING
166	PFH56M	PHLP HD SCR M2-.4 X 10
167	P0619167	LIMIT SWITCH
168	P0619168	INSULATION WASHER
169	P0619169	SUPPORT PLATE
170	PSB18M	CAP SCREW M4-.7 X 8
171	P0619171	MAGNET
172	P0619172	BLOCK
173	PS38M	PHLP HD SCR M4-.7 X 10
174	P0619174	SAFETY LENSE
175	P0619175	SHAFT
176	PRP15M	ROLL PIN 3 X 8
177	P0619177	COVER
178	P0619178	SPACER

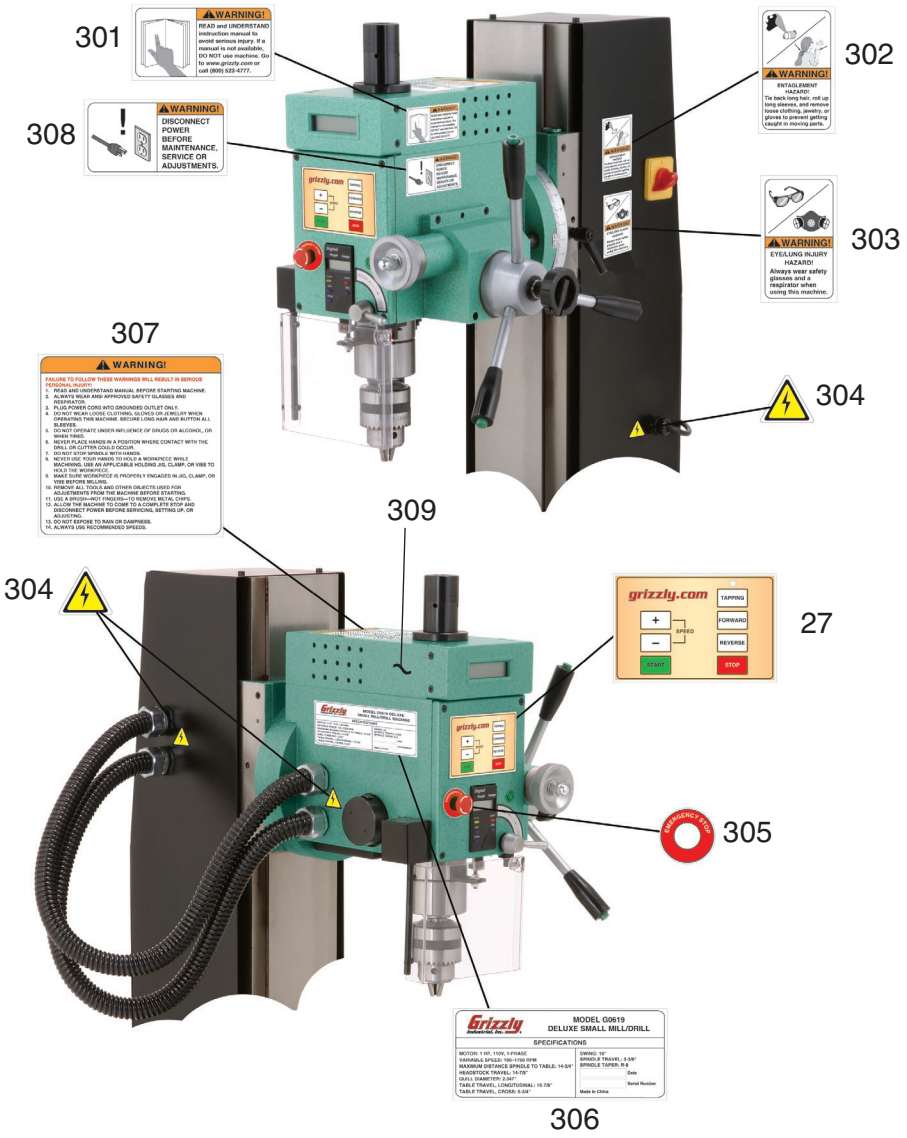
Parts Breakdown



REF	PART #	DESCRIPTION
200	P0619200	FLAT SPRING
201	PN01M	HEX NUT M6-1
202	P0619202	BALL OILER
203	PK37M	KEY 4 X 4 X 16
204	PSB15M	CAP SCREW M5-.8 X 20
205	P0619205	UNIVERSAL LEVER
208	PR01M	EXT RETAINING RING 10MM
212	PR06M	EXT RETAINING RING 16MM
213	PRP44M	ROLL PIN 3 X 10
217	PSB01M	CAP SCREW M6-1 X 16
218	PSB24M	CAP SCREW M5-.8 X 16
219	P0619219	FUSE HOUSING ASSEMBLY
220A	P0619220A	MOTOR PC BOARD/INVERTER N/S
220-1A	P0619220-1A	CAPACITOR 1200MFD 250VAC N/S
220-2A	P0619220-2A	HARNESS WITH PLUGS N/S
220-4A	P0619220-4A	FUSE 20A 250VAC
223	P0619223	POWER CORD
225	PRP35M	ROLL PIN 5 X 10
227	PW01M	FLAT WASHER 8MM
228	P0619228	MAIN POWER SWITCH
229	P0619229	COLUMN
230	P0619230	LEFT SIDE PLATE
231	P0619231	RIGHT SIDE PLATE
232	PSB33M	CAP SCREW M5-.8 X 12
233	P0619233	LIMIT SLEEVE
234	P0619234	LOWER BEARING SEAT
235	P0619235	VERTICAL LEAD SCREW
236	P0619236	VERTICAL LEAD NUT
237	P0619237	SUPPORT
238	P0619238	UPPER BEARING SEAT
239	P0619239	REAR CABINET
240	P0619240	VENTED COVER
241	P0619241	LARGE COVER
242	PSB04M	CAP SCREW M6-1 X 10
243	PSB03M	CAP SCREW M5-.8 X 8
244	PW04M	FLAT WASHER 10MM
245	PSB14M	CAP SCREW M8-1.25 X 20
246	PRP86M	ROLL PIN 8 X 45
247	PSS31M	SET SCREW M5-.8 X 8
248	PS17M	PHLP HD SCR M4-.7 X 6
249	PB73M	HEX BOLT M10-1.5 X 50

REF	PART #	DESCRIPTION
250	PRP39M	ROLL PIN 4 X 20
251	PRP56M	ROLL PIN 4 X 25
252	PRP73M	ROLL PIN 4 X 30
253	P0619253	RULER
255	P0619255	BEARING 8101
256	P6001	BEARING 6001
257	P0619257	ADJUSTABLE FOOT
258	P0619258	BASE
259	P0619259	SADDLE
260	P0619260	WORKTABLE
261	P0619261	SPACER
262	P0619262	Y-AXIS FEED SCREW
263	P0619263	X-AXIS FEED SCREW NUT
264	P0619264	Y-AXIS FEED SCREW NUT
265	P0619265	X-AXIS GIB
266	P0619266	Y-AXIS BEARING SEAT
267	P0619267	GEAR
268	P0619268	SLEEVE
269	P0619269	Z-AXIS SHAFT
270	P0619270	SUPPORT FLANGE
271	P0619271	X-AXIS FEED SCREW
272	P0619272	Y-AXIS GIB
273	P0619273	X-AXIS BEARING SEAT
274	PN09M	HEX NUT M12-1.75
275	P0619275	HANDWHEEL
276	PN03M	HEX NUT M8-1.25
277	P0619277	HANDWHEEL
278	P0619278	POINTER
279	P0619279	HANDLE SLEEVE
280	P0619280	INLAY RING
281	P0619281	GRADUATED DIAL
282	P0619282	SHOULDER SCR M8-1.25 X 55
283	PSB23M	CAP SCREW M4-.7 X 12
284	PSS12M	SET SCREW M6-1 X 25
285	PW01M	FLAT WASHER 8MM
286	PRP42M	ROLL PIN 3 X 20
287	PS37M	PHLP HD SCR M6-1 X 6
288	P0619288	RIVET
289	PN18M	ACORN NUT M8-1.25
292	P0619292	SEALED FLEX CONDUIT (LONG)
293	P0619293	SEALED FLEX CONDUIT (SHORT)

Label Placement



REF	PART #	DESCRIPTION
27	P06193027	TOUCHPANEL LABEL
301	PLABEL-12	READ MANUUAL LABEL
302	P06193302	ENTANGLEMENT HAZARD LABEL
303	P06193303	EYE AND LUNG HAZARD LABEL
304	P06193304	ELECTRICAL HAZARD LABEL

REF	PART #	DESCRIPTION
305	P06193305	EMERGENCY STOP LABEL
306	P06193306	DATA LABEL
307	P06193307	GENERAL WARNING LABEL
308	P06193308	UNPLUG LABEL
309	P06193309	GRIZZLY GREEN PAINT

⚠WARNING

Safety labels warn about machine hazards and ways to prevent injury. The owner of this machine MUST maintain the original location and readability of the labels on the machine. If any label is removed or becomes unreadable, REPLACE that label before using the machine again. Contact Grizzly at (800) 523-4777 or www.grizzly.com to order new labels.

WARRANTY AND 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.

To take advantage of 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.

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.

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.

Grizzly Industrial, Inc. WARRANTY CARD

Name _____

Street _____

City _____ State _____ Zip _____

Phone # _____ Email _____ Invoice # _____

Model # _____ Order # _____ Serial # _____

The following information is given on a voluntary basis. It will be used for marketing purposes to help us develop better products and services. ***Of course, all information is strictly confidential.***

1. How did you learn about us?

____ Advertisement ____ Friend ____ Catalog
____ Card Deck ____ Website ____ Other:

2. Which of the following magazines do you subscribe to?

____ Cabinet Maker
____ Family Handyman
____ Hand Loader
____ Handy
____ Home Shop Machinist
____ Journal of Light Cont.
____ Live Steam
____ Model Airplane News
____ Modeltec
____ Old House Journal
____ Popular Mechanics
____ Popular Science
____ Popular Woodworking
____ Practical Homeowner
____ Precision Shooter
____ Projects in Metal
____ RC Modeler
____ Rifle
____ Shop Notes
____ Shotgun News
____ Today's Homeowner
____ Wood
____ Wooden Boat
____ Woodshop News
____ Woodsmith
____ Woodwork
____ Woodworker West
____ Woodworker's Journal
____ Other:

3. What is your annual household income?

____ $20,000-$29,000 ____ $30,000-$39,000 ____ $40,000-$49,000
____ $50,000-$59,000 ____ $60,000-$69,000 ____ $70,000+

4. What is your age group?

____ 20-29 ____ 30-39 ____ 40-49
____ 50-59 ____ 60-69 ____ 70+

5. How long have you been a woodworker/metalworker?

____ 0-2 Years ____ 2-8 Years ____ 8-20 Years ____ 20+ Years

6. How many of your machines or tools are Grizzly?

____ 0-2 ____ 3-5 ____ 6-9 ____ 10+

7. Do you think your machine represents a good value? _____ Yes _____ No

8. Would you recommend Grizzly Industrial to a friend? _____ Yes _____ No

9. Would you allow us to use your name as a reference for Grizzly customers in your area?
Note: *We never use names more than 3 times.* _____ Yes _____ No

10. Comments: _____

_____

_____

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P.O. BOX 2069
BELLINGHAM, WA 98227-2069

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Send a Grizzly Catalog to a friend:

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Street_____

City_____State_____Zip_____

TAPE ALONG EDGES--PLEASE DO NOT STAPLE