

Grizzly
Industrial, Inc. ®

**MODEL G0484
GEARHEAD MILL/DRILL
WITH STAND
OWNER'S MANUAL**



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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.**

#CRTS9021 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 G0484 Gearhead Mill/Drill with Stand. 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 G0484 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

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

MODEL G0484 MILL/DRILL WITH STAND

Product Dimensions:

Overall Length.....	46¼"
Overall Width.....	33"
Overall Height.....	68"
Footprint Width.....	33"
Footprint Length.....	47"
Machine Net Weight.....	838 lbs

Shipping Information:

Crates Shipped.....	1
Carton Type (Material).....	PLYWOOD
Machine Shipping Weight.....	944 lbs
Length.....	51¼"
Width.....	30½"
Height.....	80"

Main Specifications:

Table Length.....	32¼"
Table Width.....	9¾"
Table Thickness.....	1¾"
Longitudinal Table Travel.....	21⅝"
Cross Table Travel.....	7⅞"
Vertical Travel of Headstock.....	16½"
Head Tilt.....	90 Deg. Left/Right
Face Milling Capacity.....	3⅜"
End Milling Capacity.....	1"
Drilling Cap For Cast Iron.....	1¾"
Spindle Travel.....	4¾"
Number of Vertical Spindle Speeds.....	6 STEPS
Range of Vertical Spindle Speeds.....	60, 114, 216, 426, 786, 1512 RPM
Lead Screw Diameter.....	1⅝"
Lead Screw Length.....	38⅞"
Maximum Distance Spindle To Column.....	10¼"
Maximum Distance Spindle To Table.....	15½"
Spindle Taper.....	R-8
Spindle Sleeve Diameter.....	3"
Draw Bar Diameter.....	7/16"
Draw Bar Length.....	16⅞"
Draw Bar TPI.....	20
Number of T Slots.....	4
T Slot Width.....	0.55"
T Slot Centers.....	2⅞"
Collars Calibrated.....	0.001"



Construction:

Base Construction.....	Cast Iron
Column Construction	Cast Iron
Head Construction	Cast Iron
Spindle Housing Construction.....	Steel
Stand Construction	Cast Iron
Table Construction.....	Cast Iron
Gear Box.....	YES

Electrical:

Voltage.....	220V
Safety Shutoff Switch.....	YES
Recommended Plug Type	NEMA 6-15
Plug Included	NO
Control Panel	YES

Milling Motor:

Horsepower.....	1½ HP
Voltage.....	220V
Phase	1
Cycle	60
Amps.....	7½A
RPM	1725
Number of Speeds.....	1
Reversible.....	YES

Lift Motor:

Horsepower.....	1/8 HP
Lift Motor Reduction Gearbox.....	YES
Voltage.....	220V
Phase	1
Cycle	60
Amps.....	¾A
RPM	1650
Number of Speeds.....	1
Reversible.....	YES

Features:

- All Steel Gear Drive
- Includes Cast Iron Stand
- Wayed Column
- Oil-Filled Gearbox
- Manual and Motorized Headstock Lift System
- Easy Maintenance
- Power Feed Included
- Worklamp
- Intergrated Headstock Control Panel
- Heavy Duty Construction Throuought
- Tilting Headstock
- Coolant Troughs in Table and Base



Identification

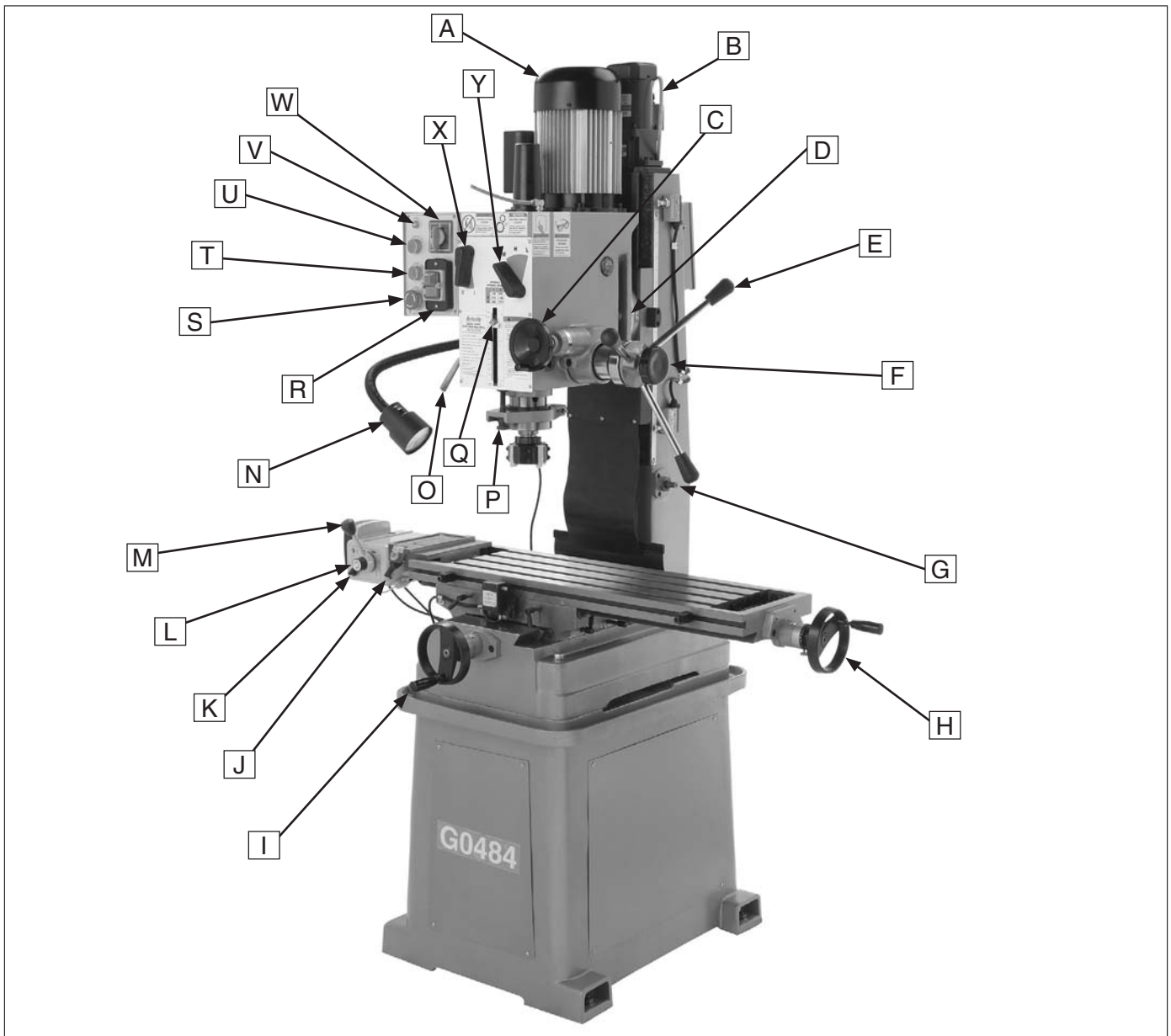


Figure 1. G0484 Identification.

- | | |
|--|------------------------------------|
| A. Mill/Drill Motor | N. Work Lamp |
| B. Headstock Lift Motor | O. Quill Lock Lever |
| C. Fine Feed Knob | P. Quill Depth Limiter |
| D. Headstock Tilt Lock Bolt and Scale | Q. Quill Depth Scale |
| E. Quill Feed Lever | R. Master Power Switch |
| F. Fine Feed Lock Knob | S. Emergency Stop Button |
| G. Manual Headstock Crank | T. Headstock Down Button |
| H. Y-Axis Handwheel | U. Headstock Up Button |
| I. X-Axis Handwheel | V. Power Lamp |
| J. Power Feed Rapid Feed Switch | W. Spindle Direction Switch |
| K. Power Feed Power Switch | X. Reduction Lever |
| L. Power Feed Speed Dial | Y. Range Lever |
| M. Power Feed Direction Lever | |



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 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.



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



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



Indicates a potentially hazardous situation which, if not avoided, **MAY** result in minor or moderate injury. 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 ENTIRE MANUAL BEFORE STARTING.** Operating machine before reading the manual greatly increases the risk of injury.
- 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 A NIOSH APPROVED RESPIRATOR WHEN OPERATING MACHINERY THAT PRODUCES DUST.** Most types of dust (wood, metal, etc.) can cause severe respiratory illnesses.
- 4. ALWAYS USE HEARING PROTECTION WHEN OPERATING MACHINERY.** Machinery noise can cause permanent hearing loss.
- 5. WEAR PROPER APPAREL. DO NOT** wear loose clothing, gloves, neckties, rings, or jewelry that can catch 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/VISITORS AWAY.** Keep all children and visitors away from machinery. When machine is not in use, disconnect it from power, lock it out, or disable the switch to make it difficult for unauthorized people to start the machine.
9. **UNATTENDED OPERATION.** Leaving machine unattended while its running greatly increases the risk of an accident or property damage. Turn machine **OFF** and allow all moving parts to come to a complete stop before walking away.
10. **DO NOT USE IN DANGEROUS ENVIRONMENTS.** DO NOT use machinery in damp, wet locations, or where any flammable or noxious fumes may exist.
11. **KEEP WORK AREA CLEAN AND WELL LIGHTED.** Clutter and dark shadows may cause accidents.
12. **USE A GROUNDED POWER SUPPLY RATED FOR THE MACHINE AMPERAGE.** Grounded cords minimize shock hazards. Operating machine on an incorrect size of circuit increases risk of fire.
13. **ALWAYS DISCONNECT FROM POWER SOURCE BEFORE SERVICING MACHINERY.** Make sure switch is in OFF position before reconnecting.
14. **MAINTAIN MACHINERY WITH CARE.** Keep blades sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.
15. **MAKE SURE GUARDS ARE IN PLACE AND WORK CORRECTLY BEFORE USING MACHINERY.**
16. **REMOVE CHUCK KEYS OR ADJUSTING TOOLS.** Make a habit of never leaving chuck keys or other adjustment tools in/on the machine—especially near spindles!
17. **DAMAGED MACHINERY.** Check for binding or misaligned parts, broken parts, loose bolts, other conditions that may impair machine operation. Always repair or replace damaged parts before operation.
18. **DO NOT FORCE MACHINERY.** Work at the speed for which the machine or accessory was designed.
19. **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.
20. **DO NOT OVERREACH.** Maintain stability and balance at all times when operating machine.
21. **MANY MACHINES CAN EJECT WORKPIECES TOWARD OPERATOR.** Know and avoid conditions that cause the workpiece to "kickback."
22. **STABLE MACHINE.** Machines that move during operations greatly increase the risk of injury and loss of control. Verify machines are stable/secure and mobile bases (if used) are locked before starting.
23. **CERTAIN DUST MAY BE HAZARDOUS** to the respiratory systems of people and animals, especially fine dust. Be aware of the type of dust you are exposed to and always wear a respirator designed to filter that type of dust.
24. **EXPERIENCING DIFFICULTIES.** If at any time you are experiencing difficulties performing the intended operation, stop using the machine! Contact our Technical Support Department at (570) 546-9663.



WARNING

Additional Safety Instructions for Mill/Drills

- 1. UNDERSTANDING CONTROLS.** Make sure you understand the use and operation of all controls before operating machine.
- 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/drill.
- 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. STOPPING SPINDLE.** **DO NOT** stop the spindle by hand. Allow it to come to a stop by itself.
- 7. AVOIDING ENTANGLEMENT.** Keep loose clothing articles such as sleeves, belts or jewelry away from the mill/drill spindle. Never wear gloves when operating the mill/drill.
- 8. BE ATTENTIVE.** **DO NOT** leave mill/drill running unattended for any reason.
- 9. POWER DISRUPTION.** In the event of a power outage during use of the mill/drill, turn **OFF** all switches to avoid possible sudden start up once power is restored.
- 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/drill is **OFF**, disconnected from the power source and all moving parts have come to a complete stop before starting any inspection, adjustment, or maintenance procedure.
- 12. CLEAN UP.** **DO NOT** clear chips away by hand—use a brush. Never clear chips while the mill/drill is turning.
- 13. 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.
- 14. 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

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 lessen the possibility 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.



SECTION 2: CIRCUIT REQUIREMENTS

220V Single-Phase

!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 G0484 motors draws the following amps under maximum load:

Motor Draw at 220V.....8¼ Amps

Power Supply Circuit Requirements

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.**

220V Circuit..... 15 Amps

Plug/Receptacle Type

Recommended Plug/Receptacle.... NEMA L6-15

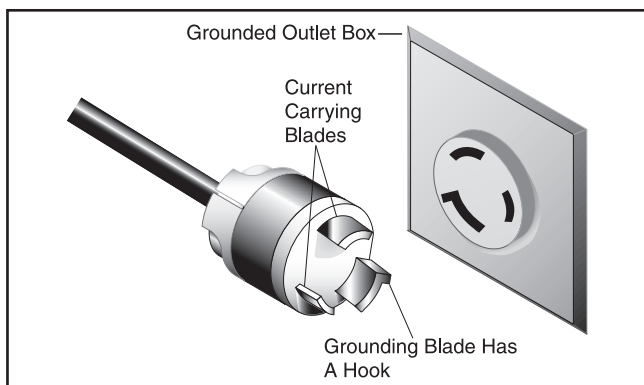
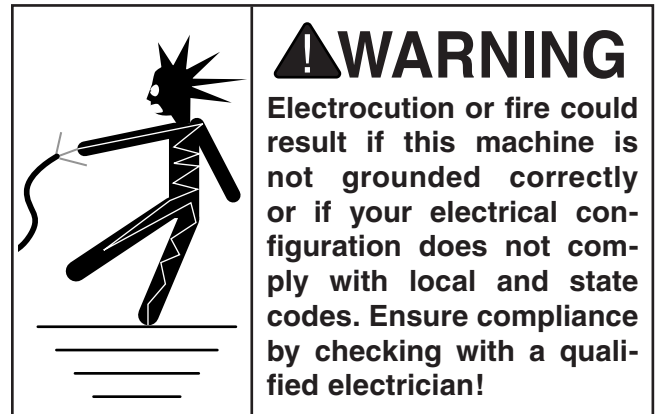


Figure 2. NEMA L6-15 plug and receptacle.

Grounding

In the event of an electrical short, grounding reduces the risk of electric shock. The grounding wire in the power cord must be properly connected to the grounding prong on the plug; likewise, the outlet must be properly installed and grounded. All electrical connections must be made in accordance with local codes and ordinances.



Extension Cords

We do not recommend the use of extension cords. Instead, arrange the placement of your equipment and the installed wiring to eliminate the need for extension cords.

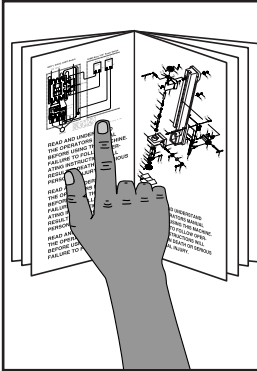
If you find it absolutely necessary to use an extension cord at 220V with your machine:

- 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.



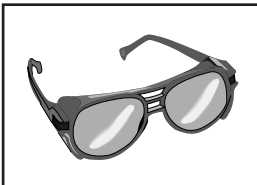
SECTION 3: SETUP

Setup Safety



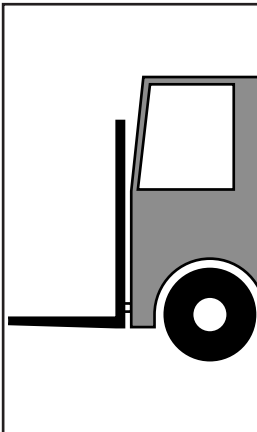
!WARNING

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 G0484 is a heavy machine. Serious personal injury may occur if safe moving methods are not used. To be safe, get assistance and use power equipment to move the shipping crate and remove the machine from the crate.

Items Needed for Setup

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

Description	Qty
• Assistance	1 or More Persons
• Power Lifting Equipment	As Needed
• Wrench 7mm	1
• Wrench 12mm	1
• Mounting Hardware	As Needed
• Cleaning Solvent	As Needed
• Shop Rags.....	As Needed

Unpacking

The Model G0484 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, inventory the contents.



Inventory

After all the parts have been removed from the crate, you should have the following items with your machine:

Inventory: (Figure 3)	Qty
A. Downfeed Handles.....	3
B. Face Mill Assembly R8.....	1
C. Adapter R8 - JT3.....	1
D. Headstock Elevation Crank.....	1
E. Wrench 24mm.....	1
F. Hex Wrenches, 4, 5, 6 mm.....	1 Ea
G. Handwheels.....	2
H. Chuck 1–16mm JT3.....	1
I. Chuck Key.....	1
J. Handwheel Handles.....	2

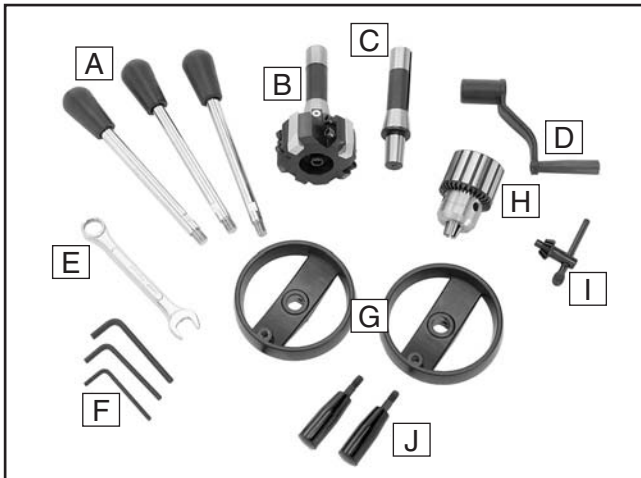


Figure 3. Model G0484 inventory.

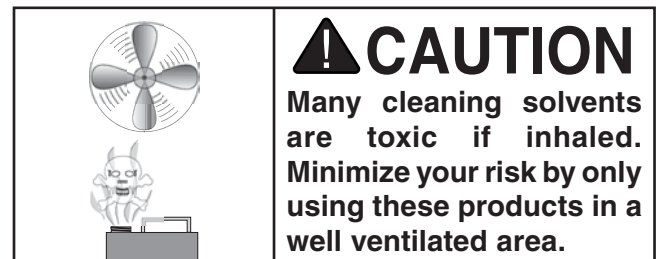
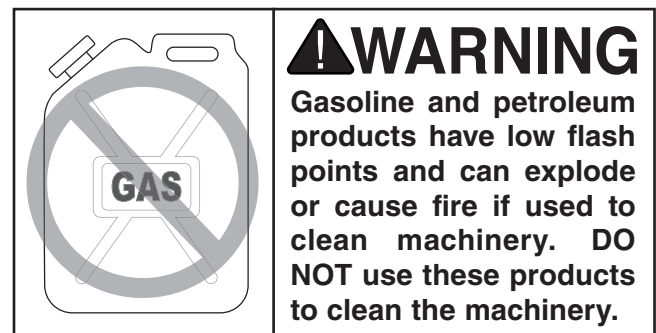
NOTICE

Some hardware/fasteners on the inventory list may arrive pre-installed. Check mounting locations before assuming that any items from the inventory list are missing.

If any nonproprietary 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.

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 degreaser, such as shown in **Figure 4**. For thorough cleaning, some parts must be removed. **For optimum performance, 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.



G2544—Solvent Cleaner & Degreaser

A great product for removing the waxy shipping grease from your machine during clean up.



Figure 4. Cleaner/degreaser available from Grizzly.



Site Considerations

Floor Load

Refer to the **Machine Data Sheet** on **Page 3** 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, other machinery, and the operator when establishing a location for your new machine. See **Figure 5** for the minimum clearance dimensions.

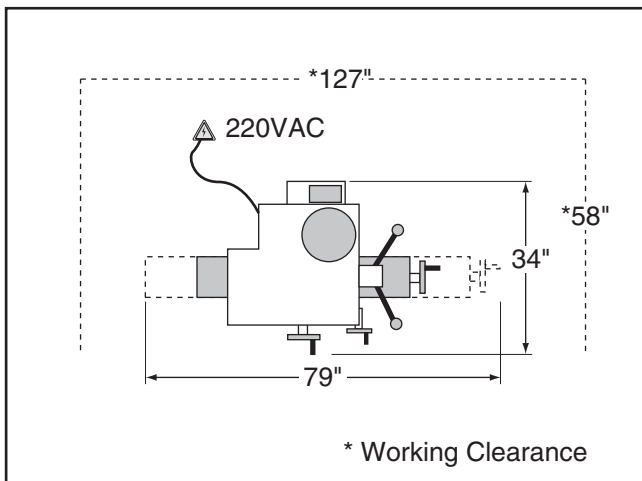


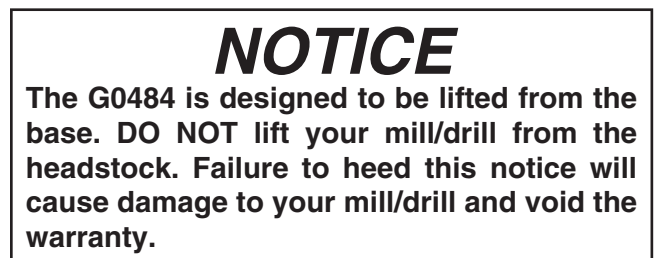
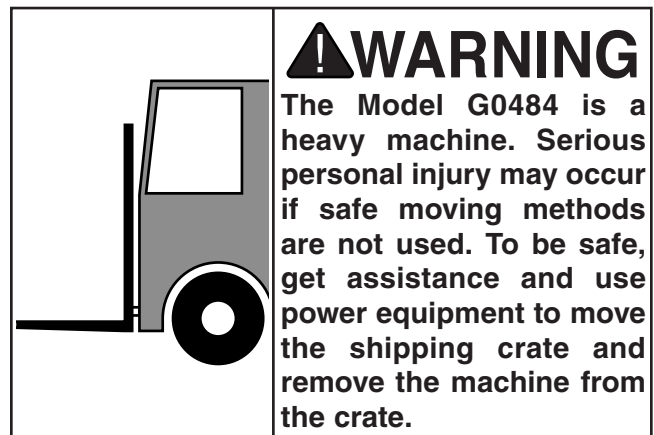
Figure 5. Model G0484 clearance dimensions.

Lighting

Lighting should be bright enough to eliminate shadow in the working zones of the machine and prevent eye strain. Follow local electrical codes for proper installation of new lighting.



Moving & Placing Base Unit



To lift the G0484 from the base, remove both side panels of the base (see **Figure 6**). Carefully place the lift forks completely through the base cavity.

Be sure to use assistance in this process and only lift the mill/drill enough to clear floor obstacles as you move it to its permanent position.



Figure 6. Base side panel (right side shown).



Mounting to Shop Floor

We recommend that you mount your new machine to the floor. Because floor materials may vary, floor mounting hardware is not included.

Lag shield anchors with lag bolts and anchor studs (Figure 7) are two popular methods for anchoring an object to a concrete floor.

NOTICE

Anchor studs are stronger and more permanent alternatives to lag shield anchors; however, they will stick out of the floor, which may cause a tripping hazard if you decide to move your machine.

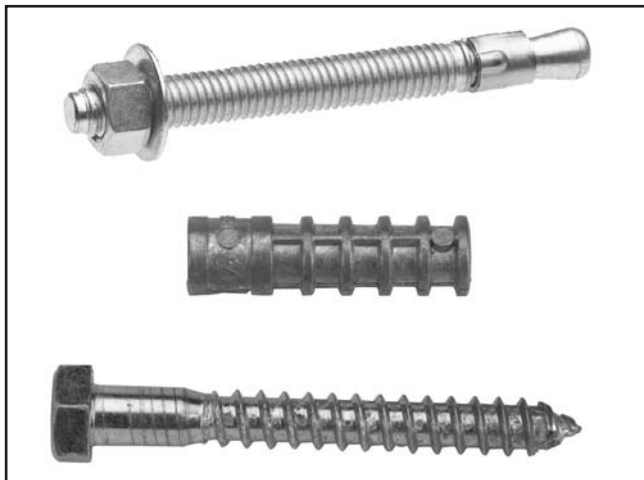


Figure 7. Typical fasteners for mounting to concrete floors.

Assembly

To assemble your mill/drill:

1. Place the handwheels on the longitudinal and cross lead screws, and tighten the set screw (see Figure 8).



Figure 8. Handwheel installed.

2. Thread the handles onto the handwheels and tighten with a 7mm wrench.
3. Thread the quill feed levers onto the downfeed hub and tighten with a 12mm wrench (see Figure 9).

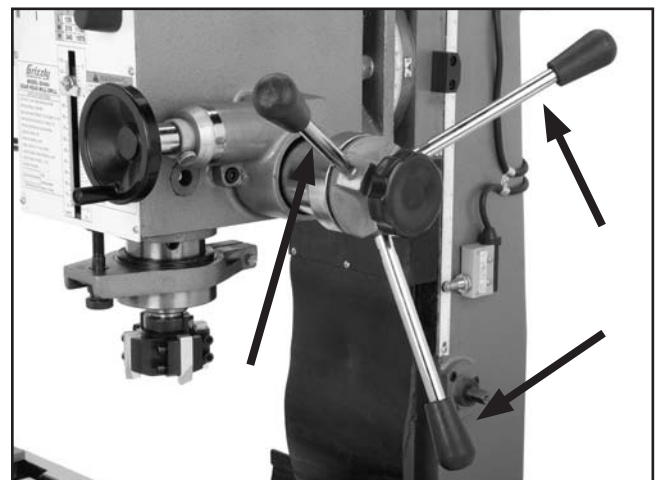


Figure 9. Downfeed handles installed.



Test Run

Once the assembly is complete, test run your machine to make sure it runs properly and is ready for regular operation. The test run consists of verifying the following: 1) The main motor powers up and runs correctly and 2) the stop button safety feature works correctly.

If, during the test run, you cannot easily locate the source of an unusual noise or vibration, stop using the machine immediately, then review **Troubleshooting** on **Page 26**.

If you cannot find a remedy, contact our Tech Support at (570) 546-9663 for assistance.

!WARNING

Before starting the mill/drill, make sure you have performed the preceding assembly and adjustment instructions, and you have read through the rest of the manual and are familiar with the various functions and safety features on this machine. Failure to follow this warning could result in serious personal injury or even death!

To test run the machine:

1. Make sure you understand the safety instructions at the beginning of the manual and that the machine is setup properly.
2. Make sure all tools and objects used during setup are cleared away from the machine.
3. Connect the machine to the power source.
4. Press the main power switch **ON**.

5. Push the emergency stop button in, then twist it clockwise so it pops out. When the emergency stop button pops out, the switch is reset and ready for operation (see **Figure 10**).

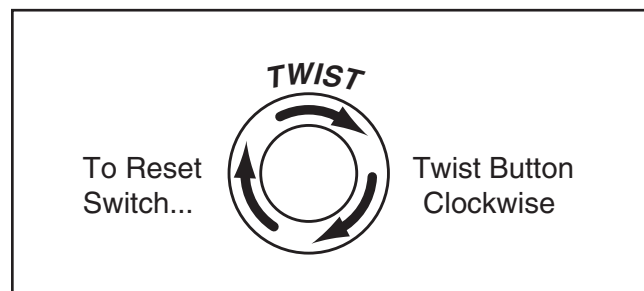


Figure 10. Resetting the switch.

6. Verify that the main motor is operating correctly by switching the spindle rotation dial to "F" (forward).
 - When operating correctly, the machine runs smoothly with little or no vibration or rubbing noises.
 - Investigate and correct strange or unusual noises or vibrations before operating the machine further. Always disconnect the machine from power when investigating or correcting potential problems.
7. Press the emergency stop button to stop the machine and switch the spindle rotation dial to "0" (neutral).
8. **WITHOUT** resetting the emergency stop button, switch the spindle rotation dial to "F". The machine should not start.
 - If the machine does not start, the OFF button safety feature is working correctly. The Test Run is complete.
 - If the machine does start (with the stop button pushed in), immediately disconnect power to the machine. The OFF button safety feature is not working correctly. This safety feature must work properly before proceeding with regular operations. Call Tech Support for help.



Break-In

After successfully completing the **Test Run**, it is necessary run the mill/drill in each speed and direction without a load to seat the bearings.

NOTICE

Only change spindle speed when the spindle is stopped. Attempting to change spindle speeds when the spindle is in motion will damage the drive gears and bearings.

To perform the break-in procedure:

1. Press the emergency stop button in and make sure the spindle is stopped.
2. Use the gearbox levers so that the spindle RPM is set at 120.
3. Twist the emergency stop button clockwise so that it pops out.
4. Switch the spindle rotation dial to "F" (forward) and let the spindle run for 10 minutes.
5. Press the emergency stop button in and wait for the spindle to stop.
6. Switch the spindle rotation dial to "R" (reverse) and let the spindle run for 10 minutes.
7. Repeat **Steps 2–6** for the remaining RPM ranges.

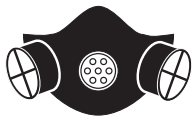


SECTION 4: OPERATIONS

Operation Safety

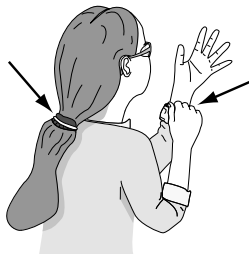
!WARNING

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

Control Panel

- A. **Power Lamp:** Glows when power is flowing to the machine.
- B. **Headstock Up Button:** Controls the headstock motor so the headstock is powered upwards.
- C. **Headstock Down Button:** Controls the headstock motor so the headstock is powered downwards.
- D. **Emergency Stop Button:** Stops the mill/drill. Rotate the button clockwise until it pops back out to reset it.
- E. **Master Power Switch:** Toggles main power to the machine.
- F. **Spindle Rotation Dial:** Changes spindle rotation direction for milling/drilling operations. Spindle rotation must always be stopped before making direction changes.

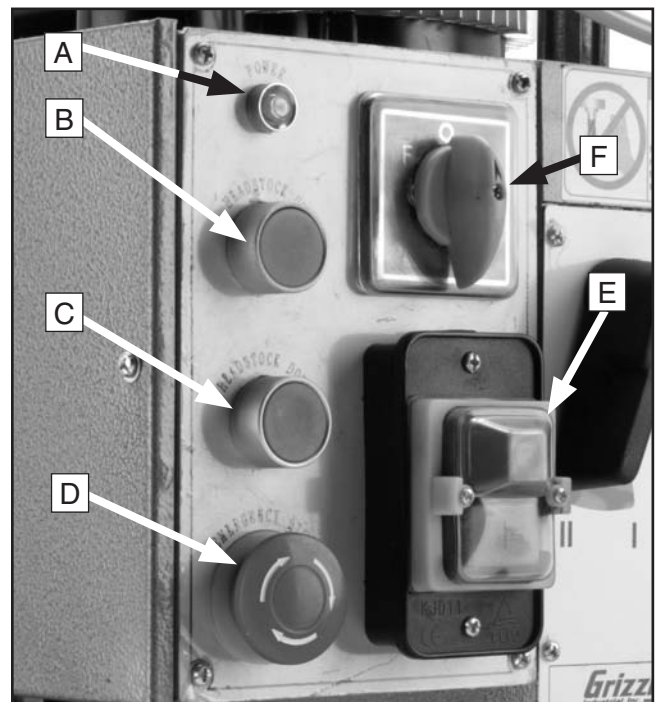


Figure 11. Control panel.




Spindle Height Control

Spindle height is changed by unlocking the quill lock lever and the fine feed knob, and using the quill feed handles or the fine feed knob (**Figure 12**). The spindle scale indicates the spindle height in inches and millimeters.

To change the spindle position:

1. Unlock the quill lock lever and loosen the fine feed lock 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.
3. Tighten the fine feed lock knob and use the fine feed knob if you like.

 **Tip:** Milling with the quill fully extended, can cause tool chatter. For maximum spindle rigidity when milling, keep the spindle retracted into the headstock as far as possible, lock the headstock and quill lock levers, and tighten the fine feed lock knob.

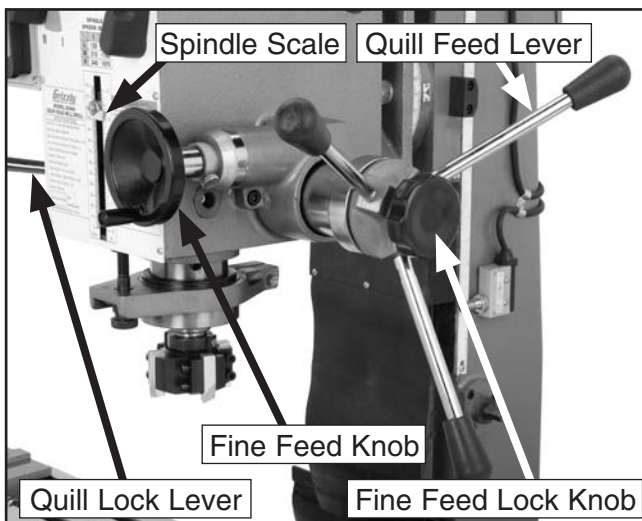


Figure 12. Spindle controls.

Table Travel (X-Axis and Y-Axis)

Longitudinal Feed

The longitudinal feed, or X-axis, is moved by the handwheel at the right 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.

Cross Feed

The cross feed, or Y-axis, is moved with the handwheel on the front of the table base. One complete revolution of the handwheel moves the cross slide 0.100".

Headstock Travel (Z-Axis)

The vertical headstock travel, or Z-axis travel, is controlled by the lift motor or the manual headstock crank on the right side of the column. This coarse travel is only used to position the headstock in the spindle-travel range. Precise incremental movement is available by using the feed levers or the fine feed handwheel.



Tooling Changes

Your mill/drill has an R-8 spindle taper. Follow these general procedures to install and remove R-8 tooling like drill chuck arbors, face cutters, or collets of your choice.



To install tooling in the spindle:

1. DISCONNECT MACHINE FROM POWER!
2. Carefully clean the R-8 tapered surface of the tooling and the spindle. Ensure that they are free of debris and burrs.
3. Insert the tooling into the spindle, and rotate it so the slot in the tool taper lines up with the pin inside of the spindle.
4. Press the tooling up firmly to seat it with the spindle taper.
5. Finger tighten the drawbar into place, then tighten the drawbar (**Figure 13**).

Note: Overtightening the drawbar makes tool removal difficult and stretches the threads of the tool and drawbar.

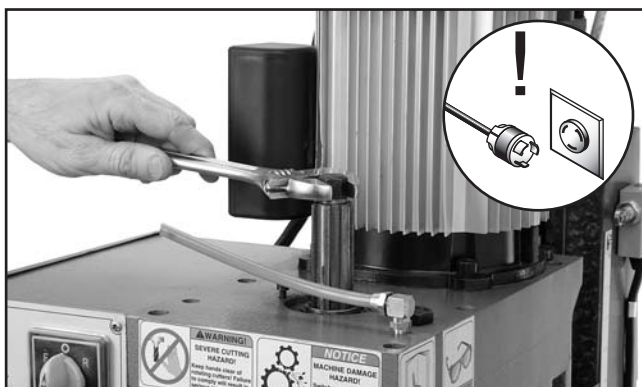


Figure 13. Tightening drawbar.



Figure 14. Unseating the arbor/cutter.

6. Clear away all items from the cutter before turning the mill/drill **ON**.

To remove tooling from the spindle:

1. DISCONNECT MACHINE FROM POWER!
2. Return the headstock to the highest position and loosen the drawbar.
3. Put on leather gloves, support the tool, and unthread the drawbar approximately three turns.

NOTICE

DO NOT completely unscrew the drawbar prior to striking the drawbar or the initial threads of the drawbar and tool will be crushed.

4. Lightly strike the drawbar with a dead blow hammer (**Figure 14**) or a piece of wood to release the tooling from the spindle.
5. Hold the tooling, and unscrew the drawbar.



Choosing Spindle RPM

NOTICE
Never shift gears while mill/drill or mill is running; otherwise, the gear teeth will be chipped or broken.

To determine and set the mill to the needed cutting RPM:

1. Select the cutting speed required for the material of your workpiece using the table in **Figure 15**.

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

Figure 15. High speed steel cutting chart.

Note: *Double the cutting speed for carbide cutting tools. These values are a guideline only. Refer to the MACHINERY'S HANDBOOK for more detailed information.*

2. Measure the diameter of your cutting tool in inches.
3. Use the following formula to determine the needed RPM for your operation:

$$\frac{\text{Cutting Speed (SFM)} \times 4}{\text{Tool Diameter (in inches)}} = \text{RPM}$$

Note: *You will only be able to get an approximate RPM value with the gearbox range and reduction levers.*

4. Move the mill gearbox levers to the nearest milling speed RPM.

NOTICE
Failure to follow RPM and Feed Rate Guidelines will shorten cutter life and give poor workpiece results and may threaten operator safety from ejected parts or broken tools.



Milling/Drilling

To mill a workpiece:

1. Learn about the control panel shown on **Page 16** and the controls shown in **Figure 16**.
2. Clamp the workpiece to the milling table, and adjust the headstock to the needed height, depth of cut, and milling path.

Note: For special milling operations, loosen the headstock tilt lock nuts and rotate the headstock to the needed angle (**Figure 17**).

Note: If you are only milling in one direction, lock the unused table slide in place.

3. Refer to **Choosing Spindle RPM** on **Page 19** to find the best spindle RPM, and then move the headstock levers to the appropriate spindle speed positions.
4. Unlock the headstock levers (**Figure 18**), and use the lift motor to position the headstock close to the workpiece.

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

—For milling tighten the fine feed lock knob and use the fine feed handwheel and its scale to set the milling depth. Then lock the quill lock lever.

—For drilling, leave the fine feed lock knob loose, and use the quill feed lever handles to draw the quill and drill bit down.

5. Push the green power button.
6. Turn the rotary switch dial to **F** or **R** to select the appropriate cutting direction for the type of cutter that you are using.
7. Use the table handwheels or the power feed to move the table so the cutter enters the workpiece slowly. Refer to the power feed manual for power feed operation if required.

⚠ WARNING

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

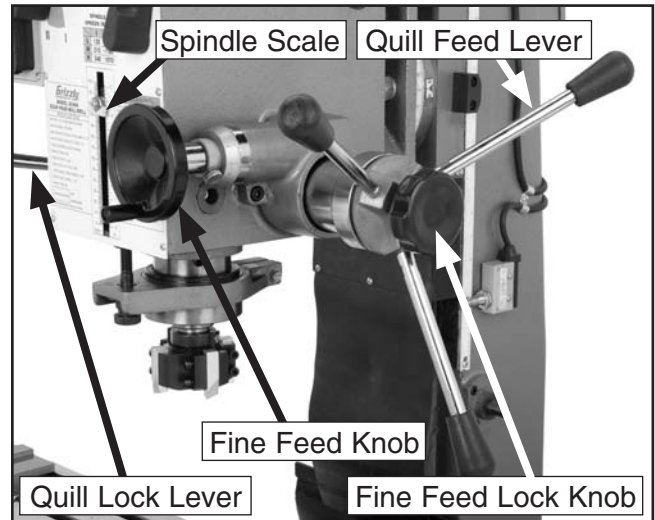


Figure 16. Milling/drilling controls.

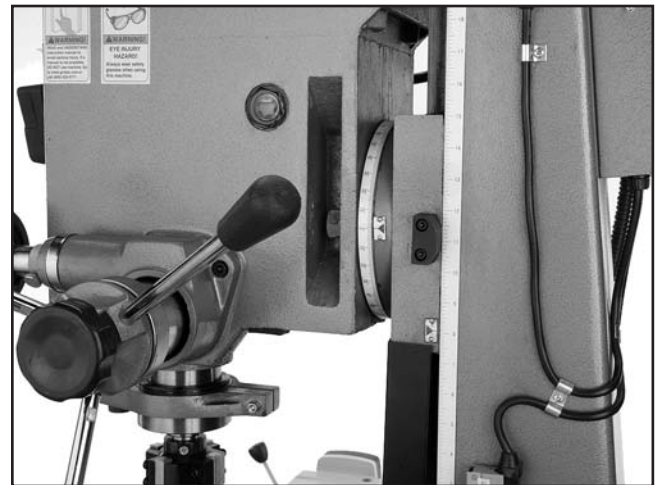


Figure 17. Headstock tilt lock.

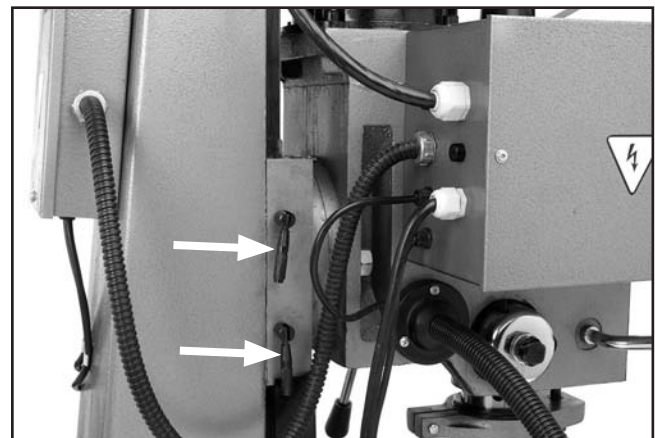


Figure 18. Headstock lock levers.



SECTION 5: ACCESSORIES

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 $\frac{1}{8}$ ", $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ", $\frac{7}{8}$ ", 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 $\frac{7}{16}$ " x 20.

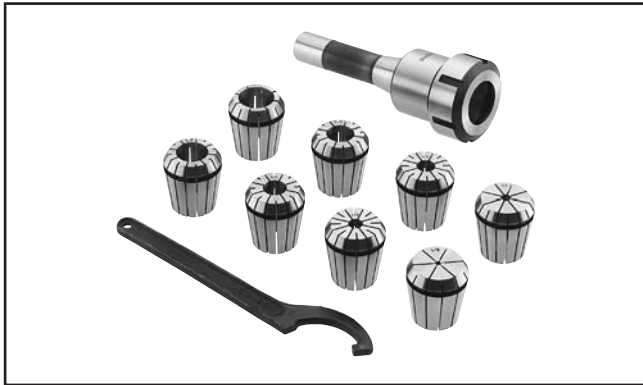


Figure 19. H2689 R-8 Quick Change Collet Set.

G1075—52-PC. Clamping Kit, $\frac{1}{2}$ " T-Nut Size

All the blocks, bolts, nuts, and hold-downs are case hardened. Each kit includes: Metal rack, 24 studs, 6 step block pairs, 6 T-nuts, 6 flange nuts, 4 coupling nuts, and 6 end hold-downs.

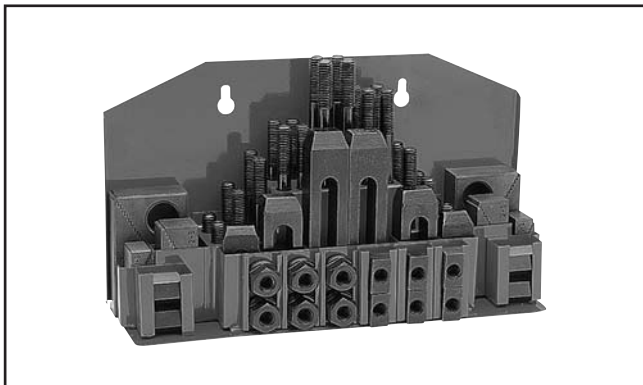


Figure 20. G1075 52-PC. Clamping Kit.

G9324—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 3" boring head, R-8 shank with $1\frac{1}{2}$ "-18 TPI, and a 12 piece $\frac{3}{4}$ " boring bar set.



Figure 21. G9324 Boring Head Combo Set.

G2861—Face Mill

G4051—Carbide Insert for Face Mill

This $2\frac{1}{2}$ " face mill accepts four carbide inserts (not included). Comes with an R-8 arbor.



Figure 22. G2861 Face Mill.

Call 1-800-523-4777 To Order



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



Figure 23. G9760 20-PC End Mill Set.

G9765—9-PC. Ball End Mill Set
 Features 2 flute ball nose end mills. Includes the following sizes: $\frac{1}{8}$ ", $\frac{3}{16}$ ", $\frac{1}{4}$ ", $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{7}{16}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ " and $\frac{3}{4}$ ".

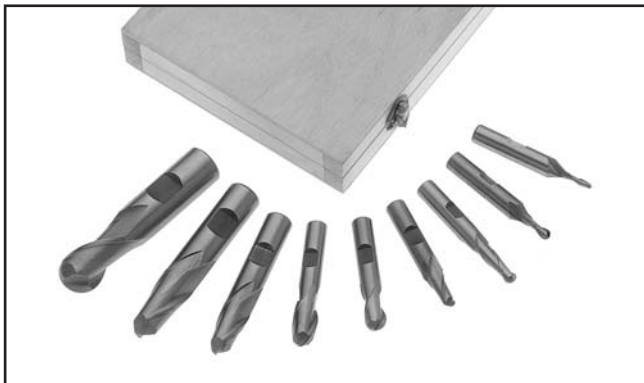


Figure 24. G9765 9 PC. Ball End Mill Set.

H3022—Measurement Tool Set
 Includes magnetic base, 1" dial indicator (.001"), and 6" dial caliper (.001"). The extremely low price has made this a very popular seller!



Figure 25. H3022 Measurement Tool Set.

G5641—1-2-3 Blocks
G9815—Parallel Set
H5556—Edge Finder Set

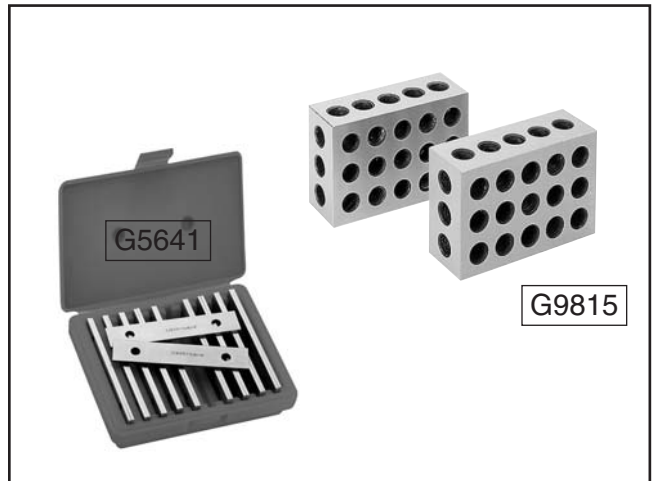


Figure 26. G5641 1-2-3 Blocks, G9815 Parallel Set, and H5556 Edge Finder Set.

T20501—Face Shield Crown Protector 4"
T20502—Face Shield Crown Protector 7"
T20503—Face Shield Window
T20452—"Kirova" Anti-Reflective S. Glasses
T20451—"Kirova" Clear Safety Glasses
H0736—Shop Fox® Safety Glasses
H7194—Bifocal Safety Glasses 1.5
H7195—Bifocal Safety Glasses 2.0
H7196—Bifocal Safety Glasses 2.5

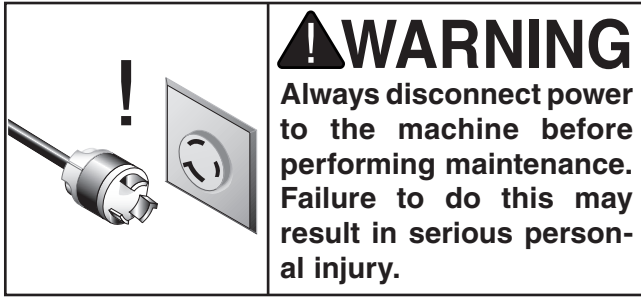


Figure 27. Eye protection assortment.

Call 1-800-523-4777 To Order



SECTION 6: MAINTENANCE



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.
- Lubricate ball oilers.
- Ways are cleaned and lubricated.
- Cross and longitudinal lead screws are cleaned and lubricated.
- Any other condition that would hamper the safe operation of this machine.

Weekly Maintenance:

- Gibs are adjusted properly and lubricated.

Cleaning and Protecting

Metal chips left on the machine that have been soaked with water-based coolant will invite oxidation and a gummy residue build-up around the moving parts. Use a brush and shop vacuum to remove chips and debris from the working surfaces of the mill. Never blow the mill off with compressed air, as this will force metal chips deep into the mechanisms.

Remove any rust build-up from unpainted cast iron surfaces of your mill and treat with a non-staining lubricant after cleaning.

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



Lubrication

Ball Oilers

Lubricate both ball oilers every 8 hours (see **Figures 28–29**). Use a manual oiler (oil can) filled with ISO 68 or SAE 20W non-detergent oil.

To lubricate ball oilers, depress the ball with the tip of the oil can nozzle and squirt a little oil inside the fitting. Make sure to clean the outside of the ball oiler before and after each use to keep out contaminants.

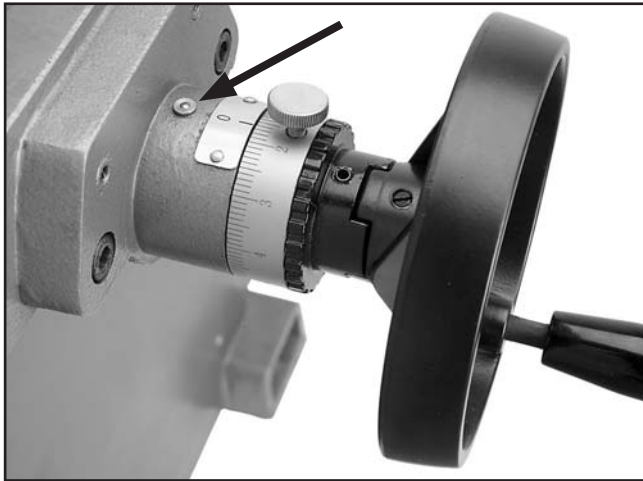


Figure 28. Longitudinal ball oiler.

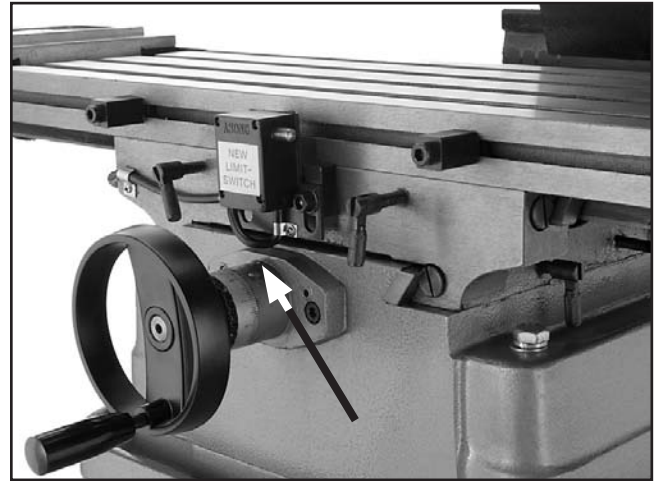


Figure 29. Cross slide ball oiler.

Ways

Clean the longitudinal, cross, and headstock ways of all debris. Lightly lubricate each way with ISO 68 or SAE 20W oil.

Longitudinal and Cross Lead Screws

After cleaning the longitudinal and cross lead screws of all debris, paint a small amount of white lithium grease on each one. Then, move the attached part all the way through its full range of motion on the lead screw.

Continued on next page →



Headstock Lead Screw

On an annual basis, or every six months under heavy use, we recommend that you clean and lubricate the headstock lead screw with white lithium grease.

To clean and lubricate the lead screw:

1. DISCONNECT MACHINE FROM POWER!
2. Raise the headstock to its highest position.
3. Hold the rubber chip curtain (**Figure 30**) away from the lead screw access port.
4. Using mineral spirits, a toothbrush, and rags, thoroughly clean the lead screw.
5. Paint the lead screw and gear teeth with lithium grease.
6. Lower the headstock and repeat **Step 4** on the upper portion of the lead screw that was previously inaccessible.

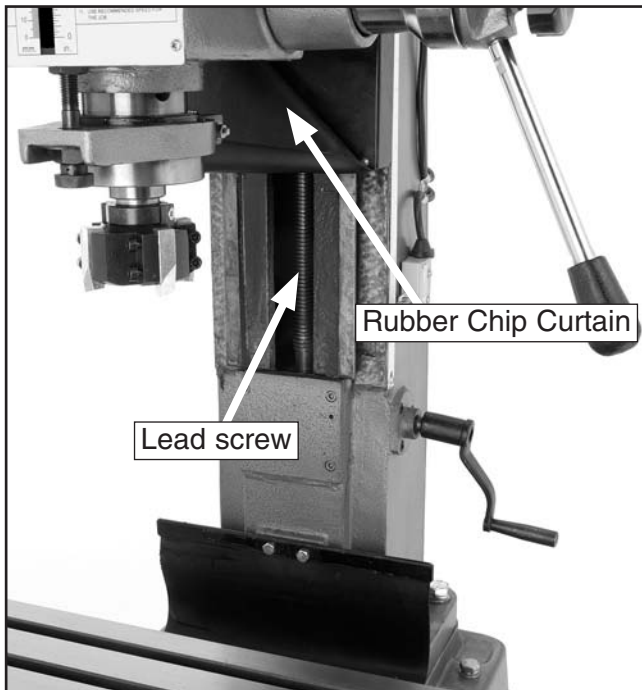


Figure 30. Headstock lead screw access and lubrication.

Headstock Gearbox Oil

On an annual basis, or every six months under heavy use, we recommend that you drain and refill the headstock oil with a 10-30W non-detergent oil.

To change the headstock oil:

1. DISCONNECT MACHINE FROM POWER!
2. Locate the drain plug (**Figure 31**).
3. Using a 5mm hex wrench, remove the drain plug located under the headstock, drain the oil, then reinstall the plug.
4. Remove the fill plug on top of the headstock and fill the headstock with oil until the sight glass shows $\frac{3}{4}$ full, then reinstall the plug.

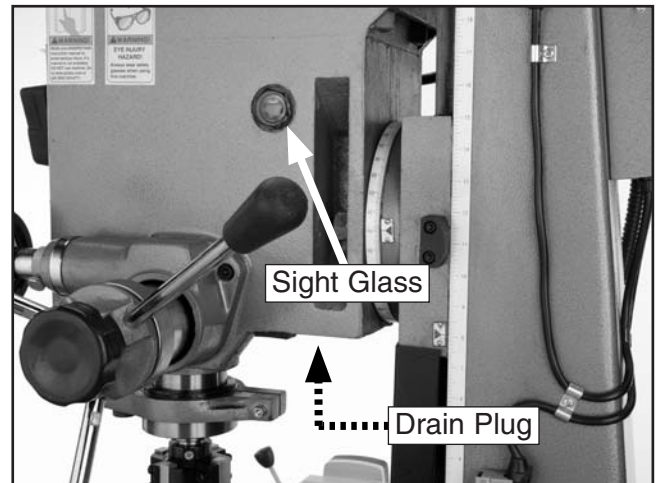


Figure 31. Headstock oil access and lubrication.



SECTION 7: SERVICE

Review the troubleshooting and procedures in this section to fix or adjust 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



Motor & Electrical

Symptom	Possible Cause	Possible Solution
Motor will not start.	<ol style="list-style-type: none"> 1. Incorrect mill/drill operation. 2. Main power panel switch is OFF. 3. Emergency switch is pushed in. 4. Circuit breaker or fuse has tripped. 5. No voltage or open connection. 6. Capacitor is at fault. 7. Power switch or magnetic contactor is at fault. 8. Transformer or fuse at fault. 9. Motor is at fault. 	<ol style="list-style-type: none"> 1. Use the spindle direction ON/OFF lever. 2. Turn the main power panel switch ON. 3. Rotate emergency switch so it pops out. 4. Seek an electrician to troubleshoot and repair the shop power supply. 5. Test circuit, replace wires and connections as required. 6. Replace capacitor. 7. Replace power switch or magnetic contactor. 8. Replace transformer or fuse. 9. Replace motor.
Fuses or circuit breakers trip open.	<ol style="list-style-type: none"> 1. Short circuit in line cord or plug. 2. Short circuit in motor or loose connections. 3. Incorrect fuses or circuit breakers in power supply. 	<ol style="list-style-type: none"> 1. Inspect cord or plug for damaged insulation and shorted wires. 2. Inspect all connections on motor for loose or shorted terminals or worn insulation. 3. Install correct fuses or circuit breakers.
Table is hard to move.	<ol style="list-style-type: none"> 1. Chips have loaded up on bedways. 2. Ways, gibs, lead screw are at fault . 3. Gibs are too tight. 	<ol style="list-style-type: none"> 1. Frequently clean away chips that load up during milling/drilling operations. 2. Lubricate ways and lead screw, adjust gibs. 3. Loosen gib screw(s) slightly (Page 27).
Machine is loud when cutting. Overheats or bogs down in the cut.	<ol style="list-style-type: none"> 1. Excessive depth of cut. 2. RPM or feed rate wrong for operation. 3. Dull cutters. 	<ol style="list-style-type: none"> 1. Decrease depth of cut. 2. Refer to RPM feed rate chart (Page 19) for appropriate rates. 3. Sharpen or replace cutters.
Bad surface finish when milling.	<ol style="list-style-type: none"> 1. Wrong RPM or feed rate. 2. Dull tooling or tool not centered correctly. 3. Headstock is loose. 4. Too much play in gibs. 5. Vise or clamping hardware at fault. 6. Incorrect spindle speed or feed rate. 	<ol style="list-style-type: none"> 1. Adjust for appropriate RPM (Page 19) and feed rate. 2. Sharpen tooling and/or center tool correctly. 3. Tighten column way gib, lock down headstock lock levers, and run milling operation with quill fully retracted into headstock and locked in position. 4. Lubricate ways and tighten gibs. 5. Vise or clamping fixture is worn, loose, or inadequate for clamping task. 6. Incorrect spindle speed or feed rate.
Gear change levers will not shift into position.	<ol style="list-style-type: none"> 1. Gears not aligned in headstock. 	<ol style="list-style-type: none"> 1. Rotate spindle by hand until gear falls into place.



Adjusting Gibs

The gibs control the accuracy of the table and headstock movement. During the life of your mill/drill, you may have to adjust the gibs to remove looseness that is a result of normal wear.

The goal of gib adjustment is to remove unnecessary looseness without causing the dovetail slides to bind. Loose gibs may cause poor finishes on the workpiece and may cause undue wear on the slides; over-tightening may cause pre-mature wear.

Each sliding dovetail on the Model G0484 has a gib that is sandwiched between two adjusting screws (see **Figures 32–33** for the locations of the gib adjustment screws).

Some minor components must be removed to access all the gib adjustment screws.

Adjust the gibs by loosening one screw and tightening the other at the opposite end until a slight drag is felt while moving the table/headstock along the dovetail slides. Then, tighten the loose screw at the other end to lock the setting in place.

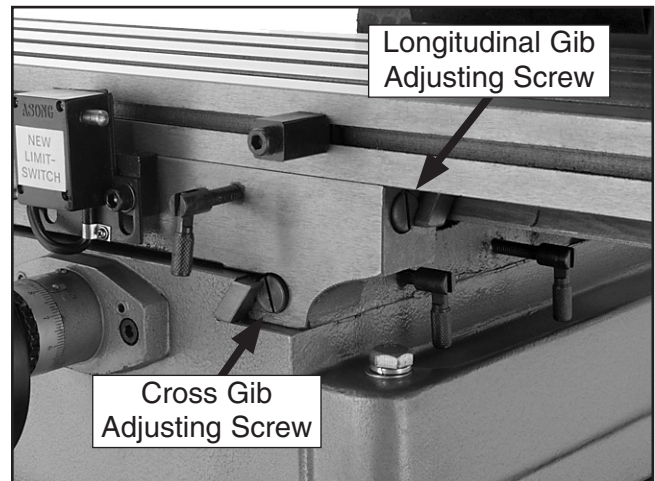


Figure 32. Cross and longitudinal gib adjusting screws (one side shown for each).

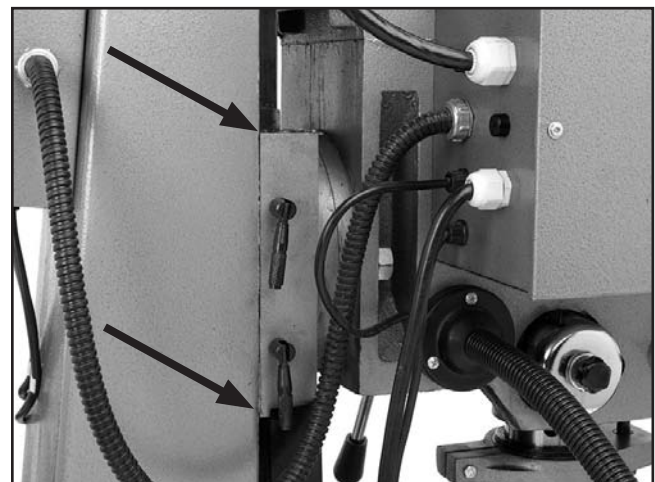
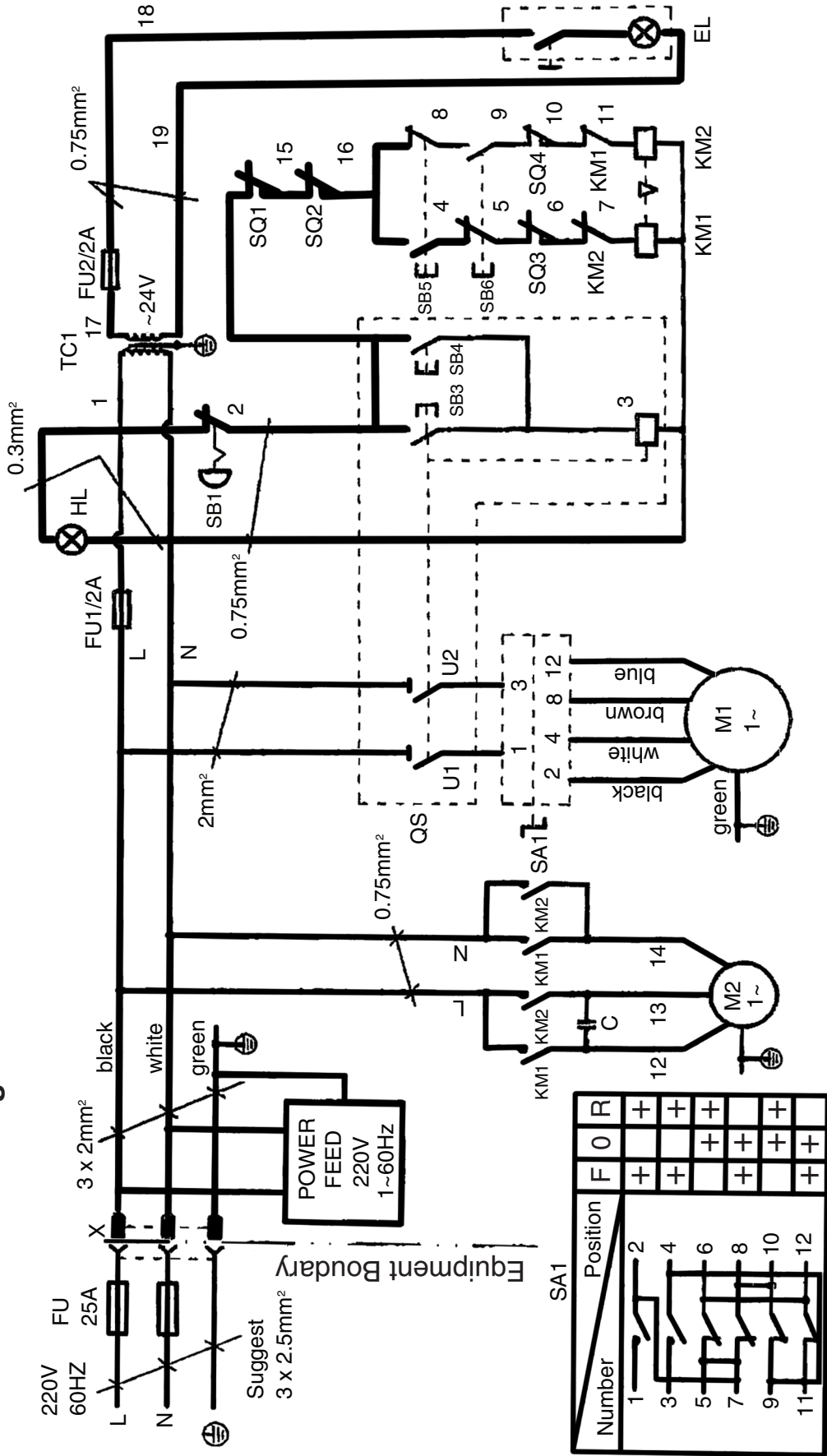


Figure 33. Headstock gib adjusting screws (left side of headstock shown).



Wiring Diagram

220V Single-Phase



Electrical Component Index

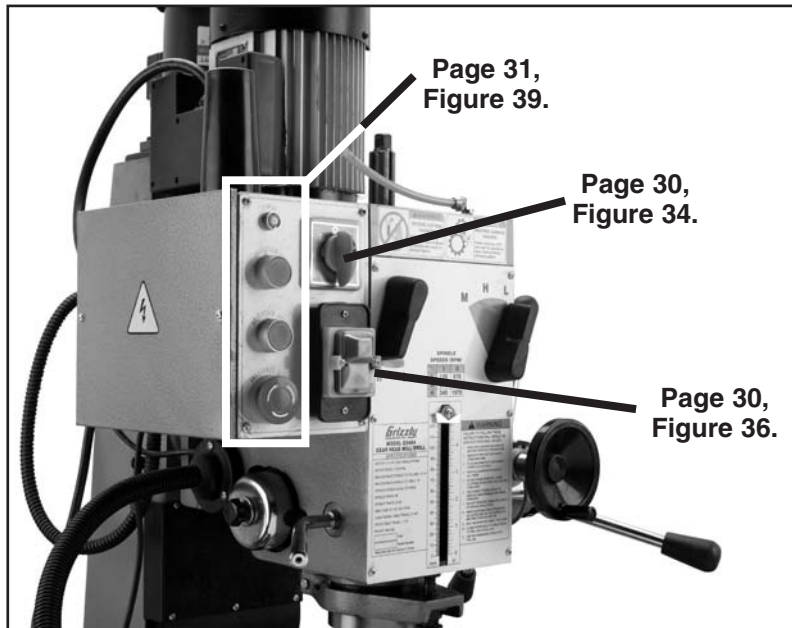


Figure 1. Mill/drill front left view.

⚠ WARNING
ELECTROCUTION
HAZARD!



Always disconnect power to the machine before beginning any electrical procedures. Ignoring this warning may result in fire or electrocution!

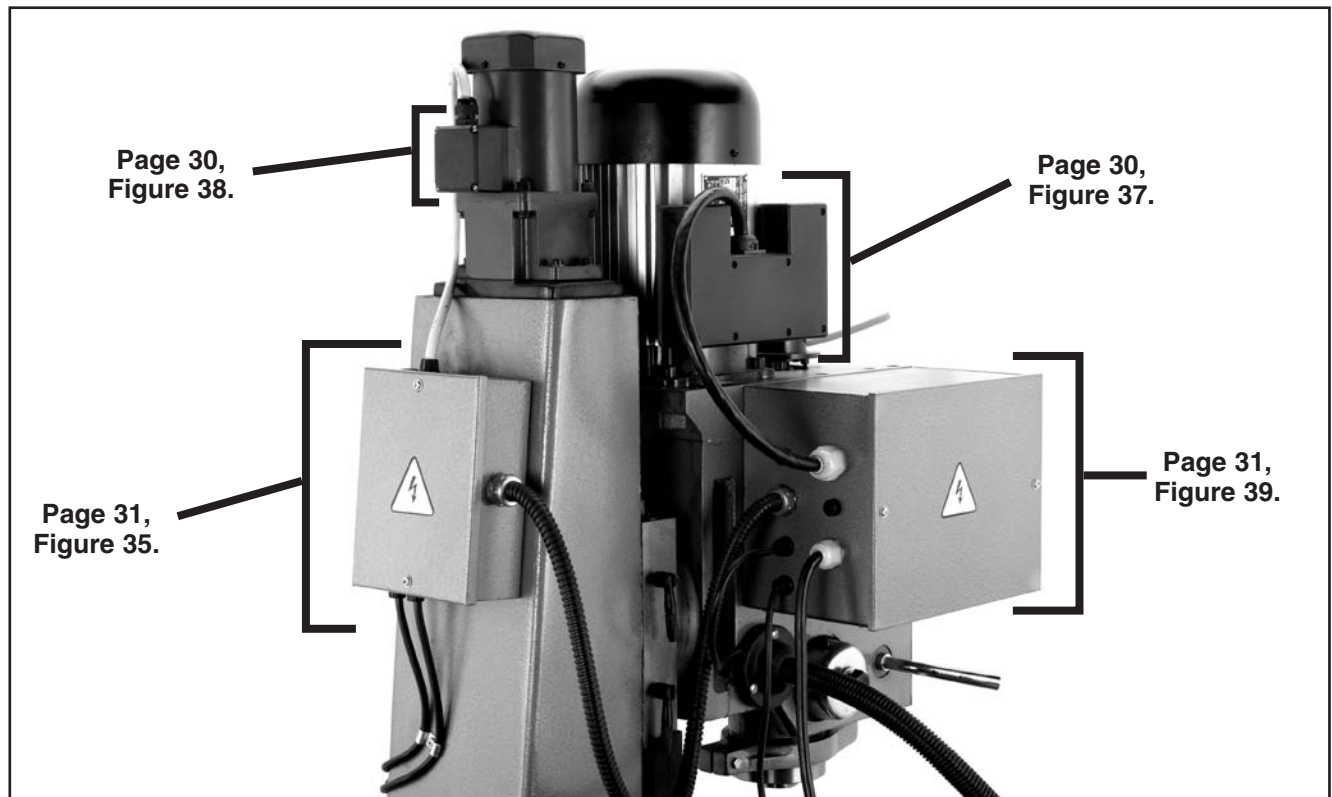


Figure 2. Mill/drill right rear view.



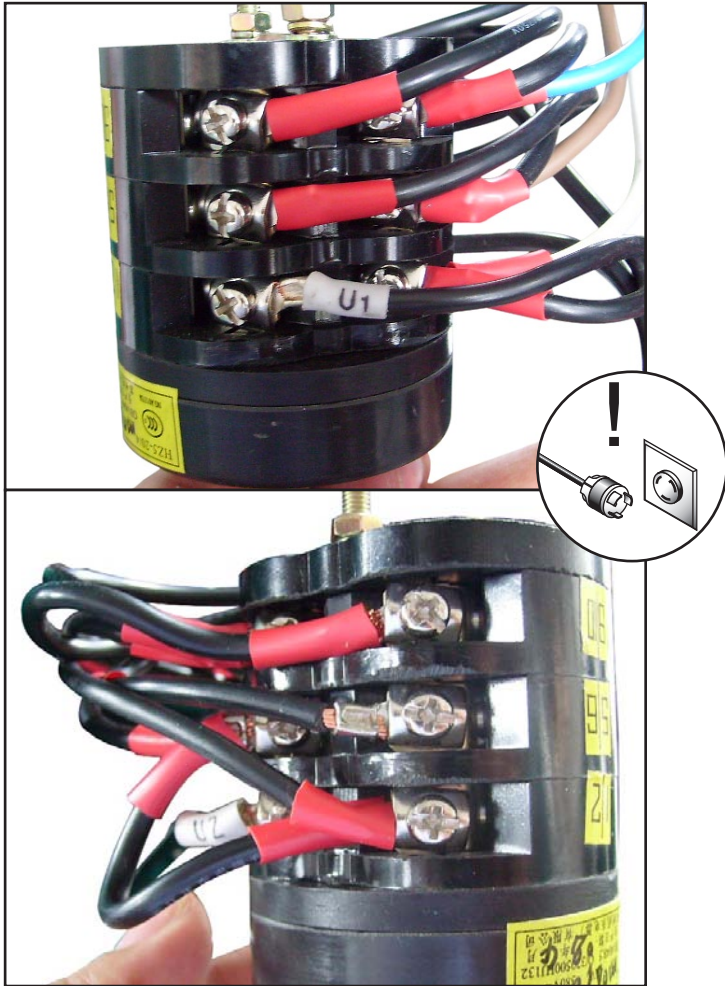


Figure 34. Spindle motor rotary switch, left and right view.



Figure 36. Master power switch.

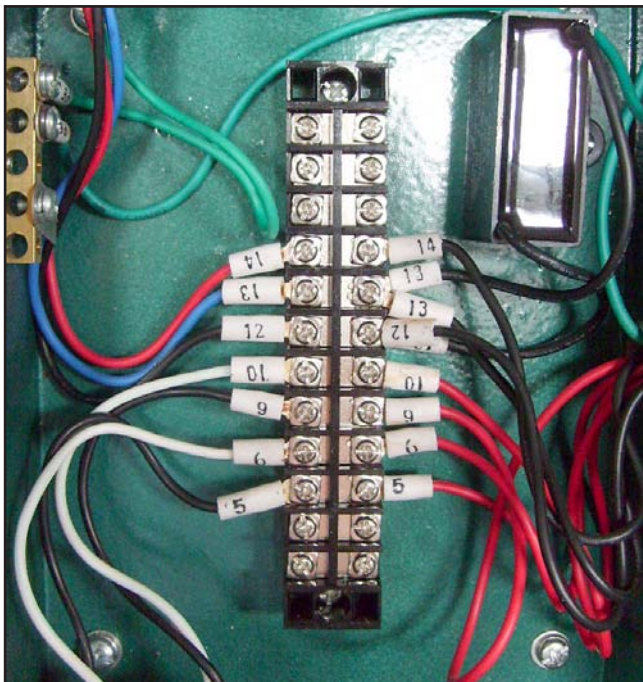


Figure 35. Lift motor capacitor and wiring box.



Figure 37. Spindle motor capacitors and wiring connections.

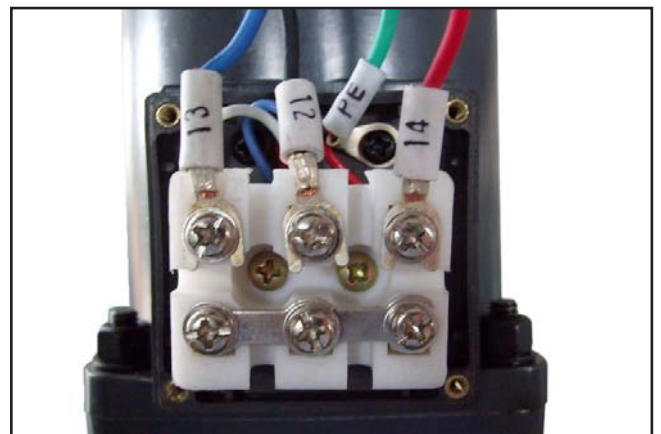


Figure 38. Lift motor junction box.



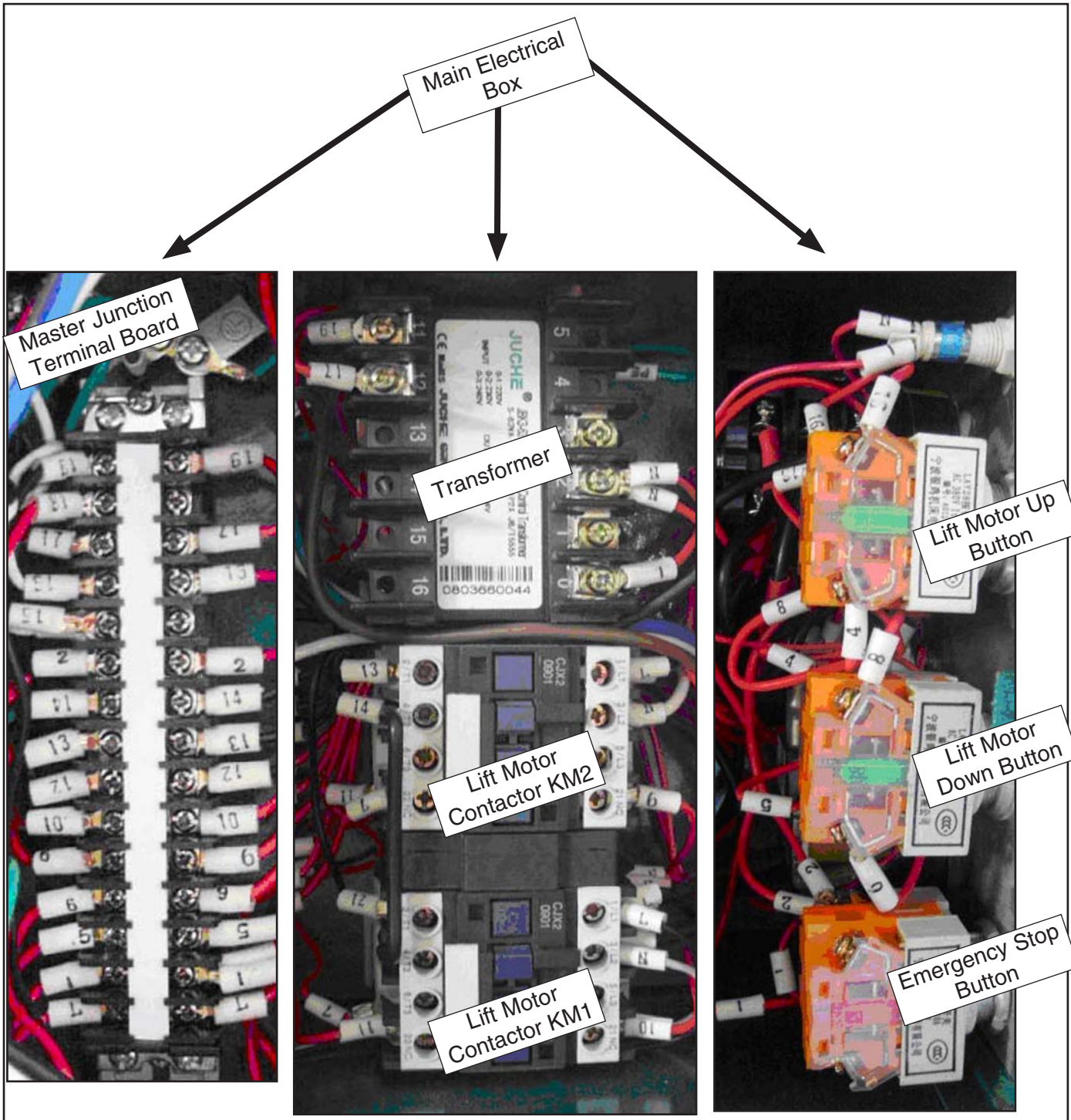


Figure 39. Main wiring box.



Table Parts Breakdown

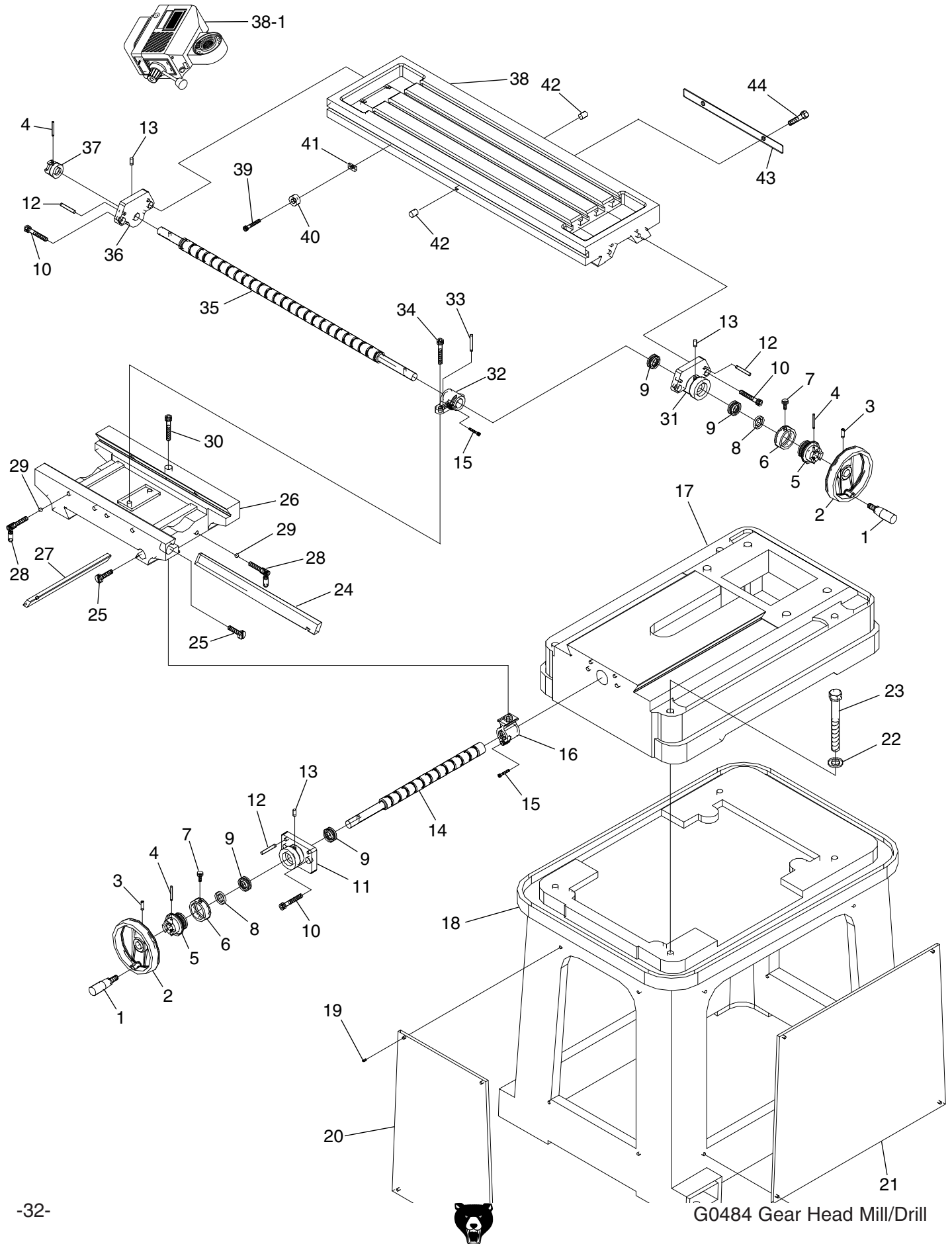


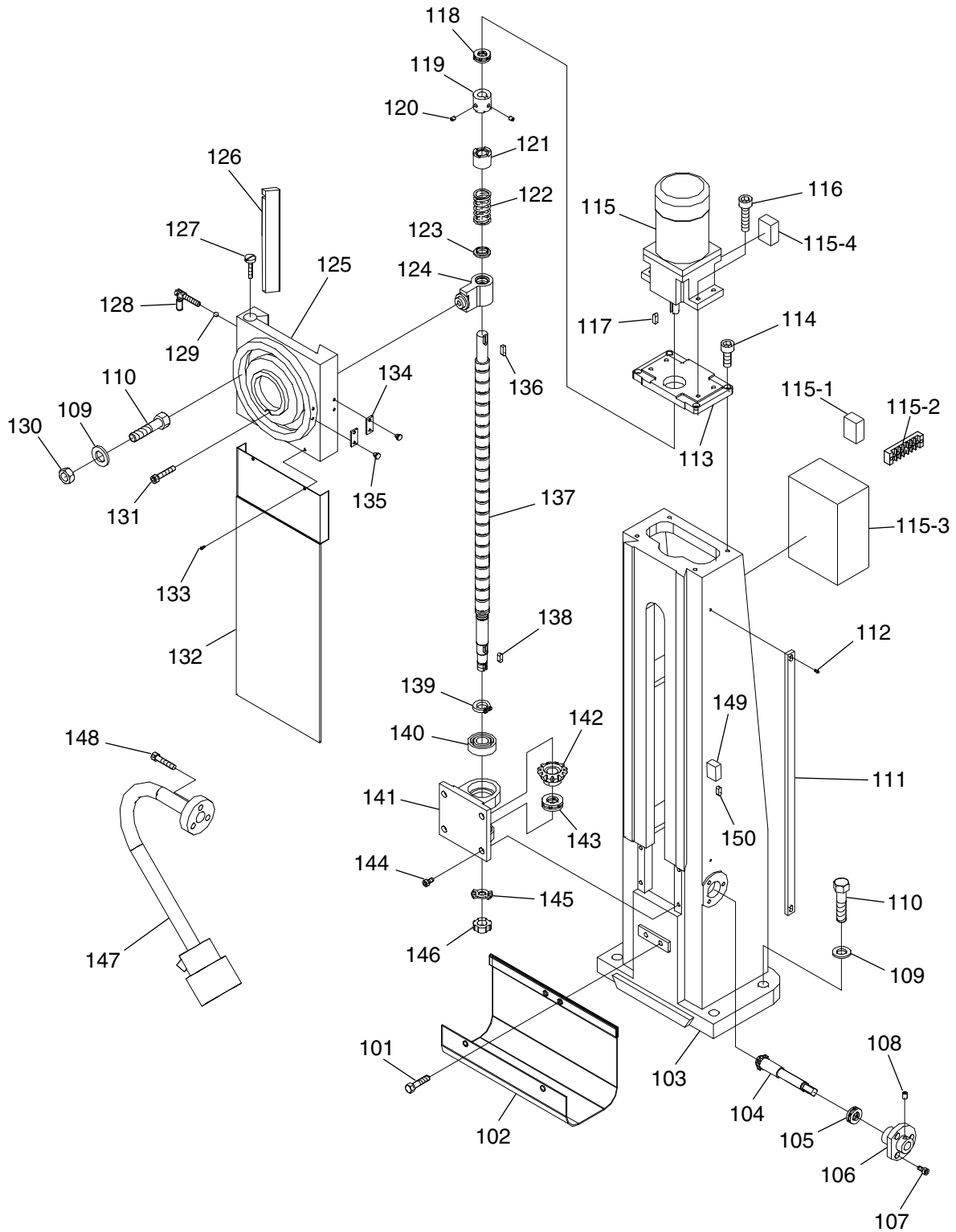
Table Parts List

REF	PART #	DESCRIPTION
1	P0484001	HANDLE
2	P0484002	HANDWHEEL
3	PSS03M	SET SCREW M6-1 X 8
4	P0484004	PIN
5	P0484005	HANDWHEEL CLUTCH
6	P0484006	GRADUATED DIAL
7	P0484007	KNOB M5-.8 X 12
8	P0484008	SHIFTING RING
9	P0484009	THRUST BEARING 17 X 30 X 9MM
10	PSB14M	CAP SCREW M8-1.25 X 20
11	P0484011	LEAD SCREW SUPPORT
12	P0484012	PIN
13	P0484013	BALL OILER
14	P0484014	LEAD SCREW
15	PSB33M	CAP SCREW M5-.8 X 12
16	P0484016	LEAD SCREW NUT
17	P0484017	BASE
18	P0484018	STAND
19	PS17M	PHLP HD SCR M4-.7 X 6
20	P0484020	FRONT PANEL
21	P0484021	SIDE PANEL
22	PW06M	FLAT WASHER 12MM

REF	PART #	DESCRIPTION
23	PB157M	HEX BOLT M12-1.75 X 130
24	P0484024	GIB
25	P0484025	GIB ADJUSTING SCREW
26	P0484026	SADDLE
27	P0484027	GIB
28	P0484028	LOCK HANDLE
29	P0484029	STEEL BALL 6.5MM
30	PSB31M	CAP SCREW M8-1.25 X 25
31	P0484031	LEAD SCREW SUPPORT
32	P0484032	LEAD SCREW NUT
33	P0484033	PIN
34	PSB31M	CAP SCREW M8-1.25 X 25
35	P0484035	LEAD SCREW
36	P0484036	LEAD SCREW SUPPORT
37	P0484037	DIAL CLUTCH
38	P0484038	TABLE
39	PSB26M	CAP SCREW M6-1 X 12
40	P0484040	STOP BLOCK
41	P0484041	STOP BLOCK NUT
42	P0484042	BALL OILER
43	P0484043	REAR TABLE PLATE
44	PB06M	HEX BOLT M8-1.25 X 12



Column Parts Breakdown



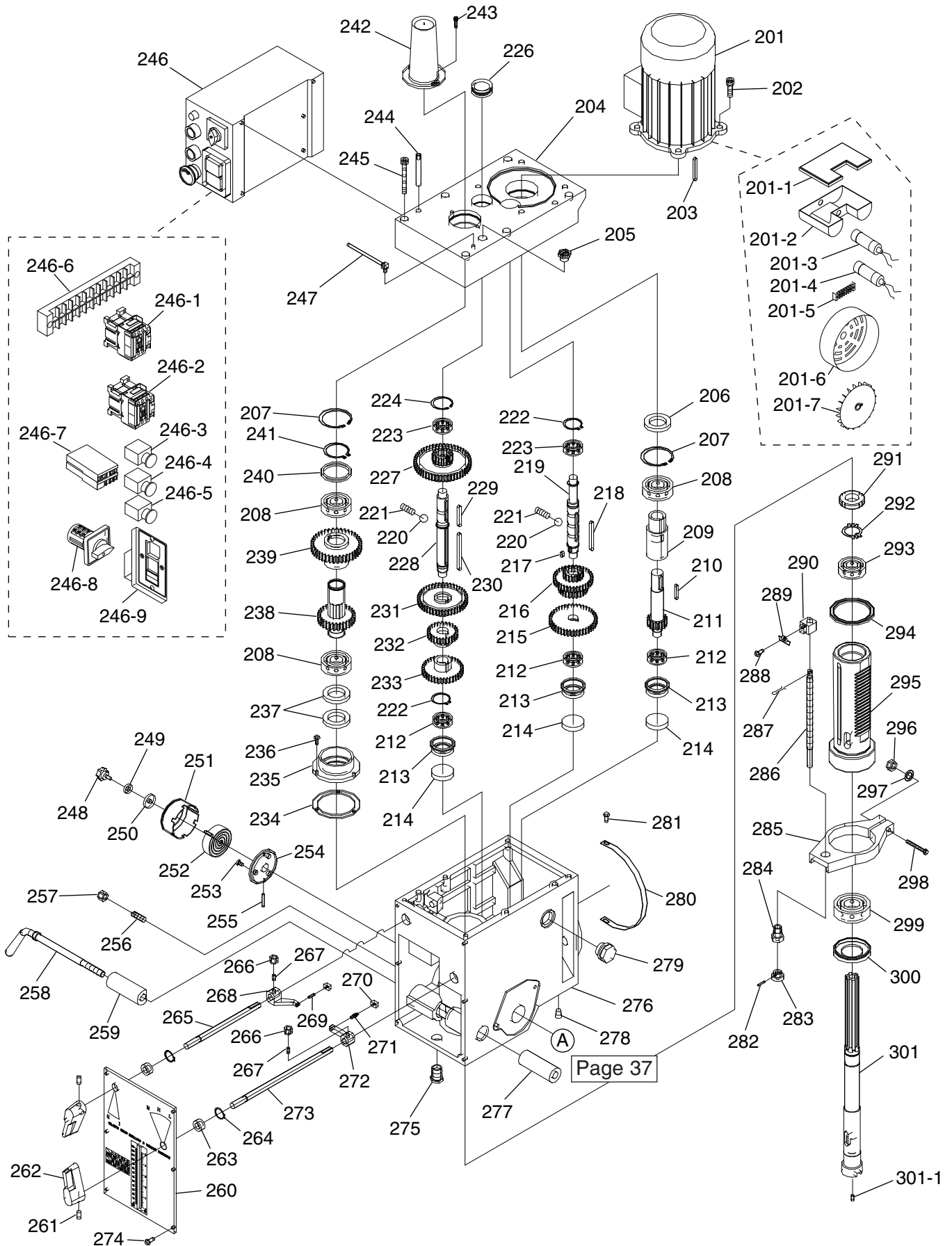
Column Parts List

REF	PART #	DESCRIPTION
101	PB06M	HEX BOLT M8-1.25 X 12
102	P0484102	SADDLE WAY PROTECTOR
103	P0484103	COLUMN
104	P0484104	GEAR SHAFT
105	P0484105	THRUST BEARING 15 X 28 X 9MM
106	P0484106	GEAR SHAFT BRACKET
107	PSB26M	CAP SCREW M6-1 X 12
108	P0484108	BALL OILER
109	PLW10M	LOCK WASHER 16MM
110	PB80M	HEX BOLT M16-2 X 55
111	P0484111	SCALE
112	PS37M	PHLP HD SCR M6-1 X 6
113	P0484113	MOTOR MOUNT
114	PSB01M	CAP SCREW M6-1 X 16
115	P0484115	MOTOR 1/8HP 220V/60HZ/1-PH
115-1	P0484115-1	CAPACITOR CBB61 5MFD/450VAC
115-2	P0484115-2	TERMINAL BLOCK
115-3	P0484115-3	MOTOR ELECTRICAL BOX
115-4	P0484115-4	MOTOR JUNCTION BOX
116	PSB06M	CAP SCREW M6-1 X 25
117	PK01M	KEY 5 X 5 X 22
118	P0484118	THRUST BEARING 15 X 28 X 9MM
119	P0484119	TOP CLUTCH
120	PSS03M	SET SCREW M6-1 X 8
121	P0484121	BOTTOM CLUTCH
122	P0484122	COMPRESSION SPRING

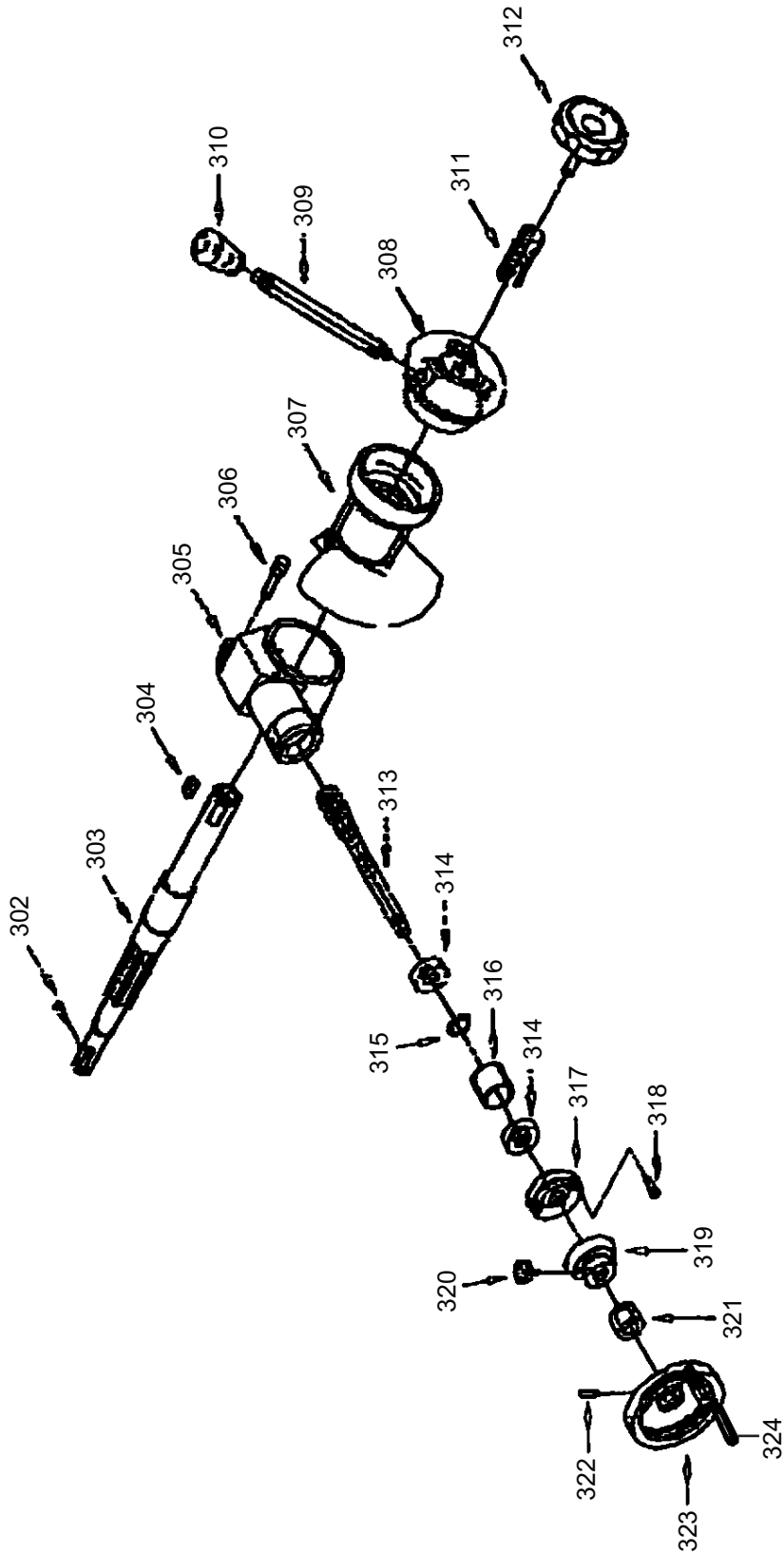
REF	PART #	DESCRIPTION
123	P0484123	SPRING BASE
124	P0484124	LEAD SCREW NUT
125	P0484125	HEADSTOCK MOUNT
126	P0484126	GIB
127	P0484127	GIB ADJUSTING SCREW
128	P0484128	LOCK HANDLE
129	P0484029	STEEL BALL 6.5MM
130	PN13M	HEX NUT M16-2
131	PSB12M	CAP SCREW M8-1.25 X 40
132	P0484132	COLUMN WAY PROTECTOR
133	PS07M	PHLP HD SCR M4-.7 X 8
134	P0484134	REFERENCE MARKER
135	P0484135	RIVET
136	PK147M	KEY 6 X 6 X 18
137	P0484137	LEAD SCREW
138	PK147M	KEY 6 X 6 X 18
139	PR09M	EXT RETAINING RING 20MM
140	P0484140	BALL BEARING 6204
141	P0484141	BEARING BRACKET
142	P0484142	BEVEL GEAR
143	P0484143	THRUST BEARING 17 X 30 X 9MM
144	PSB26M	CAP SCREW M6-1 X 12
145	P0484145	SPECIAL LOCK WASHER 16MM
146	PN13M	HEX NUT M16-2
147	P0484147	LAMP
148	PS22M	PHLP HD SCR M5-.8 X 25



Head Parts Breakdown, Part A



Head Parts Breakdown, Part B



Head Parts List

REF	PART #	DESCRIPTION
201	P0484201	MOTOR 1-1/2HP 220V/60HZ/1-PH
201-1	P0484201-1	MOTOR JUNCTION BOX COVER
201-2	P0484201-2	MOTOR JUNCTION BOX
201-3	P0484201-3	CAPACITOR CD60 150MFD/250VAC
201-4	P0484201-4	CAPACITOR CBB60 20MFD/450VAC
201-5	P0484201-5	TERMINAL BLOCK
201-6	P0484201-6	MOTOR FAN COVER
201-7	P0484201-7	MOTOR FAN
202	PSB64M	CAP SCREW M10-1.5 X 25
203	PK74M	KEY 6 X 6 X 35
204	P0484204	HEAD BODY COVER
205	P0484205	OIL CAP
206	P0484206	OIL SEAL
207	PR38M	INT RETAINING RING 62MM
208	P6007	BALL BEARING 6007ZZ
209	P0484209	MOTOR SHAFT
210	PK42M	KEY 6 X 6 X 30
211	P0484211	GEAR
212	P6003	BALL BEARING 6003ZZ
213	P0484213	BEARING BRACKET
214	P0484214	STOPPLE
215	P0484215	GEAR
216	P0484216	GEAR
217	P0484217	KEY 6 X 6 X 14
218	P0484218	KEY 5 X 5 X 60
219	P0484219	SHAFT
220	P0484220	STEEL BALL 8MM
221	P0484221	COMPRESSION SPRING
222	PR07M	EXT RETAINING RING 18MM
223	P6202	BALL BEARING 6202ZZ
224	PR21M	INT RETAINING RING 35MM
225	P0484225	O-SEAL RING
226	P0484226	CAP
227	P0484227	GEAR
228	P0484228	SHAFT
229	PK36M	KEY 5 X 5 X 50
230	P0484230	KEY 6 X 6 X 75
231	P0484231	GEAR
232	P0484232	GEAR
233	P0484233	GEAR
234	P0484234	AIRTIGHT RING
235	P0484235	AIRTIGHT BASE
236	PS05M	PHLP HD SCR M5-.8 X 8
237	P0484237	OIL SEAL
238	P0484238	GEAR
239	P0484239	GEAR
240	P0484240	SEPARATING RING
241	PR12M	EXT RETAINING RING 35MM
242	P0484242	ARBOR BOLT COVER
243	PSB33M	CAP SCREW M5-.8 X 12

REF	PART #	DESCRIPTION
244	P0484244	PIN
245	PSB05M	CAP SCREW M8-1.25 X 50
246	P0484246	ELECTRIC BOX
246-1	P0484246-1	LIFT MOTOR CONTACTOR KM2
246-2	P0484246-2	LIFT MOTOR CONTACTOR KM1
246-3	P0484246-3	LIFT MOTOR UP BUTTON
246-4	P0484246-4	LIFT MOTOR DOWN BUTTON
246-5	P0484246-5	EMERGENCY STOP BUTTON
246-6	P0484246-6	MASTER JUNCTION TERMINAL BLOCK
246-7	P0484246-7	TRANSFORMER
246-8	P0484246-8	SPINDLE MOTOR ROTARY SWITCH
246-9	P0484246-9	MASTER POWER SWITCH
247	P0484247	PRESSURE RELIEF HOSE
248	P0484248	KNURLED KNOB
249	PLW03M	LOCK WASHER 6MM
250	PW01M	FLAT WASHER 8MM
251	P0484251	SPRING CAP
252	P0484252	COIL SPRING
253	PFH05M	FLAT HD SCR M5-.8 X 12
254	P0484254	SPRING BASE
255	P0484255	PIN
256	PSS73M	SET SCREW M10-1.5 X 30
257	PN02M	HEX NUT M10-1.5
258	P0484258	HANDLE ROD
259	P0484259	BUSHING
260	P0484260	FACE PLATE
261	PSS20M	SET SCREW M8-1.25 X 8
262	P0484262	SPEED LEVER
263	P0484263	OIL SEAL
264	PR03M	EXT RETAINING RING 12MM
265	P0484265	LEVER SHAFT (LEFT)
266	PN01M	HEX NUT M6-1
267	PSS04M	SET SCREW M6-1 X 12
268	P0484268	LEVER (LEFT)
269	P0484269	PIN
270	P0484270	LEVER BRACKET
271	P0484271	PIN
272	P0484272	LEVER (RIGHT)
273	P0484273	LEVER SHAFT (RIGHT)
274	PS17M	PHLP HD SCR M4-.7 X 6
275	P0484275	SPECIAL NUT
276	P0484276	HEAD BODY
277	P0484277	BUSHING
278	P0484278	OIL COVER
279	P0484279	SIGHT GLASS
280	P0484280	SCALE
281	PS05M	PHLP HD SCR M5-.8 X 8
282	P0484282	PIN
283	P0484283	KNOB
284	P0484284	SUPPORT



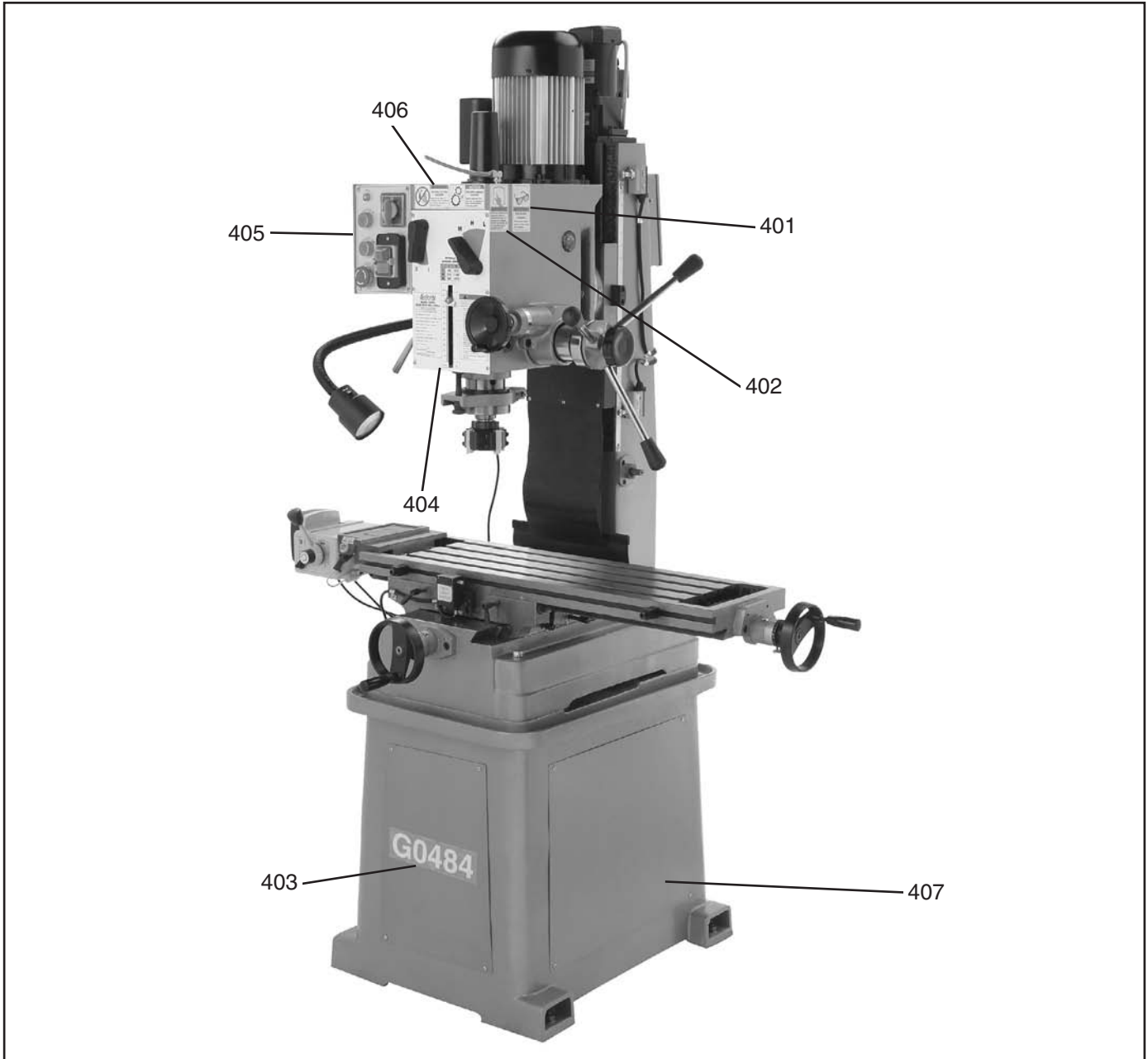
Head Parts List

REF	PART #	DESCRIPTION
285	P0484285	FEED BASE
286	P0484286	SHAFT
287	P0484287	PIN
288	PS17M	PHLP HD SCR M4-.7 X 6
289	P0484289	REFERENCE MARKER
290	P0484290	BRACKET
291	P0484291	SPECIAL NUT
292	P0484292	LOCK WASHER 30MM
293	P0484293	TAPERED ROLLER BEARING
294	P0484294	FLAT WASHER 75MM
295	P0484295	QUILL
296	PN01M	HEX NUT M6-1
297	PW03M	FLAT WASHER 6MM
298	PB39M	HEX BOLT M6-1 X 50
299	P0484299	TAPERED ROLLER BEARING
300	P0484300	BEARING CUP
301	P0484301	SPINDLE
302	PFH19M	FLAT HD SCR M4-.7 X 10
303	P0484303	PINION SHAFT
304	P0484304	KEY 8 X 7 X 22

REF	PART #	DESCRIPTION
305	P0484305	FEED COVER
306	PSB31M	CAP SCREW M8-1.25 X 25
307	P0484307	WORM WHEEL
308	P0484308	HANDLE BODY
309	P0484309	HANDLE ROD
310	P0484310	HANDLE BALL
311	P0484311	COMPRESSION SPRING
312	P0484312	KNOB
313	P0484313	WORM GEAR
314	P6202	BALL BEARING 6202ZZ
315	PR05M	EXT RETAINING RING 15MM
316	P0484316	SEPARATING RING
317	P0484317	WORM COVER
318	PSB24M	CAP SCREW M5-.8 X 16
319	P0484319	GRADUATED SCALE
320	P0484320	KNOB M5-.8 X 12
321	P0484321	BUSHING
322	PSS31M	SET SCREW M5-.8 X 8
323	P0484323	HANDWHEEL
324	P0484324	HANDLE



Label Placement



REF PART #	DESCRIPTION
401	PLABEL-11 SAFETY GLASSES LABEL
402	PLABEL-12 READ MANUAL LABEL
403	P0484327 MODEL NUMBER LABEL
404	P0484328 MACHINE ID & CONTROL PANEL LABEL

REF PART #	DESCRIPTION
405	PLABEL-14 ELECTRICITY LABEL
406	P0484330 CUTTING/DAMAGE LABEL
407	PPAINT-1 GRIZZLY GREEN TOUCH UP 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.





WARRANTY CARD

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 Model # _____ Order # _____ Serial # _____

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<input type="checkbox"/> Advertisement	<input type="checkbox"/> Friend	<input type="checkbox"/> Catalog
<input type="checkbox"/> Card Deck	<input type="checkbox"/> Website	<input type="checkbox"/> Other:
- Which of the following magazines do you subscribe to?

<input type="checkbox"/> Cabinetmaker & FDM	<input type="checkbox"/> Popular Science	<input type="checkbox"/> Wooden Boat
<input type="checkbox"/> Family Handyman	<input type="checkbox"/> Popular Woodworking	<input type="checkbox"/> Woodshop News
<input type="checkbox"/> Hand Loader	<input type="checkbox"/> Precision Shooter	<input type="checkbox"/> Woodsmith
<input type="checkbox"/> Handy	<input type="checkbox"/> Projects in Metal	<input type="checkbox"/> Woodwork
<input type="checkbox"/> Home Shop Machinist	<input type="checkbox"/> RC Modeler	<input type="checkbox"/> Woodworker West
<input type="checkbox"/> Journal of Light Cont.	<input type="checkbox"/> Rifle	<input type="checkbox"/> Woodworker's Journal
<input type="checkbox"/> Live Steam	<input type="checkbox"/> Shop Notes	<input type="checkbox"/> Other:
<input type="checkbox"/> Model Airplane News	<input type="checkbox"/> Shotgun News	
<input type="checkbox"/> Old House Journal	<input type="checkbox"/> Today's Homeowner	
<input type="checkbox"/> Popular Mechanics	<input type="checkbox"/> Wood	
- What is your annual household income?

<input type="checkbox"/> \$20,000-\$29,000	<input type="checkbox"/> \$30,000-\$39,000	<input type="checkbox"/> \$40,000-\$49,000
<input type="checkbox"/> \$50,000-\$59,000	<input type="checkbox"/> \$60,000-\$69,000	<input type="checkbox"/> \$70,000+
- What is your age group?

<input type="checkbox"/> 20-29	<input type="checkbox"/> 30-39	<input type="checkbox"/> 40-49
<input type="checkbox"/> 50-59	<input type="checkbox"/> 60-69	<input type="checkbox"/> 70+
- How long have you been a woodworker/metalworker?

<input type="checkbox"/> 0-2 Years	<input type="checkbox"/> 2-8 Years	<input type="checkbox"/> 8-20 Years	<input type="checkbox"/> 20+ Years
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- How many of your machines or tools are Grizzly?

<input type="checkbox"/> 0-2	<input type="checkbox"/> 3-5	<input type="checkbox"/> 6-9	<input type="checkbox"/> 10+
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- Do you think your machine represents a good value? Yes No
- Would you recommend Grizzly Industrial to a friend? Yes No
- 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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