

Grizzly *Industrial, Inc.*®

MODEL G0448 MORTISING MACHINE 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.**

#TREWPCBL7187 PRINTED IN TAIWAN.



WARNING!

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

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

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

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



WARNING!

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

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

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

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INTRODUCTION

Foreword

We are proud to offer the Model G0448 Mortising Machine. This machine is part of a growing Grizzly family of fine woodworking 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.

We are pleased to provide this manual with the Model G0448. It was written to guide you through assembly, review safety considerations, and cover general operating procedures. It represents our effort to produce the best documentation possible.

The specifications, drawings, and photographs illustrated in this manual represent the Model G0448 as supplied 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 G0448 MORTISING MACHINE

Design Type Bench Model with Cabinet

Overall Dimensions:

Height.....	71"
Width.....	36"
Depth.....	24"
Table Height.....	36 ³ / ₄ "
Table Size.....	19" x 12 ¹ / ₂ "
Footprint.....	17 ¹ / ₂ " x 20 ¹ / ₂ "
Cabinet Size.....	17 ¹ / ₂ " x 20 ¹ / ₂ " x 28"
Box 1 Size (Mortiser).....	26" x 24 ³ / ₈ " x 35 ³ / ₈ "
Box 1 Shipping Weight.....	308 lbs.
Box 2 Size (Cabinet).....	22 ³ / ₄ " x 16 ¹ / ₂ " x 31 ¹ / ₂ "
Box 2 Shipping Weight.....	68 lbs.
Machine Weight (assembled).....	332 lbs.

Capacities:

Vertical Spindle Travel.....	6 ⁵ / ₈ "
Chuck.....	1/2"
Max Chisel Size.....	1 1/2"
Max Chisel Stroke.....	6 1/4"
Chisel to Table Distance.....	10 ⁹ / ₁₆ "
Fence to Chisel Center Distance.....	3"
Max Workpiece Width.....	9"
Spindle Speed.....	1725 RPM
Table Longitudinal Traverse.....	14 1/2"
Table Cross Traverse.....	3"
Head Vertical Traverse.....	3"
Column Tilt.....	+/- 45°
Extendable Stop.....	30 1/2"

Motor:

Type.....	TEFC Capacitor Start Induction
Horsepower.....	1 1/2
Phase/Voltage.....	Single Phase/110V/220V; Prewired 110V
Amps.....	14/7
Cycle/ RPM.....	60 Hertz /1725
Power Transfer.....	Direct Drive
Bearings.....	Shielded & Permanently Lubricated Ball
Switch.....	Paddle ON/OFF, w/Safety Lockout Key

Construction:

Table & Fence.....	Ground Cast Iron
Base, Saddle, Column.....	Cast Iron
Cabinet.....	Steel

Specifications, while deemed accurate, are not guaranteed.



Identification

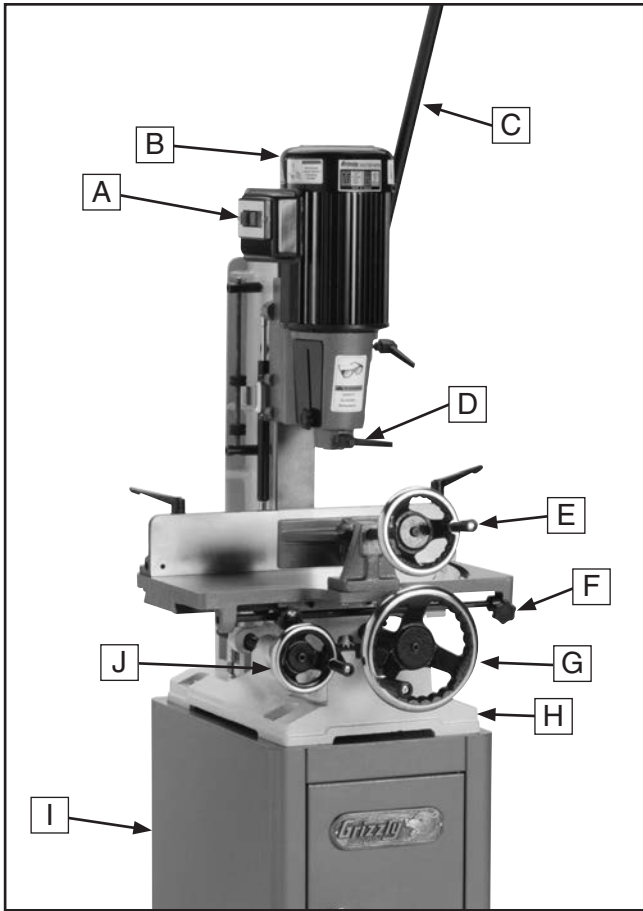


Figure 1. G0448 front controls.

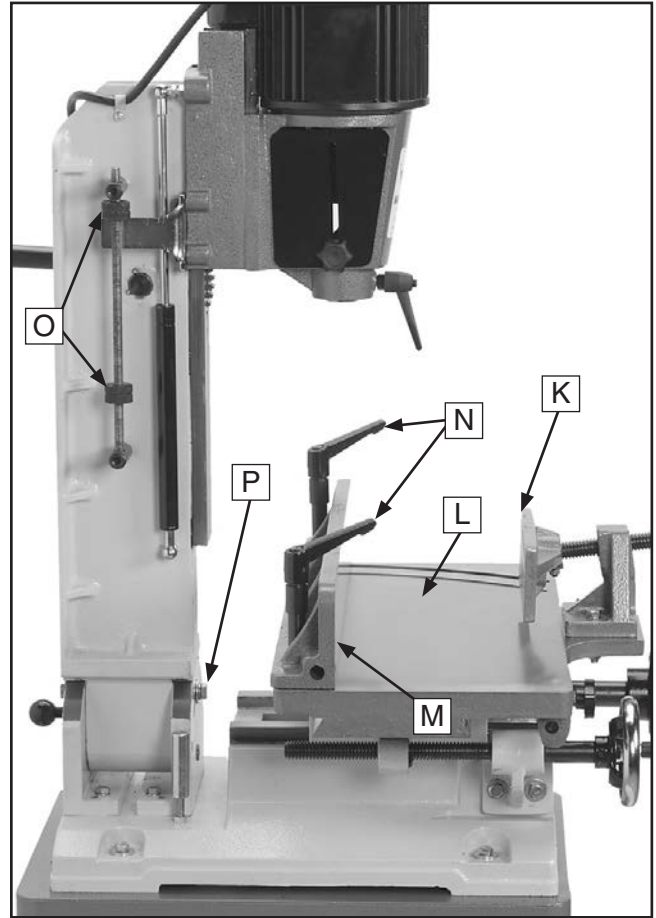


Figure 2. Left side view.

- A. ON/OFF Switch
- B. Motor
- C. Operating Handle
- D. Chisel Lock Handle
- E. Vise Handwheel
- F. Table Stop Knob
- G. Right/Left Handwheel
- H. Base
- I. Cabinet
- J. Forward/Backward Handwheel

- K. Vise
- L. Table
- M. Fence
- N. Fence Angle Lock Handles
- O. Depth Stops
- P. Front Head Tilt Bolt



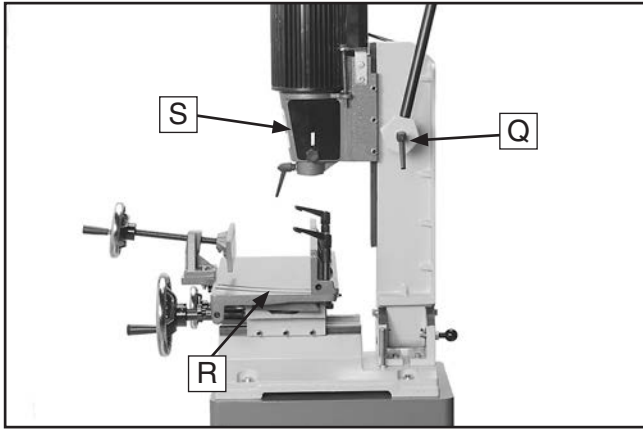


Figure 3. Right side view.

- Q.** Operating Handle Lock Handle
- R.** Fence Angle Scale
- S.** Chuck Cover

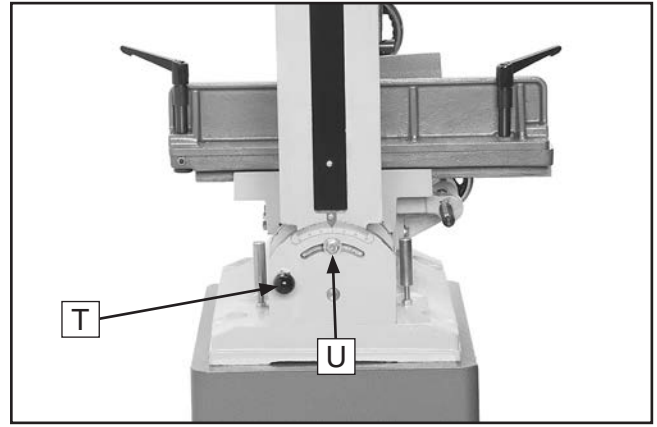


Figure 4. Rear adjustments.

- T.** Tilt Pin
- U.** Rear Head Tilt Bolt



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 WOODS MAY CAUSE AN ALLERGIC REACTION** in people and animals, especially when exposed to fine dust. Make sure you know what type of wood dust you will be exposed to and always wear an approved respirator.



WARNING

Additional Safety for Mortising Machines

- 1. HAND PROTECTION.** Do not place your hands under an installed chisel at any time or near the chisel while the spindle is in motion. Chisels may become hot during operation! Allow chisels to cool before handling. Chisels are sharp! Always use caution when handling, especially when installing or removing.
- 2. USING CORRECT MATERIALS.** Do not use the machine for anything except mortising in wood. Materials such as metals, plastics, and glass can damage the machine, resulting in personal injury.
- 3. RESPIRATOR AND SAFETY GLASSES.** Always wear a respirator and safety glasses while operating the machine. Dust and chips are created when mortising. Some debris will be ejected, becoming hazards to the eyes and lungs.
- 4. CHISEL COMPATIBILITY.** Make sure the mortising bit fits a minimum of 1/2" into the chuck.
- 5. ADJUSTMENTS.** Do not adjust the machine or workpiece while the mortiser is running. Wait for the spindle to come to a complete stop and unplug the machine before continuing.
- 6. INSPECTING MACHINE.** Inspect the machine for smooth head casting movement, loose drill bits/chisel housing, and loose nuts/bolts before connecting the machine to power and operating. Correct any problems before use.
- 7. EXPERIENCING DIFFICULTIES.** If at any time you are experiencing difficulties performing the intended operation, stop using the machine! Contact Tech Support at (570) 546-9663.

WARNING

Like all machines there is potential danger associated with the Model G0448. 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

110/220V 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 G0448 features a 1½ HP 110/220V motor that is prewired at 110V.

Motor Draw at 110V 14 Amps
Motor Draw at 220V..... 7 Amps

Circuit Requirements

Only connect your machine to a circuit that meets the requirements below. Always check to see if the wires and circuit breaker in your circuit are capable of handling the amperage draw from your machine, as well as any other machines that could be operating on the same circuit. If you are unsure, consult a qualified electrician.

110V Circuit..... 15 Amp
220V Circuit..... 15 Amp

Plug Type

The Model G0448 comes prewired with a NEMA 5-15 plug. If you wish to rewire the motor to 220V we recommend using the following plug (see **Figure 5** for an example):

220V Plug & Receptacle 6-15

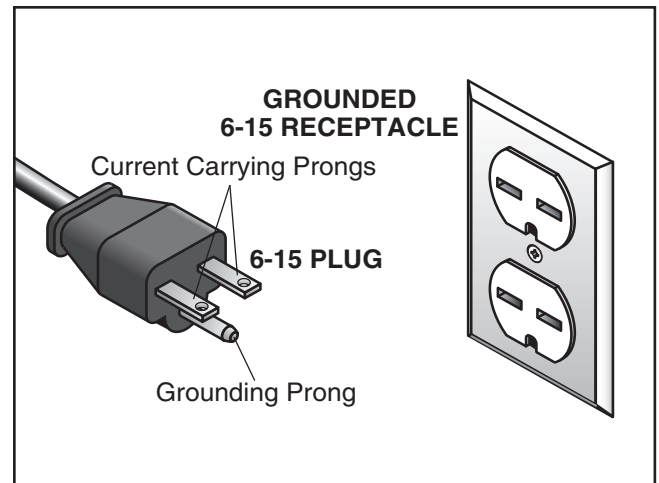
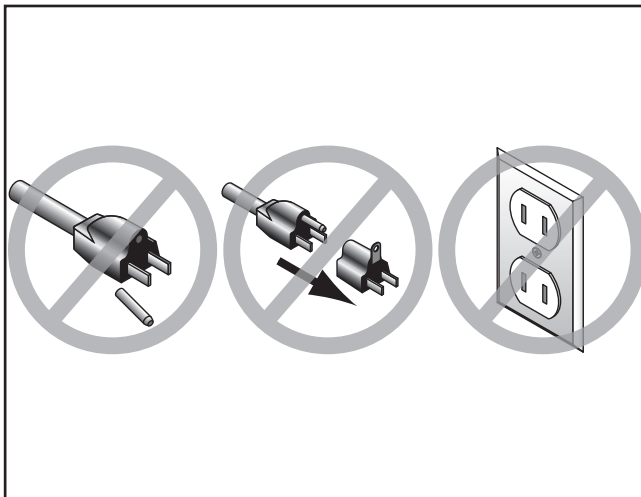
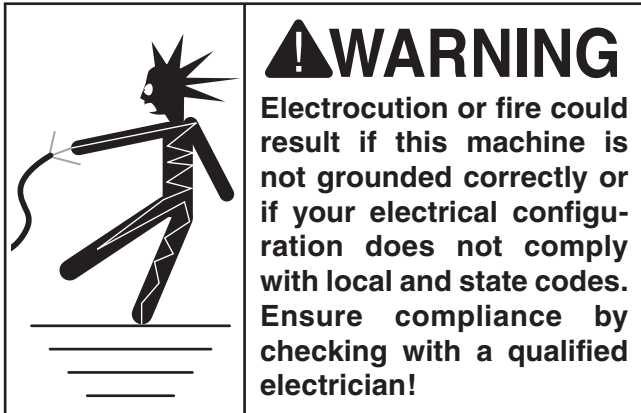


Figure 5. 220V 6-15 plug and outlet.



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.



! 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

110V Operation

If you find it necessary to use an extension cord at 110V with your machine:

- Make sure the cord is rated Standard Service (grade S) or better.
- The extension cord must also contain a ground wire and plug pin.
- Use at least a 14 gauge cord if the cord is 25 feet long or less.
- Use at least a 12 gauge cord if the cord is between 25–50 feet.
- We do not recommend using cords over 50 feet for this machine.

220V Operation

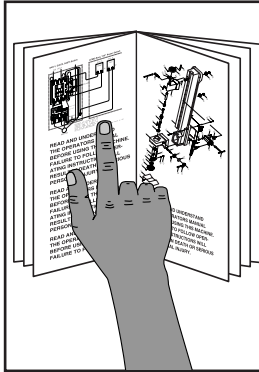
We do not recommend the use of extension cords on 220V equipment. Instead, arrange the placement of your equipment and the installed wiring to eliminate the need for extension cords.

If you find it absolutely necessary to use an extension cord at 220V with your machine, check with a qualified electrician for the correct sizing, type, and maximum possible length for your needs.

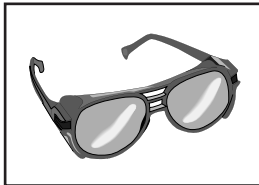


SECTION 3: SET UP

Set Up 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 G0448 is a heavy machine (320 lbs). DO NOT over-exert yourself while unpacking or moving your machine—get assistance.

Items Needed For Set Up

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

Description	Qty
• Safety Glasses (for each person)	1
• Wrenches 12mm	2
• Phillips Head Screwdriver	1
• Flat Head Screwdriver.....	1
• Assistants	Minimum of 3
• Floor Mounting Hardware $\frac{3}{8}$ "	4
• Tools For Mounting To Floor.....	Varies

Unpacking

The Model G0448 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 two boxes, you should have the following items with your new mortiser:

Mortiser Box: (Figure 6)	Qty
A. Operating Handle	1
B. Extendable Workstop	1
C. Chisel Bushings, $\frac{5}{8}$ " & $\frac{3}{4}$ "	1 Ea

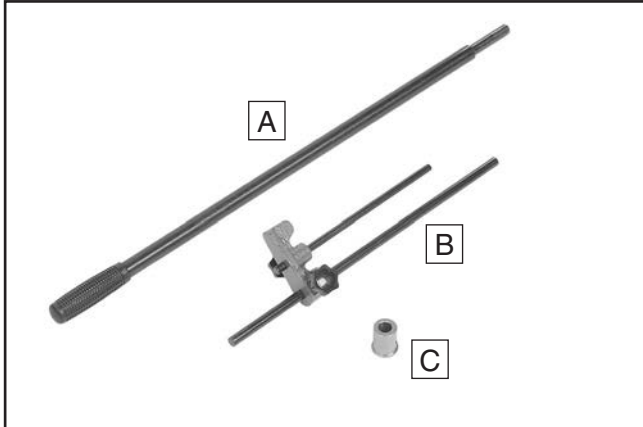


Figure 6. Mortiser inventory.

Stand Box: (Not Shown)	Qty
D. Cabinet Stand	1

Hardware and Tools:	Qty
• Hex Bolts $\frac{5}{16}$ -18 x 2"	4
• Hex Nuts $\frac{5}{16}$ -18	4
• Flat Washers $\frac{5}{16}$	8
• Hex Wrench 4mm	1
• Chuck Key	1
• Handwheel Handles $\frac{3}{8}$ -16	1
• Handwheel Handles $\frac{5}{16}$ -18	2

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.



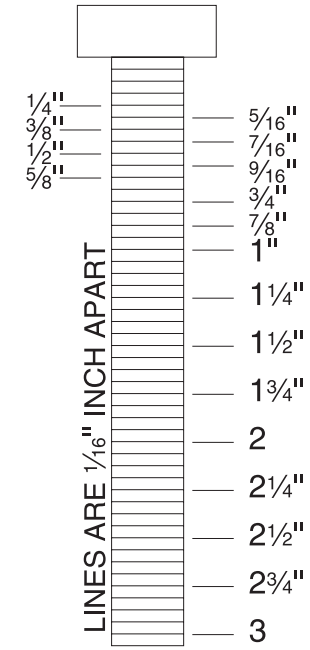
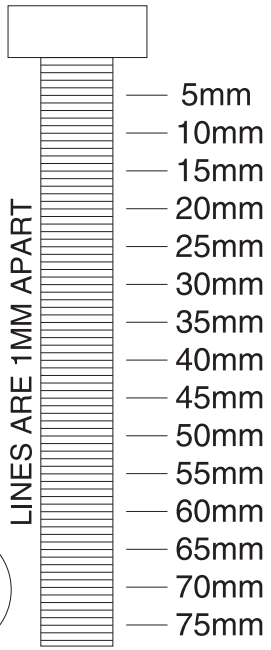
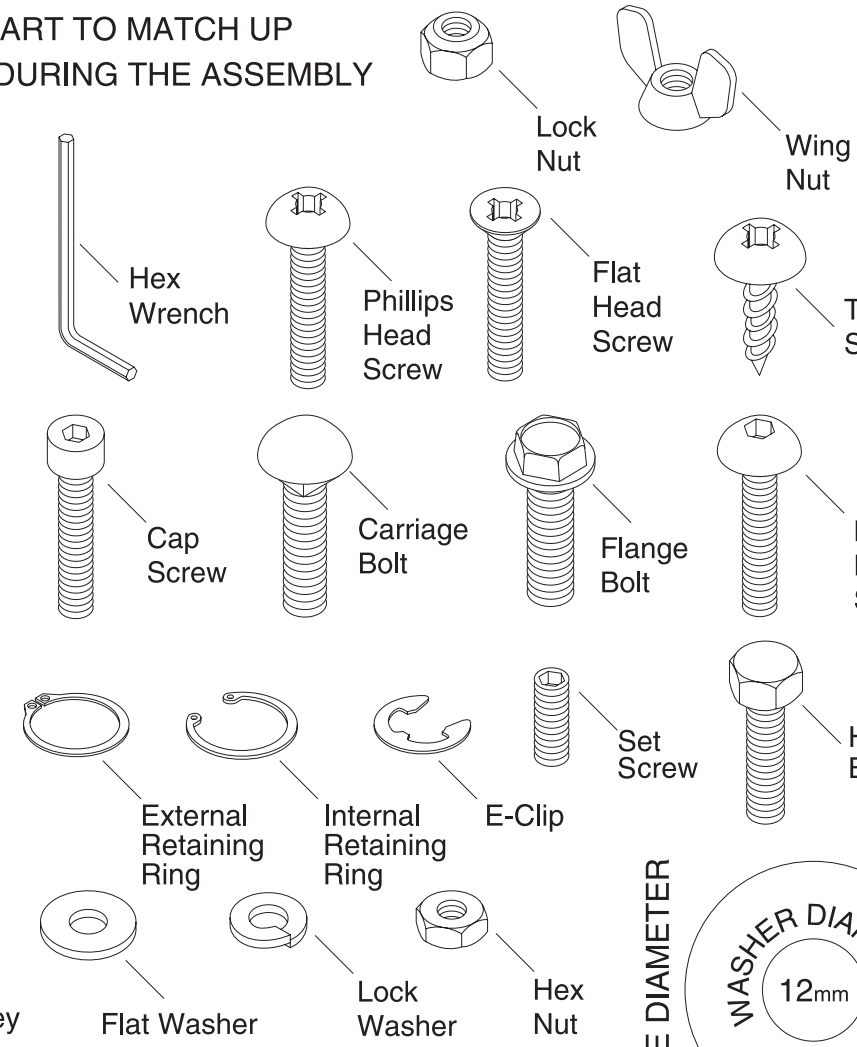
Hardware Recognition Chart

USE THIS CHART TO MATCH UP HARDWARE DURING THE ASSEMBLY PROCESS.

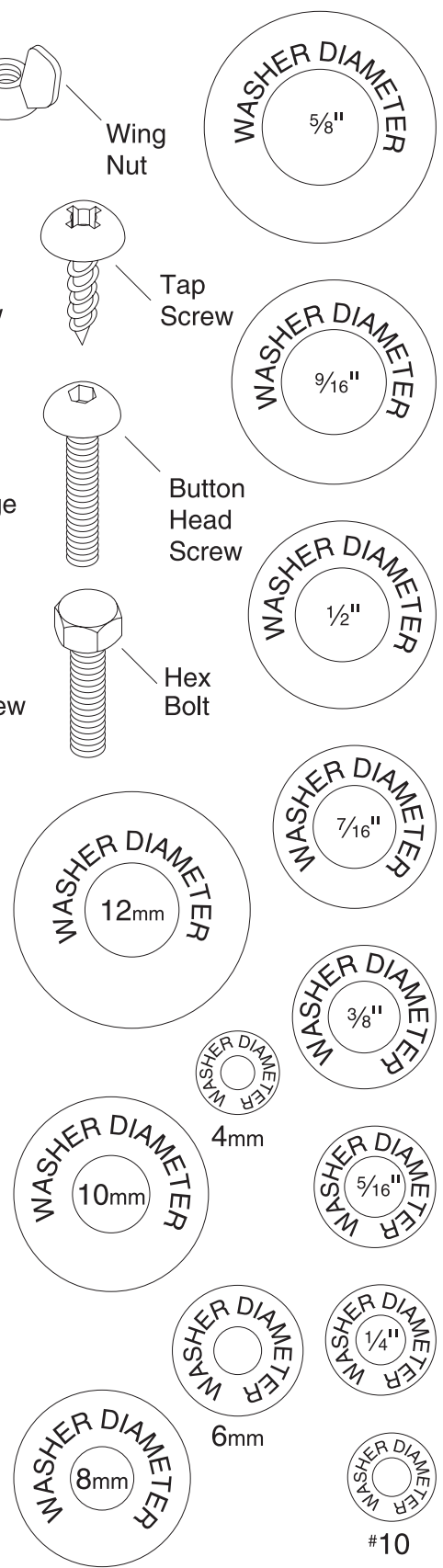
MEASURE BOLT DIAMETER BY PLACING INSIDE CIRCLE

- #10
- 1/4"
- 5/16"
- 3/8"
- 7/16"
- 1/2"

- 4mm
- 5mm
- 6mm
- 8mm
- 10mm
- 12mm
- 16mm




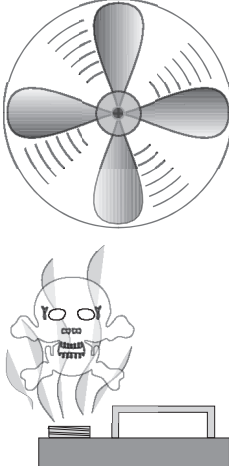
WASHERS ARE MEASURED BY THE INSIDE DIAMETER



Clean Up

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

	<p>⚠️ WARNING Gasoline and petroleum products have low flash points and could cause an explosion or fire if used to clean machinery. DO NOT use gasoline or petroleum products to clean the machinery.</p>
------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

	<p>⚠️ CAUTION Many of the solvents commonly used to clean machinery can be toxic when inhaled or ingested. Lack of ventilation while using these solvents could cause serious personal health risks or fire. Take precautions from this hazard by only using cleaning solvents in a well ventilated area.</p>
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Site Considerations

Floor Load

The Model G0448 weighs 320 lbs. and has a base footprint of 17½" W x 20½" D. Most floors are suitable for your machine. Some residential floors may require additional reinforcement to support both the machine and operator.

Working Clearances

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 mortising machine. See **Figure 7** for the minimum working clearances of the G0448.

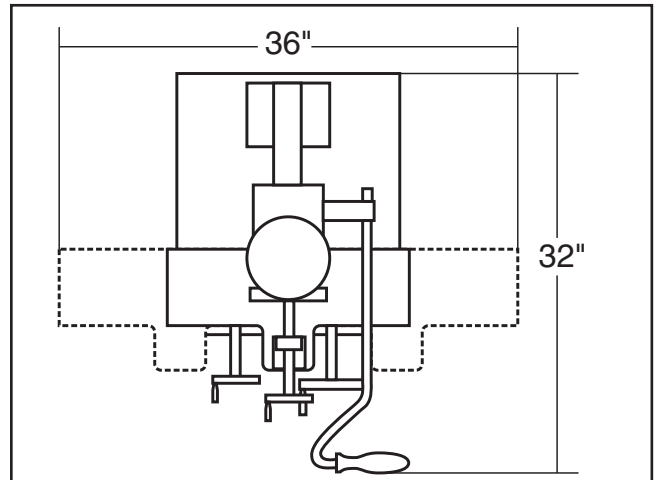


Figure 7. Working clearances.

	<p>⚠️ CAUTION Unsupervised children and visitors inside your shop could cause serious personal injury to themselves. Lock all entrances to the shop when you are away and DO NOT allow unsupervised children or visitors in your shop at any time!</p>
--------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------



Installing Mortising Unit on Base

	<p>! WARNING</p> <p>The mortising unit weighs close to 260 lbs. DO NOT over-exert yourself while unpacking or moving your machine—get assistance.</p>
-----------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------

Components and Hardware Needed:	Qty
Mortiser	1
Cabinet Stand.....	1
Hex Bolts ⁵ / ₁₆ -18 x 2"	4
Hex Nuts ⁵ / ₁₆ -18	4
Flat Washers ⁵ / ₁₆ -18	8

To install the mortising unit on the base:

1. Place the cabinet stand in its permanent location (once the unit is assembled it will be difficult to move).
2. Get assistance and lift the mortising unit on top of the cabinet stand.
3. Align the holes in the mortising unit with the holes in the cabinet stand, insert the hex bolts with washers, and secure with the remaining washers and the hex nuts.

Mounting to Shop Floor

This mortising machine is very top heavy and will tip when the mortising head is tilted. Mount this machine to the floor to prevent injury. Because floor materials may vary, floor mounting hardware is not included.

Bolting to Wood Floors

The most secure method of mounting the mortising machine to a wood floor is using ³/₈" hex bolts with flat washers, and securing the bolts from under the floor with flat washers, lock washers and hex nuts. Use lag bolts with flat washers if you do not have access under of the floor.

Bolting to Concrete Floors

Lag shield anchors with ³/₈" lag bolts or anchor studs (**Figure 8**) are two popular methods for anchoring an object to a concrete floor. We suggest you research the many options and methods for mounting your machine and choose the best that fits your specific application.

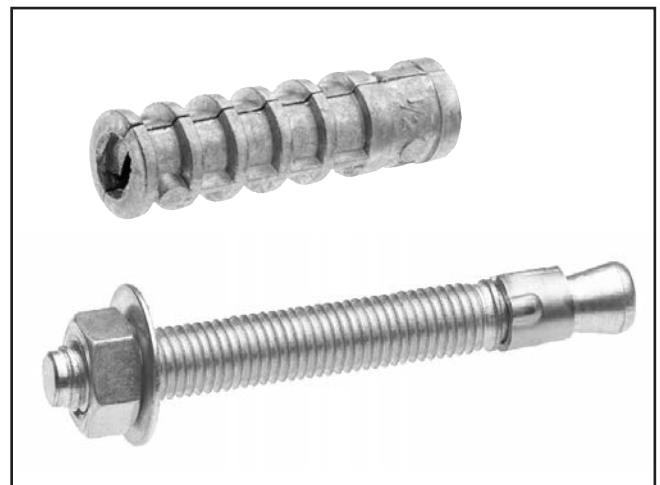


Figure 8. Concrete anchor options.

NOTICE

Concrete anchor studs are stronger and more permanent alternatives to lag shield anchors; however, they will stick out of the floor, causing a tripping hazard if you decide to move your machine at a later point.



Installing Handles

Components and Hardware Needed:	Qty
Handwheel Handle $\frac{3}{8}$ -16"	1
Handwheel Handles $\frac{5}{16}$ -18"	2
Operating Handle	1

To install the handles:

1. Screw the handle with the $\frac{3}{8}$ " thread into the left/right handwheel shown in **Figure 9**, and tighten the locknut against the handwheel.

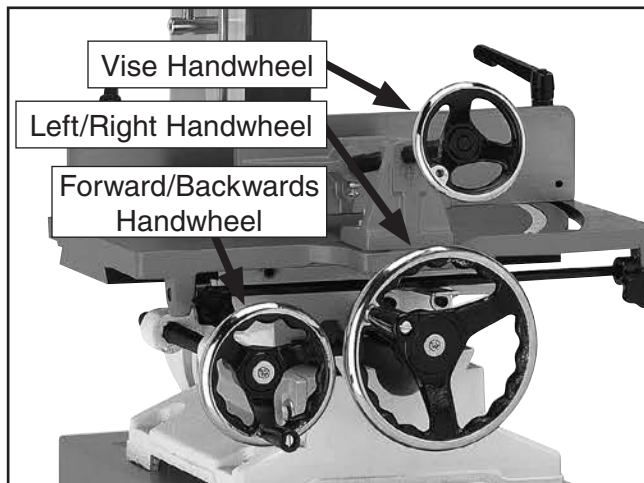


Figure 9. Handwheels.

2. Screw the remaining handles into the smaller handwheels (**Figure 9**) and tighten the locknuts against the handwheels.
3. Slide the operating handle into the hub shown in **Figure 10** and tighten the lock handle.

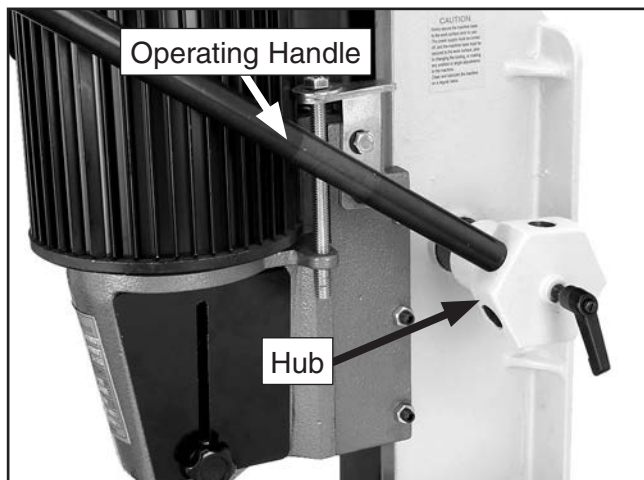


Figure 10. Operating handle.

Extendable Workstop

Components and Hardware Needed:	Qty
Extendable Workstop	1

To install the extendable workstop:

1. Slide the larger rod into the mounting hole (**Figure 11**) on either end of the fence and tighten the setscrew.

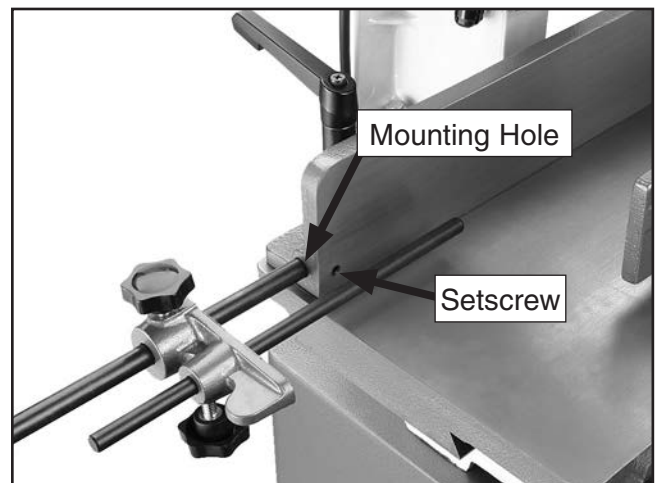


Figure 11. Extendable workstop installed.



Test Run

Test run the machine before installing the chisel to isolate any problems that may occur.

1. Plug the mortising machine into the power supply.
2. Turn the mortising machine **ON**.

Note: *Make sure your finger is poised over the switch, just in case there is a problem.*

The mortising machine should run smoothly, with little or no vibration or rubbing noises. Strange or unnatural noises should be investigated and corrected before operating the machine further. See **Page 26** for troubleshooting instructions.

If you cannot easily locate the source of an unusual noise or vibration, contact our Service Department at (570) 546-9663 for help.

Recommended Adjustments

For your convenience, the adjustments listed below have been performed at the factory and no further setup is required to operate your machine.

However, because of the many variables involved with shipping, some of these adjustments may need to be repeated to ensure optimum results. Keep this in mind as you start to use your new mortising machine.

Step-by-step instructions for these adjustments can be found in SECTION 7: SERVICE.

1. Gib Adjustments (**Page 27**).
2. Head Tilt Calibration (**Page 28**).
3. Fence Calibration (**Page 29**).

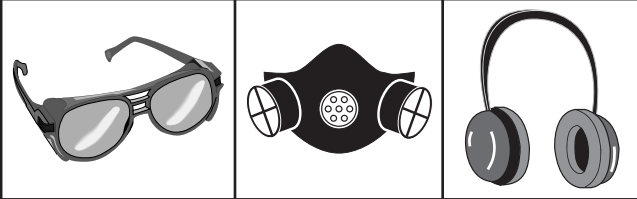


SECTION 4: OPERATIONS

Operation Safety

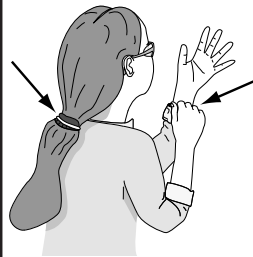
⚠️ WARNING

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.

Installing Mortising Chisel

This mortiser uses 1/8" shank chisels and comes with bushings for 5/8" and 3/4" shank chisels.

To install a mortising chisel:

1. Loosen the lock handle (**Figure 12**), insert a bushing into the socket with the hole facing forward, then tighten the lock handle.

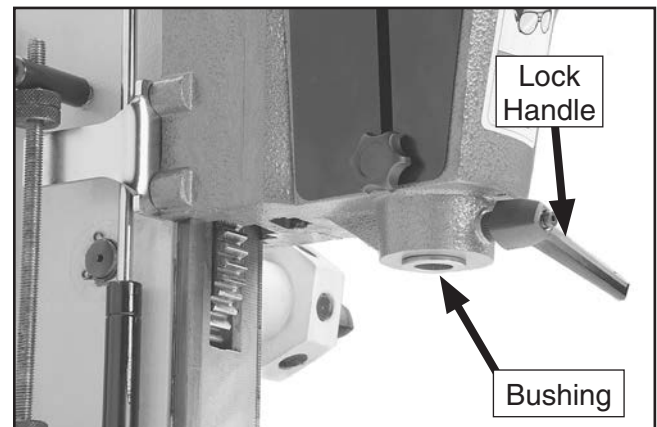


Figure 12. Chisel bushing.

2. Slide the chisel into the bushing, move the fence against the chisel face to square the chisel to the fence, then tighten the lock handle.

Note: If you are mortising a rectangular slot, orient the chisel so chips are expelled into the first hole cut.



3. Chuck up the bit so it extends $\frac{1}{16}$ – $\frac{3}{16}$ " beyond the chisel (**Figure 13**). The correct distance depends on the wood type and operation.

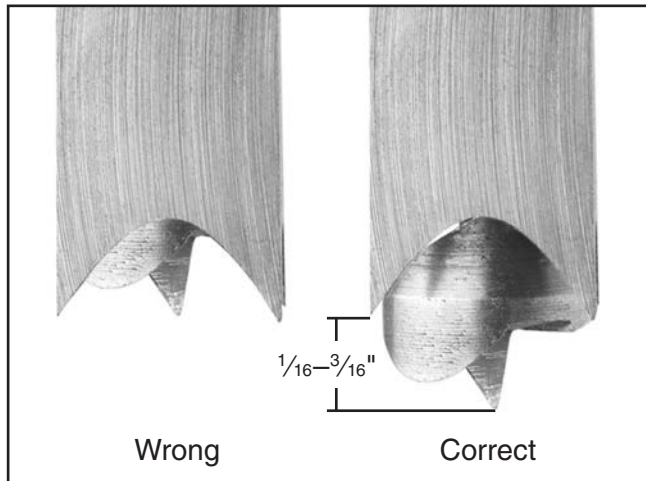


Figure 13. Drill bit extension.

Adjusting the Depth Stop

Each upper and lower depth stops consist of two knurled rings that thread up and down the depth stop rod. One knurled ring acts as a depth stop by contacting the stop plate. The other knurled ring tightens against the depth stop ring to lock it in place.

Adjusting the lower depth stop will make sure the mortise is not cut too deep and is consistent. Adjusting the upper depth stop prevents the head from raising any farther than necessary. Always make the mortise at least an $\frac{1}{8}$ " deeper than the tenon to allow room for excess glue.

To adjust the depth stop:

1. Lower the mortising chisel to the desired depth of cut.
2. Tighten the lower depth stop against the bottom of the stop plate as shown in **Figure 14**.

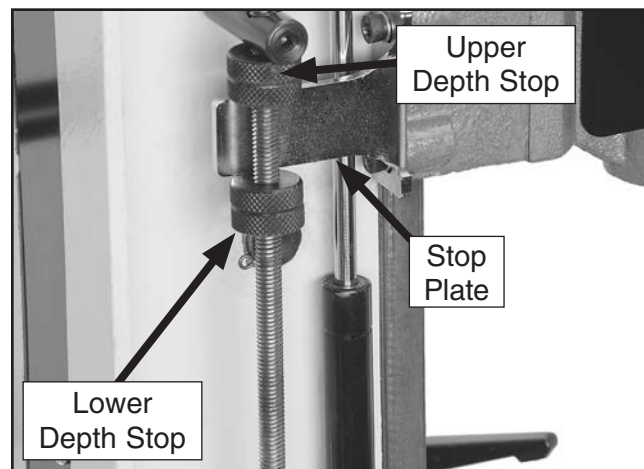


Figure 14. Depth stops controls.

3. Raise the mortising chisel until it is clear of the workpiece and tighten the upper depth stop against the top of the stop plate.



Table Controls

Moving the table allows you to create a perfectly straight rectangular mortise with a series of cuts.

To control the table:

1. Move the forward/back handwheel (**Figure 15**) to move the table toward or away from the operator.

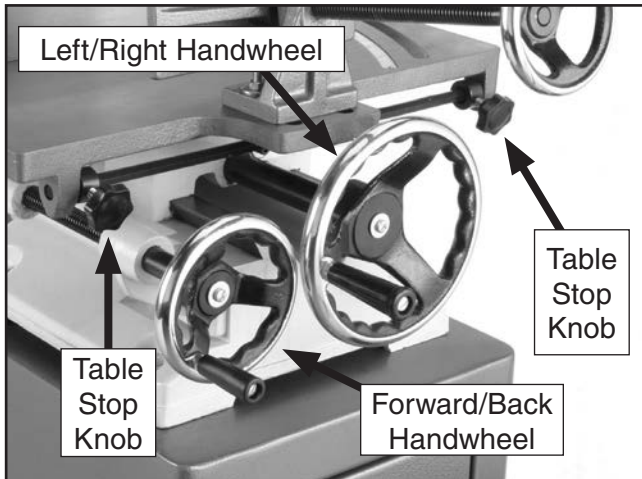


Figure 15. Table controls.

2. Move the left/right handwheel (**Figure 15**) to move the table horizontally.
3. Use the table stop knobs (**Figure 15**) to control how far the table moves to the left and right.

Note: Use the table stop knobs when setting up to cut a mortise to set the left and right ends of the mortise.

4. Use the table forward/back lock handle (under the right side of the table) to prevent the table from moving forward and back when cutting a horizontal mortise.

Basic Mortising Operations

To make a basic mortise:

1. Layout the desired mortise on the workpiece, place the workpiece on the mortiser worktable, and clamp it in place with the vise.

Note: When making mortises that extend through the workpiece, it is necessary to place a sacrificial board between the workpiece and the table. This board must be at least $\frac{3}{4}$ " thick to prevent damage to the table and slightly narrower than the workpiece to allow the vise to clamp on the workpiece.

2. Use the table controls to align the mortising chisel with the layout lines (see **Figure 16**) and set the depth and table stops.

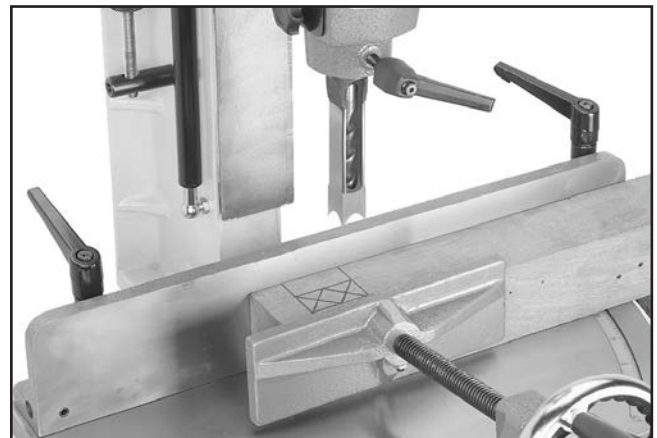


Figure 16. Aligning the mortising chisel.

3. Turn the mortising machine **ON** and use the operating handle to steadily feed the mortising chisel into the workpiece.

—The feed rate must be fast enough to prevent the tip of the bit from burning, but slow enough to prevent the motor from stalling. This speed will vary depending on the wood type.

—When cutting deep mortises, make a 1" deep cut, then back off and allow the chips to clear before cutting deeper.

Note: Some chisel noise is normal.



Extendable Workstop

The extendable workstop allows you to cut a mortise in the same place on multiple identical parts.

To use the extendable workstop:

1. Insert the extendable workstop into the socket in the fence and secure it with the set screw.
2. Align the mortising chisel with the layout lines of the workpiece and clamp it in place.
3. Loosen the lock knobs on the extendable workstop and slide the smaller rod against the end of the workpiece as shown in **Figure 17**, then tighten the lock knobs.

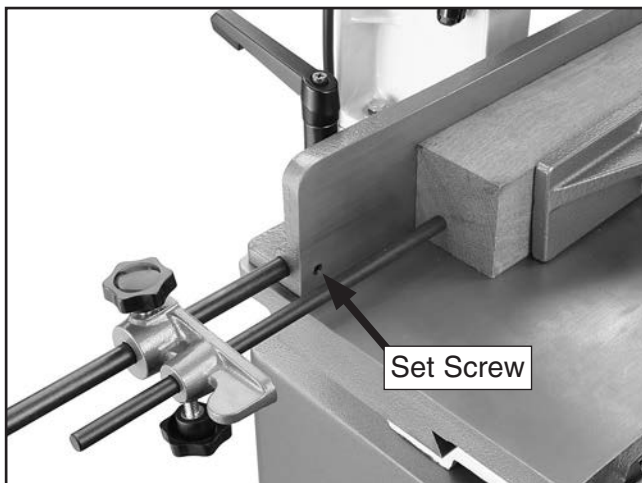


Figure 17. Using the extendable workstop.

4. After the initial mortise is completed, remove the workpiece and slide the new workpiece against the extendable workstop to create an identical mortise in the next part.

Angling Fence

The fence can be angled from 0°–30°. The fence angling controls are shown in **Figure ??**.

To angle the fence:

1. Loosen the fence angle lock handles.
2. Pivot the fence to the necessary angle as shown on the scale located on the top of the table.
3. Tighten the fence angle lock handles.
4. Loosen the two vise adjusting bolts.
5. Angle the vise so it is parallel to the fence.
6. Tighten the two vise adjusting bolts.

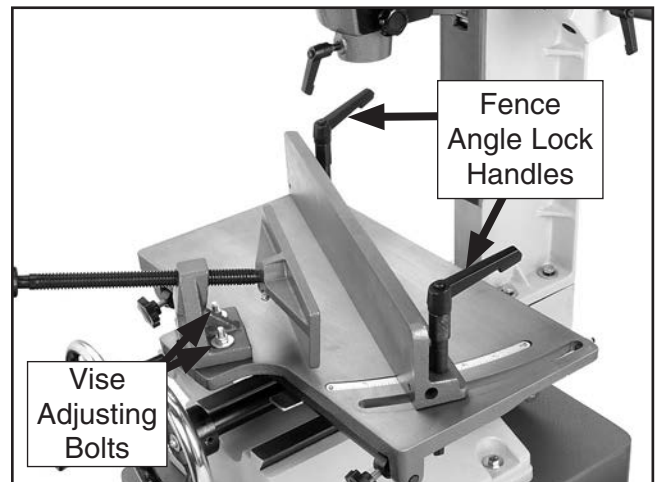


Figure ??. Fence controls for angling.



Tilting Head

The head can be tilted 30° to the left and 30° to the right for angled mortises. When tilting the head, make sure to hold onto it so it does not fall. The head tilt controls are shown in **Figure 18**.

NOTICE

The head will fall when the front and rear head tilt bolts are loosened. Always hold onto the head with your free hand when loosening these bolts!

To tilt the head:

1. Slightly loosen the front and rear head tilt bolts.
2. Tilt the head in the desired direction.

Note: When tilting the head to the right, the tilt pin must be pulled out and allowed to clear the 0° positive stop block, and then pushed back in to make contact with the 30° R positive stop.

3. Tighten the front and rear head tilt bolts.

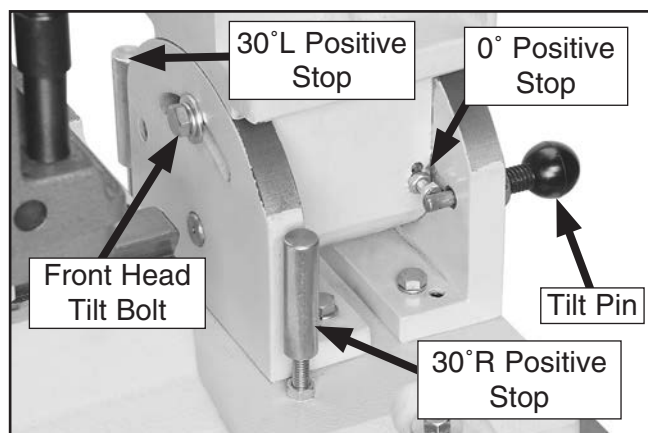


Figure 18. Head tilt controls.

Adjusting Head Height

The head can be raised an additional 2⁷/₈" to accommodate larger workpieces.

To adjust the head height:

1. Move the chuck cover out of the way.
2. Loosen the two large hex nuts on the inside of the head (see **Figure 19**).
3. Adjust the headstock elevation hex bolt, shown in **Figure 19**, to raise or lower the head.

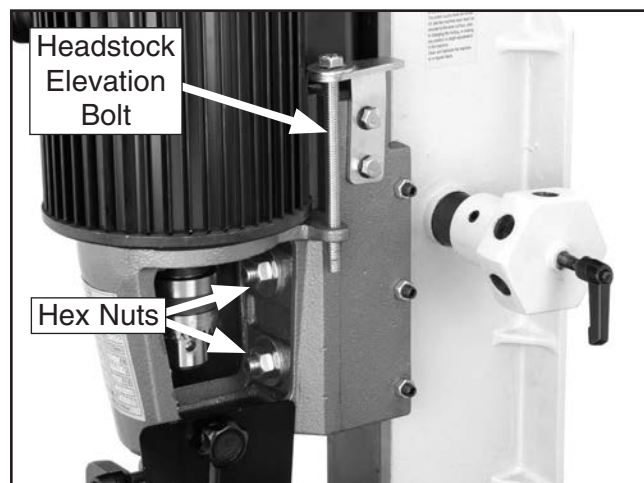


Figure 19. Head height controls.

4. Tighten the two large hex nuts on the inside of the head, and replace the chuck cover.



SECTION 5: ACCESSORIES

H7583—Tenoning Jig

Use this simple jig on your table saw to make tenons for a mortise and tenon joint. Precision adjustments make it easy to create a perfect tenon every time.

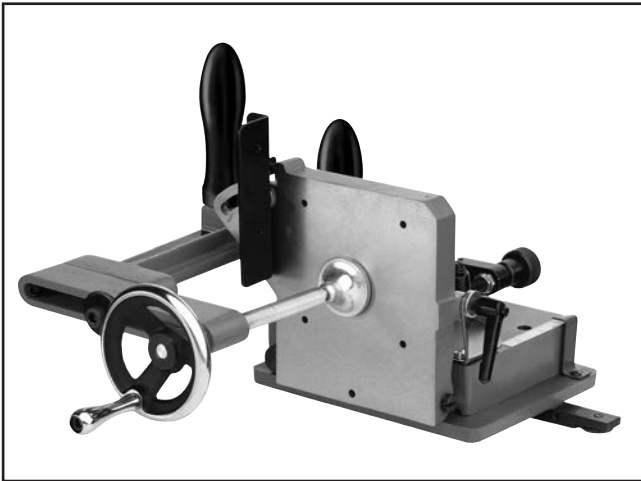


Figure 20. Table saw tenoning jig.

- T20502—F-500 7" Crown Protector
- T20503—4178-CL Replacement Faceshield
- T27720—Edge DZ111 Zorge Safety Glasses
- T20452—KIROVA Safety Glasses, Anti-Reflective
- T20451—KIROVA Safety Glasses, Clear

Safety Glasses are essential to every shop. If you already have a pair, buy extras for visitors or employees. You can't be too careful when it comes to shop safety!

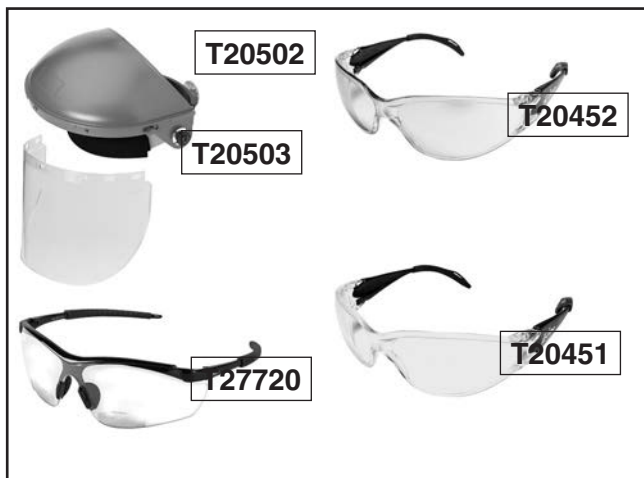


Figure 21. Our most popular safety glasses.

- H2543—Mortising Chisel 1/4"
- H2544—Mortising Chisel 5/16"
- H2545—Mortising Chisel 3/8"
- H2546—Mortising Chisel 1/2"
- H2547—Mortising Chisel 5/8"
- H2548—Mortising Chisel 3/4"
- H1154—Mortising Chisel 1"
- H2549—4 Pc. Mortising Chisel Set
1/4", 5/16", 3/8", 1/2"



Figure 22. 4 Pc. Mortising Chisel Set.

- H1302—Standard Earmuffs
 - H4979—Deluxe Twin Cup Hearing Protector
 - T20446—WolfPeak 3901 Earplugs 200 pair
- Protect yourself comfortably with a pair of cushioned earmuffs or earplugs. Especially important if you or employees operate for hours at a time.



Figure 23. Our most popular earmuffs and earplugs.



G5562—SLIPIT® 1 Qt. Gel
G5563—SLIPIT® 12 oz Spray

Used on cast iron table surfaces and other unpainted metal surfaces to reduce sliding friction and hangups. This product also reduces rust and prevents resin build-up.



Figure 24. SLIPIT® gel and spray.

H3788—G96® Gun Treatment 12 oz Spray
H3789—G96® Gun Treatment 4.5 oz Spray

This triple action gun treatment cleans, lubricates and protects all metal parts. Contains solvents that completely remove all traces of rust and corrosion and leaves no gummy residue.



Figure 25. G96® Gun Treatment spray.

Call 1-800-523-4777 To Order

G2871—Boeshield® T-9 12 oz Spray
G2870—Boeshield® T-9 4 oz Spray

Perfect for unpainted cast iron surfaces, this ozone friendly protective spray penetrates deep and really holds up against corrosive environments. Lubricates metals for months and is also safe for use on most paints, plastics, and vinyls. Developed by Boeing engineers for aircraft applications—this is the best!



Figure 26. Boeshield® T-9 spray.

G7895—Citrus Degreaser

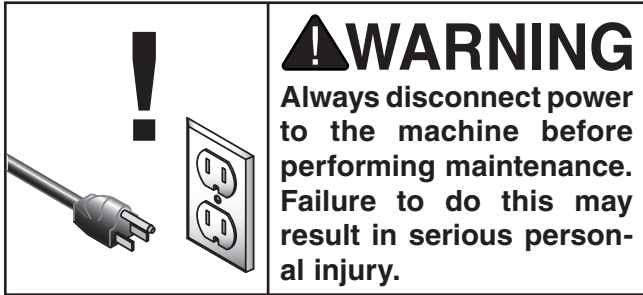
This citrus based degreaser is perfect for cleaning Cosmoline® off of new equipment. It also works for cleaning auto parts, tools, concrete, and porcelain surfaces. Natural, safe for the environment, and contains no CFC's.



Figure 27. G7895 Citrus Degreaser.



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:

- Loose mounting bolts.
- Worn switch.
- Worn or damaged cords and plugs, or any other unsafe condition.

Cleaning

Cleaning the Model G0448 is relatively easy. Vacuum excess wood chips and sawdust, and wipe off the remaining dust with a dry cloth. If any resin has built up, use a resin dissolving cleaner to remove it. Treat all unpainted cast iron and steel with a non-staining lubricant after cleaning.

Unpainted Cast Iron

Protect the unpainted cast iron surfaces on the table, fence, and steel chisels/bits by wiping them clean after every use—this ensures moisture from wood dust does not remain on bare metal surfaces.

Keep metal surfaces rust-free with regular applications of products like G96® Gun Treatment, SLIPIT®, or Boeshield® T-9 (see **SECTION 5: ACCESSORIES** on **Page 23** for more details).

Lubrication

Since all bearings are sealed and permanently lubricated, simply leave them alone until they need to be replaced. Do not lubricate them.

For other items on this machine, such as the gear, base, and columns, an occasional application of light machine oil is all that is necessary. Before applying lubricant, clean off sawdust and wood chips.

Your goal is to achieve adequate lubrication. Too much lubrication will attract dirt and sawdust. Various parts of your machine could lose their freedom of movement as a result.

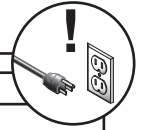
Drill Bits

The drill bits for mortising chisels operate under extreme conditions. A small amount of bees wax applied to the drill bit can aid in reducing heat and expelling chips. It is important that a small amount is used and none is applied to the chisel. Bees wax coming into contact with the finished surfaces will impede adhesion of glues and finishes.



SECTION 7: SERVICE

Troubleshooting



Symptom	Possible Cause	Possible Solution
Motor will not start.	<ol style="list-style-type: none"> 1. Low voltage. 2. Open circuit in motor or loose connections. 	<ol style="list-style-type: none"> 1. Check power line for proper voltage. 2. Inspect all lead connections on motor for loose or open connections.
Motor will not start; fuses or circuit breakers blow.	<ol style="list-style-type: none"> 1. Short circuit in line cord or plug. 	<ol style="list-style-type: none"> 1. Repair or replace cord or plug for damaged insulation and shorted wires.
Motor fails to develop full power (output of motor decreases rapidly with decrease in voltage at motor terminals).	<ol style="list-style-type: none"> 1. Power line overloaded with lights, appliances, and other motors. 2. Undersized wires or circuits too long. 3. General overloading of power company facilities. 	<ol style="list-style-type: none"> 1. Reduce load on power line. 2. Increase wire sizes or reduce length of the circuit. 3. Request a power check from the power company.
Motor overheats.	<ol style="list-style-type: none"> 1. Motor overloaded. 2. Air circulation through the motor restricted. 	<ol style="list-style-type: none"> 1. Reduce load on motor. 2. Clean out motor to provide normal air circulation.
Motor stalls (resulting in blown fuses or tripped circuit).	<ol style="list-style-type: none"> 1. Short circuit in motor or loose connections. 2. Low voltage. 3. Incorrect size fuses or circuit breakers. 4. Motor overloaded. 	<ol style="list-style-type: none"> 1. Replace motor connections with loose/shorted terminals or worn insulation. 2. Correct the low voltage conditions. 3. Install correct fuses or circuit breakers. 4. Reduce load on motor.
Loud repetitious noise coming from machine.	<ol style="list-style-type: none"> 1. Motor fan is hitting the cover. 	<ol style="list-style-type: none"> 1. Adjust fan cover mounting position, tighten fan, or shim fan cover.
Difficult to pull lever down during machine operation.	<ol style="list-style-type: none"> 1. Drill bit does not protrude enough from the end of the chisel. 2. Chisel or drill bit is dull. 3. Mortising operating handle is not positioned for maximum leverage. 	<ol style="list-style-type: none"> 1. Adjust the drill bit depth. 2. Sharpen/replace drill bit and chisel. 3. Adjust the handle for maximum length, and position the handle so you have the maximum leverage at the hardest mortising depth.
Mortising bit and chisel are extremely noisy and chatter. (An average amount of noise and chatter are normal for any mortising machine.)	<ol style="list-style-type: none"> 1. Drill bit out of alignment with chisel. 2. The chisel mounting bushing is loose or damaged causing poor drill bit-to-chisel alignment. 3. The chisel or drill bit is bent. 	<ol style="list-style-type: none"> 1. Reinstall chisel in a different position. 2. Replace bushing, using care not to over-tighten the chisel retaining lock bolt. 3. Replace the chisel and drill bit as a matched set.
Mortising bit and chisel generate smoke and burn the workpiece.	<ol style="list-style-type: none"> 1. The drill bit is dull. 2. Drilling pressure is too aggressive and overheats the drill bit. 3. Wood chips load up in the chisel and overheat the drill bit. 4. Wood is too green, has high moisture content, or is pressure treated. 	<ol style="list-style-type: none"> 1. Sharpen/replace drill bit and chisel. 2. Adjust drill bit depth, reduce drilling pressure, clear chips often. 3. Apply small amount of bees wax to drill bit; face chisel slot sideways; clear chips often. 4. Only mortise dry, untreated wood.



Adjusting Gibs

Tools Needed:	Qty
Wrench 12mm	1
Hex Wrench 4mm.....	1

The Model G0448 has three gibs. One gib is located on the side of the headstock and the other two gibs are located under the table (see **Figure 28–30**).

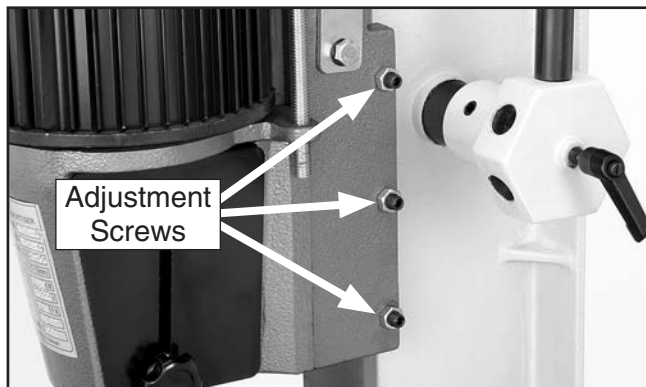


Figure 28. Adjustment screws for head gib.

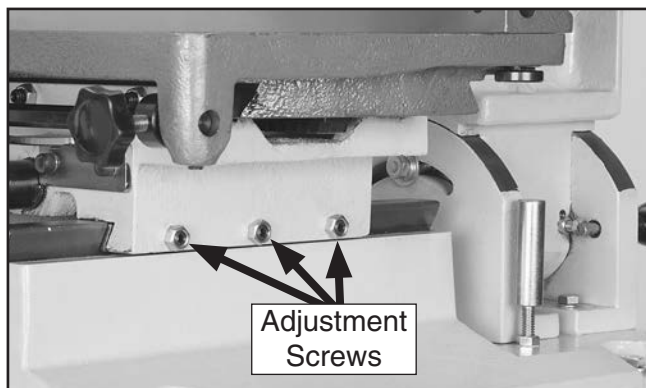


Figure 29. Adjustment screws for forward/backward table travel gib.

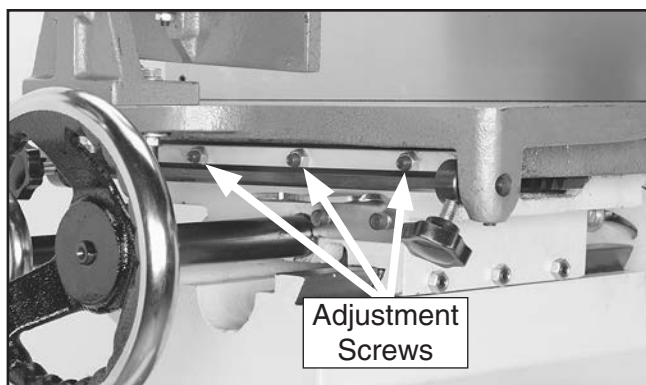


Figure 30. Adjustment screws for left/right table travel gib.

The gibs control the accuracy of the sliding parts and keep them stable during operation. The goal of adjusting the gibs is to remove unnecessary play when the slides are moved, without tightening them so much that they bind. Each gib can be tightened or loosened by using the adjustment screws.

To adjust the gibs:

1. Loosen the hex nuts on the set screws.
2. Evenly adjust the setscrews while moving the sliding part until you feel a slight amount of resistance.
3. Tighten the hex nuts against the casting while holding the setscrews in place so they do not move when the hex nut is tightened.



Calibrating Head Tilt

Tools Needed:	Qty
Wrench 19mm	1
Wrench 10mm	1
Hex Wrench 3mm.....	1
90° Square.....	1
Sliding Bevel Gauge.....	1
Phillips Screwdriver	1

The tilting mechanism features positive stops for calibrating the head position accurately to each of the tilting positions. In addition to setting these positive stops during calibration, the scale pointer should also be aligned with the 0° mark.

Figure 31 shows pointer and scale 0 marks aligned, and **Figure 32** shows the positive stops and head tilt controls.

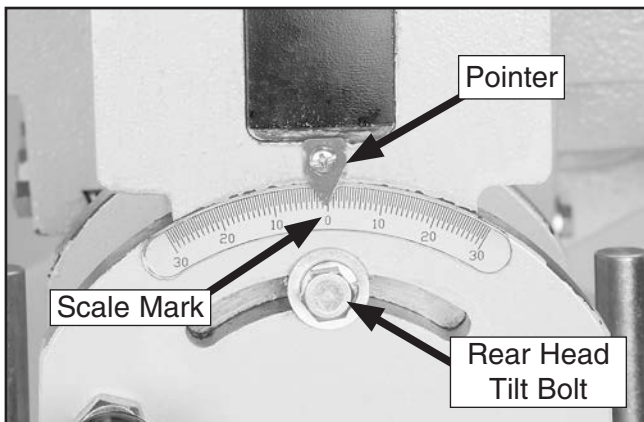


Figure 31. Aligned scale and pointer 0 marks.

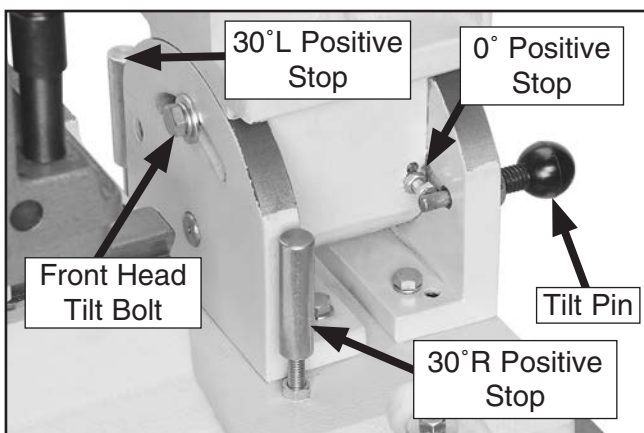


Figure 32. Head tilt controls.

To check the head tilt calibration:

1. Insert a mortising chisel in the chuck and lower it close to the table.
2. Use the 90° square and bevel gauge at 30° (see **Figure 33**) to check the chisel angle to the table when the head is in each of the three positions (30° L, 0°, 30°R).

—If the chisel angle is correct in all three positions, then calibration is unnecessary.

—If the chisel angle is incorrect in any of three locations, then those stops must be calibrated.

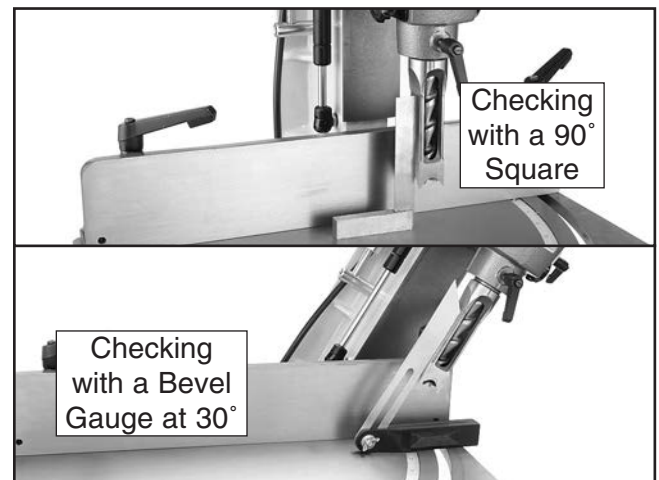


Figure 33. Checking head tilt angles.

To calibrate any of the positive stops:

1. Loosen the hex nut securing the stop.
2. Adjust the stop position and check the new chisel angle, repeating as necessary until the angle is correct.
3. Hold the stop in position and tighten the hex nut, so the stop cannot move.

To adjust the scale pointer:

1. Make sure the head is calibrated to 90°.
2. Loosen the pointer screw, and adjust the 0 mark on the pointer even with the 0 mark on the scale.
3. Tighten the pointer screw.



Calibrating Fence

Tools Needed:	Qty
Wrench 10mm	1
Hex Wrench 3mm.....	1

The fence features a positive stop that allows it to return to 0° on the scale. Having the 0° setting accurate is important because it keeps holes parallel as the table is moved sideways.

To calibrate the fence:

1. Set the fence angle to the 0 mark.
2. Install a chisel and square it to the fence.
3. Move the table all the way to the right so the chisel is near the left end of the fence.
4. Use the 3mm hex wrench as a feeler gauge between the fence and chisel, and adjust the table front to back until there is a slight drag on the hex wrench when the table is moved left to right.
5. Remove the hex wrench and move the table all the way to the left.
6. Using the hex wrench, check the gap between the chisel and fence (see **Figure 34**).
 - If the gap is the same as the other side, then the fence is calibrated correctly.
 - If the gap is different, adjust the fence adjustment set screw as necessary until the gap is the same on both sides.

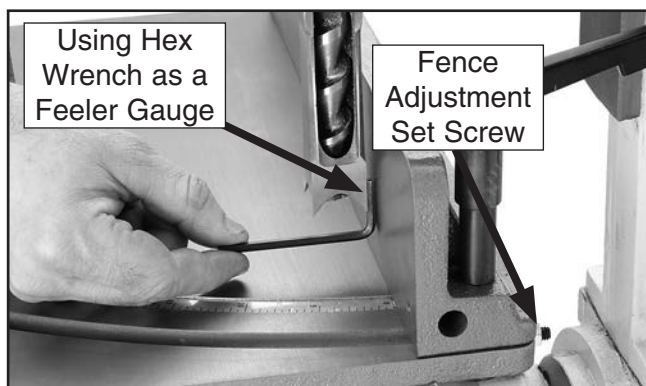


Figure 34. Checking if fence is parallel to the chisel along its travel path.

Replacing Gas Spring

Tools Needed:	Qty
Wrench 12mm	1

When working correctly, the gas spring shown in **Figure 35** keeps the headstock under pressure so it does not drop when the operating handle is released. If you ever notice that the gas spring stops working correctly, then it should be promptly replaced.

To replace the gas spring:

1. Raise the headstock as far as it will go and set the bottom depth stop as high as it will go to keep the head from falling.
2. Loosen the hex nut on the gas spring bolts (see **Figure 35**), located on both ends of the gas spring.

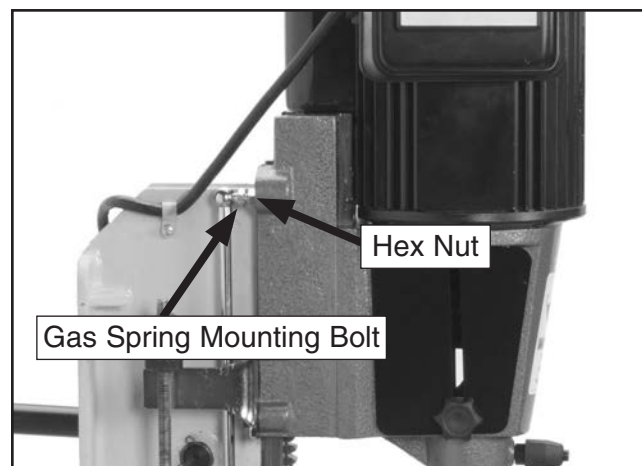
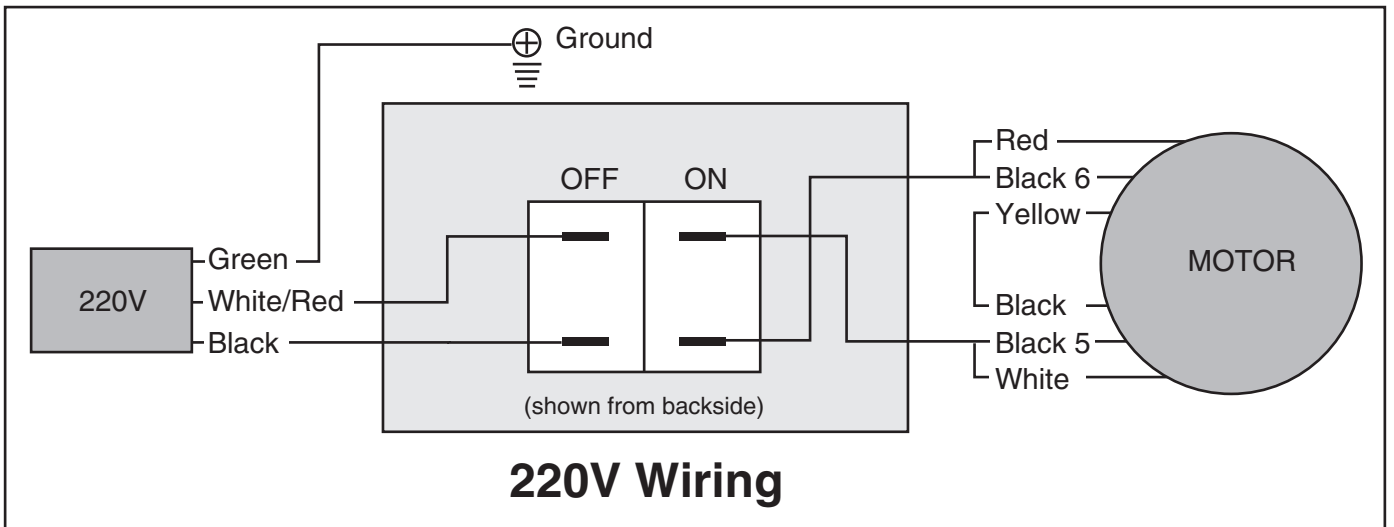
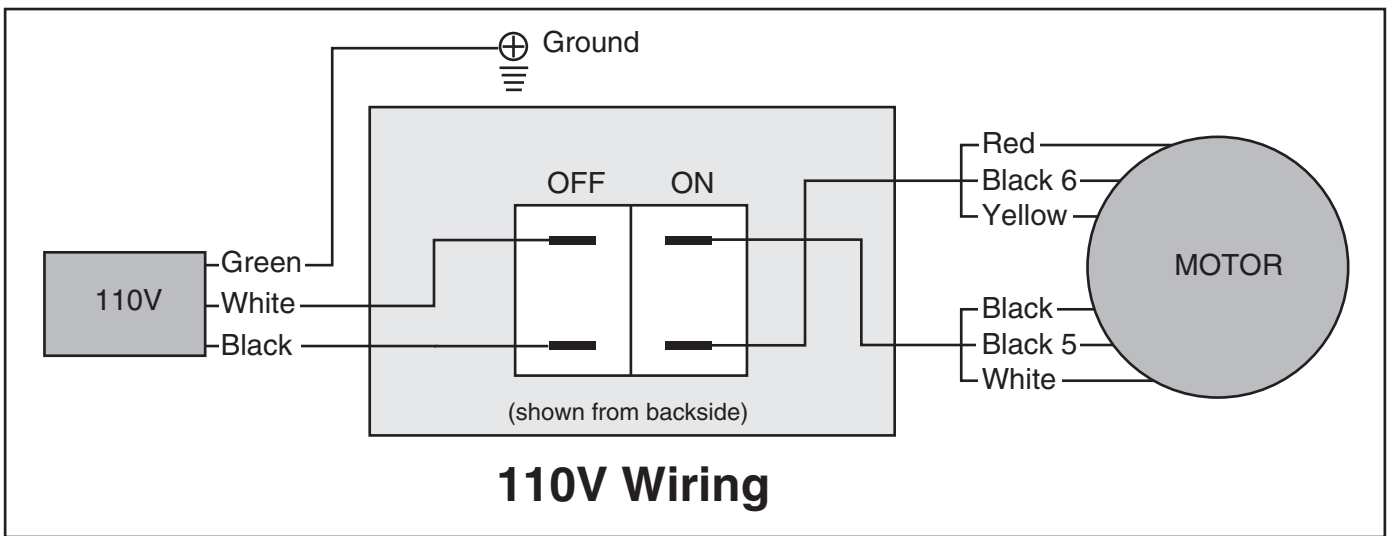


Figure 35. Gas spring mounting bolt and lock nut (top end shown).

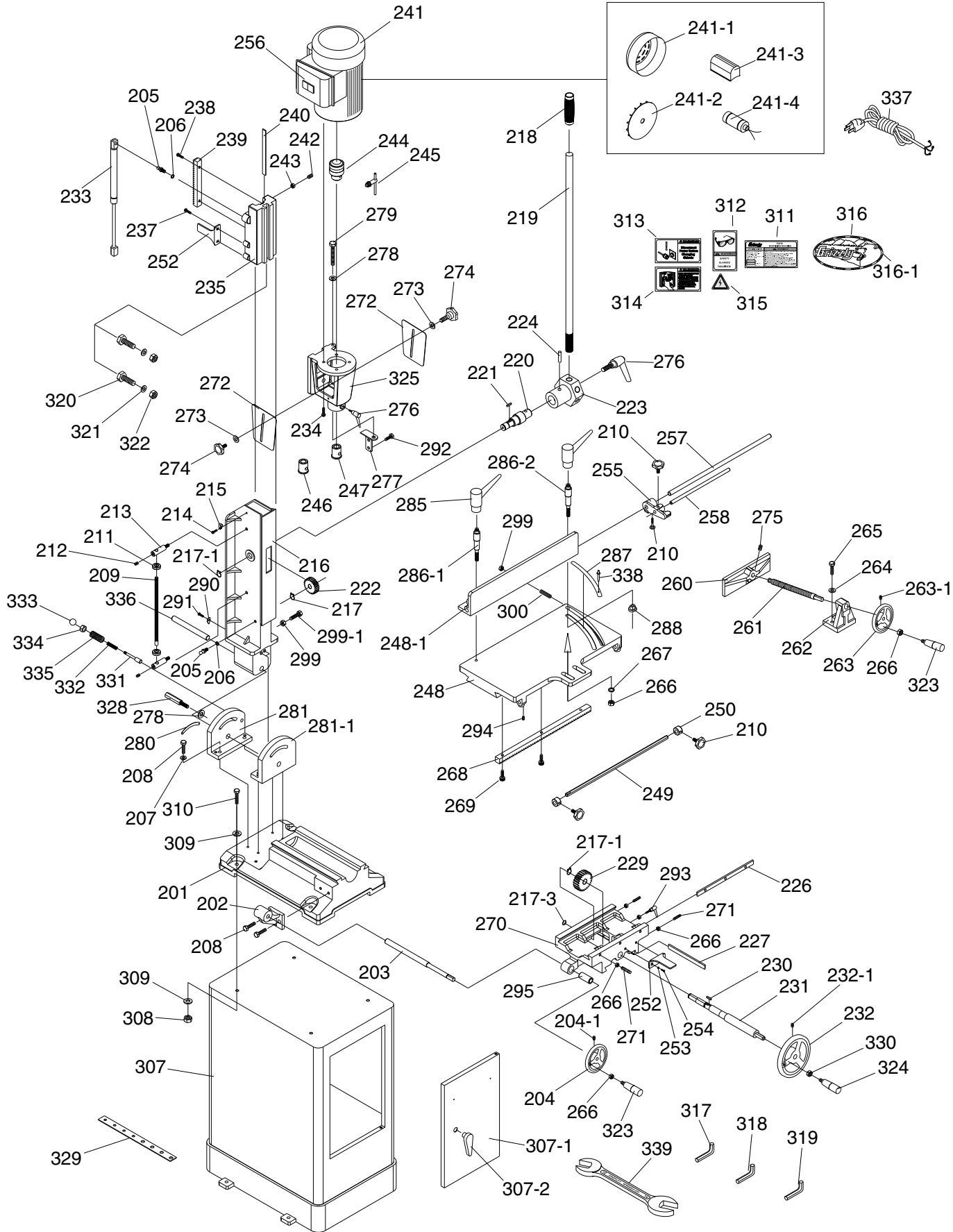
3. Unthread the gas spring mounting bolts to remove the gas spring from the mortiser.
4. Install the new gas spring in the reverse order as the old one was removed. Be sure to use the hex nuts from the old gas spring if hex nuts are not included with the new one.



Electrical Components and Wiring



Parts Breakdown



Parts List

REF	PART #	DESCRIPTION
201	P0448201	BASE
202	P0448202	ADJUSTING BAR
203	P0448203	ROD SCREW
204	P0448204	HANDWHEEL
204-1	P0448204-1	SET SCREW 5/16-18 X 3/8
205	P0448205	BALL FITTING
206	P0448206	LOCK WASHER 8MM
207	P0448207	FLAT WASHER 5/16
208	P0448208	HEX BOLT 5/16-18 X 1
209	P0448209	DEPTH STOP BAR
210	P0448210	KNOB 5/16-18 X 3/4"
211	P0448211	ADJUSTING SLEEVE
212	P0448212	SET SCREW 1/4-20 X 3/8
213	P0448213	BAR
214	P0448214	PHLP HD SCR 1/4-20 X 3/8
215	P0448215	CORD CLAMP
216	P0448216	COLUMN
217	P0448217	EXT RETAINING RING 19MM
217-1	P0448217-1	EXT RETAINING RING 20MM
217-2	P0448217-2	EXT RETAINING RING 17MM
217-3	P0448217-3	EXT RETAINING RING 15MM
218	P0448218	HANDLE GRIP
219	P0448219	HANDLE
220	P0448220	HANDLE SHAFT
221	P0448221	SHAFT KEY
222	P0448222	GEAR
223	P0448223	HANDLE BODY
224	P0448224	ROLL PIN 8 X 50
225	P0448225	EXT RETAINING RING 15MM
226	P0448226	GIB
227	P0448227	GIB
229	P0448229	GEAR
230	P0448230	KEY 5 X 5 X 16
231	P0448231	GEAR SHAFT
232	P0448232	HANDWHEEL
232-1	P0448232-1	SET SCREW 5/16-18 X 3/4
233	P0448233	GAS SPRING
234	P0448234	PHLP HD SCR 1/4-20 X 1
235	P0448235	HEAD BODY
237	P0448237	PHLP HD SCR 1/4-20 X 5/8
238	P0448238	PHLP HD SCR 1/4-20 X 5/8
239	P0448239	RACK
240	P0448240	GIB
241	P0448241	MOTOR
241-1	P0448241-1	FAN COVER
241-2	P0448241-2	FAN
241-3	P0448241-3	CAPACITOR COVER
241-4	P0448241-4	CAPACITOR 30M 350VAC
242	P0448242	SET SCREW 5/16-18 X 3/4
243	P0448243	HEX NUT 5/16-18
244	P0448244	CHUCK 1.5-13MM 1/2-20UNF

REF	PART #	DESCRIPTION
245	P0448245	CHUCK KEY
246	P0448246	BUSHING 5/8
247	P0448247	BUSHING 3/4
248	P0448248	TABLE
248-1	P0448248-1	FENCE
249	P0448249	THREADED SHAFT
250	P0448250	ADJUSTING SLEEVE
252	P0448252	LONG STOP PLATE
253	P0448253	LOCK WASHER 1/4
254	P0448254	CAP SCREW 1/4-20 X 5/8
255	P0448255	LONG STOP BODY
256	P0448256	SWITCH
257	P0448257	LONG STOP BAR A
258	P0448258	LONG STOP BAR B
260	P0448260	VICE PLATE
261	P0448261	SCREW ROD
262	P0448262	VICE BODY
263	P0448263	HANDWHEEL
263-1	P0448263-1	SET SCREW 5/16-18 X 3/8
264	P0448264	FLAT WASHER 5/16
265	P0448265	HEX BOLT 5/16-18 X 1-3/4
266	P0448266	HEX NUT 5/16-18
267	P0448267	LOCK WASHER 5/16
268	P0448268	RACK
269	P0448269	CAP SCREW 5/16-18 X 5/8
270	P0448270	SLIDE BODY
271	P0448271	SET SCREW 5/16-18 X 5/8
272	P0448272	CHUCK COVER
273	P0448273	FLAT WASHER 1/4
274	P0448274	KNOB 1/4-20 X 1/2
275	P0448275	SET SCREW 1/4-20 X 3/4
276	P0448276	LOCK HANDLE 5/16-18 X 1
277	P0448277	ADJUSTING BRACKET
278	P0448278	FLAT WASHER 3/8
279	P0448279	HEX BOLT 3/8-16 X 5
280	P0448280	SCALE
281	P0448281	TRUNNION BRACKET(FRONT)
281-1	P0448281-1	TRUNNION BRACKET(REAR)
285	P0448285	LOCK HANDLE
286-1	P0448286-1	LOCK HANDLE SHAFT (SHORT)
286-2	P0448286-2	LOCK HANDLE SHAFT (LONG)
287	P0448287	SCALE
288	P0448288	SPECIAL NUT M10-1.5
290	P0448290	POINTER
291	P0448291	PHLP HD SCR 10-24 X 3/8
292	P0449292	HEX BOLT 5/16-18 X 1
293	P0448293	LOCK HANDLE 5/16 X 18 X 1-1/2
294	P0448294	SET SCREW 1/4-20 X 3/8
295	P0448295	SLEEVE
299	P0448299	HEX NUT 1/4-20
299-1	P0448299-1	HEX BOLT 1/4-20 X 3/4



REF	PART #	DESCRIPTION
300	P0448300	SET SCREW 1/4-20 X 1
307	P0448307	CABINET STAND
307-1	P0448307-1	CABINET DOOR
307-2	P0448307-2	DOOR LATCH SYSTEM
308	P0448308	HEX NUT 5/16-18
309	P0448309	FLAT WASHER 5/16
310	P0448310	HEX BOLT 5/16-18 X 2
311	P0448311	MACHINE ID LABEL
312	P0448312	SAFETY GLASSES 2" X 3 5/16"
313	P0448313	UNPLUG 110V 2" X 3 5/16"
314	P0448314	READ MANUAL-VERTICAL NS 7/05
315	P0448315	ELECTRICITY LABEL
316	P0448316	GRIZZLY LOGO PLATE
316-1	P0448316-1	LOGO SCREW
317	P0448317	HEX WRENCH 3MM
318	P0448318	HEX WRENCH 4MM
319	P0448319	HEX WRENCH 5MM
320	P0448320	HEX BOLT 1/2-13 X 1-1/2

REF	PART #	DESCRIPTION
321	P0448321	FLAT WASHER 1/2
322	P0448322	HEX NUT 1/2-13
323	P0448323	HANDLE
324	P0448324	HANDLE
325	P0448325	HEAD
328	P0448328	LOCK SHAFT
329	P0448329	SINGLE FACE STRIP
330	P0448330	HEX NUT 3/8-16
331	P0448331	PLUNGER
332	P0448332	PRESSURE SPRING
333	P0448333	KNOB
334	P0448334	HEX NUT 5/16-18
335	P0448335	SPECIAL SCREW
336	P0448336	ROD
337	P0448337	POWER CORD
338	P0448338	RIVET
339	P0448339	COMBO WRENCH 12/14MM



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

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?

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

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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