WOOD MILL™
MODEL G9959/G9977
Instruction Manual

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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SECTION 1: SAFETY

⚠WARNING

For Your Own Safety Read Instruction Manual Before Operating This Equipment

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 equipment.**

⚠WARNING
Safety Instructions For Power Tools

1. **KEEP GUARDS IN PLACE** and in working order.
2. **REMOVE ADJUSTING KEYS AND WRENCHES.** Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning on.
3. **KEEP WORK AREA CLEAN.** Cluttered areas and benches invite accidents.
4. **DO NOT USE IN DANGEROUS ENVIRONMENT.** Do not use power tools in damp or wet locations, or where any flammable or noxious fumes may exist. Keep work area well lighted.
5. **KEEP CHILDREN AND VISITORS AWAY.** All children and visitors should be kept a safe distance from work area.
6. **MAKE WORKSHOP CHILD PROOF** with padlocks, master switches, or by removing starter keys.
7. **DO NOT FORCE TOOL.** It will do the job better and safer at the rate for which it was designed.
8. **USE RIGHT TOOL.** Do not force tool or attachment to do a job for which it was not designed.

⚠WARNING
Safety Instructions For Power Tools

9. **USE PROPER EXTENSION CORD**. Make sure your extension cord is in good condition. Conductor size should be in accordance with the chart below. The amperage rating should be listed on the motor or tool nameplate. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating. Your extension cord must also contain a ground wire and plug pin. Always repair or replace extension cords if they become damaged.

Minimum Gauge for Extension Cords

	LENGTH		
AMP RATING	25ft	50ft	100ft
0-6	18	16	16
7-10	18	16	14
11-12	16	16	14
13-16	14	12	12
17-20	12	12	10
21-30	10	10	No

10. **WEAR PROPER APPAREL.** Do not wear loose clothing, gloves, neckties, rings, bracelets, or other jewelry which may get caught in moving parts. Non-slip footwear is recommended. Wear protective hair covering to contain long hair.

11. **ALWAYS USE SAFETY GLASSES.** Also use face or dust mask if cutting operation is dusty. Everyday eyeglasses only have impact resistant lenses, they are NOT safety glasses.

12. **SECURE WORK.** Use clamps or a vise to hold work when practical. It's safer than using your hand and frees both hands to operate tool.

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

14. **MAINTAIN TOOLS WITH CARE.** Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.

15. **USE RECOMMENDED ACCESSORIES.** Consult the owner's manual for recommended accessories. The use of improper accessories may cause risk of injury.

16. **REDUCE THE RISK OF UNINTENTIONAL STARTING.** On machines with magnetic contact starting switches there is a risk of starting if the machine is bumped or jarred. Always disconnect from power source before adjusting or servicing. Make sure switch is in OFF position before reconnecting.

17. **MANY WOODWORKING TOOLS CAN "KICKBACK" THE WORKPIECE** toward the operator if not handled properly. Know what conditions can create "kickback" and know how to avoid them. Read the manual accompanying the machine thoroughly.

18. **CHECK DAMAGED PARTS.** Before further use of the tool, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting, and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced.

19. **NEVER LEAVE TOOL RUNNING UNATTENDED. TURN POWER OFF.** Do Not leave tool until it comes to a complete stop.

20. **NEVER OPERATE A MACHINE WHEN TIRED, OR UNDER THE INFLUENCE OF DRUGS OR ALCOHOL.** Full mental alertness is required at all times when running a machine.

⚠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.

⚠WARNING

Additional Safety Instructions For The Wood Mill

1. **DO NOT** use until mill is completely assembled and installed according to instructions.

2. **DO NOT** use the mill until all controls and adjustments are understood.

3. **BE SURE** drill bit is securely locked in the chuck or cutter has been secured in a holder or collet. Ensure that all wrenches and adjusting keys have been removed before starting machine.

4. **ALWAYS USE THE RECOMMENDED SPEEDS** and feeds with milling cutters and router bits.

5. **ADJUST TABLE OR DEPTH STOP** to prevent drilling into table work surface.

6. **KEEP FLOOR AREA** around the mill free from oil, tools, and chips.

7. **NEVER USE YOUR HANDS TO HOLD WORKPIECE** during milling or drilling. Clamp it to the table or use a vise bolted to the table to secure workpiece and prevent rotation.

8. **NEVER HANDLE SHARP CUTTERS** with bare hands. Paper towels or shop rags wrapped around them will help to avoid injury.

9. **ALWAYS** use a brush to remove chips after the cutter has stopped. Never use a rag to remove chips.

10. **NEVER ALLOW UNSUPERVISED OR UNTRAINED PERSONNEL TO OPERATE THE MACHINE.** Make sure any instructions you give in regards to machine operation are approved, correct, safe and clearly understood.

11. **NEVER** operate mill if any part is damaged or broken until it is properly repaired or replaced.

12. **BE SURE** cutter, workpiece and machine parts have proper working clearance throughout the range of motion you intend to use.

13. **NEVER** place your fingers in a position where drill or cutter could contact them if a part shifts unexpectedly. Serious personal injury could result.

14. **NEVER** perform layout, assembly, or setup work on the mill while a bit or cutter is rotating.

15. **SHUT OFF POWER**, remove drill or cutting tool, and clean tool before leaving machine.

16. **IF AT ANY TIME YOU ARE EXPERIENCING DIFFICULTIES PERFORMING THE INTENDED OPERATION, STOP USING THE MACHINE!** Then contact our service department or ask a qualified expert how the operation should be performed.

⚠WARNING

Operating this equipment has the potential to propel debris into the air which can cause eye injury. Always wear safety glasses or goggles when operating equipment. Everyday glasses or reading glasses only have impact resistant lenses, they are not safety glasses. Be certain the safety glasses you wear meet the appropriate standards of the American National Standards Institute (ANSI).

⚠WARNING

Like all power tools, there is danger associated with the Model G9959/G9977 Wood Mill. Accidents are frequently caused by lack of familiarity or failure to pay attention. Use this tool with respect and caution to lessen the possibility of operator injury. If normal safety precautions are overlooked or ignored, serious personal injury may occur.

SECTION 2: CIRCUIT REQUIREMENTS

220V Operation

The motor supplied with the Model G9959/G9977 is a dual-voltage 110V or 220V motor; however, the magnetic switch will only operate at 220V. (For information on operating at 110V, contact our service department.) Under normal use, the motor draws approximately 8 amps @ 220V; therefore, it should be connected to a circuit that is protected by a 10 amp fuse or circuit breaker. This should be satisfactory for normal use while providing enough protection against circuit damage caused by power surges. Grizzly recommends that the circuit you use should be dedicated, (i.e., the Model G9959 or G9977 should provide the only draw from that circuit). If frequent circuit failures occur when using the Wood Mill, contact our service department or your local electrical contractor.

It is also necessary to connect a cord and plug to the machine. Be sure that both the plug and cord are rated at 20 amps and include a grounding wire. **See Figure 1.**

Extension Cords

We do not recommend the use of extension cords on 220V equipment. It is much better to arrange the placement of your equipment and the installed wiring to eliminate the need for extension cords. Should it be necessary to use an extension, make sure the cord is rated Hard Service (grade S) or better.

Grounding

In the event of a malfunction or breakdown, grounding reduces the risk of electric shock by providing electric current a path of least resistance. This tool must be equipped with an electric cord having an equipment-grounding conductor which must be properly connected to a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances.

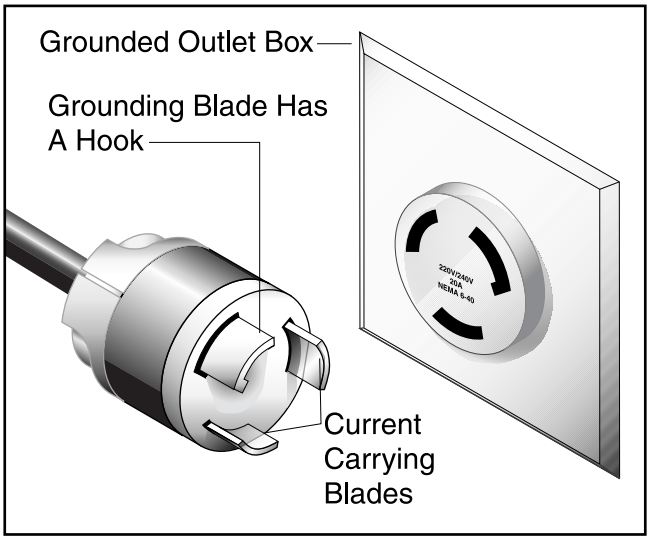
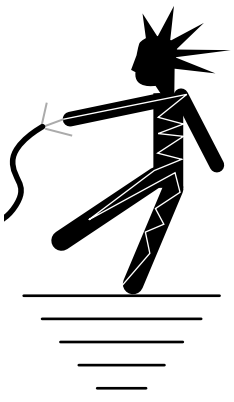


Figure 1. Grounded plug configuration.



⚠WARNING

Potential for electrical shock hazard, this equipment must be grounded. Verify that any existing electrical outlet and circuit you use is actually grounded. If it is not, it will be necessary to run a separate 12 A.W.G. copper grounding wire from the outlet to a known ground. Serious personal injury may occur.

SECTION 3: INTRODUCTION

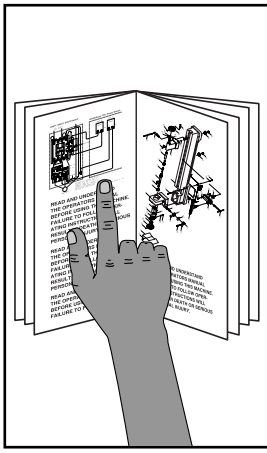
Commentary

Grizzly Industrial, Inc. is proud to offer the Model G9959/G9977 Wood Mill. This machine is a part of Grizzly's growing family of fine woodworking and metalworking tools. When used according to the guidelines stated in this manual, you can expect years of trouble-free, enjoyable operation.

The Model G9959/G9977 is intended for home and medium-duty professional use. This wood mill feature 1,720 R.P.M., 1½ H.P. capacitor-start motor and magnetic switch. The model G9977 is supplied with a powerfeed for the longitudinal movement of the table.

We are also pleased to provide this manual with the Model G9959/G9977. 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. If you have any comments regarding this manual, please write to us at the address below:

Grizzly Industrial, Inc.
c/o Technical Documentation
P.O. Box 2069
Bellingham, WA 98227-2069



⚠WARNING

Read the manual before assembly and operation. Become as familiar with the machine and its operation before beginning work. Serious personal injury may result if safety or operational information is not understood or followed.

Most importantly, 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 Circle
Pennsdale, PA 17756
Phone: (570) 546-9663
Fax: (800) 438-5901
E-Mail: techsupport@grizzly.com
Web Site: http://www.grizzly.com

The specifications, drawings, and photographs illustrated in this manual represent the Model G9959/G9977 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. Whenever possible, though, we send manual updates to all owners of a particular tool or machine. Should you receive one, we urge you to insert the new information with the old and keep it for reference.

⚠CAUTION

To operate this or any power tool safely and efficiently, it is essential to become as familiar with its characteristics as possible. The time you invest before you begin to use your Model G9959/G9977 will be time well spent. DO NOT operate this machine until you are completely familiar with the contents of this manual. Make sure you read and understand all of the safety procedures. If you do not understand something, DO NOT operate the machine.

Unpacking

This Wood Mill is shipped from the manufacturer in a carefully packed crate. If you discover the machine is damaged after you've signed for delivery, and the truck and driver are gone, you will need to file a freight claim with the carrier. Save the containers and all packing materials for possible inspection by the carrier or its agent. Without the packing materials, filing a freight claim can be difficult. *If you need assistance determining whether you need to file a freight claim, or with the procedure to file one, please contact our Customer Service.*

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

Piece Inventory

After all the parts have been removed from the crate, you should have:

- Wood Mill
- Tool Box
  - -Oil Bottle 1
  - -Screwdriver 1
  - -Wheel Handles 3
  - -Open End Wrench 1

Other featured items will be already mounted to the machine. They include:

-Draw Bar
-Powerfeed (G9977 only)
-Light Fixture

In the event that any non-proprietary 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.

NOTICE

A full parts list and breakdown can be found toward the end of this manual. For easier assembly, or to identify missing parts, please refer to the detailed illustrations.

Lifting Wood Mill

The model G9959/G9977 Wood Mill requires the use of lifting equipment such as a fork lift, engine hoist or boom crane. **Do Not** lift the machine by hand. See warning at right. Used in conjunction with lifting straps and following safe lifting procedures as detailed by the manufactures of these lifting devices, the Wood Mill can be safely lifted off the pallet and placed in the desired location.

Do Not lift machine from any other point than that pictured in **Figure 3.**

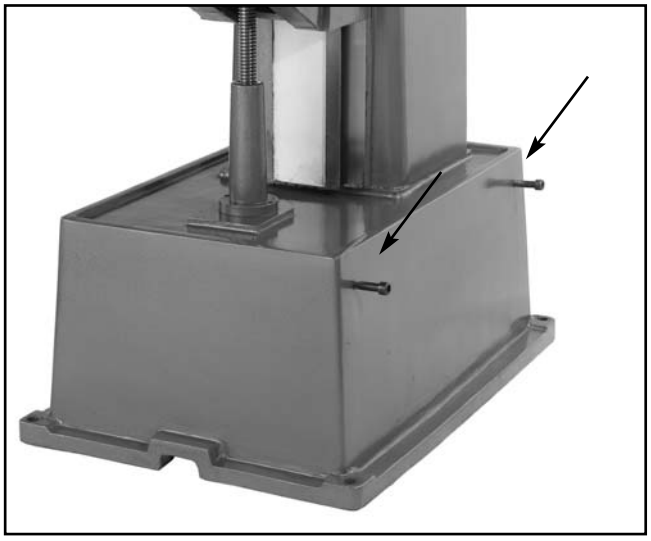
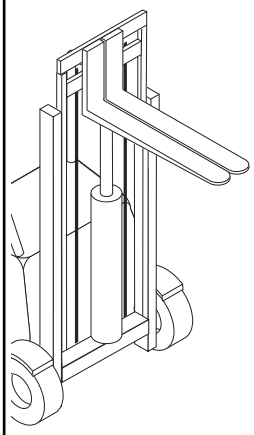
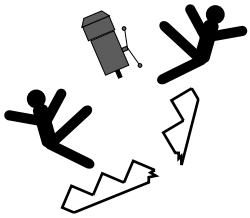


Figure 3. Use only this lifting point.



⚠WARNING

The model G9959/G9977 is a heavy machine, 1,350 lbs. shipping weight. DO NOT overexert yourself while unpacking or moving your machine – you will need assistance and power equipment. Serious personal injury may occur if safe moving methods are not followed.



⚠WARNING

If moving this machine up or down stairs, the machine must be dismantled and moved in small pieces. Also, make sure floor and stair structures are capable of supporting the combined weight of the machine parts and the people moving them.

Clean Up

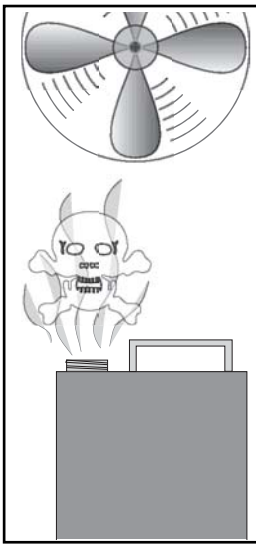
The unpainted surfaces are coated with a waxy oil to protect them from corrosion during shipment. Remove this protective coating with a solvent cleaner or citrus-based degreaser. Avoid chlorine-based solvents as they may damage painted surfaces should they come in contact. Always follow the usage instructions on the product you choose for clean up.

⚠WARNING

Do not use gasoline or other petroleum-based solvents to clean with. They have low flash points which make them extremely flammable. A risk of explosion and burning exists if these products are used. Serious personal injury may occur.

⚠WARNING

Do not smoke while using solvents. A risk of explosion or fire exists and may be the result serious personal injury may occur.



⚠CAUTION

Many of the solvents commonly used to clean machinery can be toxic when inhaled or ingested. Always work in well-ventilated areas far from potential ignition sources when dealing with solvents. Use care when disposing of waste rags and towels to be sure they do not create fire or environmental hazards.

Site Considerations

FLOOR LOAD

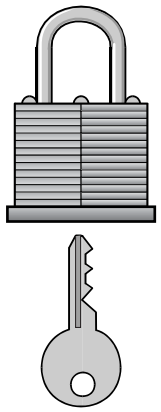
Your model G9959/G9977 Wood Mill represents a large weight load in a 22" x 33¾" footprint. Most commercial or garage shop floors should be sufficient to carry the weight. **Before** moving the Wood Mill onto a residential floor, inspect it carefully to determine that it will be sufficient to carry the load of the machine and the device for moving it. If you question the strength of your floor, you should have it inspected for possible reinforcement.

WORKING CLEARANCES

Working clearances can be thought of as the distances between machines and obstacles that allow safe operation of every machine without limitation. Consider existing and anticipated machine needs, size of material to be processed through each machine, and space for auxiliary stands and/or work tables. Also consider the relative position of each machine to one another for efficient material handling.

LIGHTING

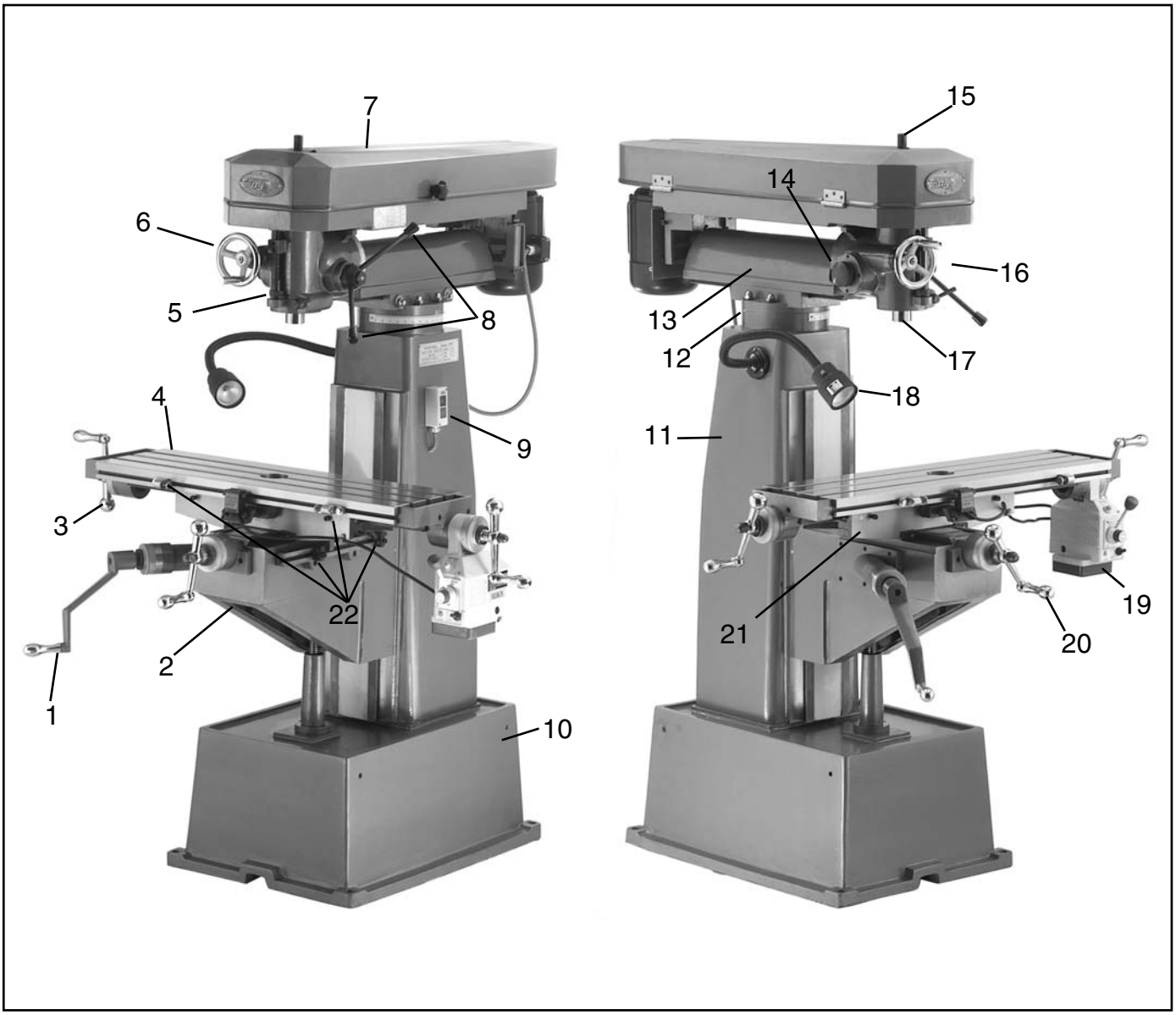
Lighting should be bright enough to eliminate shadow and prevent eye strain. The Wood Mill comes supplied with a flexible light fixture. Be sure to observe local electrical codes for proper installation of new lighting, disconnects, or circuits.



⚠CAUTION

Make your shop "child safe." Ensure that your workplace is inaccessible to youngsters by closing and locking all entrances when you are away. Never allow visitors in your shop when assembling, adjusting or operating equipment.

SECTION 4: COMPONENT ID



The following is a list of controls and components you will find on your Model G9959/G9977 Wood Mill. Please take the time to locate each item listed. Becoming familiar with the terms here will aid in comprehension later in the manual.

1. Knee Height Lever
2. Knee
3. Longitudinal Control Lever
4. Table
5. Depth Stop
6. Fine Down Feed
7. Belt Guard
8. Spindle Control Lever
9. On/Off Switch
10. Base
11. Column
12. Turret
13. Ram
14. Down Feed Clutch
15. Draw Bar
16. Head Casting
17. Spindle
18. Work Light
19. Power Feeder (G9977 only)
20. Cross Feed Control
21. Saddle
22. Table/Saddle Stops

Glossary

Arbor – The shank for a drill chuck, cutter holder or other device that is inserted into a spindle.

Back Lash – The amount of play between a lead screw and nut or between two gears.

Collet – Device for holding cutting tools in a spindle.

End Mill – Cutting tool used for slotting and facing in metal.

Facing – Cutting a surface to reveal a new face. To reduce the thickness of a workpiece.

Fly Cutter – Cutting tool used for a facing operation.

Gib – A tapered strip of metal in the dovetail ways that can be adjusted for wear.

Head Stock – That portion of the machine that supports the spindle/quill assembly.

Lead Screw – The threaded rod that when turned, causes the table to move.

Quill – Houses the spindle and allows the spindle to be adjusted up and down in the head stock.

R-8 – Designation for the spindle taper. Universal in that all arbors and collets with this number will fit this spindle.

X Axis – The direction of motion when the table moves from left to right or right to left. Turning the longitudinal hand crank creates this motion.

Y Axis – The direction of motion when the table moves from front to back or from back to front. Turning the cross slide hand crank creates this motion.

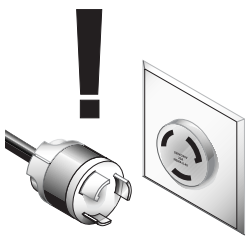
Z Axis – The direction of motion when the table or spindle moves up or down. Turning the knee hand crank or the spindle handles creates this motion.

Zero the Dial – Having positioned the table to a desired location, the dial on the hand crank is rotated to zero while maintaining the hand crank position.

Fraction	Decimal	Fraction	Decimal	Fraction	Decimal
1/64	0.015625	23/64	0.359375	45/64	0.703125
1/32	0.031250	3/8	0.375000	23/32	0.718750
3/64	0.046875	25/64	0.390625	47/64	0.734375
1/16	0.062500	13/32	0.406250	3/4	0.750000
5/64	0.078125	27/64	0.421875	49/64	0.765625
3/32	0.093750	7/16	0.437500	25/32	0.781250
7/64	0.109375	29/64	0.453125	51/64	0.796875
1/8	0.125000	15/32	0.468750	13/16	0.812500
9/64	0.140625	31/64	0.484375	53/64	0.828125
5/32	0.156250	1/2	0.500000	27/32	0.843750
11/64	0.171875	33/64	0.515625	55/64	0.859375
3/16	0.187500	17/32	0.531250	7/8	0.875000
13/64	0.203125	35/64	0.546875	57/64	0.890625
7/32	0.218750	9/16	0.562500	29/32	0.906250
15/64	0.234375	37/64	0.578125	59/64	0.921875
1/4	0.250000	19/32	0.593750	15/16	0.937500
17/64	0.265625	39/64	0.609375	61/64	0.953125
9/32	0.281250	5/8	0.625000	31/32	0.968750
19/64	0.296875	41/64	0.640625	63/64	0.984375
5/16	0.312500	21/32	0.656250	1	1.000000
21/64	0.328125	43/64	0.671875	π	3.141593
11/32	0.343750	11/16	0.687500	1mm	0.03937"

SECTION 5: ASSEMBLY

Beginning Assembly



⚠WARNING

Do not connect the machine to power at this time. The machine must remain unplugged throughout the entire assembly process. Failure to do this may result in serious personal injury.

We have organized the assembly process of the Model G9959/G9977 into steps. Please follow them in the sequence they are presented here.

Tools Required: A complete set of metric Allen® wrenches will be necessary for most of the assembly and adjustments. A rubber mallet and a set of open ended, metric wrenches will also be needed.

Leveling

The Wood Mill must be leveled and stable before use. It is supplied with 4 leveling pads and screws.

1. Thread the screws into the 4 threaded holes in the corners of the base.

2. Lift the machine using the techniques described in the **Section** titled **"Lifting Wood Mill"** and place a leveling pad under each screw.

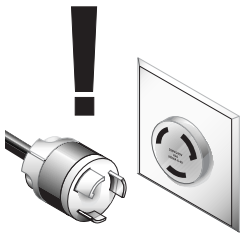
3. Place a precision level on the table top and check for level across the table and along the table.

4. Adjust the leveling screws until the table is level.

Mounting Handles

Three handles are supplied with the Model G9959/G9977. They are installed in an inverted fashion on each end of the work table and on the front of the knee. Remove the acorn nut on the end of the shafts at each of these locations. Remove the hand crank with the handle and turn it around so the handle faces away from the table. Install it onto the shaft and secure it with the acorn nut.

Collet or Arbor Installation



⚠WARNING

Disconnect the power before changing collets or arbors on the Model G9959/G9977. Serious personal injury may occur.

The Model G9959/G9977 feature an R-8 spindle which accepts any collets and arbors with the R-8 designation.

To install a collet or an arbor:

1. Release the latches on the head lid and open it.

2. Determine the location of the pin inside the spindle.

3. Align the collet keyway to the side where you found the pin, and insert the collet or cutting tool's arbor up into the spindle housing. Rotate the collet slightly to line up the key way with the pin in the spindle bore.

⚠CAUTION

Cutting tools are sharp! Be careful when installing, removing or handling all cutting tools. Hold with shop towel or gloves to avoid severe cut or injury.

4. Turn the hex head at the top of the drawbar (located on the top, front of the head) clockwise until the threads at the bottom of the drawbar mesh with the female threads in the top of the collet or arbor.

5. When using a collet: Insert the cutter in the hole at the bottom of the collet and continue to tighten the drawbar until both the collet and cutter are tightly in place. ***Do not over-tighten the collet. Grasp the rim of the front pulley. Hold it tight while tightening the draw bar.***

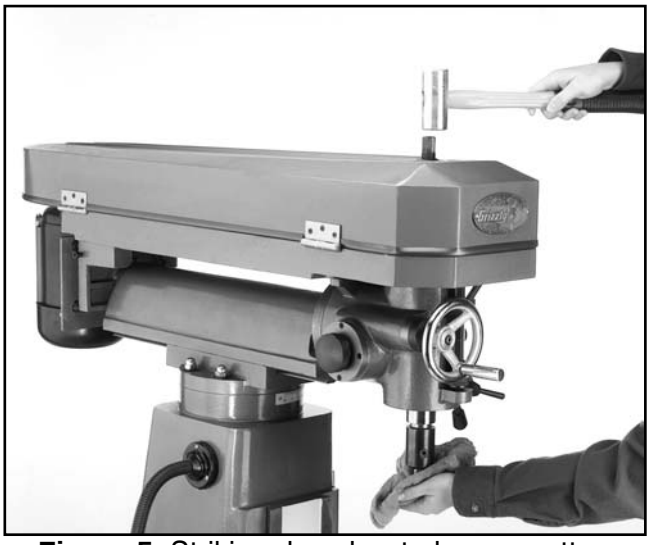


Figure 5. Striking draw bar to loosen cutter.

To remove a collet or an arbor:

1. Loosen the hex head at the top of the drawbar (2 or 3 turns).

2. Tap on the top of the drawbar with a soft faced mallet to loosen the collet from the spindle. ***Hold the collet/cutter as in Figure 5 with a shop towel from the bottom to prevent it from dropping completely out of the machine.***

3. Continue to turn the drawbar counterclockwise until it is free from the collet. Once loose, remove and replace with your desired collet. ***Remove cutting tools from spindle when not in use.***

Knee Crank Handle

The knee hand crank is located to the left of the Y-axis. It is shipped from the factory with the handle installed backwards on the knee gear shaft. To install properly, begin by removing the external retaining ring on the end of the shaft. Slide the handle off of the shaft and reinstall so that the handle faces outward.

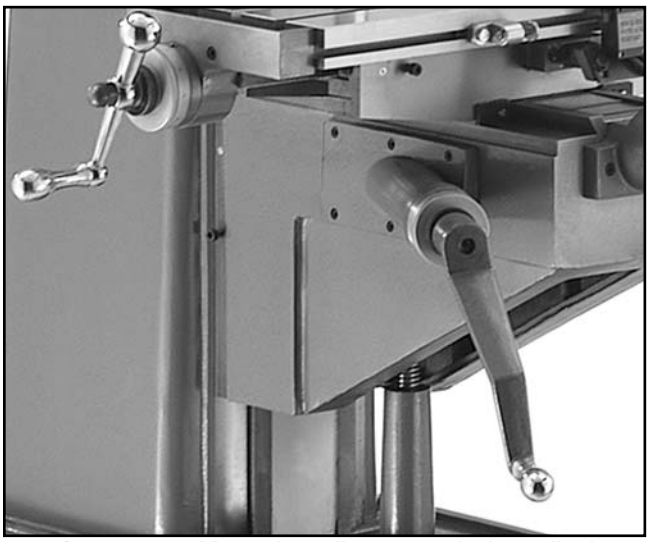


Figure 5A. Knee handle properly installed.

Mounting Milling Vise

The Model G9959/77 can be set up with a milling machine vise. Grizzly offers several milling machine vises that can be used with the mill. Please see our current catalog for order information.

Follow these instructions when installing a milling vise.

1. Make sure the table surface and bottom of vise are clean and free of dust or chips.

2. Secure the base of the vise to the top of the cross slide. The T-bolts supplied with the Wood Mill may be too short for this purpose and longer replacements might be needed.

3. Loosen the swivel bolts on the milling machine vise so the base can be swiveled.

4. Mount a drill chuck into the spindle and secure a dial indicator.

5. Position the vise so the indicator lever contacts the stationary vise jaw or a parallel mounted into the vise (as in **Figure 6**) on the right hand end.

6. Move the apron to the left on the bed ways and watch the dial.

7. If the needle on the indicator moves along the larger numbers, pivot the vise one half the difference, while watching the needle motion on the dial.

8. Move the apron to the right and note the difference on the dial from its position on the right. Again, pivot the vise one half the difference.

9. Repeat **steps 6-8** until the dial remains stationary when the apron is moved left or right.

10. Tighten the pivot bolts on the base of the milling vise.

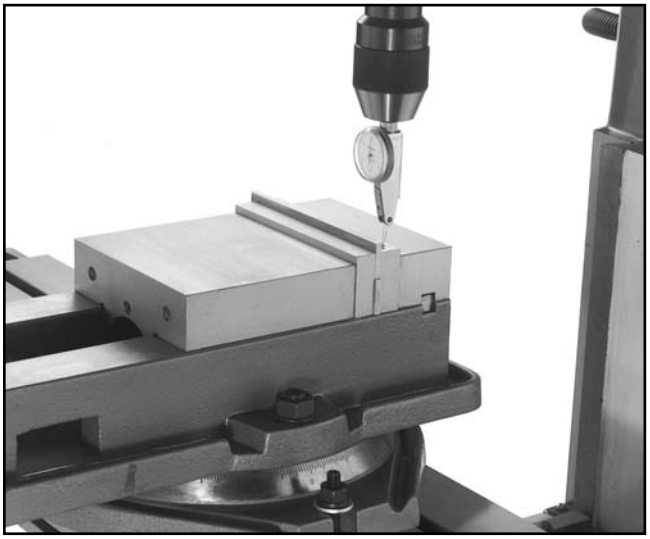
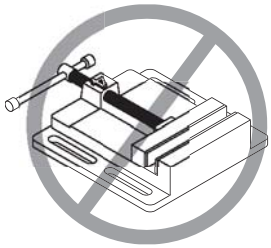


Figure 6. Dial indicator testing alignment.



⚠WARNING

Never use a vise for milling unless it is rated for milling machines. Drill press or bench vises are not designed for the rigors of machining. Vise failure during a milling operation may lead to serious personal injury.

SECTION 6: ADJUSTMENTS

Graduated Dials

The graduated dials on the handwheels for the table can be indexed or “zeroed” to help make accurate and convenient movements. Each dial can be reset or locked with the setscrew or thumb screw provided.

Example:

Suppose you want to drill a series of holes in a workpiece at 0.625" (⅝") centers. After locating the first holes placement and drilling, you can set the dial of the appropriate axis to zero and move the table 0.625". Drill the next hole and proceed as above.

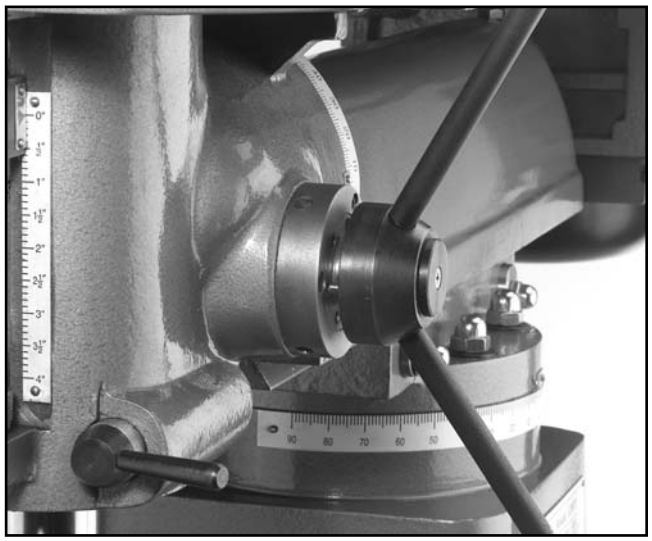


Figure 7. Align pin with holes.

Spindle Height

You have two options for spindle height adjustment: a drill press style, levered downfeed and a fine downfeed handwheel. The lever is located on the right, forward portion of the head. The fine downfeed handwheel is to the left.

To operate the feed lever:

Pull the lever toward you. The spindle will go down until you stop pulling or until it hits the depth stop. The orientation of the handle may also be repositioned.

1. Pull the handle hub away from the head casting.

2. Note there is a pin behind the hub. Rotate the handle to a new location and push the hub towards the head casting. The pin must align with holes in the head casting before the hub will seat properly. **See Figure 7.**

3. Loosen the setscrew on the knurled surface of the handwheel dial. Turn the dial until the “0” lines up with the index line. Tighten the setscrew.

4. Turn the handwheel according to the distance you want to move downward. Each complete revolution equals 0.100".

Locking:

For milling operations, the quill height can be locked in by tightening the black lever on the forward, right hand portion of the head.

To operate the fine down feed handwheel:

1. Tighten the knurled locking knob located on the left side of the headstock and just behind the fine down feed handwheel.

2. Rotate the handwheel to adjust the spindle height.

Please note that tightening the knurled locking knob prevents use of the adjusting handle. When the knurled locking knob is loose, the fine down feed handwheel no longer functions.

Quill Lock

The quill can be locked in place by tightening the handle shown in **Figure 8.** This will help maintain the depth setting while performing a milling operation. It also stabilizes the spindle and should be used even when the quill is positioned at the highest point.

Figure 8. Secure quill with this lever.

Depth Stop

To calibrate the depth stop:

1. Roll the quill down using the lever handle until you reach the desired depth shown on the scale. Lock the quill with the lever lock handle. Turn the depth stop nut until it meets the bottom of the depth stop block. Tighten the jam nut against the bottom of the stop nut.

2. Roll the spindle up into the head. Place a piece of paper on the workpiece. Loosen the knee lock handle and raise the knee until the drill bit or cutter just touches the paper. Tighten the knee lock.

3. Begin drilling or milling. *Note for precision depth: set the depth stop shallow of the desired depth by 1/16". Drill the hole and measure. Finish to depth using the fine downfeed handwheel with its graduated dial and use the procedure laid out in the previous section titled:* **"Graduated Dials".**

Head Tilt

The head casting can be tilted for milling or drilling at an angle of 90˚ to the left or right. The belt guard and motor tilt along with the head casting.

1. Loosen 3 of the 4 hex nuts shown in **Figure 9.**

2. Loosen the setscrew near the motor **(Figure 10)** with the 4mm Allen® wrench supplied.

3. While holding the head casting with one hand, loosen the last hex nut.

4. Adjust the angle of the head casting until the pointer is over the desired angle. Snug up one nut so the head will not shift from your setting.

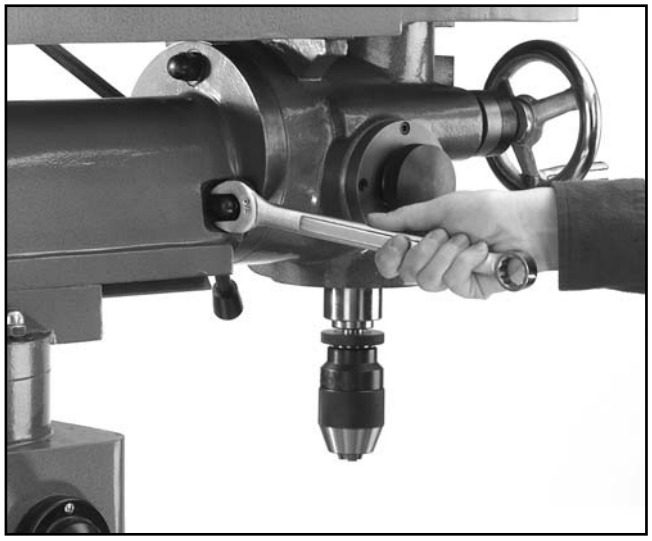


Figure 9. Loosen bolts to tilt head.

More accurate angle set up may be done with a precision protractor such as the G9900 Dial Protractor in the current Grizzly catalog. Other tools such as angle gauges, sine bars and spacers may be employed to set the head casting to very precise angles.

5. Once you have determined that the angle of the head casting is set correctly for your needs, tighten the rest of the nuts and the setscrew near the motor.

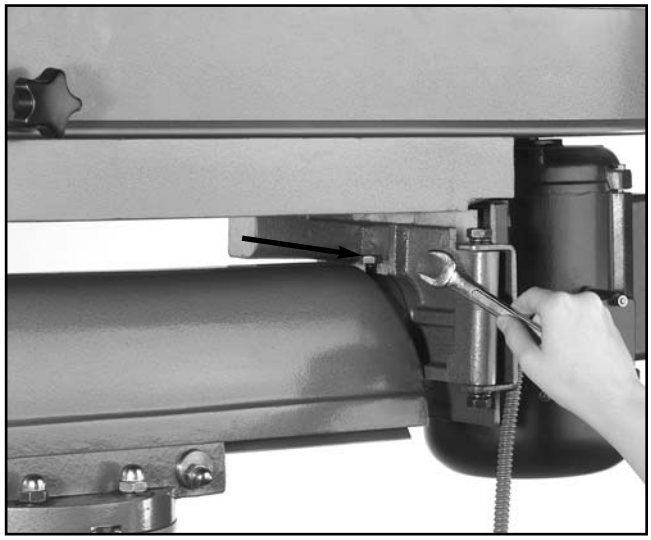


Figure 10. Loosen rear bolt before tilting head.

Truing Head

The head casting can be set perfectly square to the table from side to side. It is especially important to check this after it has been tilted. There are a number of methods to determine if its square. Two methods are described below.

Method one incorporates the use of a dial or test indicator, the support assembly from a magnetic base and a drill chuck mounted into the spindle of the Wood Mill.

1. Remove the support assembly from the magnetic base and install it into the drill chuck.

2. Position the support arm so that it is horizontal with the table top.

3. Mount the dial or test indicator onto the support arm as in **Figure 11.**

4. Lift the table using the knee until the dial has moved at least ½ revolution.

5. Turn the spindle by hand until the dial is positioned on the right hand side and turn the dial until the "0" on its face is under the indicator needle.

6. Carefully rotate the spindle until the dial is positioned on the left hand side of the spindle. Read the dial.

7. If the dial does not read the same when positioned from one side to the next, loosen the hex nuts that secure the head tilt and adjust the head ½ the error shown on the dial.

8. Repeat **step 6 and 7** until the dial measures the same on the right and the left side of the table.

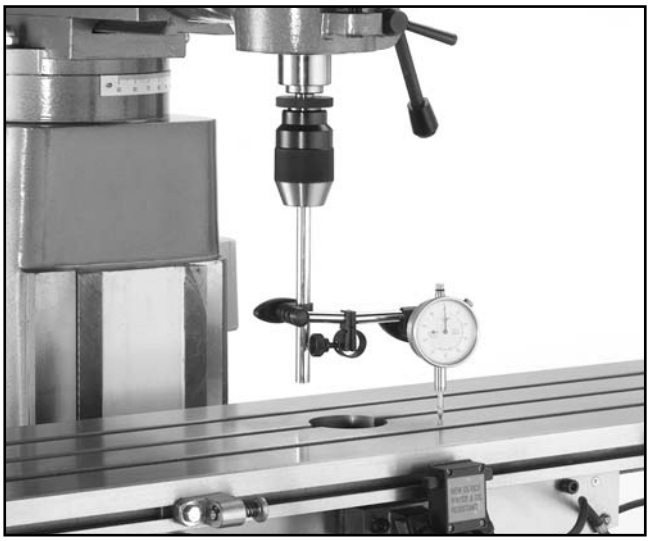


Figure 11. Indicator mounted to test head.

Method two uses a large machinist square.

1. Extend the quill down as far as it will travel and lock it in place.

2. Place the square on the machine table and check the quill body for square.

3. If adjustment is necessary, loosen the hex nuts that secure the head tilt and adjust as needed.

Turret Swivel

The top of the column has the capacity to swivel as a turret. This feature allows the reach of the head to be positioned for over-sized workpieces.

1. Loosen the 4 hex nuts at the top of the column. **See Figure 12.**

2. Rotate the head to the desired position and secure the 4 hex nuts.

Figure 12. Loosen hex nuts to swivel head.

Ram Adjustment

The ram adjustment allows the head to be positioned further away or closer to the column, thus, allowing another dimension in the setup for machining larger or odd shaped workpieces. The ram is supported by dovetail ways and is locked in place by bolts.

1. Loosen the locking bolts indicated in **Figure 13.**

2. Push or pull the head casting to the desired position.

3. Tighten the locking bolts.

If the ram does not move freely, make sure the two square head bolts are loose and tap on the face of the head casting with a rubber or wooden mallet.

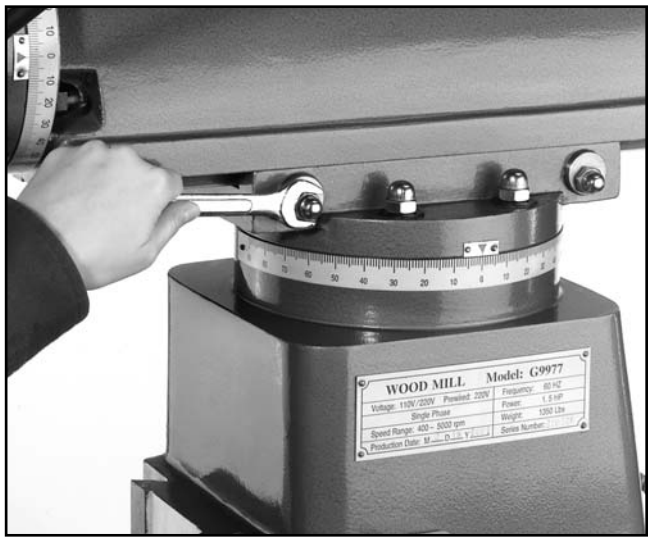


Figure 13. Loosen locking bolts.

Table Stops

The front edge of the table has a T-slot with 2 adjustable stops as shown in **Figure 14**. They can be set so that the table motion in the "X" (or longitudinal) axis is restricted to a specific distance. This is beneficial for repetitive cuts or hole placement.

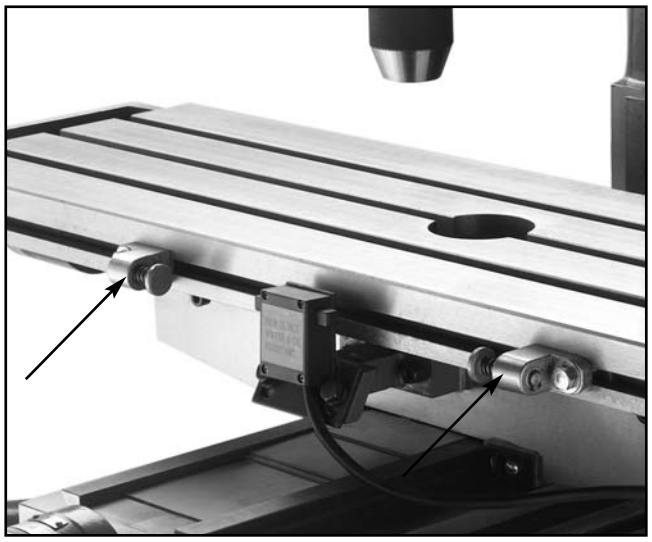


Figure 14. Upper table stops on the G9977.

Saddle Stops

The saddle stops (**Figure 15**) are used in the same way as the table stops except that they restrict the distance of motion in the table along the "Y" axis.

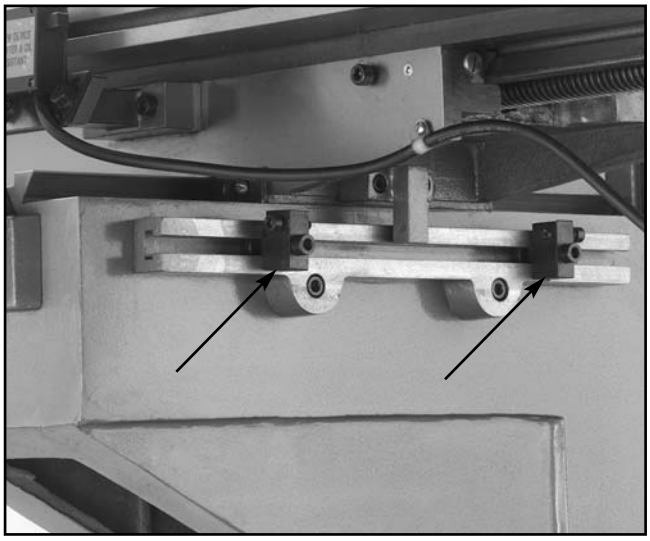
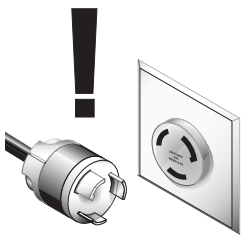


Figure 15. Saddle stops.

SECTION 7: OPERATIONS



⚠WARNING

Always disconnect power from machine whenever changing speeds. If start button is accidentally touched while changing belts serious personal injury will occur.

Speed Changes

The motor is mounted on a plate hinged to the column. The motor assembly can be released by turning the handle at the side of the motor. Once the motor tension is released, the belts can be easily re-positioned to change speeds.

Speed Chart

A_1 - B_1	B_4 - C_3 B_3 - C_2 B_2 - C_1	420 650 850
A_2 - B_2	B_4 - C_3 B_3 - C_2	1300 2000
A_3 - B_3	B_4 - C_3 B_2 - C_1	1600 3100
A_4 - B_4	B_3 - C_2 B_2 - C_1	3900 5000

Examine the speed chart above and the diagram in **Figure 16** below. The diagram shows one V-belt connecting the A pulley to the B pulley at the #3 sheave. The B pulley and C pulley are connected by V-belt at the #1 sheave. Following this progression along the chart above will show that the machine is now set to run at 3100 R.P.M.

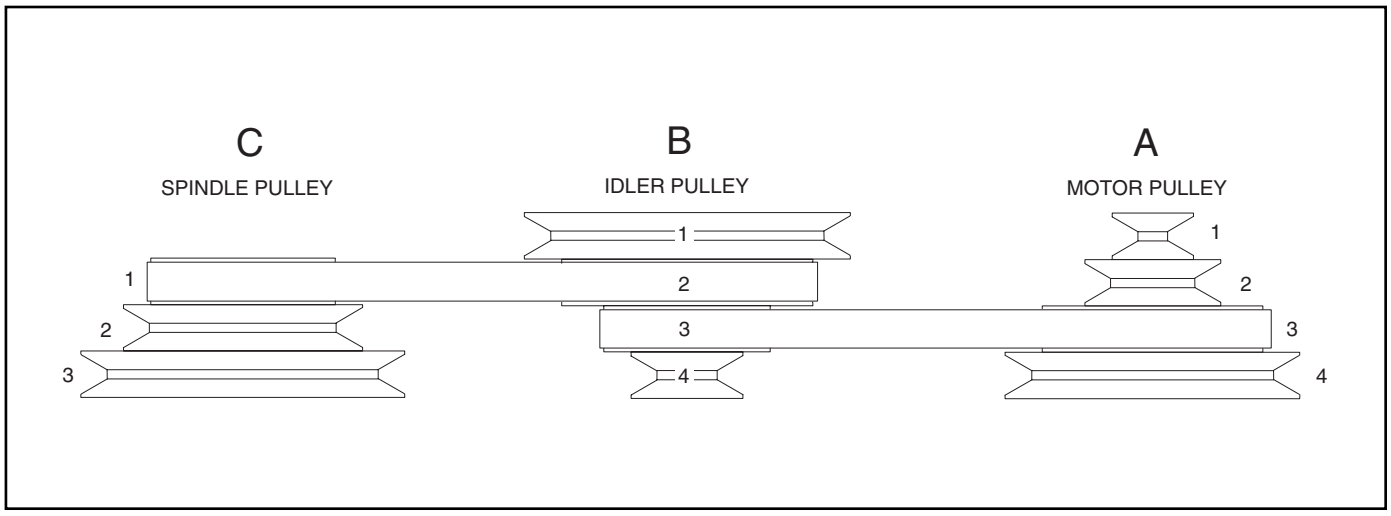


Figure 16. This belt arrangement will yield 3100 R.P.M.

Power Feed (G9977)

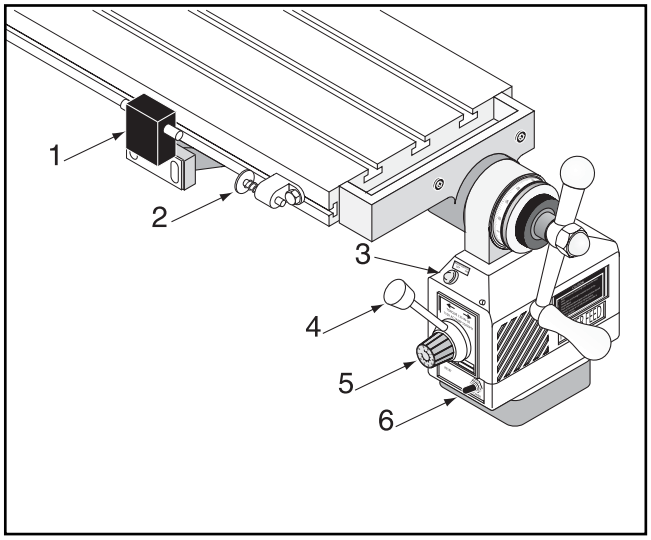


Figure 17. Power feed components.

The following is a list of components for the power feed on the Model G9977 Wood Mill. Refer to **Figure 17**, above while reading the descriptions below.

1. **Stop Switch** – Causes the power feed to stop when either button is depressed by the plunger stop.

2. **Plunger Stop** – Can be positioned along the table edge and depresses Stop Switch button.

3. **Rapid Traverse Button** – Once the direction lever has been activated, pushing this button will cause the power feed to move the table at full speed.

4. **Direction Lever** – Tilting this lever to the left causes the table to travel to the left. Tilted to the right, this lever causes the table to travel to the right.

5. **Speed Dial** – Controls the speed that the table moves. Turning the dial clockwise causes the table to move faster.

6. **On/Off Switch** – This is the master switch for the power feed unit.

A power feed is supplied and installed on the Model G9977, only. The power feed allows motorized speed control over the table along the longitudinal axis.

To operate the power feed:

1. Loosen the table locking levers located just below the front edge of the table.

2. Adjust the plunger stops on the front edge of the table to the desired distance you wish the table to travel. (When they hit the stop switch the power feed will be deactivated.)

⚠CAUTION

Before running your power feed be sure there is enough running clearance between the table, spindle, vise, clamps and/or parts. Be aware that all of these can become pinch points.

3. Use the On/Off switch located below and to the right of the power feed lever to turn on the power feed.

4. Push the lever to the right to move the table to the right.

5. Push the lever to the left to move the table to the left.

6. Turn the dial at the base of the lever to increase or decrease the speed of the table movement.

NOTICE

The table stops supplied with the machine will not stop the powerfeed until the switch buttons are totally depressed. To set up for accurate stops make a few "dry runs" without running the Wood Mill. Reset the stops until the table motion ends in a satisfactory location.

7. Press the rapid traverse switch with the lever pushed in the direction of desired movement to move the table at maximum velocity.

8. If there is a powerfeed motor overload (i.e. trying to move too fast through a heavy cut), the built in circuit breaker will trip, and the powerfeed will stop. If this occurs, proceed with these steps:

a. Stop the milling operation.

b. Turn the powerfeed switch to the "Off" position.

c. Press the circuit breaker reset button located just to the left of the On/Off button.

d. Troubleshoot and remedy the cause of the electrical overload and start again.

Speeds and Feeds

The Model G9959/77 is supplied with speeds that can be used for many types of work in both metal and wood. Care must be taken to use the correct speed for a given situation. The following guideline should be considered when planning a job for the wood mill. However, if you have questions as to the proper use of the machine, do not use it. Contact our service department or a qualified expert before continuing.

General rules of thumb:

The larger diameter cutters require a slower spindle speed.

The smaller diameter cutters require a faster spindle speed.

The harder the material, (steel vs. wood) the slower the spindle speed.

The softer the material, the faster the spindle may turn. (Plastics can melt at too high of a spindle speed!)

A deeper cut will require a slower feed rate.

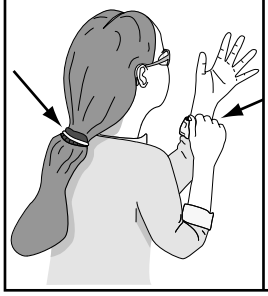
A smaller cutter will require a slower feed rate.

Test Run

Once the assembly is complete and the adjustments are done to your satisfaction, you are ready to test the machine.

Turn on the power supply at the main panel. Press the START button. **Make sure that your finger is poised on the STOP button, just in case there is a problem**. The mill 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.

If noises occur that can not be found by visual inspection, please contact our service department for help.



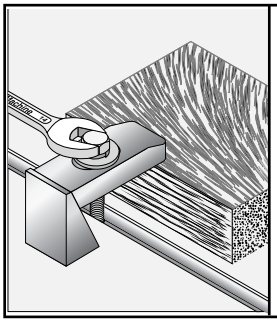
⚠WARNING

Always roll up long sleeves, tie back long hair and do not wear gloves when operating this machine. Loose clothing, hair or gloves could be entrapped and serious personal injury will occur.

⚠WARNING

Always wear safety glasses while operating machine. Chips will be propelled into the air which may lead to serious personal injury.

Securing Workpiece



⚠WARNING

Secure workpiece with clamps or in a vise before starting machine. Failure to observe this may result in serious personal injury.

All machining operations done on this machine require the workpiece be securely clamped to the milling table or in a vise that is securely bolted to the table.

The milling table has 3 T-slots which accept T-nuts sized for use with ⅜" studs. **Do Not** use hex bolts for this purpose. The hex heads are too small and may break free of the T-slot, causing the workpiece to become unstable and unsafe. The G1075 Clamping Kit or individual T-nuts, flanged nuts, step clamps and blocks are offered by Grizzly. Milling machine vises are also available and range in size from 2½" to 6".

Whenever clamping a workpiece to the Wood Mill table, remember these important safety guidelines:

- **Make sure the interlocking components of the step clamps engage fully and that the step clamp lays evenly on the workpiece. See Figures 18 and 19.**
- **Always have a minimum of 3 clamping devices when securing the workpiece to the table as in Figure 20.**
- **Check clearance by moving the table (with the machine unplugged) along the intended path. Obstructions could lead to a "crash" creating an unsafe condition and resulting in serious personal injury. See Figure 21.**

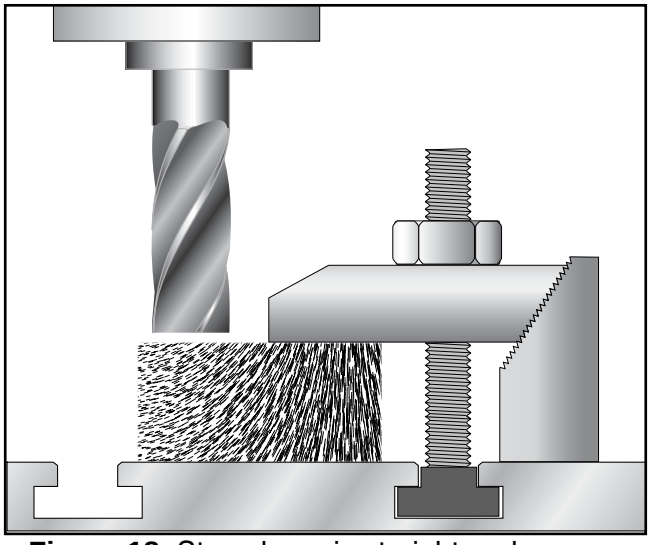


Figure 18. Step clamp is straight and secure.

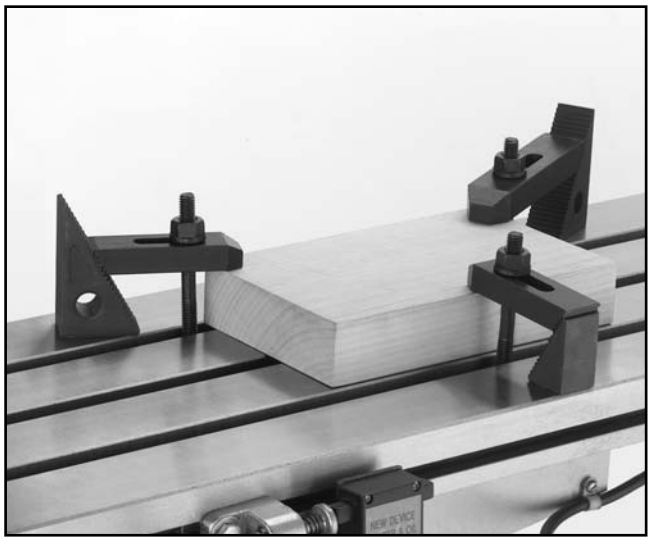


Figure 20. Three clamps holding workpiece.

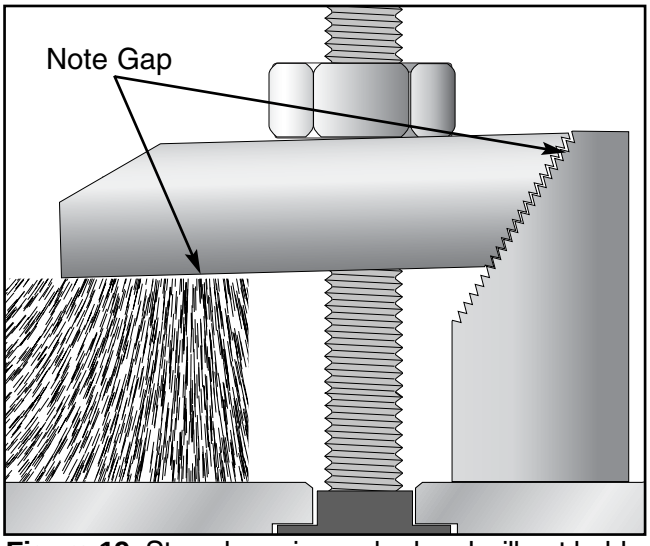


Figure 19. Step clamp is crooked and will not hold.

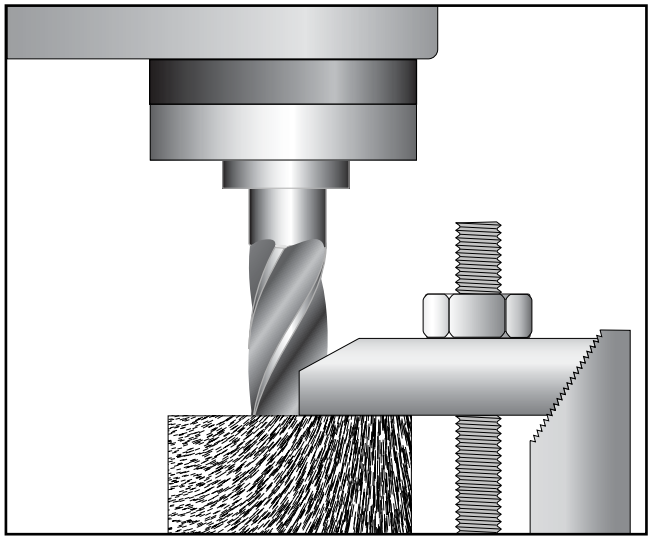


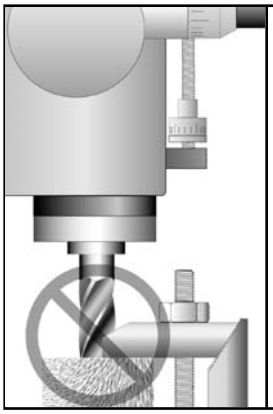
Figure 21. Clamp will interfere with path of cutter.

Whenever clamping a workpiece to the Wood Mill's table, remember these important safety guidelines:

- **Make sure the interlocking components of the step clamps engage fully and that the step clamp lays evenly on the workpiece. See Figures 18 and 19.**
- **Always have a minimum of 3 clamping devices when securing the workpiece to the table as in Figure 20.**
- **Check clearance by moving the table (with the machine unplugged) along the intended path. Obstructions could lead to a "crash" creating an unsafe condition and result in serious personal injury. See Figure 21.**

Facing/Planing

The Model G9959/G9977 is capable of facing/planing wood or metal. This is accomplished most often with indexable end mill or fly cutter. The same operation can be performed with an end mill of any size, but indexable end mills and fly cutters will give faster and better results. **See Figure 22.**



⚠WARNING

Check clearance by moving table along the intended path with the machine unplugged. Obstructions could lead to a "crash" creating an unsafe condition and result in serious personal injury.

NOTICE

A quick and accurate way to setup a workpiece parallel to the table is to lay a straight board into one of the table slots and push the workpiece against it before clamping.

1. Secure the workpiece to the Wood Mills table top or in a vise which is secured to the table top. Position the table so the workpiece is directly under the spindle. When clamping a workpiece, make sure the cutter, quill and headstock of the mill can move freely throughout the entire milling process. With the machine still unplugged, check clearance by moving table along the intended path. If not checked, this could lead to a "crash." This unsafe condition can cause damage to the machine or workpiece and may result in personal injury.

2. Install the facing mill, fly cutter or end mill into the spindle and secure with the draw bolt as described in section titled "Collet or Arbor Installation".

Figure 22. Various cutting tools for facing.

3. Lift the knee until the cutter is within an inch of the workpiece.

4. Rotate the spindle handle until the cutter is within 1/16".

5. The machine should be started prior to making final adjustments. The last 1/16" can be taken out by elevating the knee. Slowly rotate the handle while watching the cutter and workpiece.

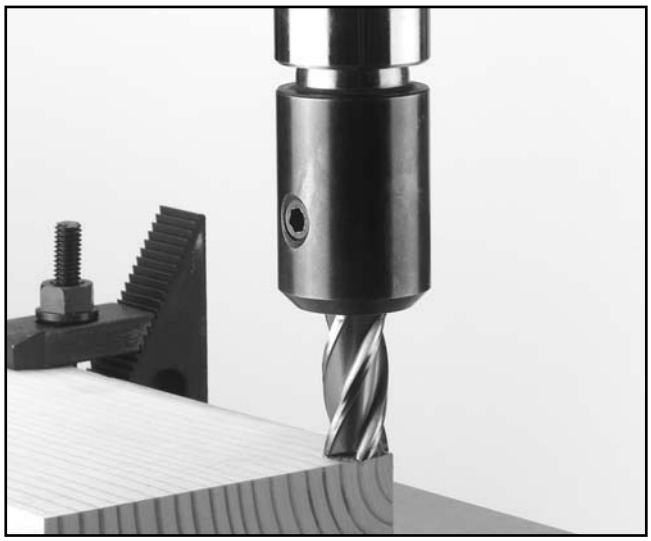


Figure 23. Cutter just touching workpiece.

6. The cutter will start to scratch the surface as in **Figure 23**. When it does, stop rotating the handle. If you have gone too far, move the knee so the cutter no longer contacts the surface. Move the table along the intended path and try again. Once the cutter is just touching the workpiece you have established the "zero" setting.

7. The graduated dial on the knee may be set to zero. Hold the handle with one hand to maintain the position, and with the other hand, rotate the graduated dial until it reads zero.

8. Move the table on the longitudinal axis until the cutter is off of the workpiece.

9. Turn the handles on the knee to the desired depth while watching the dial. For woodworking, this amount should not exceed ⅛" and in metalworking no more than 1/16". In either case, multiple passes are required for dimensions exceeding these limits.

10. Moving the workpiece under the cutter must be regulated. For the Model G9977, the feed rate can be manipulated with the dial on the powerfeed. With the Model G9959, the feed rate is done manually by the operator. For best results, start off with a slow feed rate. As the cut progresses, adjust the feed rate slower or faster as necessary to produce the best finishes.

11. Turn the machine on and begin moving the table along the intended path. While the table is moving, be aware of where the cutter, spindle and quill are in relationship to their surroundings.

12. Continue cutting until the cutter completely clears the surface of the workpiece. Shut off the machine and wait for the cutter to come to a complete stop before removing the workpiece.

Drilling

The Model G9959/77 is well suited for drilling holes in wood or metal. Given the accurate movement of the table and knee, precise lay out of multiple holes can be done quickly and with less difficulty than other methods.

It is very important to follow these guidelines when drilling with the wood mill:

- **Secure the workpiece to the table or in a vise that is secured to the table before drilling.**

- **Protect the table by placing the workpiece on scrap wood or center the location of the hole to be drilled over the pocket in the table when through drilling. Also, make use of the depth stop so that the drill bit goes no deeper than necessary.**

- **Use the correct R.P.M. for the diameter of the drill bit being used and the type of material being drilled.**

Deep boring may be accomplished using the knee. The Wood Mill has a spindle stroke of just over 3". Drilling to this depth and then adjusting the knee will allow drilling depths as long as any drill bit up to 12". However, chips will have to be periodically cleared from the hole during the drilling process, otherwise binding may occur, causing the drill bit to break or become excessively hot.

Dovetails

The Model G9959/77 are capable of producing dovetails with a high degree of accuracy. Spacing can be as accurate as 0.001" (one thousandth of an inch). A clear understanding of dovetail setup, use of cutters and spacing technique is necessary to realize the full potential of this feature. Please consult with the local library, technical college or training seminars for more information about producing dovetails should you have further questions.

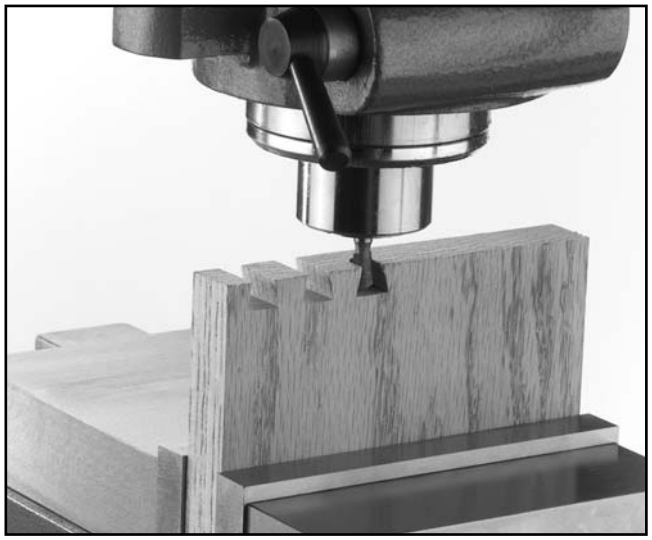


Figure 23. Cutting very accurate dovetails.

Slotting

The Model G9959/G9977 can produce slots in wood and metal. Shapes range from dovetail, round bottom, blind and through slots. Slot sizes are limited to 3" in wood and ¾" in steel. Be sure to use cutters or bits that are capable of making an end cut (plunging) when producing blind slots. See **Figure 24 and 25** for examples of end cutting and non end cutting bits.

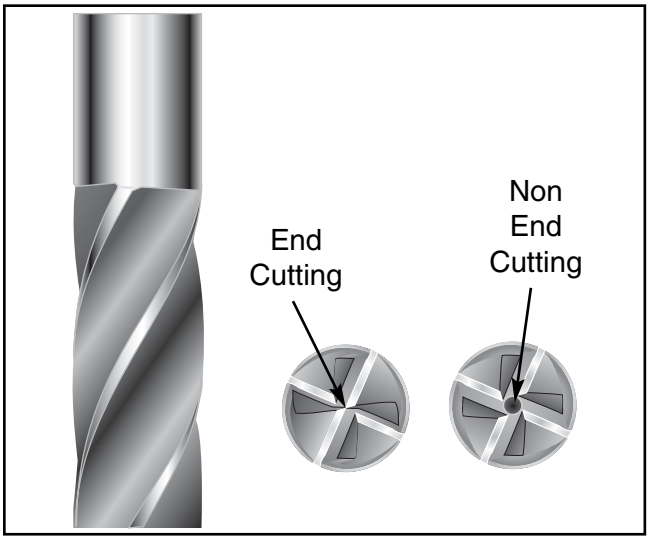


Figure 24. Cutting edges meet at center on end cutting bits.

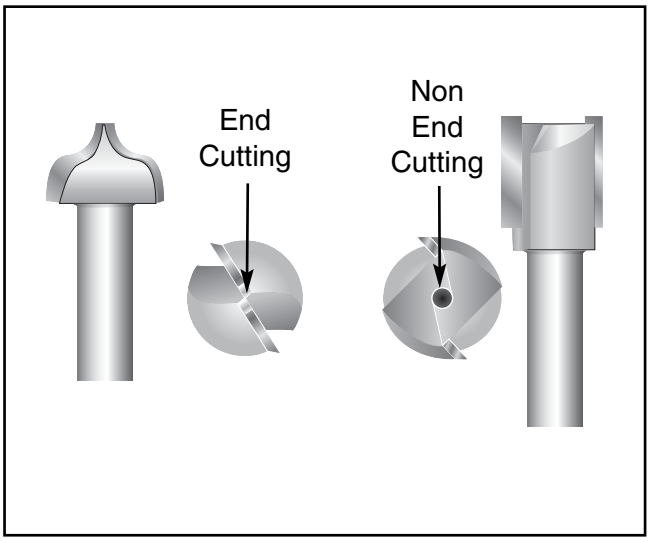


Figure 25. Cutting edges meet at center on plunging router bits.

SECTION 8: MAINTENANCE

General

Your Model G9959/G9977 Wood Mill requires very little maintenance. A thorough cleaning, now and again, will increase the machine's durability and efficiency by removing chips and grime that can gum up moving parts.

An occasional application of a protective spray coating will keep the table and other bare metal parts from rusting and pitting.

REMEMBER: When performing maintenance or repairs on shop equipment, always disconnect the machine from its power supply.

Bearings

Most of the bearings are factory-sealed. A sealed bearing requires no lubrication during its lifetime. Should a bearing fail, your mill will probably develop a noticeable rumble, which will increase when the machine is put under load. If allowed to get worse, overheating of the journal containing the worn out bearing could occur. If the worn out bearing is not replaced, it will eventually seize – possibly doing damage to other parts of the machine. Bearings are standard sizes and can be replaced through Grizzly.

Lubrication

Table and Apron Lead Screws: Lubricate every day with SAE 20 oil. A few drops applied on each side of each nut.

Lead Screw Bearings: Lubricate the bearings located at the ends of the table and just in front of the Y axis hand crank. You will find oil ports with a ball stopper. Lubricate daily. Apply small amount of SAE 20 using an oil can with a pointed nozzle to help push in the ball.

Gibs

The Model G9959/G9977 Wood Mill table features tapered gibs in the dovetail ways. To adjust these remove the dust covers on the dovetail ways to expose the heads of the adjusting screws. To tighten the table, loosen the screw at the small end of the tapered gib and tighten the screw at the large end. Use the same procedure for the saddle and knee gib adjustments.

SECTION 9: CLOSURE

Commentary

The following pages contain part diagrams, part lists and Warranty/Return information for your Model G9959/G9977 Wood Mill.

If you need parts or help in assembling your machine, or if you need operational information, we encourage you to call our Service Department. Our trained service technicians will be glad to help you.

If you have comments dealing specifically with this manual, please write to our Bellingham, Washington location using the address in **Section 3 Introduction**. The specifications, drawings, and photographs illustrated in this manual represent the Model G9959/G9977 as supplied when the manual was prepared. However, due to Grizzly's policy of continuous improvement, changes may be made at any time with no obligation on the part of Grizzly. Whenever possible, though, we send manual updates to all owners of a particular tool or machine. Should you receive one, add the new information to this manual and keep it for reference.

We have included some important safety measures that are essential to this machine's operation. While most safety measures are generally universal, each workshop is different and safety rules should be considered *as they apply to your specific situation.*

We recommend you keep a copy of our current catalog for complete information regarding Grizzly's warranty and return policy. If you need additional technical information relating to this machine, or if you need general assistance or replacement parts, please contact the appropriate regional Service Department listed in the introduction.

Additional information sources are necessary to realize the full potential of this machine. Trade journals, metalworking magazines, and the shelves of your local library are good places to start. Knowledge and caution are vital components of successful Wood Mill operation.

⚠WARNING

Operating this equipment has the potential for flying debris to cause eye injury. Always wear safety glasses or goggles when operating equipment. Everyday glasses or reading glasses only have impact resistant lenses, they are not safety glasses. Be certain the safety glasses you wear meet the appropriate standards of the American National Standards Institute (ANSI).

⚠WARNING

The Model G9959/G9977 was specifically designed for metal and wood machining. Do not modify and/or use this machine for any other purpose. Modifications or improper use of this tool will void the warranty. If you are confused about any aspect of this machine, DO NOT use it until you have answered all your questions. Serious personal injury may occur.

⚠WARNING

As with all powerful industrial machinery, there is the potential for danger when using the Model G9959/G9977 Wood Mill. Use this tool with respect and caution to lessen the possibility of operator injury or mechanical damage. If normal safety precautions are overlooked or ignored, serious injury to the operator or others in the area is possible.

Your Notes:

MACHINE DATA SHEET

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

GRIZZLY MODEL G9959 / G9977 WOOD MILL

Design Type .....Floor Model Knee Mill

Overall Dimensions:

- Height .....68⅞"
- Width (With Handwheels on) .....52"
- Depth .....41¼"
- Table Size .....10" x 33¾"
- Crate Size .....43¼" L x 47¼" W x 70¾" H
- Foot Print .....22" x 31½"
- Shipping Weight .....1390 lbs.
- Net Weight .....1276 lbs.

Capacity:

- Spindle Travel .....3.15"
- Spindle Taper R-8
- Max Distance, Spindle to Column .....16⅞"
- Max Distance, Spindle to Table .....20.47"
- Swing .....34¾"
- Table Travel, Longitudinal .....18"
- Table Travel, Cross .....12"
- T-Slots (# and Size) .....3 @ 2½" centers, ⅜" Studs
- Speeds 9
- Range of Speeds .....420-5000 R.P.M.
- Knee Movement .....15¾"
- Vertical Head Tilt .....90° Right and Left
- Column Swivel .....90° Right and Left

Construction:

- Table .....Surface Ground Cast Iron
- Base .....Cast Iron
- Head .....Cast Iron

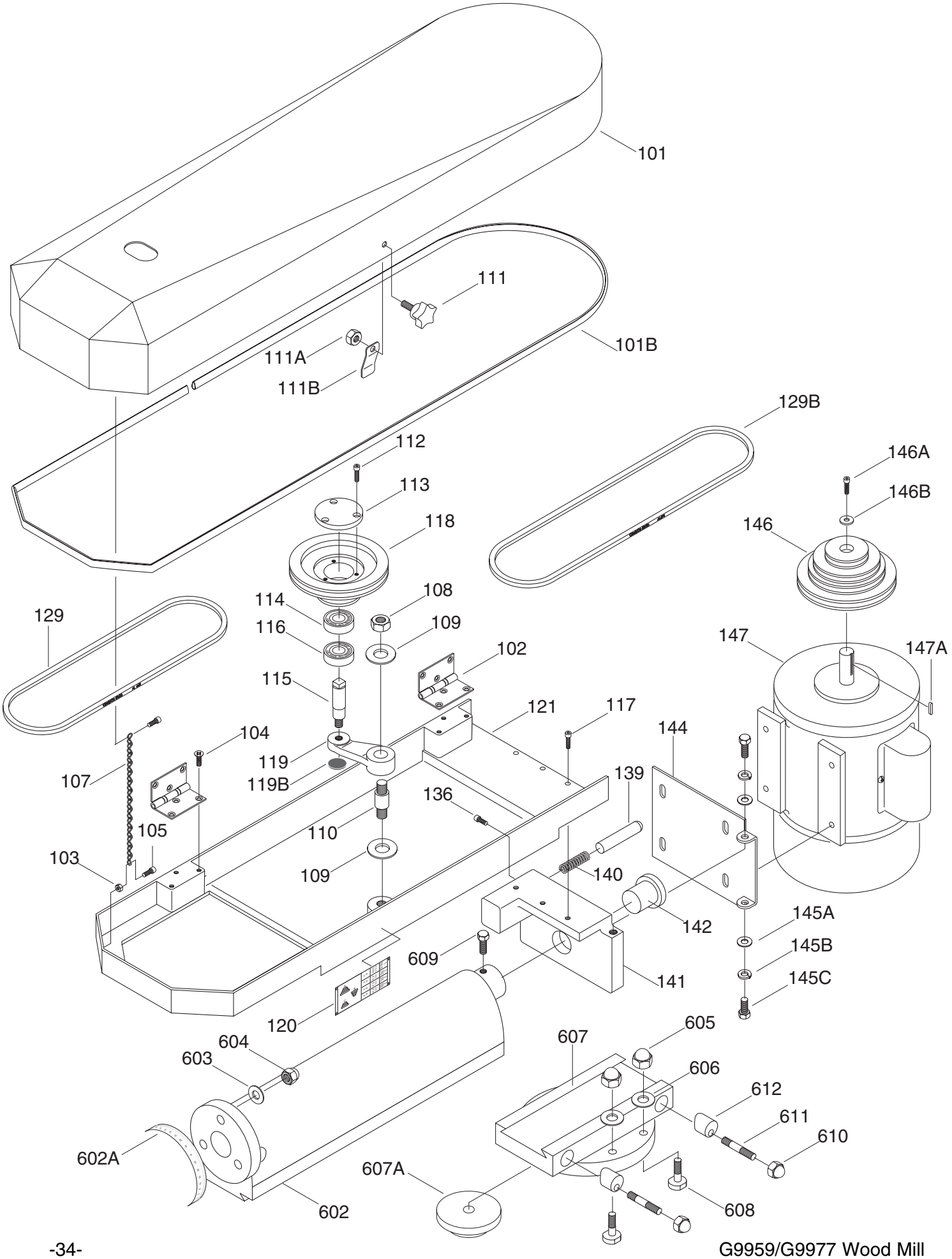
Motor:

- Type .....TEFC Capacitor Start Induction
- Horsepower .....1½ H.P.
- Phase / Voltage .....Single Phase 110 / 220V
- Prewired 220V
- Switch .....Forward / Reverse Barrel Switch
- Amps .....16 / 8
- Cycle and R.P.M. .....60 Hertz / 3450 R.P.M.
- Power Transfer .....V-Belt Drive
- Bearings .....Shielded and Lubricated Ball Bearings

Features:

- .....Table Stops
- .....Precision Adjustable Depth Stop
- .....Work Light
- .....2½" Table Pocket for Drilling Through-Holes
- .....Dovetail Ways

The G9959 is the same machine as the G9977 with the addition of a factory-fitted, servo-type, variable speed, power feed unit and extended lead screw on the X Axis. Automatic power feed limit switches are included.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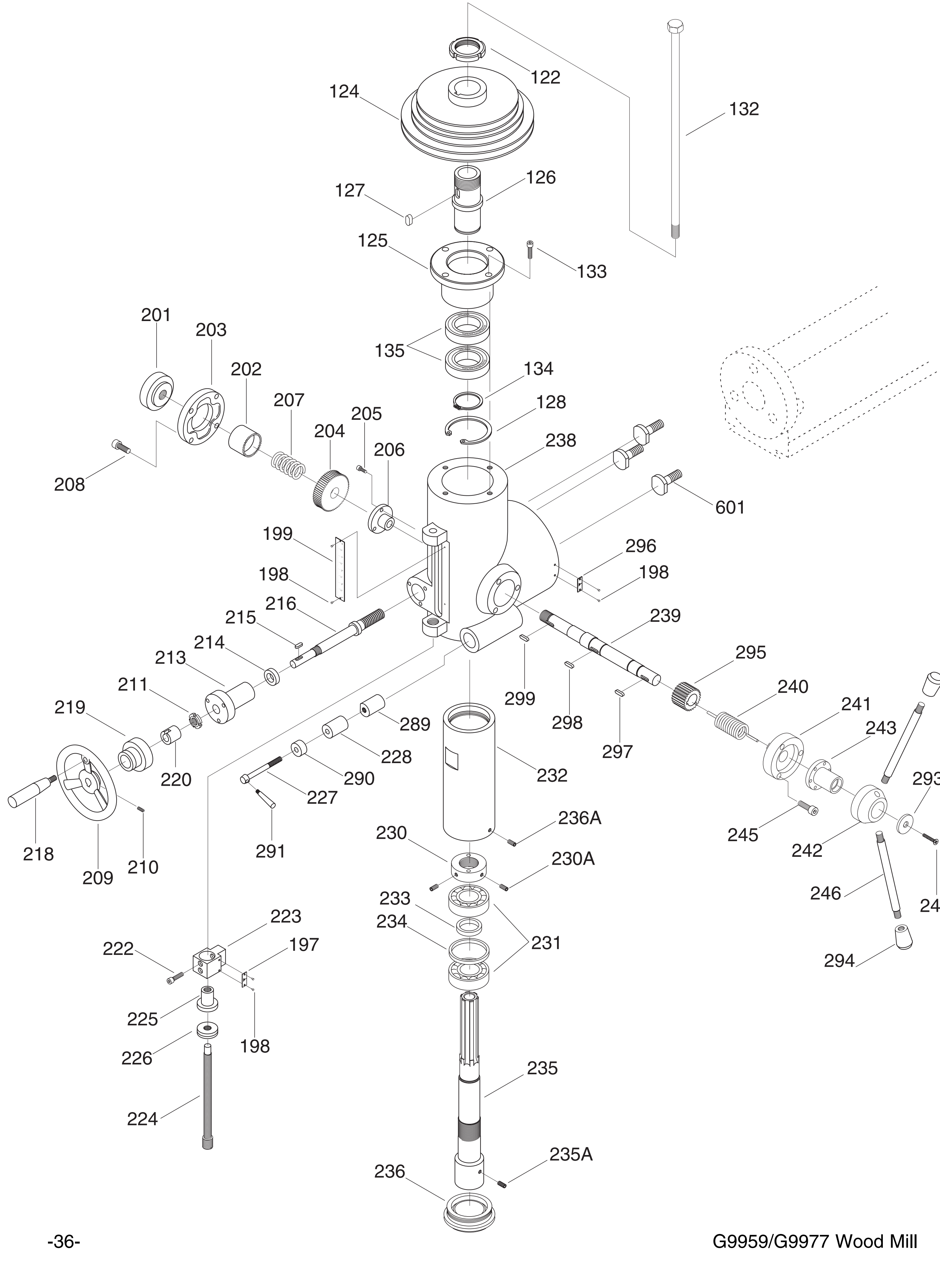
REF	PART #	DESCRIPTION
101	P9959101	UPPER BELT COVER
101B	P9959101B	EDGE GUARD
102	P9959102	COVER HINGE
103	P9959103	HEX NUT
104	P9959104	BEVEL HD SCREW
105	P9959105	MACHINE SCREW
107	P9959107	CHAIN
108	P9959108	HEX NUT
109	P9959109	WASHER
110	P9959110	SHAFT
111	P9959111	KNOB
111A	P9959111A	HEX NUT
111B	P9959111B	LATCH
112	P9959112	CAP SCREW
113	P9959113	FLANGE COVER
114	P9959114	BALL BEARING
115	P9959115	SHAFT
116	P9959116	BALL BEARING
117	P9959117	CAP SCREW
118	P9959118	PULLEY
119	P9959119	SWIVEL
119B	P9959119B	CHUNK-O-RUBBER
120	P9959120	SPEED LABEL
121	P9959121	LOWER BELT COVER
129	P9959129	V-BELT
129B	P9959129B	V-BELT

REF	PART #	DESCRIPTION
136	P9959136	CAP SCREW
139	P9959139	TENSION PIN
140	P9959140	SPRING
141	P9959141	BRACKET
142	P9959142	PIVOT
144	P9959144	MOUNTING PLATE
145A	P9959145A	WASHER
145B	P9959145B	LOCK WASHER
145C	P9959145C	HEX BOLT
146	P9959146	PULLEY
146A	P9959146A	CAP SCREW
146B	P9959146B	FLAT WASHER
147	P9959147	MOTOR
147A	P9959147A	KEY
602	P9959602	RAM
602A	P9959602A	ANGLE SCALE
603	P9959603	FLAT WASHER
604	P9959604	ACORN NUT
605	P9959605	ACORN NUT
606	P9959606	FLAT WASHER
607	P9959607	TURRET
607A	P9959607A	PIVOT
608	P9959608	T-BOLT
609	P9959609	HEX BOLT
610	P9959610	ACORN NUT
611	P9959611	STUD
612	P9959612	CLAMPING BLOCK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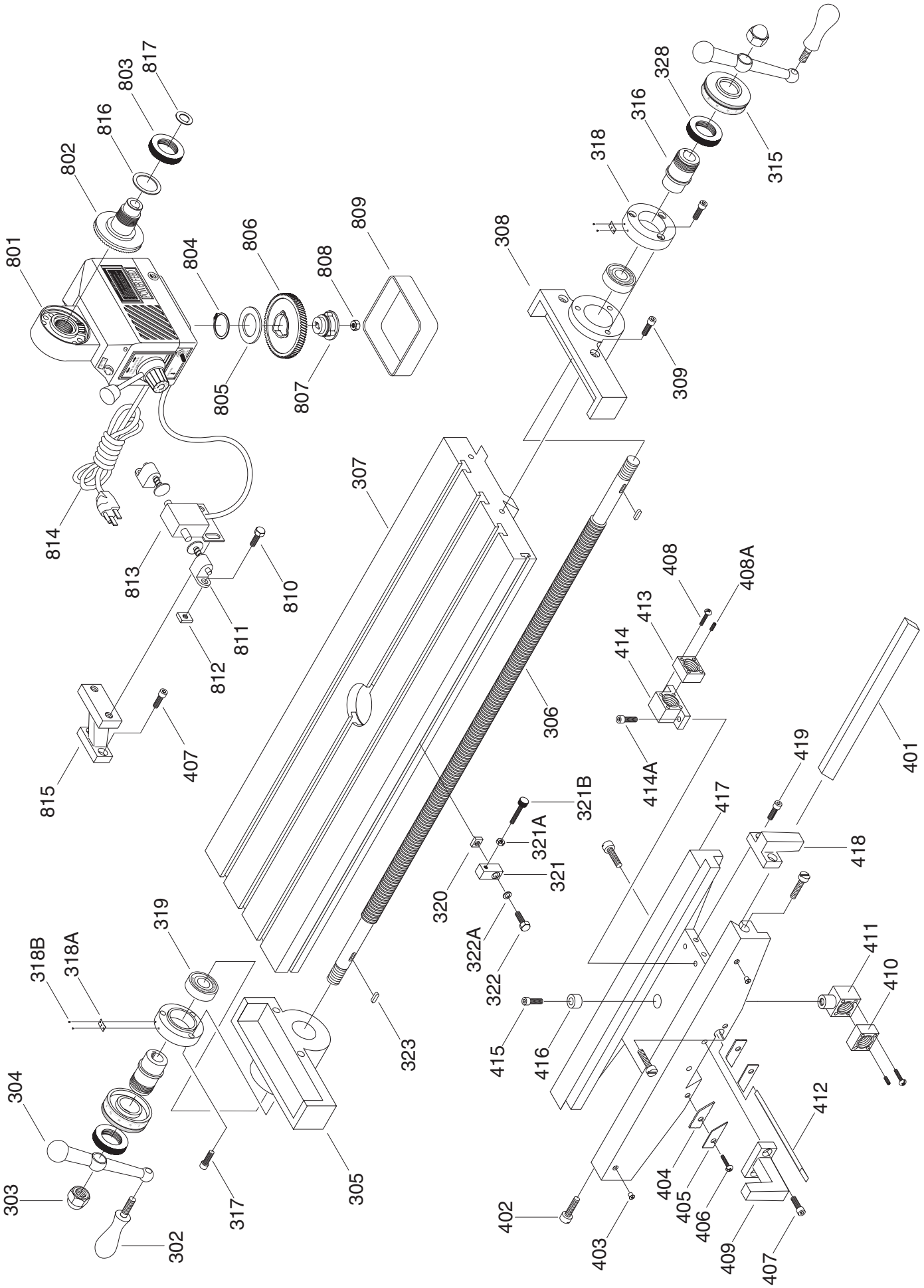
REF	PART #	DESCRIPTION
122	P9959122	NUT
124	P9959124	SPINDLE PULLEY
125	P9959125	BEARING HOUSING
126	P9959126	SPLINE SLEEVE
127	P9959127	KEY 8 X 8 X 20MM
128	P9959128	SNAP RING 68MM
132	P9959132	DRAW BAR
133	P9959133	CAP SCREW
134	P9959134	SNAP RING
135	P9959135	BALL BEARING 208
197	P9959197	INDICATOR
198	P9959198	RIVET
199	P9959199	SCALE
201	P9959201	KNOB
202	P9959202	COUPLING
203	P9959203	PLATE
204	P9959204	COUPLING WORM GEAR
205	P9959205	CAP SCREW
206	P9959206	FLANGE SLEEVE
207	P9959207	SPRING
208	P9959208	CAP SCREW
209	P9959209	HANDWHEEL
210	P9959210	SETSCREW
211	P9959211	RETAINING NUT
213	P9959213	SLEEVE
214	P9959214	SPACER
215	P9959215	KEY
216	P9959216	WORM SHAFT
218	P9959218	HANDLE
219	P9959219	STEPPED SLEEVE
220	P9959220	SLEEVE
222	P9959222	CAP SCREW
223	P9959223	BLOCK
224	P9959224	SCREW
225	P9959225	HEIGHT NUT

REF	PART #	DESCRIPTION
226	P9959226	LOCK NUT
227	P9959227	LOCK KNOB SHAFT
228	P9959228	LOCK BLOCK
230	P9959230	NUT
230A	P9959230A	SETSCREW
231	P9959231	BEARING
232	P9959232	SPINDLE QUILL
233	P9959233	BEARING WASHER
234	P9959234	BEARING WASHER
235	P9959236	SPINDLE
235A	P9959235A	SETSCREW
236	P9959236	SPINDLE NUT
236A	P9959236A	SETSCREW
238	P9959238	HEAD CASTING
239	P9959239	GEAR SHAFT
240	P9959240	SPRING
241	P9959241	FLANGE COVER
242	P9959242	HANDLE BODY
243	P9959243	FLANGE
244	P9959244	SCREW
245	P9959245	CAP SCREW
246	P9959246	HANDLE LEVER
289	P9959289	LOCK BLOCK
290	P9959290	SPACER
291	P9959291	HANDLE
293	P9959293	WASHER
294	P9959294	KNOB
295	P9959295	GEAR
296	P9959296	INDICATOR
297	P9959297	KEY
298	P9959298	KEY
299	P9959299	KEY
601	P9959601	T-BOLTS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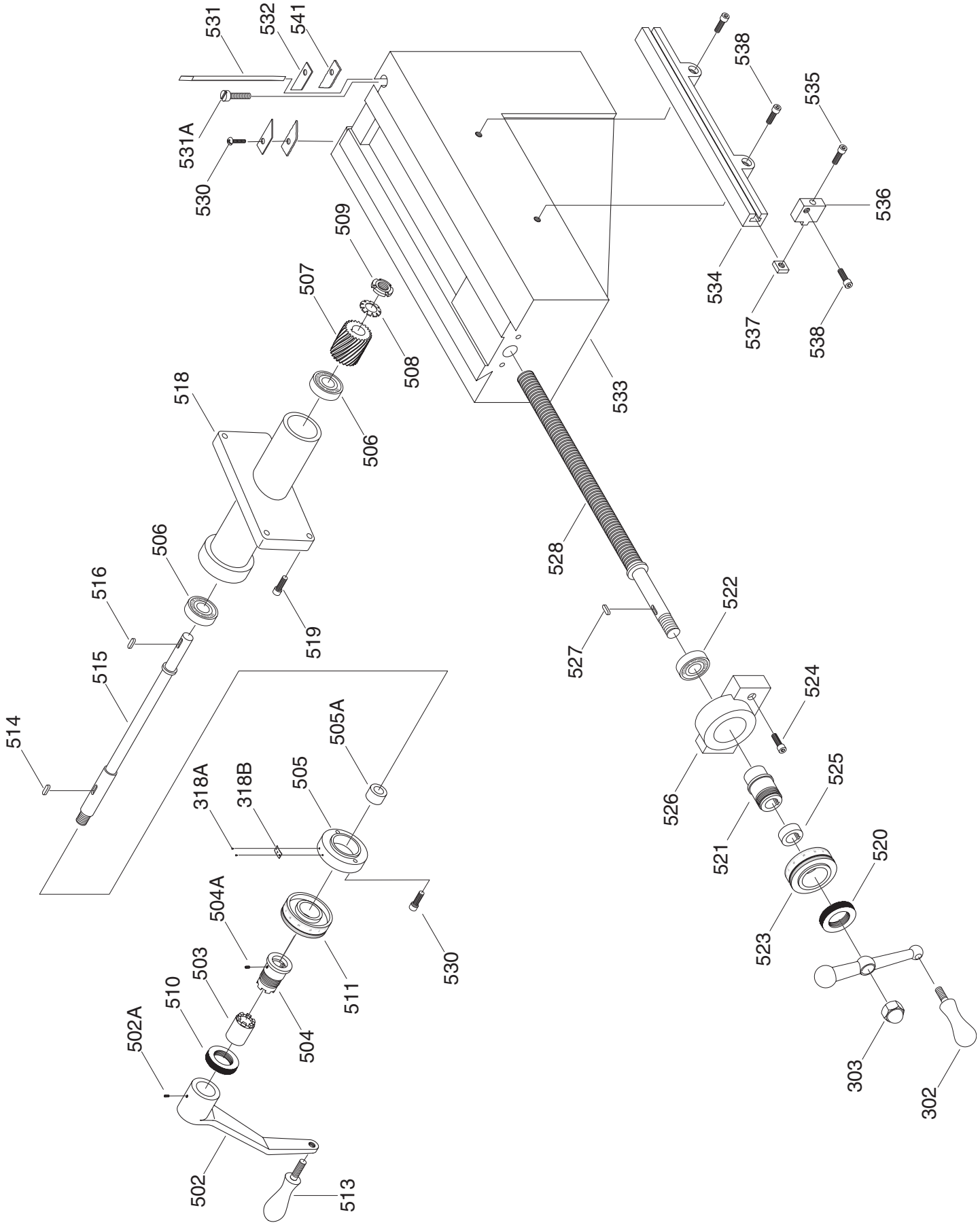
REF	PART #	DESCRIPTION
302	P9959302	HANDLE
303	P9959303	CAP NUT
304	P9959304	HANDLE
305	P9959305	LEAD SCREW BRACKET L
306	P9959306	LONG. LEAD SCREW
307	P9959307	TABLE
308	P9959308	LEAD SCREW BRACKET R
309	P9959309	CAP SCREW
315	P9959315	DIAL
316	P9959316	SHAFT SLEEVE
317	P9959317	CAP SCREW
318	P9959318	FLANGE COVER
318A	P9959318A	INDICATOR
318B	P9959318B	RIVET
319	P9959319	BALL BEARING 204
320	P9959320	SQUARE NUT
321	P9959321	TRIP DOG
321A	P9959321A	HEX NUT
321B	P9959321B	THUMB SCREW
322	P9959322	HEX BOLT
322A	P9959322A	FLAT WASHER
323	P9959323	KEY
328	P9959328	NUT
401	P9959401	GIB
402	P9959402	ADJUSTING SCREW
403	P9959403	OIL CUP
404	P9959404	WIPER
405	P9959405	WIPER GUARD
406	P9959406	SCREW
407	P9959407	CAP SCREW

REF	PART #	DESCRIPTION
408	P9959408	SCREW
408A	P9959408A	SETSCREW
409	P9959409	LIMIT SEAT
410	P9959410	CROSS ADJ. NUT
411	P9959411	CROSS NUT
412	P9959412	GIB
413	P9959413	LONG. ADJ. NUT
414	P9959414	LONGITUDINAL NUT
414A	P9959414A	CAP SCREW
415	P9959415	CAP SCREW
416	P9959416	SPACER
417	P9959417	CROSS CARRIAGE
418	P9959418	LIMIT BLOCK
419	P9959419	CAP SCREW
801	P9977801	POWER FEED
802	P9977802	BEVEL GEAR
803	P9977803	NUT
804	P9977804	SNAP RING
805	P9977805	WASHER
806	P9977806	GEAR
807	P9977807	HUB
808	P9977808	NUT
809	P9977809	COVER
810	P9977810	HEX BOLT
811	P9977811	STOP W/ PLUNGER
812	P9977812	SQUARE NUT
813	P9977813	AUTO STOP SWITCH
814	P9977814	POWER CORD
815	P9977815	MOUNTING BRACKET
816	P9977816	LARGE SHIM
817	P9977817	SMALL SHIM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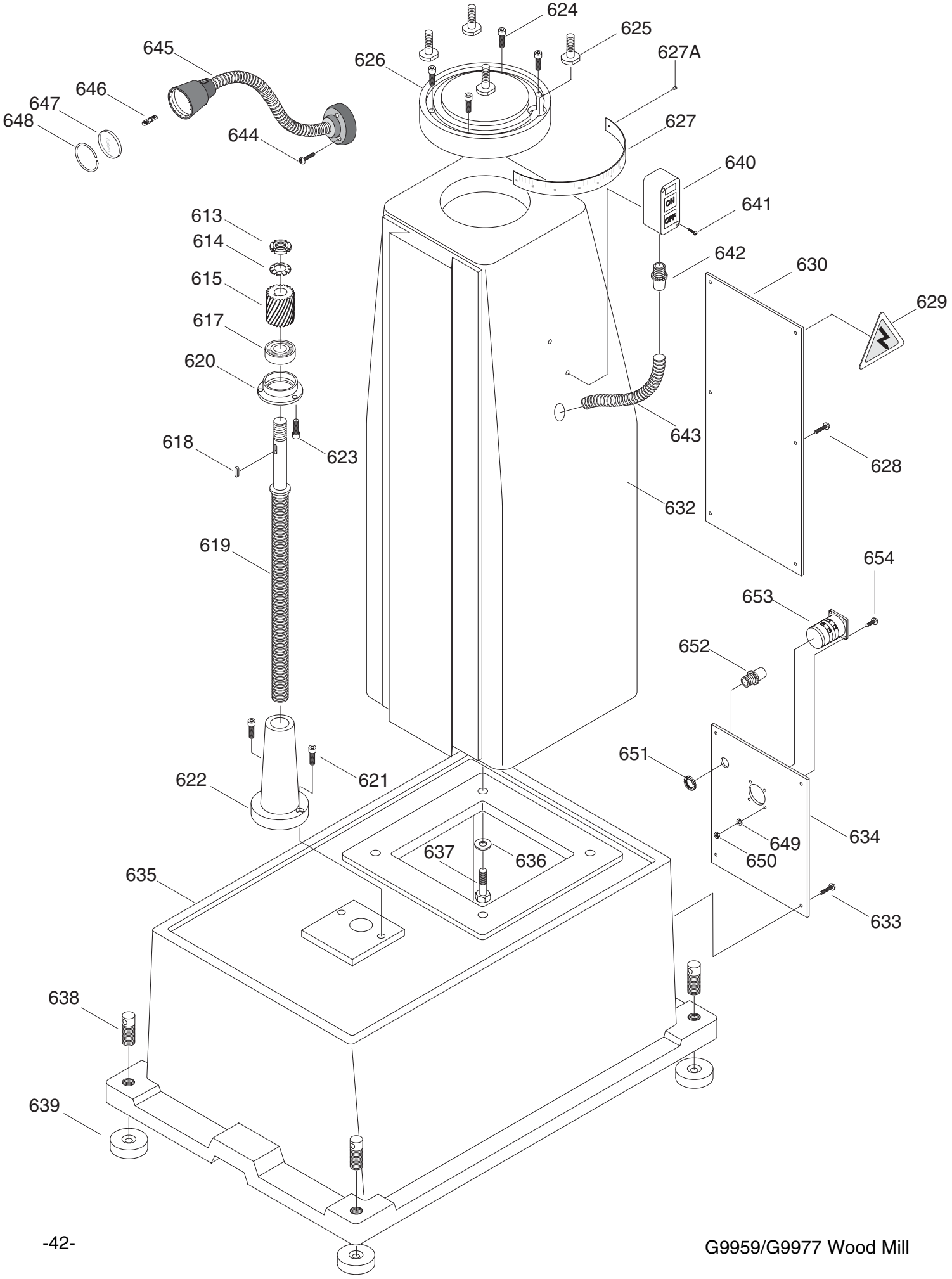
REF	PART #	DESCRIPTION
302	P9959302	HANDLE
303	P9959303	ACORN NUT
318A	P9959318A	RIVET
318B	P9959318B	INDICATOR
502	P9959502	CRANK ARM
502A	P9959502A	SETSCREW
503	P9959503	COUPLING
504	P9959504	COUPLING
504A	P9959504A	SETSCREW
505	P9959505	FLANGE COVER
505A	P9959505A	SLEEVE
506	P9959506	BALL BEARING 204
507	P9959507	BEVEL GEAR
508	P9959508	TAB WASHER
509	P9959509	NUT
510	P9959510	NUT
511	P9959511	DIAL
513	P9959513	HANDLE
514	P9959514	KEY
515	P9959515	SHAFT
516	P9959516	KEY

REF	PART #	DESCRIPTION
518	P9959518	FLANGE
519	P9959519	CAP SCREW
520	P9959520	NUT
521	P9959521	SHAFT SLEEVE
522	P9959522	BALL BEARING 204
523	P9959523	DIAL
524	P9959524	CAP SCREW
525	P9959525	SPACER
526	P9959526	BEARING HOUSING
527	P9959527	KEY
528	P9959528	LEAD SCREW
530	P9959530	SCREW
531	P9959531	GIB
531A	P9959531A	ADJUSTING SCREW
532	P9959532	WIPER GUARD
533	P9959533	KNEE CASTING
534	P9959534	LIMIT TRACK
535	P9959535	HEX BOLT
536	P9959536	TRIP DOG
537	P9959537	SQUARE NUT
538	P9959538	CAP SCREW
541	P9959541	WIPER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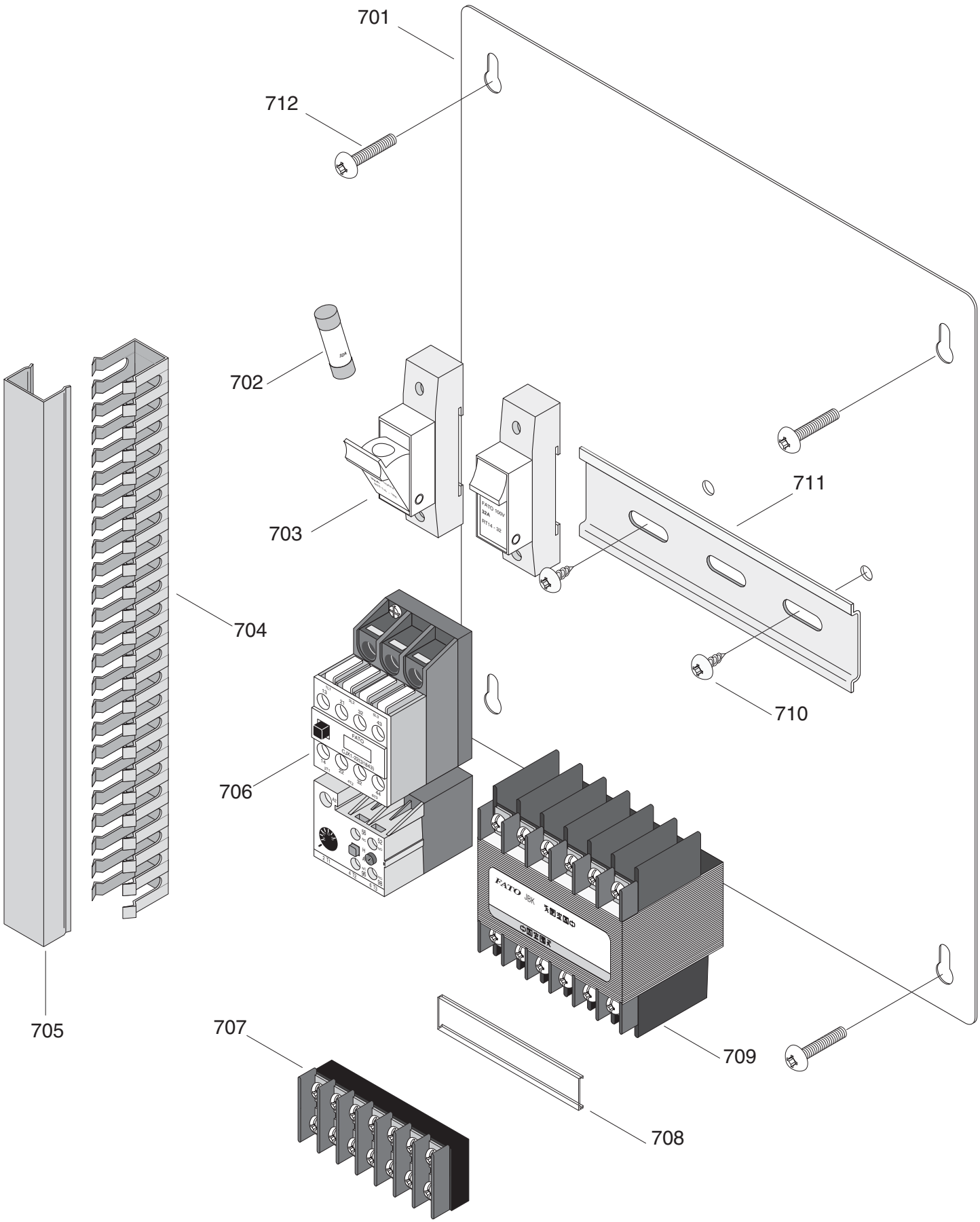
REF	PART #	DESCRIPTION
613	P9959613	NUT
614	P9959614	TAB WASHER
615	P9959615	GEAR
617	P9959617	BALL BEARING 204
618	P9959618	KEY
619	P9959619	LEAD SCREW
620	P9959620	PLATE
621	P9959621	CAP SCREW
622	P9959622	PEDESTAL
623	P9959623	CAP SCREW
624	P9959624	CAP SCREW
625	P9959625	T-NUT
626	P9959626	HEAD BRACKET SEAT
627	P9959627	SCALE
627A	P9959627A	RIVET
628	P9959628	SCREW
629	P9959629	SAFETY LABEL
630	P9959630	COLUMN COVER
632	P9959632	COLUMN
633	P9959633	SCREW

REF	PART #	DESCRIPTION
634	P9959634	COVER
635	P9959635	MACHINE BASE
636	P9959636	WASHER
637	P9959637	HEX BOLT
638	P9959638	LEVELING BOLT
639	P9959639	LEVELING PAD
640	P9959640	SWITCH
641	P9959641	SCREW
642	P9959642	STRAIN RELIEF
643	P9959643	FLEXIBLE CONDUIT
644	P9959644	SCREW
645	P9959645	LAMP ASSEMBLY
646	P9959646	LIGHT BULB
647	P9959647	LENS
648	P9959648	RETAINING RING
649	P9959649	LOCK WASHER
650	P9959650	HEX NUT
651	P9959651	NUT
652	P9959652	STRAIN RELIEF
653	P9959653	SWITCH
654	P9959654	SCREW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REF	PART #	DESCRIPTION
701	P9959701	ELECTRICAL MOUNT
702	P9959702	FUSE
703	P9959703	FUSE HOLDER
704	P9959704	WIRE LOOM
705	P9959705	WIRE LOOM COVER
706	P9959706	MAGNETIC CONTACTOR

REF	PART #	DESCRIPTION
707	P9959707	BUS BAR
708	P9959708	CLEAR COVER
709	P9959709	TRANSFORMER
710	P9959710	SHEET METAL SCREW
711	P9959711	MOUNTING TRACK
712	P9959712	CAP SCREW

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_____ PHONE NUMBER_____
STREET_____
CITY_____STATE_____ZIP _____
MODEL#_____ INVOICE#_____

The following information is given on a voluntary basis. This information will be used for marketing purposes to help Grizzly develop better products. Your name will be included in our mailing **list** only. It will not be sold to other companies. of course, all information is strictly confidential.

1. How did you find out about us?

__Advertisement __Friend __Other_____
__Catalog __Card deck

2. Do you think your machine represents good value? __YES __NO

3. Would you allow us to use your name as a reference for Grizzly customers in your area? __YES __NO
(Note: Your **name** will be used a maximum of three **times.)**

4. To which of the following publications do you subscribe? Check all that apply.

__Home Shop Machinist __Rifle Magazine Other _____
__Projects in Metal __Hand Loader Magazine
__Modeltec __Precision Shooter
__Live Steam __RC Modeler
__Shotgun News __Model Airplane News

5. What is your annual household income?

__$20,000-$30,000 __$50,001-$60,000 __$80,000-$90,000
__$30,001-$40,000 __$60,001-$70,000 __+$90,000
__$40,001-$50,000 __$70,001-$80,000

6. To which age group do you belong?

__20-30 __41-50__61-70
__31-40 __51-60__+70

7. Which of the following machines or accessories do you own? Check all that apply.

__Engine Lathe __Abrasive Cutoff __Sheet Metal Machine
__Band Saw (Metal) __Arc Welder __Other _____
__Band Saw (Wood) __Oxy/Ac. Outfit
__Wood Mill __Air Compressor
__Bench Grinder __Drill Press

8. How many of the machines you checked in Question 7 are Grizzly machines? _____

9. Which of the following tooling and accessories do you own? Check all that apply.

__Milling Vises __Collet Closer __Digital Readout
__Indexing Head __Taper Attachment __Tool Post Grinder
__Rotary Table __Boring Head __Other _____

10. In the space below, list three tools you would like Grizzly to carry.

11. Of all the mail order metalworking company's you have purchased from, how do you rate Grizzly in terms of overall customer satisfaction?

__The best __Above average __Average
__Below average __The worst

12. Comments_____

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FOLD ALONG DOTTED LINE

Place
Stamp
Here

GRIZZLY INDUSTRIAL, INC.
P.O. BOX 2069
BELLINGHAM, WA 98227-2069

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Send a Grizzly Catalog to a friend:

Name_____

Street_____

City_____State_____Zip_____

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