

Grizzly *Industrial, Inc.*®

MODEL G9986 8" DRILL PRESS INSTRUCTION MANUAL



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#TR8194 PRINTED IN CHINA

WARNING!

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

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

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

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

WARNING!

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

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

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

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INTRODUCTION

Foreword

We are proud to offer the Model G9986 8" Drill Press. This machine is part of a growing Grizzly family of fine woodworking and metalworking machinery. When used according to the guidelines set forth in this manual, you can expect years of trouble-free, enjoyable operation and proof of Grizzly's commitment to customer satisfaction.

We are pleased to provide this manual with the Model G9986. 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 G9986 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

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 G9986 8" DRILL PRESS

Design Type Bench Model

Overall Dimensions:

Table Size 7" Diameter
Overall Height 29 $\frac{1}{4}$ "
Overall Width 9"
Overall Depth 18"
Machine Weight 46 lbs.
Shipping Weight 50 lbs.
Box Size 24" L x 14" W x 9" H
Footprint 7 $\frac{1}{2}$ " x 12"

Construction:

Table Precision Ground Cast Iron
Column Cylindrical Ground Steel
Base & Head Cast Iron

Capacities:

Spindle Travel 2"
Max. Distance, Spindle to Base 15 $\frac{1}{4}$ "
Max. Distance, Spindle to Table 11 $\frac{7}{8}$ "
Spindle Nose JT-33
Swing 8 $\frac{1}{8}$ "
Chuck Size $\frac{1}{2}$ " (13mm), Keyed
Speeds 5, Belt Controlled
Range of Speeds 620, 1100, 1720, 2340, 3100 RPM
Drilling Capacity $\frac{1}{2}$ " Diameter in Steel

Motor:

Type TEFC Capacitor Start Induction
Horsepower $\frac{1}{2}$ HP
Phase / Cycle Single-Phase / 60 Hz
Amps 5
Voltage 110V
RPM 1725
Power Transfer V-Belt Drive
Bearings Shielded & Lubricated Ball Bearings
Switch Paddle Type w/Disabling Key

Features:

Table 360° Swivel Around Support Column, Tilt -45° to +45°, Lock Levers
Slots 4 slots, $\frac{1}{2}$ " x 2"

Specifications, while deemed accurate, are not guaranteed.



Identification

Refer to the list below and **Figures 1 & 2** to become familiar with the drill press controls.

1. **Power Switch:** Turns motor **ON/OFF**.
2. **Belt Tension Lock:** Locks motor in place.
3. **Table Height Lock:** Locks/unlocks to adjust table height.
4. **Lash Screw:** Adjusts quill lash.
5. **Downfeed Handles:** Used to move the spindle down during operation.
6. **Torsion Spring:** Returns quill into headstock.
7. **Depth Stop:** Limits quill travel to a pre-set drilling depth.
8. **Scale:** Displays current table-tilt angle.

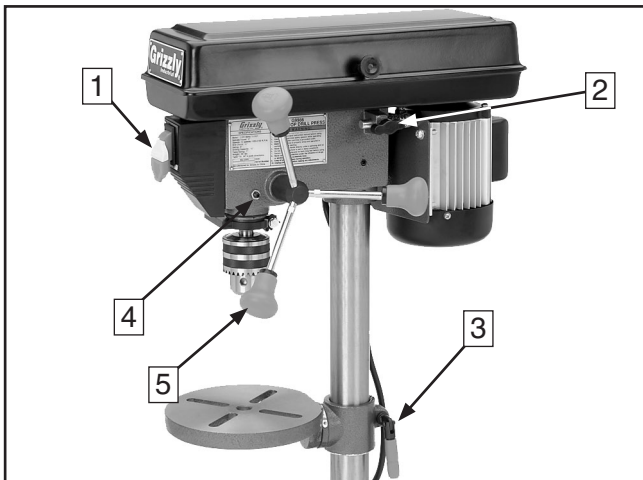


Figure 1. Right-side controls.

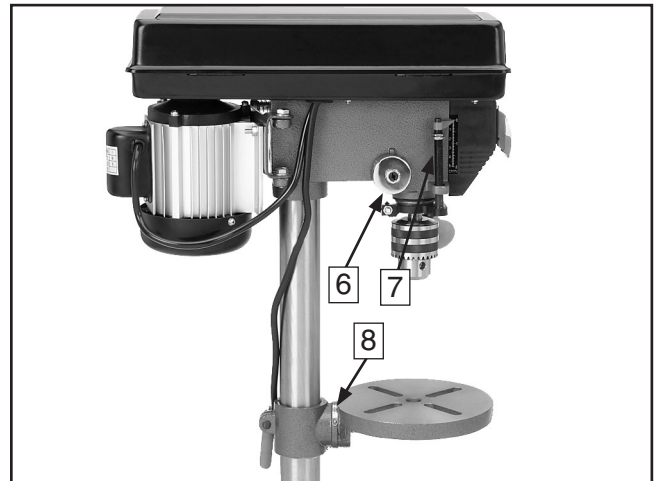


Figure 2. Left-side controls.

Refer to the list below to become familiar with the drill press terms and definitions.

Headstock: The cast iron upper portion of the drill press that houses the quill and supports the motor and belt housing.

Arbor: A tapered shaft that connects the chuck to the spindle.

Quill: Houses the spindle and bearings.

Spindle: The hollow shaft that accepts the arbor.

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 A NIOSH 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 WORKPIECE TOWARD 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

Safety for Drill Presses

- 1. EYE/FACE/HAND PROTECTION.** A face shield used with safety glasses is recommended. Always keep hands and fingers away from the drill bit. Never hold a workpiece by hand while drilling! **DO NOT** wear gloves when operating the drill.
- 2. SECURING BIT.** Properly tighten and securely lock the drill bit in the chuck.
- 3. CORRECT BIT.** Use only round, hex, or triangular shank drill bits.
- 4. ADJUSTING KEYS AND WRENCHES.** Remove all adjusting keys and wrenches before turning the machine **ON**.
- 5. DRILLING SHEET METAL.** Never drill sheet metal unless it is securely clamped to the table.
- 6. SURFACE/WORKPIECE PREP.** Never turn the drill press **ON** before clearing the table of all objects (tools, scrap wood, etc.) **DO NOT** drill material that does not have a flat surface, unless a suitable support is used.
- 7. DAMAGED TOOLS.** Never use tools in poor condition. Dull or damaged cutting tools are hard to control and may cause serious injury.
- 8. DRILL OPERATION.** Never start the drill press with the drill bit pressed against the workpiece. Feed the drill bit evenly into the workpiece. Back the bit out of deep holes to clear chips. Disconnect power, remove drill bit, and clean table with a brush before leaving the machine.
- 9. OPERATING SPEED.** Always operate your drill press at speeds that are appropriate for the drill bit size and the material that you are drilling.
- 10. MAINTENANCE/SPEED CHANGES.** Never perform maintenance or change speeds with the machine connected to power.
- 11. MOUNTING WORKPIECES.** Use clamps or vises to secure workpiece before drilling. Position work so you avoid drilling into the table.
- 12. TABLE LOCK.** Make sure the table lock is tightened before starting the drill press.
- 13. EXPERIENCING DIFFICULTIES.** If at any time you are experiencing difficulties performing the intended operation, stop using the machine! Contact our Service Department at (570) 546-9663.

WARNING

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

CAUTION

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



SECTION 2: CIRCUIT REQUIREMENTS

110V Operation

!WARNING

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

Amperage Draw

The Model G9986 motor draws the following amps under maximum load:

Motor Draw 5 Amps

Circuit Recommendations

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

110V Circuit 15 Amps

Plug/Receptacle Type

Included Plug Type NEMA 5-15

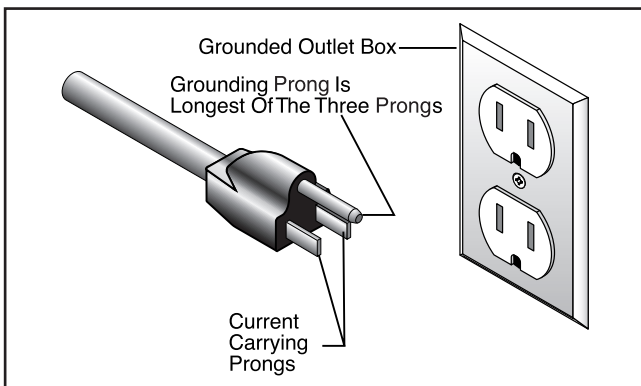

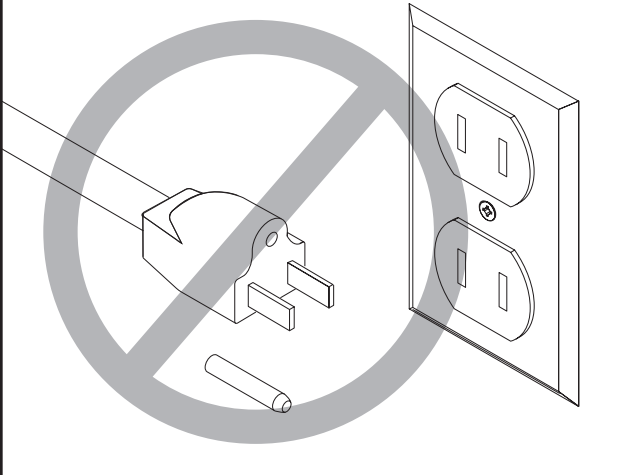


Figure 3. Typical 5-15 plug and receptacle.



!WARNING

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



!CAUTION

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

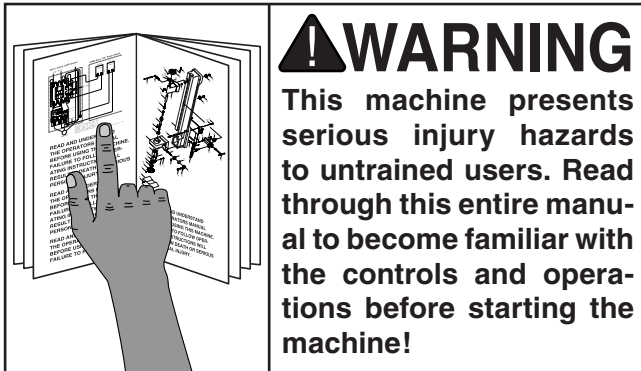
Extension Cords

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

- Use at least a 16 gauge cord that does not exceed 50 feet in length!
- The extension cord must also contain a ground wire and plug pin.
- A qualified electrician **MUST** size cords over 50 feet long to prevent motor damage.



SECTION 3: SET UP



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
• Degreaser.....	Varies
• Hammer or Mallet.....	1
• Block of Wood	1
• Wrench 13mm.....	1

Unpacking

The Model G9986 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:

Description	Qty
A. Headstock	1
B. Table	1
C. Swivel Handle.....	1
D. Column	1
E. Base	1
F. Hex Bolts M8-1.25 x 20.....	3
G. Flat Washers 8mm	3
H. Chuck	1
I. Chuck Key	1
J. Adjustment Wrench.....	1
K. Downfeed Handles.....	3
L. Hex Wrenches 3, 4mm.....	1 Each

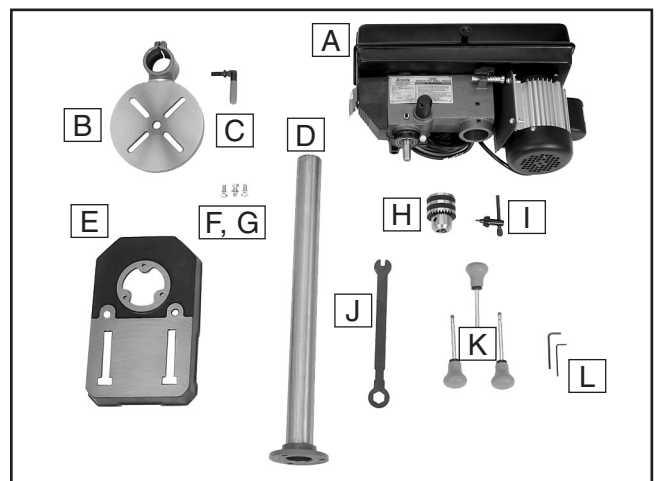


Figure 4. G9986 Inventory.

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

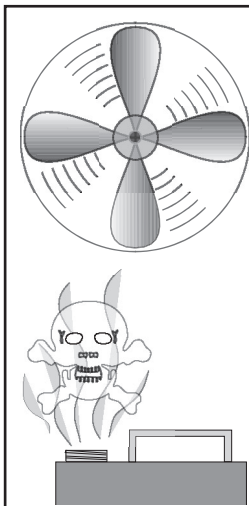
Clean Up

The unpainted surfaces are coated with a waxy oil to 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.



!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.



!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.

Assembly

The drill press cannot be safely operated unless it is properly assembled.

To assemble the drill press:

1. Mount the column to the base with the three included hex bolts and flat washers (**Figure 5**).



Figure 5. Column secured to base.

2. Slide the table assembly over the column and lock into place with the swivel handle (**Figure 6**).



Figure 6. Table assembly installed on column.

- Slide the headstock onto the top of the column, center it over the base, and tighten the two setscrews shown in **Figure 7**.



Figure 7. Setscrews for tightening headstock to column.

- Thread the three downfeed handles into the pinion hub and use the included wrench to tighten them, as shown in **Figure 8**.



Figure 8. Tightening the downfeed handles.

- Install the knob on the belt cover with the Phillips screw and flat washer (**Figure 9**).



Figure 9. Knob installed on belt cover.

- Prepare the mating surfaces on the spindle taper and the chuck by cleaning them thoroughly.
- Retract the chuck jaws all the way inside of the chuck.
- Push the chuck onto the spindle taper, and using a wood block and hammer or mallet as shown in **Figure 10**, hit the chuck once with moderate force to secure it on the spindle.

Note: *Hitting the chuck directly with a steel hammer may damage the chuck, making it unsafe to use.*



Figure 10. Seating the chuck on the spindle.

Test Run

Once assembly is complete, you understand the safety instructions, and the work area is cleared of all tools, you are ready to test run the drill press and test the switch disabling key to make sure they function properly.



To test run the drill press:

1. Connect the drill press to the power source.
2. Pull up on the switch to turn the drill press **ON**. The drill press should run smoothly, with little or no vibration or rubbing noises.

If you notice anything unusual about the drill press operation, turn it **OFF** and investigate and correct the issue before operating the machine further. If you cannot easily locate the source of a potential problem, refer to **Troubleshooting** on **Page 19** or contact our Technical Support at (570) 546-9663.

3. Remove the switch key (yellow portion of the main switch), and try to turn the switch **ON**.

—If the drill press does NOT turn **ON** with the key removed, then the safety feature is working as intended.

—If the drill press turns **ON** with the key removed, then the safety feature is malfunctioning. Contact Tech Support immediately.

Mounting

Once you have confirmed that your machine is running properly, mount it to a workbench, using the holes in the base as a guide.

The strongest mounting option is a "Through Mount" where holes are drilled all the way through the workbench, and hex bolts, washers, and hex nuts are used to secure the drill press to the workbench. Refer to the illustration in **Figure 11** for details about this option.

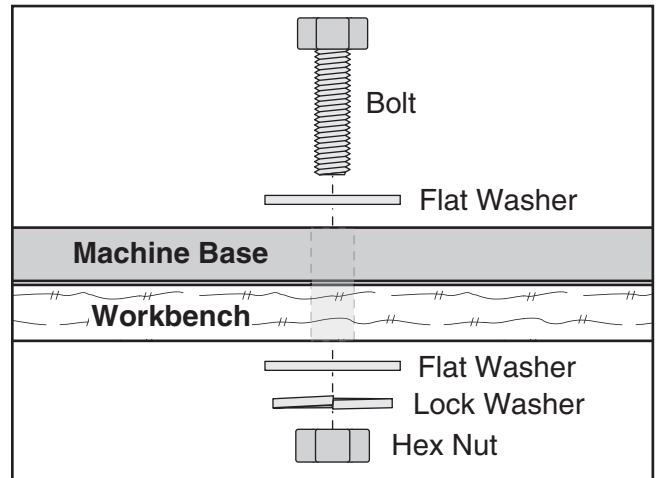


Figure 11. Example of a through mount setup.

Another option for mounting is a "Direct Mount" where the machine is simply secured to the workbench with a lag screw and washer. Refer to the illustration in **Figure 12** for details about this option.

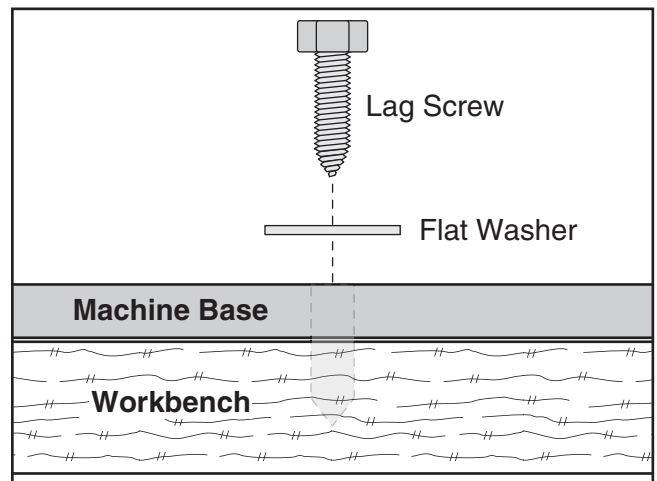


Figure 12. Example of a direct mount setup.



SECTION 4: OPERATIONS

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/Removing Drill Bits

Drill bits installed in the chuck must be tight enough to not come loose during operation.

To install a drill bit:

1. UNPLUG THE DRILL PRESS!
2. Open the drill chuck wide enough to accept the shank of the drill bit.
3. Insert the drill bit as far as possible into the chuck WITHOUT allowing the chuck jaws to touch the fluted portion of the bit, and hand tighten the chuck.

Note: Make sure small bits are not trapped between the edges of two jaws; if they are, reinstall the drill bit or it will not be secure enough to use for drilling.

4. Final tighten the drill bit with the chuck key.

To remove a drill bit:

1. UNPLUG THE DRILL PRESS!
2. Use the chuck key to open the drill chuck, and catch the drill bit with a rag to protect your hands.

Adjusting Table

The table can be raised/lowered and tilted left or right. Table adjustment controls are shown in Figure 13.

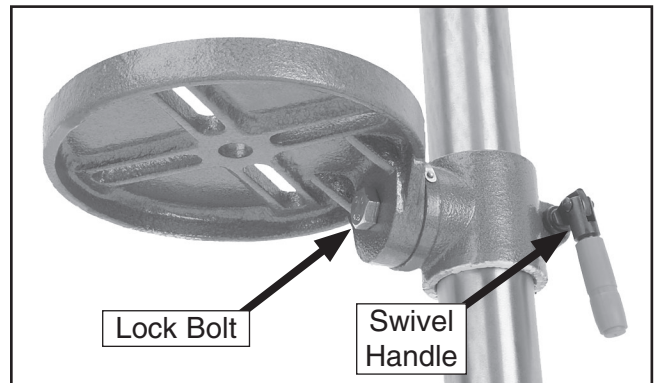


Figure 13. Table adjustment controls.

Table Height

Use the swivel handle to loosen/tighten the table support collar to adjust the table height.

Table Tilt

Loosen the lock bolt to tilt the table and use the scale (Figure 14) as a guide to adjust the table tilt to the desired angle.

NOTICE

The table scale is only a basic guide. For precise setups, use an angle gauge/square to set the correct table-to-spindle angle.

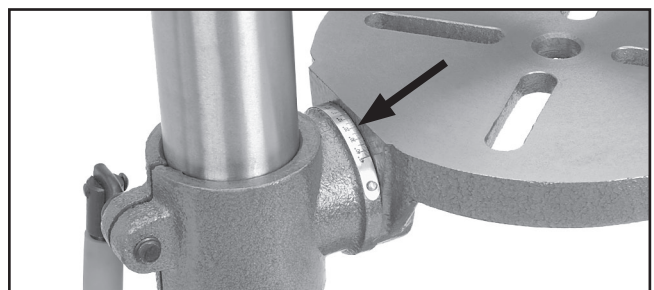


Figure 14. Table tilt scale.

Changing Speeds

The belt must be moved to change speeds. A chart under the belt cover shows the belt position needed for a given speed.

To change speeds:

1. UNPLUG THE DRILL PRESS!
2. Loosen the lock knob (shown in **Figure 15**) to take tension off of the V-belt.

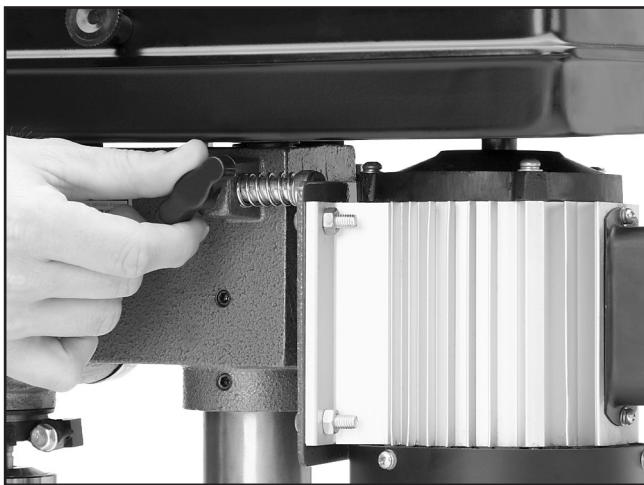


Figure 15. Loosening lock knob.

3. Find your desired speed on the speed chart (**Figure 16**) and move the V-belt to the indicated position in the pulley grooves.

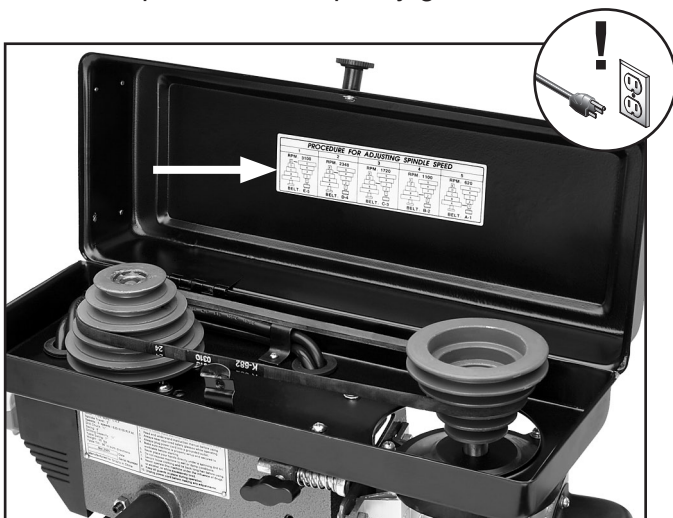


Figure 16. Speed chart.

4. Pull the motor backwards to tighten the V-belt, then tighten the belt tension lock knob and close the belt cover.

Depth Stop

The Model G9986 has a depth stop that allows you to drill repeated non-through holes to the same depth every time.

The depth stop features two hex nuts that can be adjusted to limit spindle travel.

The upper hex nut (jam nut) tightens against the depth nut so it doesn't move during repeated operations.

Figure 17 shows the various components of the depth stop.

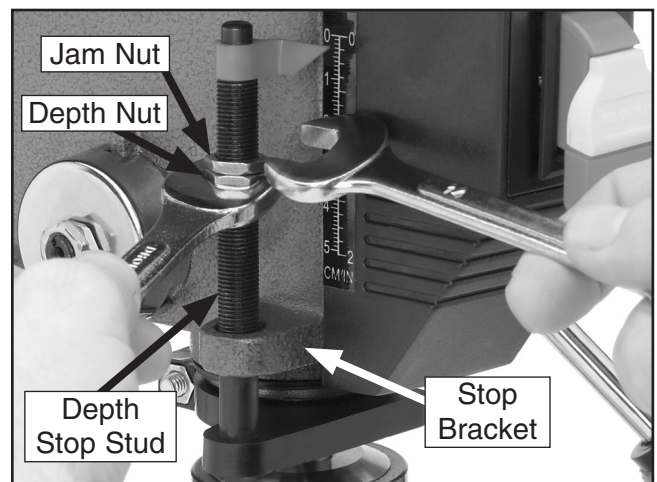


Figure 17. Depth stop components.

To set the depth stop:

1. Lower the drill bit to the required height.
2. Thread the depth nut down against the stop bracket.
3. Lower the jam nut against the depth nut.
4. Using wrenches, hold the depth nut in place and tighten the jam nut against the depth nut.



Drilling

The Model G9986 is designed for drilling holes in wood or metal. The basic operation of a drill press is lining up your drill bit with the intended hole location, turning the drill press **ON**, and using the downfeed handles to move the spinning drill bit into the workpiece.

For safe operation and optimum results, it is very important to follow these guidelines when drilling:

CLEARING CHIPS: Raise the drill bit often to clear chips and cool the drill bit. This will ease the work of the drill press motor and extend the life of your drill bits.

SECURING WORKPIECE TO TABLE: Secure the workpiece to the table or in a vise that is secured to the table before drilling.

PROTECTING TABLE: 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, use the depth stop to ensure that the drill bit goes no deeper than necessary.

USING CORRECT SPEEDS: Use the correct speed for the diameter of the drill bit being used and the type of material being drilled. Refer to the **Drill Bit Speed Chart** on **Page 16** to help you choose the correct speed for your application.

LARGE DIAMETER BITS: Large diameter drill bits require slower spindle speeds.

SMALL DIAMETER BITS: Smaller diameter drill bits require faster spindle speeds.

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

SOFT MATERIAL: The softer the material, the faster the spindle may turn. However, plastics can melt at too high of a spindle speed.

LUBRICANT: Use some form of lubricant on all materials except wood. Refer to **Lubrication Suggestions** on **Page 16** to find the correct lubrication for your application.

DRILLING ACCURACY: To prevent drill bit wandering and ensure accurate placement of holes, mark the hole location with a center punch before drilling. Also consider using a center-point drill to start the hole.

PLUG/ROSETTE CUTTERS: Plug cutters and rosette cutters are for wood only. However, carbide-tipped bits and cutters cut at a higher speed and can cut materials other than wood, depending on the cutter type.

5-FLUTE/2-FLUTE CUTTERS: Use a 5-flute cutter when cutting into plastics, brass, aluminum, and mild steel. A 2-flute cutter can aggressively grab the workpiece and damage the tool if used with materials other than wood.

SPADE BITS AND PLASTIC: When drilling plastic with a spade bit, use a spade bit with spurs.

HOLE SAWS: When using hole saws, apply firm and even pressure, so the saw teeth contact the surface all at the same time—not at an angle. You can also flip the workpiece and finish drilling from the other side to prevent tear-out.

CAUTION

Larger bits turning at slower speeds tend to grab the workpiece aggressively. This can result in the operator's hand being pulled into the bit or the workpiece being thrown with great force. Clamp the workpiece to the table when using larger bits.



Choosing Speeds

Using the Drill Bit Speed Chart

The chart shown in **Figure 18** is intended as a guide only. Always follow the manufacturer's speed recommendations if provided with your drill bits, cutters, or hole saws. Exceeding the recommended speeds may be dangerous to the operator.

The speeds shown here are intended to get you started. The optimum speed will always depend on various factors, including tool diameter, drilling pressure, material hardness, material quality, and desired finish.

Often, when drilling materials other than wood, some type of lubrication is necessary.

Lubrication Suggestions

WoodNone
 Plastics Soapy Water
 Brass Water-Based Lubricant
 Aluminum.....Paraffin-Based Lubricant
 Mild Steel.....Oil-Based Lubricant

⚠ CAUTION

Larger bits turning at slower speeds tend to grab the workpiece aggressively. This can result in the operator's hand being pulled into the bit or the workpiece being thrown with great force. Clamp the workpiece to the table when using larger bits.

Twist/Brad Point Drill Bits	Soft Wood	Hard Wood	Plastic	Brass	Aluminum	Mild Steel
1/16" – 3/16"	3000	2500	2500	2500	3000	2500
13/64" – 3/8"	2000	1500	2000	1250	2500	1250
25/64" – 5/8"	1500	750	1500	750	1500	600
11/16" – 1"	750	500	1000	400	1000	350

Spade/Forstner Bits	Soft Wood	Hard Wood	Plastic	Brass	Aluminum	Mild Steel
1/4" – 1/2"	2000	1500	/	/	/	/
9/16" – 1"	1500	1250	/	/	/	/
1-1/8" – 1-7/8"	1000	750	/	/	/	/
2–3"	500	350	/	/	/	/

Hole Saws	Soft Wood	Hard Wood	Plastic	Brass	Aluminum	Mild Steel
1/2" – 7/8"	500	500	600	600	600	500
1" – 1-7/8"	400	400	500	500	500	400
2" – 2-7/8"	300	300	400	400	400	300
3" – 3-7/8"	200	200	300	300	300	200
4" – 5"	100	100	200	200	200	100

Rosette Cutters	Soft Wood	Hard Wood	Plastic	Brass	Aluminum	Mild Steel
Carbide Insert Type	350	250	/	/	/	/
One-Piece Type	1800	500	/	/	/	/

Tenon/Plug Cutters	Soft Wood	Hard Wood	Plastic	Brass	Aluminum	Mild Steel
3/8" – 1/2"	1200	1000	/	/	/	/
5/8" – 1"	800	600	/	/	/	/

Figure 18. Drill bit speed chart.



SECTION 5: ACCESSORIES

G2500—20-PC Regular Sanding Drum Set

Use on your drill press, lathe, or hand drill. This kit consists of 5 drums in popular $\frac{1}{2}$ " x $\frac{1}{2}$ ", $\frac{3}{4}$ " x 1", 1" x 1", $1\frac{1}{2}$ " x $1\frac{1}{2}$ ", and 2" x $1\frac{1}{2}$ " sizes. Comes with 50, 80 and 120 grit sizes for each drum.



Figure 19. Model G2500 20-PC Sanding Drum Set.

G8865—Cobalt Alloy Drill Bits 13-PC. Set

G8866—Steelex® Cobalt Alloy Drill Set 21-PC

G8867—Steelex® Cobalt Alloy Drill Set 29-PC

Cobalt Alloy bits will retain their edge sharpness longer than normal HSS bits, resulting in a significant saving of time and money in the workshop. Includes a heavy-gauge steel index case for storing. G8865: $\frac{1}{16}$ " - $\frac{1}{4}$ "; G8866: $\frac{1}{16}$ " - $\frac{3}{8}$ "; G8867: $\frac{1}{16}$ " - $\frac{1}{2}$ ".



Figure 20. Model G8865 13-PC Alloy Drill Bits.

G8233— $\frac{3}{8}$ " Keyless Drill Chuck JT #33

Industrial grade keyless chucks are excellent for quick bit changes. Knurled grips and exceptional accuracy make these chucks an indispensable part of any shop.



Figure 21. Model G8233 Keyless Drill Chuck.

G3639—Power Twist® V-Belt $\frac{3}{8}$ " x 48"

Smooth running with less vibration and noise than solid belts. The Power Twist® V-belts can be customized in minutes to any size—just add or remove sections to fit your needs. Size: $\frac{3}{8}$ " x 48"; replaces all "M" sized V-belts. Requires one Power Twist® V-belt to replace the stock V-belt on your Model G9986. Well worth it!

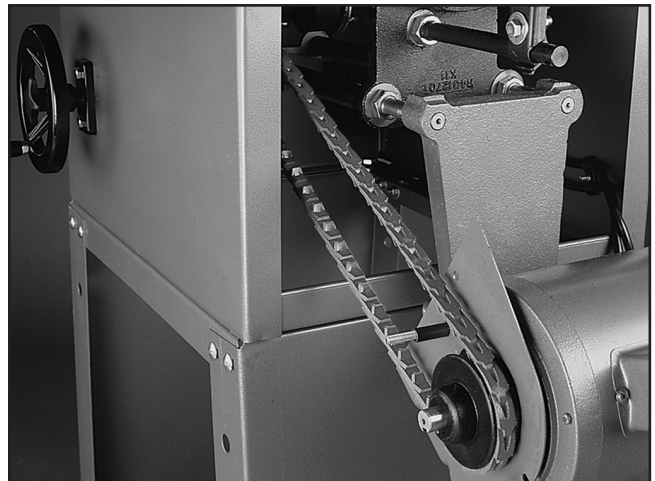
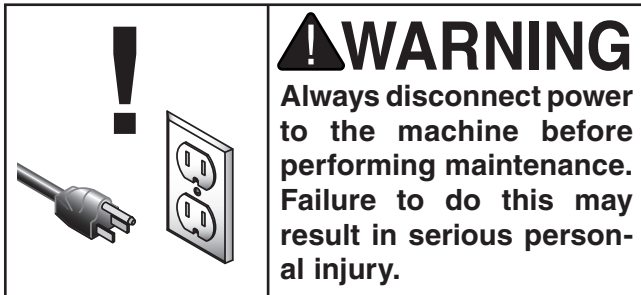


Figure 22. G3639 Power Twist® V-Belt installed.

Call 1-800-523-4777 To Order

SECTION 6: MAINTENANCE



General

Regular periodic maintenance on your drill press will ensure optimum performance. Make a habit of inspecting your machine each time you use it. Check for the following conditions and repair or replace when necessary:

- Loose mounting bolts.
- Worn switch.
- Worn or damaged cords and plugs.
- Damaged V-belt.
- Any other condition that could hamper the safe operation of this machine.
- Loose chuck/arbor.

Cleaning

Cleaning the Model G9986 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.

Lubrication

Since all bearings are shielded and permanently lubricated, simply leave them alone until they need to be replaced. DO NOT lubricate them.

Keep quill, spindle, column, and table top well lubricated to prevent rust. Protect the unpainted cast iron surfaces by wiping them clean after every use—this ensures moisture from wood dust does not remain on bare metal surfaces.

Keep these surfaces rust-free with regular applications of products like G96® Gun Treatment, SLIPIT®, or Boeshield® T-9 (see the current Grizzly Catalog for more details).

V-Belt

Inspect regularly for tension and wear. See **Changing Speeds** on **Page 14** for more information about removing/installing the belt if you need help with replacement.



SECTION 7: SERVICE

About Service

This section is provided for your convenience—it is not a substitute for the Grizzly Service Department. If you need help troubleshooting, you need replacement parts, or you are unsure of how to perform the procedures in this section, then feel free to call our Technical Support at (570) 546-9663.

Troubleshooting



Motor & Electrical

Symptom	Possible Cause	Possible Solution
Machine does not start or a breaker trips.	<ol style="list-style-type: none"> 1. Plug or receptacle is at fault or wired incorrectly. 2. Motor connection is wired incorrectly. 3. Power supply is faulty, or is switched OFF. 4. Safety switch key is at fault. 5. ON/OFF switch is faulty. 6. Cable or wiring is open or has high resistance. 7. Motor is at fault. 	<ol style="list-style-type: none"> 1. Test power plug and receptacle for good contact and correct wiring. 2. Correct motor wiring (see Page 23). 3. Make sure all hot lines and grounds are operational and have correct voltage on all legs. 4. Install or replace safety key, or replace switch assembly. 5. Replace faulty switch. 6. Troubleshoot wires for internal or external breaks, check for disconnected or corroded connections and repair or replace wiring. 7. Test, repair or replace motor.
Machine stalls or is under-powered.	<ol style="list-style-type: none"> 1. Incorrect spindle speed for task. 2. Machine is undersized for the task. 3. Bit or cutter is dull. 4. Low power supply voltage. 5. Belt(s) is slipping. 6. Plug or receptacle is at fault. 7. Motor connection is wired incorrectly. 8. Pulley is slipping on shaft. 9. Motor bearings are at fault. 10. Motor has overheated. 11. Motor is at fault. 	<ol style="list-style-type: none"> 1. Decrease spindle speed. 2. Use smaller drill bits/cutters and reduce the feed rate and spindle speed. 3. Sharpen/replace bit or cutter. 4. Make sure hot lines and grounds are operational w/ correct voltage. 5. Replace bad belts, align pulleys, and re-tension. 6. Test power plug and receptacle for good contact and correct wiring. 7. Correct motor wiring (see Page 23). 8. Replace loose pulley and shaft. 9. Rotate motor shaft for noisy or burnt bearings, repair/replace as required. 10. Clean dust off motor, let it cool, and reduce workload on machine. 11. Test, repair or replace motor.



Symptom	Possible Cause	Possible Solution
Machine vibrates excessively or is unusually noisy.	<ol style="list-style-type: none"> 1. Motor or component is loose. 2. Belt is slapping belt cover. 3. V-belt is worn or is loose. 4. Motor fan is rubbing on fan cover. 5. Pulley is loose. 6. Machine is incorrectly mounted to the workbench, or the workbench is uneven. 7. Chuck or cutter is at fault. 8. Motor bearings are at fault. 9. Spindle bearings at fault. 	<ol style="list-style-type: none"> 1. Replace component fasteners and re-tighten with thread locking fluid. 2. Replace, realign, or retension belt (refer to Page 14). 3. Replace belt. 4. Replace/repair dented fan cover, and replace loose or damaged fan. 5. Remove pulley, replace with key as required, and re-install securely. 6. Make sure the mounting hardware is tight; place shims under machine. 7. Replace out-of-round chuck, replace or sharpen cutter, use appropriate feed rate and cutting RPM. 8. Check bearings, replace motor or bearings as required. 9. Replace bearing.

Drill Press Operations

Symptom	Possible Cause	Possible Solution
Drilling stops, but the motor still operates.	<ol style="list-style-type: none"> 1. The belt is loose or worn. 2. The pulley for the spindle shaft or the motor is slipping on the shaft. 3. Bit slips in chuck. 	<ol style="list-style-type: none"> 1. Replace and/or adjust the belt. 2. To resecure the pulley, do these steps: <ol style="list-style-type: none"> a. UNPLUG THE DRILL PRESS. b. Remove the setscrew on the slipping pulley. c. Align the flats on the pulley shaft with the setscrew hole. d. Reinstall and tighten the setscrew. 3. Tighten bit; inspect bit for burrs or other obstructions that might interfere with clamping surface.
The chuck wobbles or is loose on the spindle shaft.	<ol style="list-style-type: none"> 1. Foreign material is stuck between the chuck-to-spindle mating surface. 2. Damaged chuck. 	<ol style="list-style-type: none"> 1. Remove the chuck and clean and de-burr the tapered chuck and spindle mating surfaces, then reassemble. 2. Replace.
The spindle does not retract completely in the uppermost position or it binds.	<ol style="list-style-type: none"> 1. The quill shaft is gummy with sawdust and oil. 2. The feed shaft return spring is weak. 3. The quill deflection screw is binding the quill. 	<ol style="list-style-type: none"> 1. Clean shaft and lubricate with a light coat of oil. 2. Increase the feed shaft return spring tension as described on Page 21. 3. Loosen the jam nut, and slightly turn out the screw where the quill binds. Retighten the jam nut and recheck for binding and looseness at all spindle locations.
The quill has excessive deflection.	<ol style="list-style-type: none"> 1. The quill shaft is at fault. 2. The quill and/or bearings are worn. 	<ol style="list-style-type: none"> 1. Adjust the quill screw. 2. Replace the quill and/or bearings.
Holes drilled at an angle.	<ol style="list-style-type: none"> 1. Table is not at 90 degrees. 	<ol style="list-style-type: none"> 1. Adjust table angle (see Page 13).
Drill bit wobbles, holes are oversized.	<ol style="list-style-type: none"> 1. Drill bit installed incorrectly. 	<ol style="list-style-type: none"> 1. Remove drill bit and reinstall.



Lash Adjustment

The Model G9986 features a lash adjustment set screw for the quill. Quill lash is the freeplay in the quill as it moves up and down. Having too much lash in the quill makes the quill prone to vibration and runout. Setting the quill lash too tight makes it difficult to move the quill up and down. The goal is to find the "sweet spot" where there is the perfect balance between ease of movement and restricted quill lash.

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

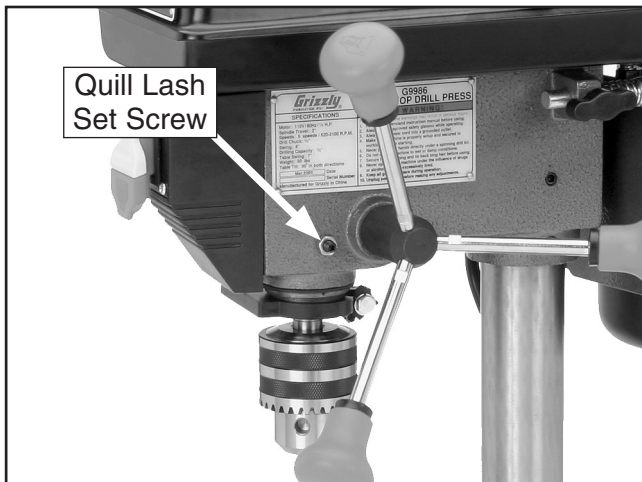


Figure 23. Quill lash set screw.

To set the quill lash set screw:

1. Loosen the jam nut that locks the set screw in place.
2. Move the downfeed up and down with one hand and tighten the set screw with the other hand until you feel a light drag on the quill as you move it up and down.
3. Slowly loosen the set screw while moving the quill up and down. Stop moving the set screw when you feel all quill drag disappear.
4. Using the hex wrench, hold the set screw in place and tighten the jam nut.

Feed Shaft Spring Tension

The feed shaft return spring is adjusted at the factory. Only adjust the feed shaft return spring if you are having troubles with the return pressure and you have first adjusted the quill lash.

	<p>! WARNING</p> <p>Wear safety glasses when adjusting springs. Serious injury may occur if this warning is ignored!</p>
--	--

Tools Needed	Qty
Heavy Leather Gloves.....	1 Pair
Wrench 14mm.....	1

To adjust the feed shaft spring tension:

1. UNPLUG THE DRILL PRESS!
2. Wipe off any oil on the spring lock cover so it does not slip in your fingers when you hold the cover from spinning (see Figure 24).

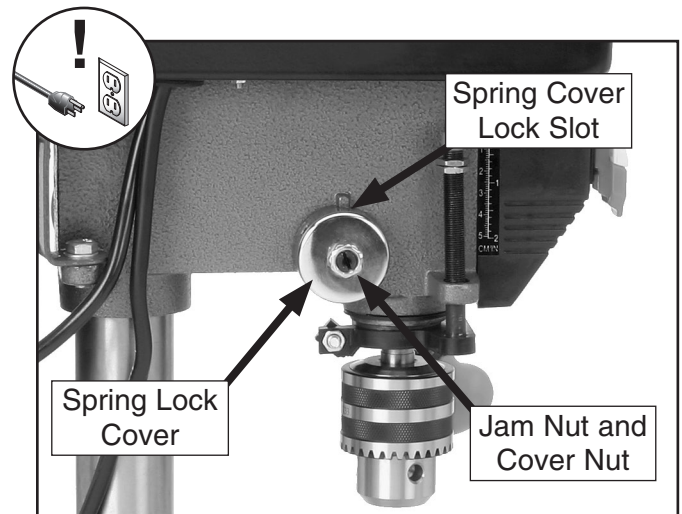


Figure 24. Feed shaft return spring assembly.



3. While holding the spring lock cover against the side of the head stock so the cover stays splined with the locking lug; loosen the jam nut and loosen the cover nut approximately $\frac{1}{4}$ " (see **Figure 25**).



Figure 25. Loosening cover and jam nut

4. Put on heavy leather gloves.

⚠ CAUTION

A high tension coiled spring is underneath the cover. Wearing heavy leather gloves helps to protect your hands from possible lacerations if the spring uncoils during the next step.

5. Pull the cover outward just enough to disengage the spring-cover lock slot from the locking lug.

Important: *It is important to keep a good grip during this step. Letting go of the cover will cause the spring to rapidly uncoil, which may cause injury and is difficult to reassemble.*

6. Rotate the cover counterclockwise to increase spring tension, or let the cover slowly unwind in the clockwise direction to reduce spring tension.
7. Engage the next available spring-cover lock slot with the locking lug and hold the spring lock cover tightly against the side of the head stock.
8. Snug the cover nut against the spring cover just until the nut stops, and then back off the nut approximately $\frac{1}{8}$ turn, or just enough so there is no binding at complete spindle travel.
9. Hold the cover nut and tighten the jam nut against the cover nut.



Electrical Components

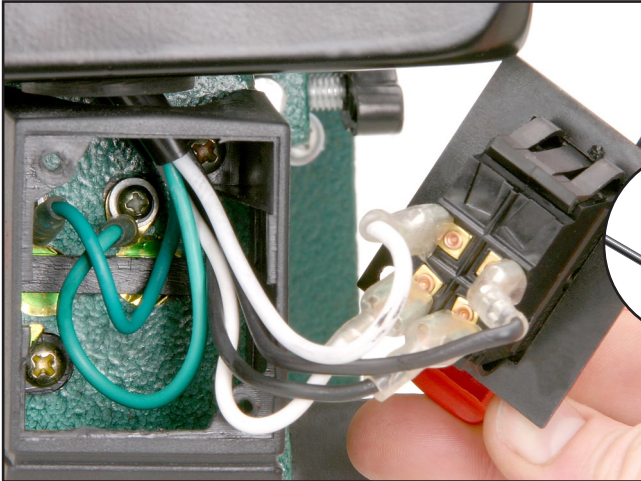


Figure 26. Power switch assembly.

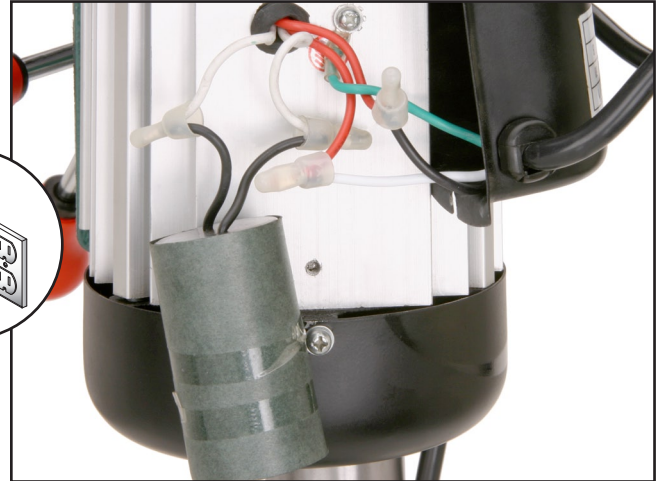


Figure 27. Motor wiring inside junction box.

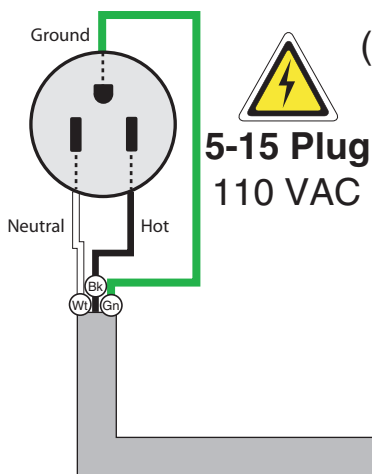
Wiring Diagram



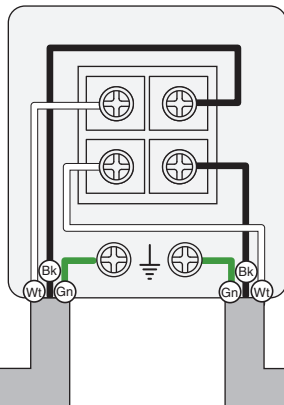
MODEL G9986

⚠ DANGER
 Disconnect power before performing any electrical service. Electricity presents serious shock hazards that will result in severe personal injury and even death!

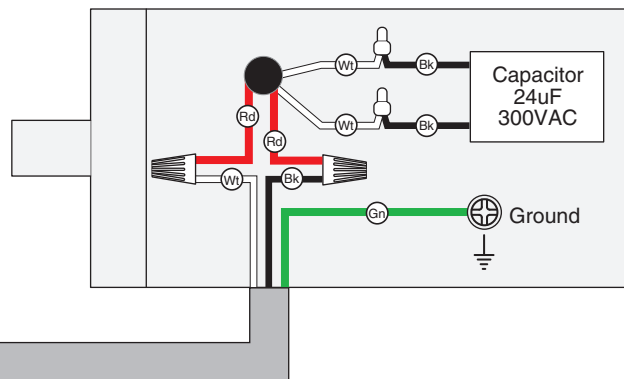
COLOR KEY	
BLACK	
WHITE	
GREEN	
RED	



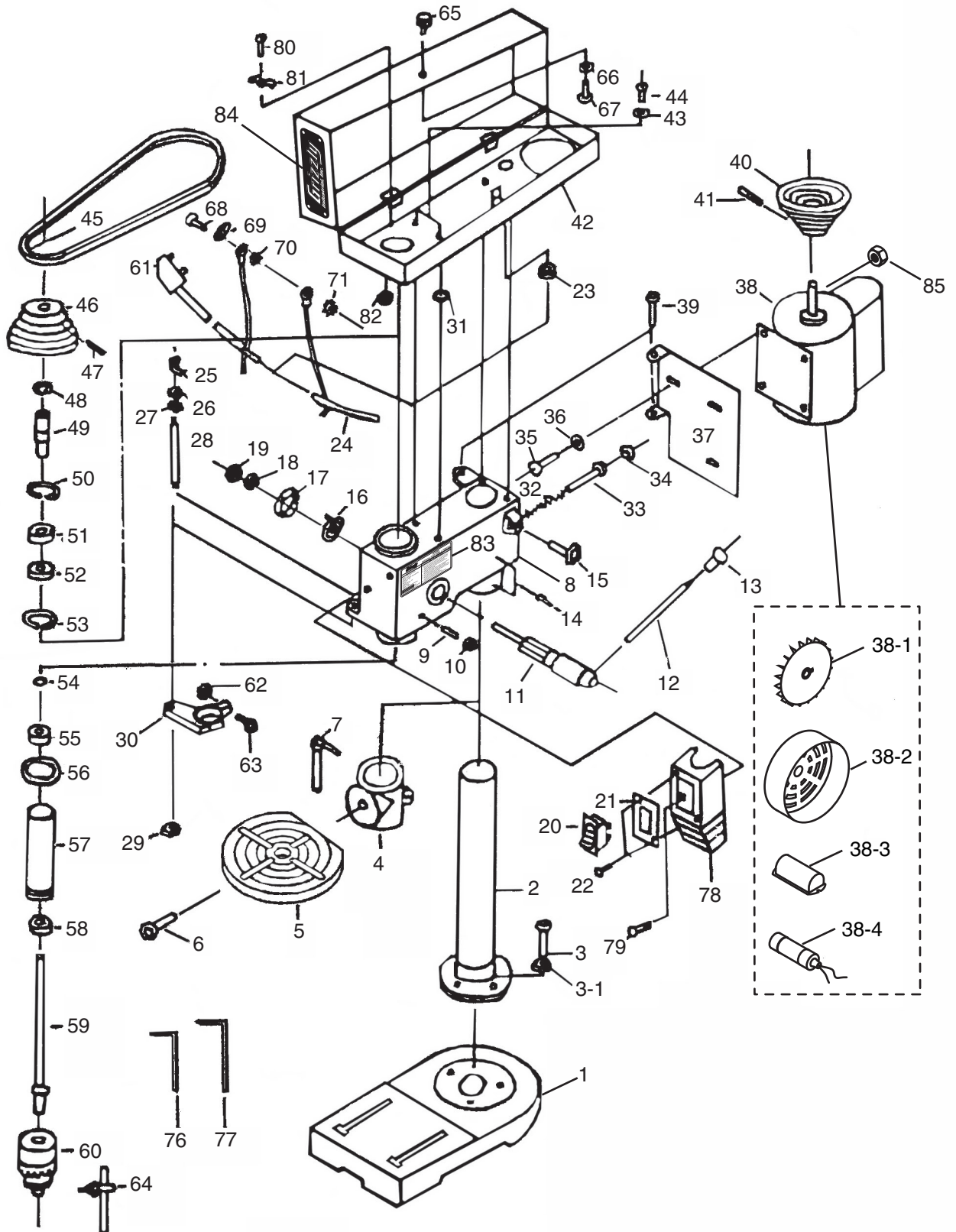
PADDLE SWITCH
 (viewed from behind)



MOTOR



G9986 Parts Breakdown



G9986 Parts List

REF	PART #	DESCRIPTION
1	P9986001	BASE
2	P9986002	COLUMN
3	PB09M	HEX BOLT M8-1.25 X 20
3-1	PW01M	FLAT WASHER 8MM
4	P7942004	CLAMPING SLEEVE
5	P9986005	TABLE
6	PB25M	HEX BOLT M12-1.75 X 25
7	P9986007	CLAMPING LEVER
8	P9986008	BODY
9	P9986009	DOG POINT SET SCREW M6-1 X 18
10	PN01M	HEX NUT M6-1
11	P9986011	FEED SHAFT
12	P9986012	DOWNFEED HANDLE
13	P9986013	KNOB 3/8-16
14	P9986014	KNURLED CUP SET SCREW M8-1.25 X 10
15	P9986015	KNOB M8-1.25 X 16
16	P9986016	SPRING SEAT
17	P9986017	SPRING CAP
18	P9986018	JAM NUT M10-1
19	P9986018	JAM NUT M10-1
20	PSW06	SWITCH
21	P9986021	CLAMPING SHEET
22	PS02M	PHLP HD SCR M4-.7 X 12
23	P9986023	BUSHING
24	P9986024	WIRE
25	P9986025	POINTER
26	P9986018	JAM NUT M10-1
27	P9986018	JAM NUT M10-1
28	P9986028	LIMIT BOLT
29	PN01M	HEX NUT M6-1
30	P9986030	HEEL BLOCK
31	P9986031	RUBBER WASHER
32	P9986032	COMPRESSION SPRING
33	P9986033	SLIDE BAR
34	P9986034	RUBBER PAD
35	PS26M	PHLP HD SCR M6-1 X 20
36	PW03M	FLAT WASHER 6MM
37	P9986037	MOTOR BASE
38	P9986038	MOTOR
38-1	P9986038-1	MOTOR FAN
38-2	P9986038-2	MOTOR FAN COVER
38-3	P9986038-3	CAPACITOR COVER
38-4	P9986038-4	CAPACITOR 24MFD 300VAC

REF	PART #	DESCRIPTION
39	PB03M	HEX BOLT M8-1.25 X 16
40	P9986040	MOTOR PULLEY
41	P9986041	SET SCREW M6-1 x 10
42	P9986042	PULLEY COVER
43	PW03M	FLAT WASHER 6MM
44	PS68M	PHLP HD SCR M6-1 X 10
45	P9986045	V-BELT M27 3L270
46	P9986046	SPINDLE PULLEY
47	PSS01M	SET SCREW M6-1 X 10
48	PR10M	EXT RETAINING RING 22MM
49	P9986049	INTERNAL SPLINE SLEEVE
50	PR23M	INT RETAINING RING 40MM
51	P6203	BALL BEARING 6203ZZ
52	P6203	BALL BEARING 6203ZZ
53	PR23M	INT RETAINING RING 40MM
54	PR01M	EXT RETAINING RING 10MM
55	P6201	BALL BEARING 6201ZZ
56	P9986056	COLLAR
57	P9986057	QUILL
58	P6201	BALL BEARING 6201ZZ
59	P9986059	SPINDLE
60	P9986060	DRILL CHUCK 1-13MM JT33
61	P9986061	PLUG
62	PN01M	HEX NUT M6-1
63	PB10M	HEX BOLT M6-1 X 25
64	P9986064	CHUCK KEY
65	P9986065	HANDLE
66	PW02M	FLAT WASHER 5MM
67	PS08M	PHLP HD SCR M5-.8 x 12
68	PS07M	PHLP HD SCR M4-.7 X 8
69	P9986069	GROUNDING SYMBOL
70	PLW02M	LOCK WASHER 4MM
71	PW05M	FLAT WASHER 4MM
76	PAW03M	HEX WRENCH 3MM
77	PAW04M	HEX WRENCH 4MM
78	P9986078	SWITCH BOX
79	PS08M	PHLP HD SCR M5-.8 X 12
80	PS07M	PHLP HD SCR M4-.7 X 8
81	P9986081	WIRE CLAMPS
82	PN04M	HEX NUT M4-.7
83	P9986083	MACHINE ID LABEL
84	P9986084	GRIZZLY NAMEPLATE
85	PN01M	HEX NUT M6-1

WARNING

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



WARRANTY AND RETURNS

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

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

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

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

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

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





WARRANTY CARD

Name _____
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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?

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<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
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<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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