



**POWER FEEDER
MODEL G1778
INSTRUCTIONAL MANUAL**



GRIZZLY IMPORTS, INC.

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REVISED OCTOBER, 1994

DISCONTINUED MACHINE MANUAL DISCLAIMER

THE INFORMATION IN THIS MANUAL REPRESENTS THE LAST CONFIGURATION OF THE MACHINE BEFORE IT WAS DISCONTINUED. MACHINE CONFIGURATIONS MAY HAVE CHANGED AS PRODUCT IMPROVEMENTS WERE INCORPORATED. IF YOU OWN AN EARLIER VERSION OF THE MACHINE, THIS MANUAL MAY NOT EXACTLY DEPICT YOUR MACHINE. CONTACT CUSTOMER SERVICE IF YOU HAVE ANY QUESTIONS ABOUT DIFFERENCES. PREVIOUS VERSIONS ARE NOT AVAILABLE ONLINE.

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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I. INTRODUCTION

We are proud to offer the Model G1778 Power Feeder. The Model G1778 is part of a growing Grizzly family of fine woodworking machinery. When used according to the guidelines set forth in this manual, you can expect years of trouble-free, enjoyable operation and proof of Grizzly's commitment to customer satisfaction.

The Model G1778 is intended for use in a home workshop or small professional shop. Its heavy-duty $\frac{1}{4}$ H.P. motor, combined with versatile reduction gearing and spring activated rollers, provide plenty of power and traction even on large workpieces.

We are also pleased to provide this instructional manual with the Model G1778 Power Feeder. This manual was written to guide you through assembly, review safety considerations and cover general operating procedures. If you have any constructive criticisms or comments you feel we should include in our next printing, please write us at the address below.

Manager, Technical Documentation
Grizzly Industrial, Inc.
P.O. Box 2069
Bellingham, WA 98227

Finally, we stand behind our machines. We have two excellent regional service departments at your disposal, should the need arise. If you have any service questions or parts requests, please call or write us at the appropriate 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>

II. COMMENTARY

To operate this, or any power tool, safely and efficiently, it is essential to become as familiar with its characteristics as possible. Take as much time as necessary to become acquainted with the Model G1778 Power Feeder. The time you invest before you begin to use this machine will be time well spent. If you do not understand something, do not operate this machine.

The specifications, drawings and photographs illustrated in this manual represent the Model G1778, as supplied when the manual was prepared. However, owing to Grizzly's policy of continuous improvement, changes to the Model G1778 may be made at any time with no obligation on the part of Grizzly.

The information in this manual has been obtained from sources believed to be reliable and as up-to-date as possible. We have focused primarily on the proper assembly and adjustment of your power feeder – as well as some basic information on using the power feeder on specific machines. We have also included some important safety measures which we believe to be essential to this machine's operation. While most safety measures are generally universal, Grizzly cautions that each workshop is different and safety rules should be considered *as they apply to your individual situation*.

The primary function of the Model G1778 is to provide automated material handling capabilities for your shaper or table saw. Feed speed is controlled by interchangeable gear systems which allow you to customize the motor-to-drive wheel ratio – giving you six possible speeds to choose from, ranging from 16 to 52 feet-per-minute (FPM).

We recommend that you keep a current copy of the Grizzly catalog for complete information regarding Grizzly warranty and return policy. Should you need additional technical information relating to this machine, parts, or general assistance, please contact the appropriate regional service department.

We also believe that additional information sources are very important to help you realize the full potential of your woodworking equipment. Trade journals, woodworking magazines, woodworking clubs and your local library all excellent sources of information.

III. SAFETY RULES FOR ALL TOOLS

WARNING! As with all power tools, there is a certain amount of inherent danger associated with the Model G1778 Power Feeder. Using the tool with respect and caution will considerably lessen the possibility of mechanical damage or operator injury. However, if normal safety precautions are overlooked or ignored, injury to the operator or others in the area is possible.

There are certain applications for which this tool was designed. We strongly emphasize that this tool should never be modified and/or used for any application other than that for which it was designed. If you are confused about any aspect of this machine, **do not** use it until you have resolved any questions you might have. The following are important safety rules for all tools:

1. **KNOW YOUR POWER TOOL.** Read the owner's manual carefully. Learn the tool's applications and limitations, as well as its particular hazards.
2. **KEEP GUARDS AND INSERTS IN PLACE** and in working order.
3. **GROUND ALL TOOLS.** If the tool is equipped with a three-prong plug, it should be plugged into a three-hole grounded outlet. If an adapter is used to accommodate a two-prong receptacle, the adapter plug must be attached to a known ground. Never remove the grounding prong.
4. **REMOVE ADJUSTING KEYS AND WRENCHES.** Make it a habit to check that keys and adjusting wrenches are removed from the machine before turning it on.
5. **KEEP WORK AREA CLEAN.** Cluttered areas and benches invite accidents.
6. **AVOID DANGEROUS ENVIRONMENTS.** Do not use power tools in damp or wet locations or expose them to rain. Keep your work area well lighted.

7. **KEEP CHILDREN AND VISITORS AWAY.** All children and visitors should be kept a safe distance away from your work area.
8. **MAKE WORKSHOP CHILD-PROOF** with padlocks, master switches, or by removing starter keys.
9. **DO NOT FORCE TOOL.** Tools work better and more safely when they are allowed to work at their own speed.
10. **USE THE RIGHT TOOL.** Do not use a tool or an attachment to do a job it wasn't intended for.
11. **WEAR PROPER APPAREL.** Do not wear loose clothing, gloves, neckties, or jewelry that might get caught in moving parts. Non-slip footwear is also recommended. Wear a hat or other protective head wear if your hair is long.
12. **USE SAFETY GLASSES AND EAR PROTECTION.** Also use a dust mask whenever operating the power feeder.
13. **SECURE YOUR WORK.** Use clamps or a fixture to hold your work. It is safer than using your hands and frees up both hands for operating the tool.
14. **DO NOT OVERREACH.** Keep proper footing and balance at all times.
15. **MAINTAIN TOOLS IN TOP CONDITION.** Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.
16. **DISCONNECT TOOLS FROM POWER** before servicing and when changing accessories, such as spindles and inserts.
17. **USE RECOMMENDED ACCESSORIES.** Consult the current catalog for recommended accessories. The use of improper accessories may be hazardous.
18. **AVOID ACCIDENTAL STARTING.** Make sure the switch is in the "OFF" position before plugging in the cord.
19. **NEVER STAND OR LEAN ON TOOL.** Serious injury could occur if the tool is tipped or if the abrasive surfaces are accidentally contacted.
20. **CHECK DAMAGED PARTS.** Before further use of the tool, any part or guard that is damaged should be promptly repaired or replaced. Do not operate the machine until you are certain it is in perfect running condition. Failure to follow this precaution could result in further mechanical damage and operator injury.
21. **DIRECTION OF FEED.** Always feed your work against the direction of the sanding spindle. Workpieces fed in the same direction as the spindle travel could be forced out of your control.
22. **NEVER LEAVE THE TOOL RUNNING UNATTENDED - TURN POWER OFF.** Do not leave the tool until it comes to a full stop.
23. **DRUGS, ALCOHOL, MEDICATION.** Do not operate the tool under the influence of drugs, alcohol, or any medication. Never operate machinery when overly fatigued.

IV. UNPACKING

The Model G1778 Power Feeder is shipped from the factory in two heavy-duty cardboard packages. Find a clear work area to open the packages and inventory their contents. Use particular care, when unpacking the boxes, to inspect all of the parts for damage incurred during shipping.

If you find the machine is damaged after you've signed for delivery and the truck and driver are already gone, you will need to file a freight claim with the carrier. Save the containers and all packing materials for inspection by the carrier or their agent. Without the packing materials, filing a freight claim can be difficult. If you need advice regarding this situation, please call us.

CAUTION: The shipping weight of the Model G1778 Power Feeder is a hefty 86 pounds. DO NOT over-exert yourself while unpacking or moving the shipping boxes.

V. PARTS INVENTORY

Once the Model G1778 components are unpacked from their containers, take a moment to verify that all the necessary parts have been included. You should have:

- Power Feed Unit
- 2 Angular Joints
- Vertical Column Assembly
- Horizontal Column
- Leadscrew Assembly
- Parts Bag

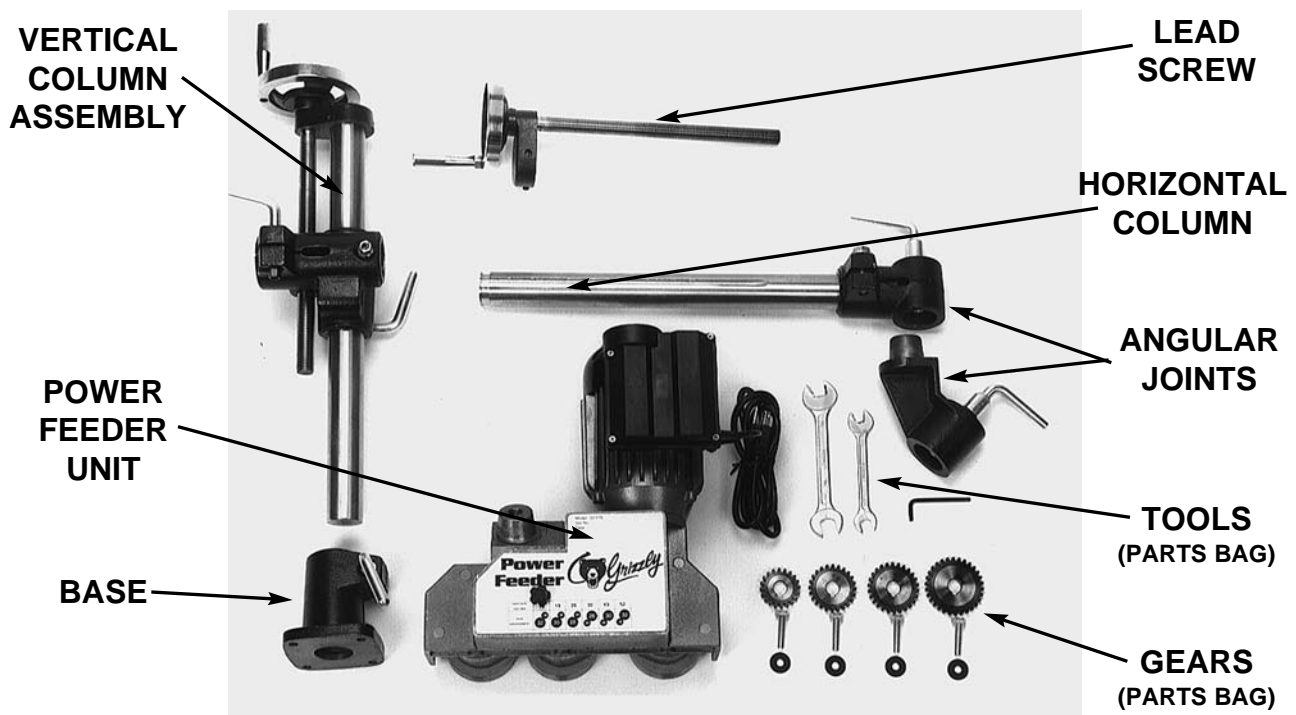


Figure 1

VI. CLEAN-UP

All of the unpainted surfaces on this machine – and a few of the painted ones – are coated with a rust preventative oil. The coating can be removed with paint thinner (mineral spirits) and a good supply of paper towels.

DO NOT use gasoline, lacquer thinner, acetone, or other highly-flammable solvents to remove the coating. The possibility of flash fire or explosion is far greater and they don't work much better than mineral sprits anyway. Don't use chlorinated solvents, such as perchloroethelene; they will lift the paint and ruin the Power Feeder's finish. While you are cleaning the Power Feeder, please pay attention to the following rules:

1. Work only in a well-ventilated area.
2. Make sure there are no sources of open flame in your work area, such as pilot lights or wood-stoves.
3. DO NOT smoke while you're working.
4. Dispose of soiled towels in a proper manner to avoid fire and environmental damage.

VII. ELECTRICAL SERVICE REQUIREMENTS

The Model G1778 is wired for 110/120V, single phase operation; it cannot be operated on 220/240V. The 1/4 H.P., 1720 R.P.M. motor draws 3.8 amps. This is not a large load. However, if you operate the power feeder on a circuit that is already close to capacity, it could overload that circuit. If an unusual load does not exist and a power failure still occurs, have the circuit inspected by a qualified electrician.

This equipment must be grounded. The Model G1778 is equipped with a grounded cord and plug. Please ensure that the outlet and circuit you select is wired for 110/120V and is properly grounded. If the circuit isn't grounded, it will be necessary to run a separate 12 AWG copper wire from the outlet to a known ground. If adding a new circuit, please ensure that the circuit is connected to the grounding terminal in your electrical service panel. Under no circumstances should the grounding pin be removed from the three pronged plug.

A 15 amp fuse or circuit breaker should be used when fusing the power feeder. Circuits rated any higher are not adequate to protect the motor from power surges.

If you find it necessary to use an extension cord with the Model G1778, make sure the cord is rated Hard Service (grade S) or better. Cords up to 50 feet should contain 14 AWG wire. The extension cord must also contain a ground wire and plug pin. Always repair or replace extension cords when they become worn or damaged.

CAUTION: In this section we have covered some basic electrical requirements for the safe operation of your G1778 Power Feeder. As with the safety rules in the preceding section, these requirements are not necessarily comprehensive. Be sure your electrical configuration complies with local and state codes. If you have questions about your specific situation, feel free to call our service technicians.

VIII. ASSEMBLY

Most of the power feeder has been assembled at the factory. The remaining assembly requirements should not take a large amount of time. Take a moment to examine the parts diagrams at the back of this manual to familiarize yourself with the various parts.

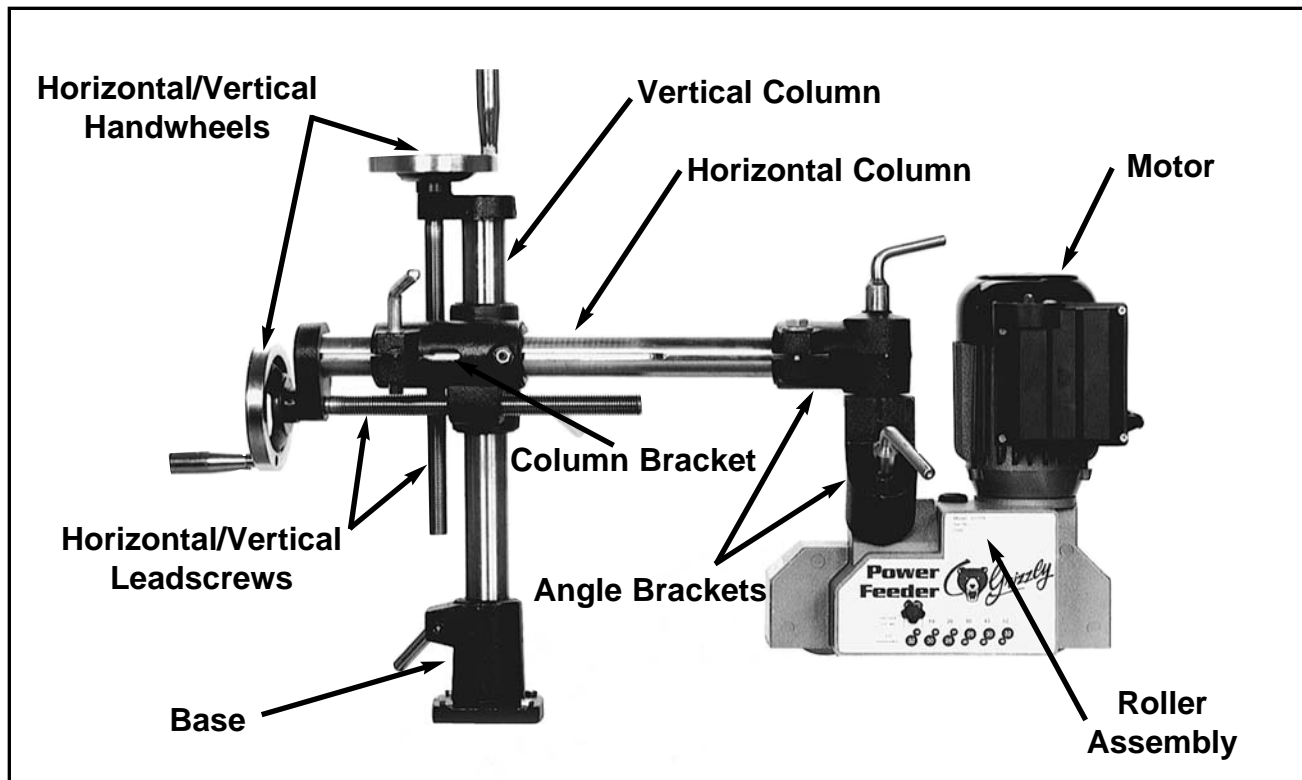


Figure 2

While the Model G1778 Power Feeder looks somewhat complicated at first, the assembly process is really quite simple.

Start the assembly process by attaching the horizontal column, the vertical column and the horizontal leadscrew. Begin by removing the base from the vertical column assembly. The base can be removed by loosening the clamping lever attached to the side of the base. The next several steps of the procedure are probably most easily accomplished by laying all of the parts out on a table or workbench.

The first step of assembly requires attaching the horizontal column to the vertical column. Begin by loosening the clamping lever on the column bracket. The horizontal column should slip easily through the column bracket. The column must be inserted so the guide notch goes through the bracket. Keep in mind that the notch must line up with the guide bolt on the column bracket. If you find that you are still having trouble inserting the horizontal column into the bracket, you may need to loosen the guide bolt.

After the horizontal column is attached to the vertical column, attach the horizontal leadscrew. See Figure 3. The leadscrew is attached to the column bracket by screwing it into the threaded opening just below the horizontal column. After the leadscrew has been threaded through the bracket, attach the column cap to the end of the horizontal column.

Three setscrews hold the column cap to the horizontal column. You will need to loosen those setscrews to properly seat the column cap on the column. Two of the setscrews are seen in Figure 3. At this point, attach the handles to the handwheels with a 12mm open end wrench.

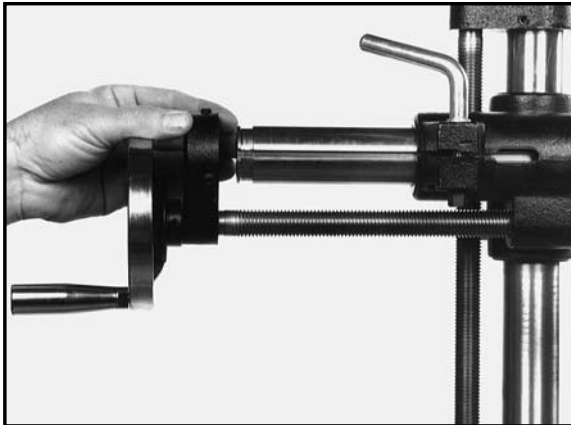


Figure 3

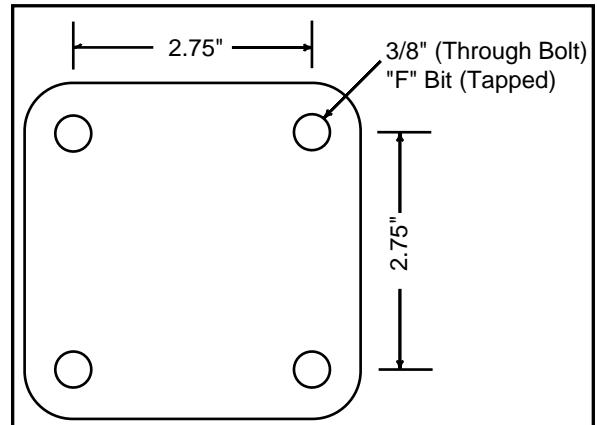


Figure 4

Once the first three components are attached, snug up the guide bolt on the column bracket. The bolt should be tight enough to keep the horizontal column from twisting in the bracket, yet loose enough to allow for smooth column movement. Tighten the bolt in small increments and turn the horizontal handwheel to test movement. Once you've found proper adjustment, you can tighten the clamping lever.

Now that the columns are properly attached, let's turn our attention to the power feeder's base. Depending on what machine you intend to install the Model G1778 on, locate the point on your machine's table where installation will not affect movement of fences or other moving parts. The base should be mounted as close to the actual work area as possible, without interfering with machine operation. The shorter the amount of distance between the base and the rollers, the less likely the power feeder will torque out of its desired position. *You might consider mounting the base on a stable piece of hardwood with the mounting bolts countersunk in the bottom of the wood. You can temporarily mount the power feeder on your table with clamps to find the base location that best suits your needs.*

Using the base as your template, locate the best mounting point. Mark the outside perimeter of the base and the locations of the four bolt holes on your table. Measure the distances of the four mounting holes from the edges of the table with a tape measure or yardstick and compare those measurements with the bottom of the table. Make sure the mounting holes will not align with cast braces on the underside of the table. The proper drilling pattern, as shown in Figure 4, features 4 holes at 2³/₄" distance. The holes should be drilled at 3/8" if you intend to attach the base to the table with through bolts. If you intend to drill and tap holes for your mounting bolts, use an "F" drill bit in conjunction with a 5/16-18 tap. When you are satisfied you have properly located the base, drill through your table and attach the base with the fasteners you have chosen for your application.

Once the holes are drilled and the base is mounted with appropriate hardware, loosen the clamping lever on the base and attach the column assembly. Tighten the clamping lever when the columns are in place.

The next step is to attach the angular joints to the motor and roller assembly and attach that entire unit to the outboard end of the horizontal column. To begin, connect the two angular joints. The 45° joint is fitted with a threaded knob which is inserted into the 90° joint. Tighten the locking lever on the 90° joint with the two joints aligned as shown in Figure 5. Attach the motor and roller assembly

to the angled joints. The roller casing mounts in an identical fashion as described for the angle joints. Attach the knob on the roller casing to the 45° angle joint and tighten the locking lever.

Once the motor and roller assembly is attached to the angle joints, attach the entire unit to the column assembly. The column clamp may need to be spread slightly to attach it to the horizontal column. Use extreme care when spreading the clamp. Too much force could break the casting.

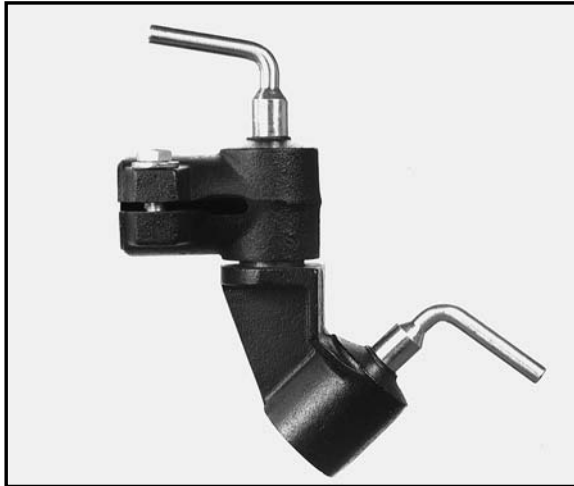


Figure 5



Figure 6

It's essential, for proper power feeder operation, that the feed rollers be parallel to the machine's table. To adjust the power feeder, lower the horizontal column using the handwheel at the top of the vertical column, until the rollers contact the table. If the rollers touch unevenly, loosen the locking lever on the 45° angular joint and continue to lower the horizontal column until all of the rollers are touching the table evenly. Re-tighten the locking lever.

IX. ADJUSTMENTS

The effectiveness of your Model G1778 Power Feeder depends on proper placement of the rollers and the speed at which they turn. In this section, we will look at the adjustments that will optimize power feeder performance.

A. ROLLER PLACEMENT

If you look at the rollers, as shown in Figure 6, you will notice that the gap between the leading and middle roller is larger than that between the middle and trailing roller. That arrangement allows you to place the rollers so the first wheel is slightly ahead of your cutting tool, while the middle and third wheels are behind. Thus, the rollers feed your workpiece into, through and past the cutting surface without contact between the wheels and cutter. Positioning the roller assembly this way not only provides a consistent application of power to the workpiece, it also acts to keep your hands away from cutting surfaces.

To position the rollers correctly:

1. Raise the horizontal column so the rollers are just above the table.
2. Swing the motor and roller assembly so the rollers are just slightly away from the cutter, with the leading roller slightly forward of the cutting surface.

3. Turn the feed rollers so they are angled just slightly toward the fence. The leading wheel should be just about $\frac{1}{4}$ " closer to the fence than the trailing wheel.
4. Set the wheel height between $\frac{1}{16}$ " and $\frac{1}{8}$ " below the height of the material you intend to mill. The wheels, when properly adjusted, will put consistent downward pressure on your workpiece. See Figure 7.

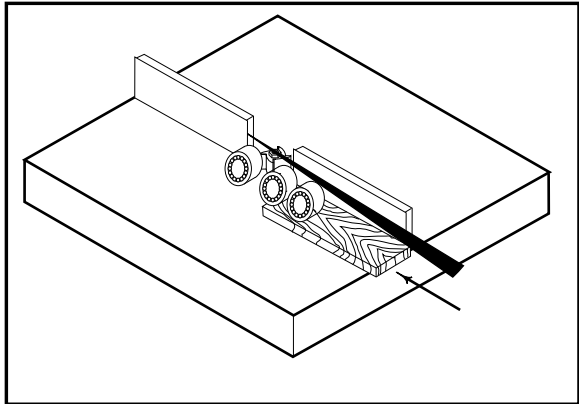


Figure 7

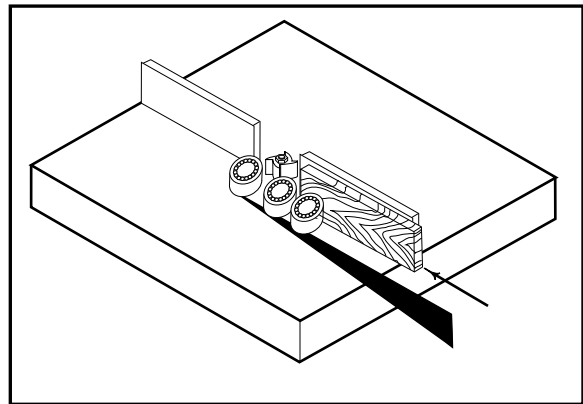


Figure 8

The power feeder can also be set to support your work against a fence, as shown in Figure 8. As with the previous arrangement, the rollers should be slightly angled to hold the workpiece against your cutting surface. This arrangement is ideal for milling edges and when using the power feeder with a jointer. When using the power feeder this way, it is essential to make sure that the fence is fastened tightly in place. As before, you will want to set the distance between the rollers and (in this case) the fence about $\frac{1}{16}$ " to $\frac{1}{8}$ " under the thickness of the material to be milled. When used on its side, you will want to adjust the rollers so the leading wheel is about $\frac{1}{4}$ " closer to the table than the trailing wheel.

There are three important factors to consider when using the power feeder with a table saw; pinching, binding and blade height. If you are ripping boards 4" or wider, place the power feeder between the fence and blade with the rollers turned slightly toward the fence. If you are ripping materials less than 4", set the rollers as close as possible to the fence. It is important, in this case, that you don't set the rollers so the waste side of your material binds or pinches the blade. The rollers should be angled with no more than $\frac{1}{8}$ " of variation between the leading and trailing wheels.

IMPORTANT: It is essential, when ripping narrow materials, that the blade height on your table saw be at, or just slightly below the bottom of your rollers. See Figure 9. If the material you are cutting requires you to place the saw blade directly below you rollers, set your saw blade slightly below the full thickness of your workpiece.

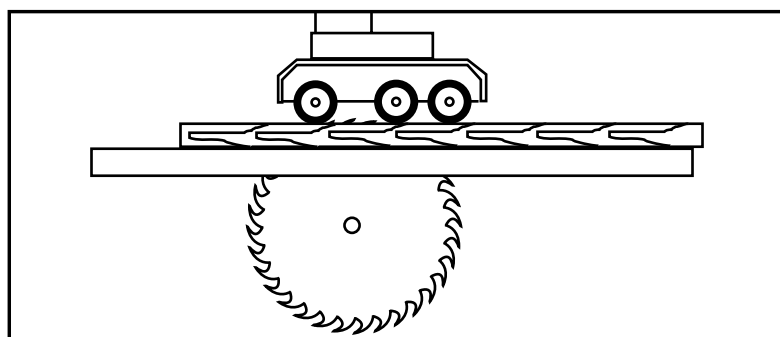


Figure 9

B. FEED RATES

The optimum feed rate for the Model G1778 Power Feed will vary depending on a number of factors, including; the thickness of the material to be cut, the hardness of the workpiece, the speed of the cutting tool and the configuration of the cutting tool (number of teeth, shape of cutter, etc. Generally, the following rules can be followed with a good level of success.

- The thicker the material to be cut, the slower the feed rate.
- The harder the material, the slower the feed rate.
- The faster the cutter speed, the faster the feed rate.
- The greater the number of teeth or cutting surfaces, the faster the feed rate.

X. GEARING

The Model G1778 Power Feed gearbox allows you to tailor your feed rate to match individual projects. Feed rates range from 16 to 52 feet-per-minute. See Figure 11. To change gears:

1. Remove the gearbox cover by unscrewing the knurled knob on the front of the power head.
2. Determine the speed you desire, based on your material and cutter configuration.
3. Locate the desired feed rate on the chart shown in Figure 11.
4. Remove the hex nuts which hold the drive gears in place. See Figure 10.
5. Remove the existing gears and replace with the new gears.
6. Replace the hex nuts and attach the drive gear cover.

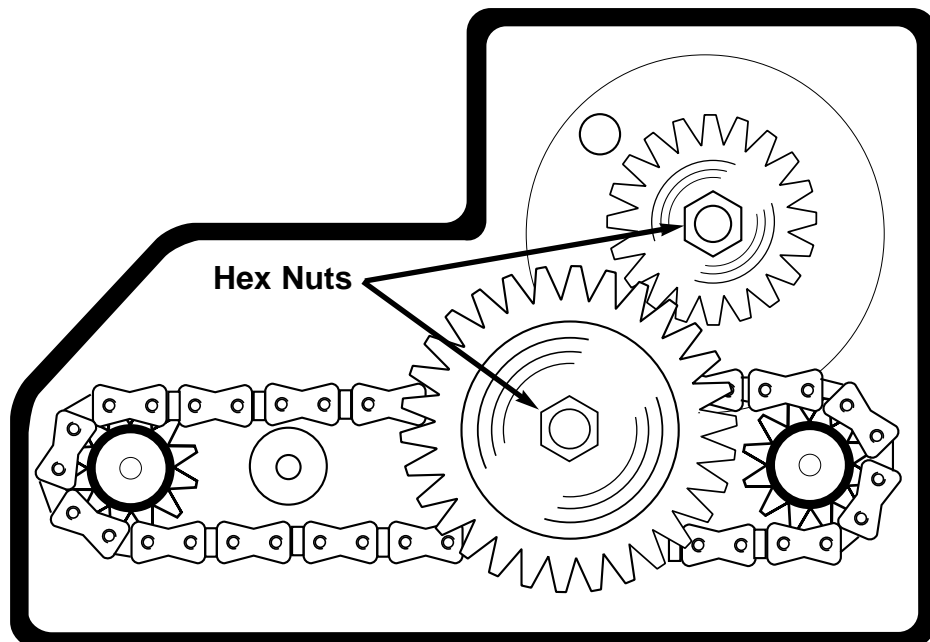


Figure 10

XI. MAINTENANCE

A. GEARBOX

The internal gearbox holds 65cc of SAE 30W gear oil. The oil should be drained and replaced after every 500 hours of operation. A drain plug at the bottom of the gearbox provides access for removal of old oil. Re-fill to within $\frac{3}{4}$ " of the filler plug.

B. ROLLERS

Each of the three roller wheels is fitted with a grease fitting. Lubricate after every 200 hours of use.

C. CHAINS AND GEARS

Lubricate drive gears and chains with grease after every 200 hours of operation. Clean and lubricate all the machined surfaces with light machine oil.

XII. CLOSURE

The following pages contain machine specifications, parts lists, parts diagrams and warranty and return information for your Model G1778 Power Feeder.

Feel free to write or call us if you have questions. Our service staff will be glad to help you if you need parts or service assistance. If you have questions or comments about this manual, please write to our Bellingham, Washington location.

Thank you for your purchase. We sincerely appreciate your business and look forward to serving you again.

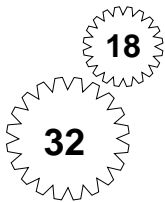
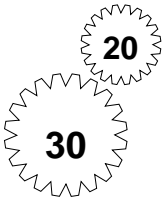
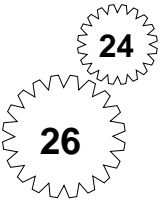
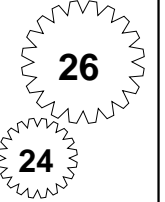
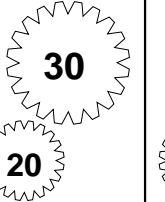
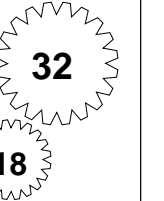
FEED RATE FEET/MIN	16	19	26	30	43	52
GEAR ARRANGEMENT						

Figure 11

XIII. MACHINE DATA

GRIZZLY MODEL G1778 POWER FEEDER

Overall Dimensions:

Height	24"
Overall Length	30"
Overall Width.....	14"
Shipping Weight.....	85 lbs.
Net Weight	80 lbs.

Construction:

Columns	Steel
Supports	Cast Iron
Housing.....	Cast Aluminum
Wheels (3) 1 ¹ / ₈ " x 3 ¹ / ₈ "	Synthetic Rubber

Motor:

Type	TEFC Capacitor Start Induction
Horsepower	1/4 H.P.
Phase Type/Voltage.....	Single Phase/110V
Cycle/RPM	60 Hertz/1720 RPM
Switch	Forward/Reverse
Bearings	Shielded and Lubricated-For-Life

Features:

- Spring Tension Rollers
- Heavy-Duty Gear Reduction
- Universal Positioning with Locking Handles
- Six Feed Speeds

Specifications, while deemed accurate, are subject to change without notice.

XIV. WARRANTY AND RETURNS

LIMITED WARRANTY

Grizzly Imports, Inc. warrants every product it sells for a period of one year on all parts and one year on all electric motors 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 for 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.

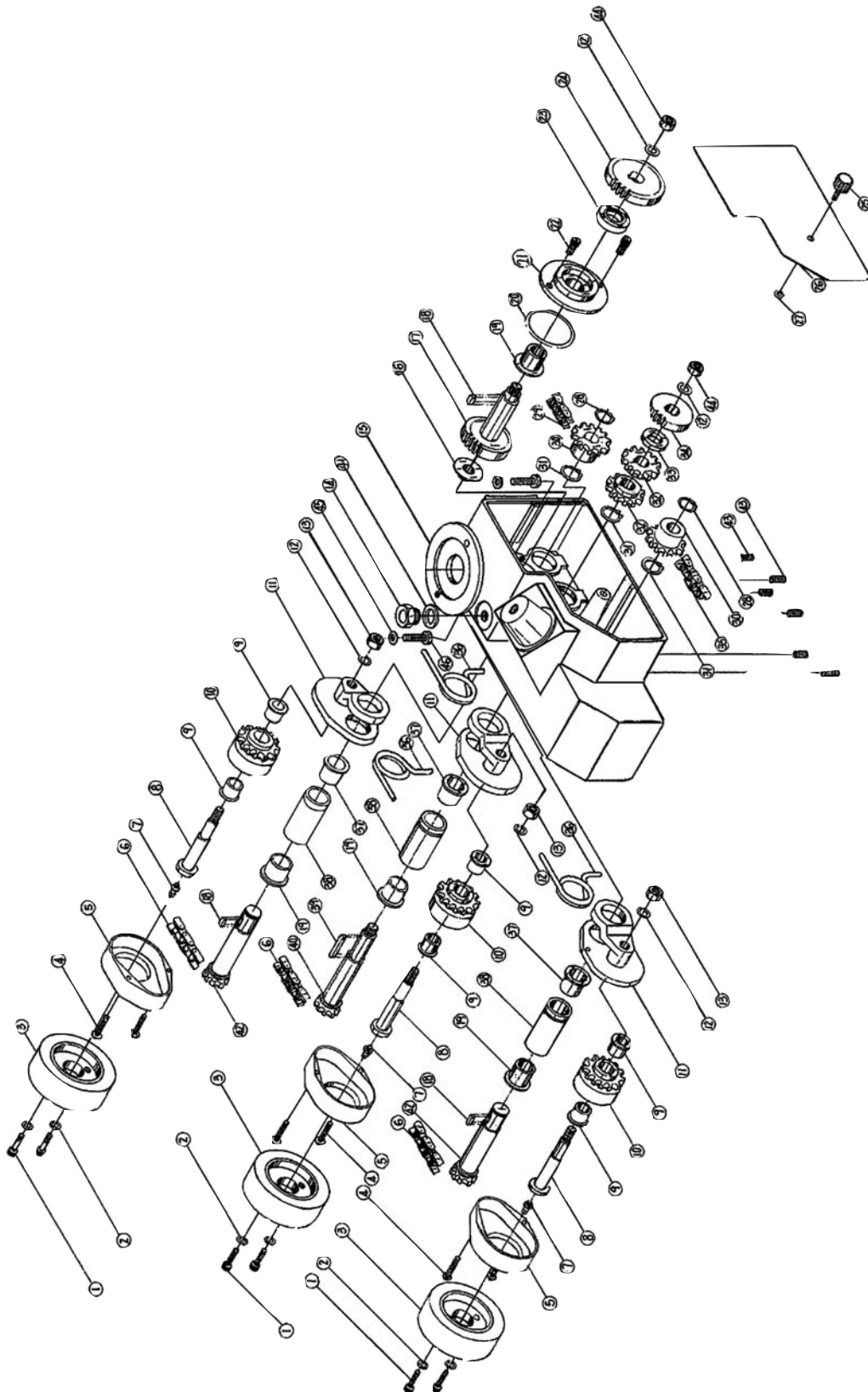
We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special, or consequential damages arising from the use of our products.

To take advantage of this warranty, the product or part must be returned to either our Bellingham or Williamsport warehouse, freight pre-paid. Proof of purchase must accompany the merchandise. The manufacturers reserve the right to change specifications at any time as they continually 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.

XV. PARTS LISTS AND DIAGRAMS

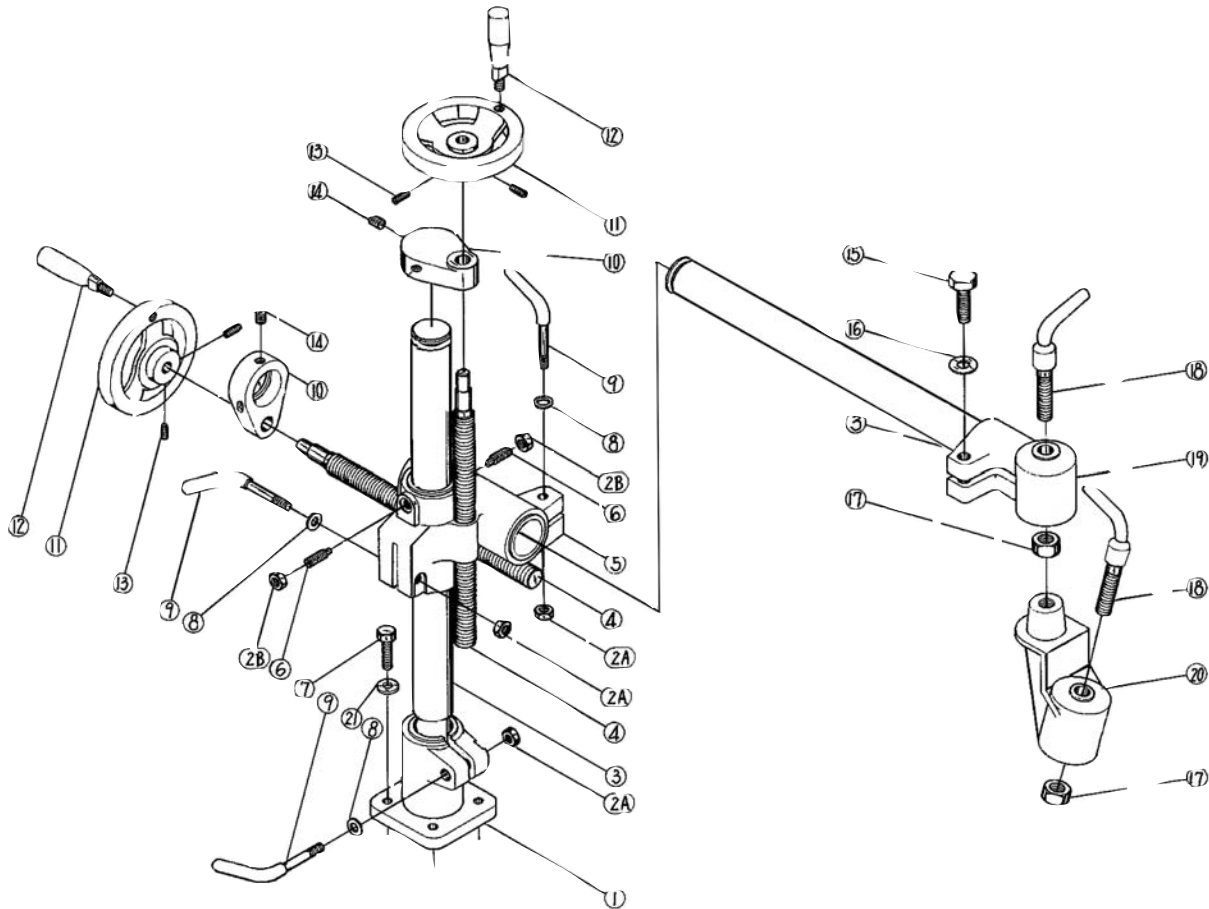
A. GEARBOX DIAGRAM



B. PARTS LIST – GEARBOX DIAGRAM

Ref. #	Part #	Description	Ref. #	Part #	Description
001	PSB15M	Cap Screw M5-0.8x20	024	P1778024B	Gear 20T
002	PLW01M	Lock Washer 5mm	024	P1778024C	Gear 30T
003	P1778003	Wheel	024	P1778024D	Gear 32T
004	P1778004	Screw M4-0.7x25mm	025	P1778025	Knob
005	P1778005	Cover	026	P1778026	Cover
006	P1778006	Chain	027	P1778027	Retaining Ring 5mm
007	P1778007	Grease Fitting	028	P1778028	Retaining Ring 15mm
008	P1778008	Shaft	029	P1778029	Chain
009	P1778009	Bushing	030	P1778030	Sprocket
110	P1778010	Sprocket	031	PR17M	Retaining Ring
011	P1778011	Roller Stand	032	P1778032	Sprocket
012	PLW04M	Lock Washer 8mm	033	P1778033	Collar
013	PN03M	Nut M8-1.25mm	034	P1778034	Gear 24T
014	P1778014	Oil Plug $\frac{5}{8}$ "-18	035	P1778035	Chain
015	P1778015	Case	036	P1778036	Spring
016	P1778016	Bushing	037	P1778037	Bushing
017	P1778017	Worm Gear	038	P1778038	Bush Tube
018	PK06M	Key 5x5x10mm	039	PK12M	Key 5x5x30mm
019	P1778019	Bushing	040	P1778040	Shaft
020	P1778020	O-Ring	041	P1778041	Oil Plug Gasket
021	P1778021	Cover	042	P1778042	Shaft
022	PSB33M	Cap Screw M5-0.8x12	043	PSS04M	Setscrew M6-1.0x12mm
023	P1778023	Seal 17x32x8mm	044	PN03M	Nut M10-1.5mm
024	P1778024	Gear 26T	045	PW06	Washer $\frac{1}{4}$ "
024	P1778024A	Gear 18T	046	PB10M	Screw M6-1.0x25mm

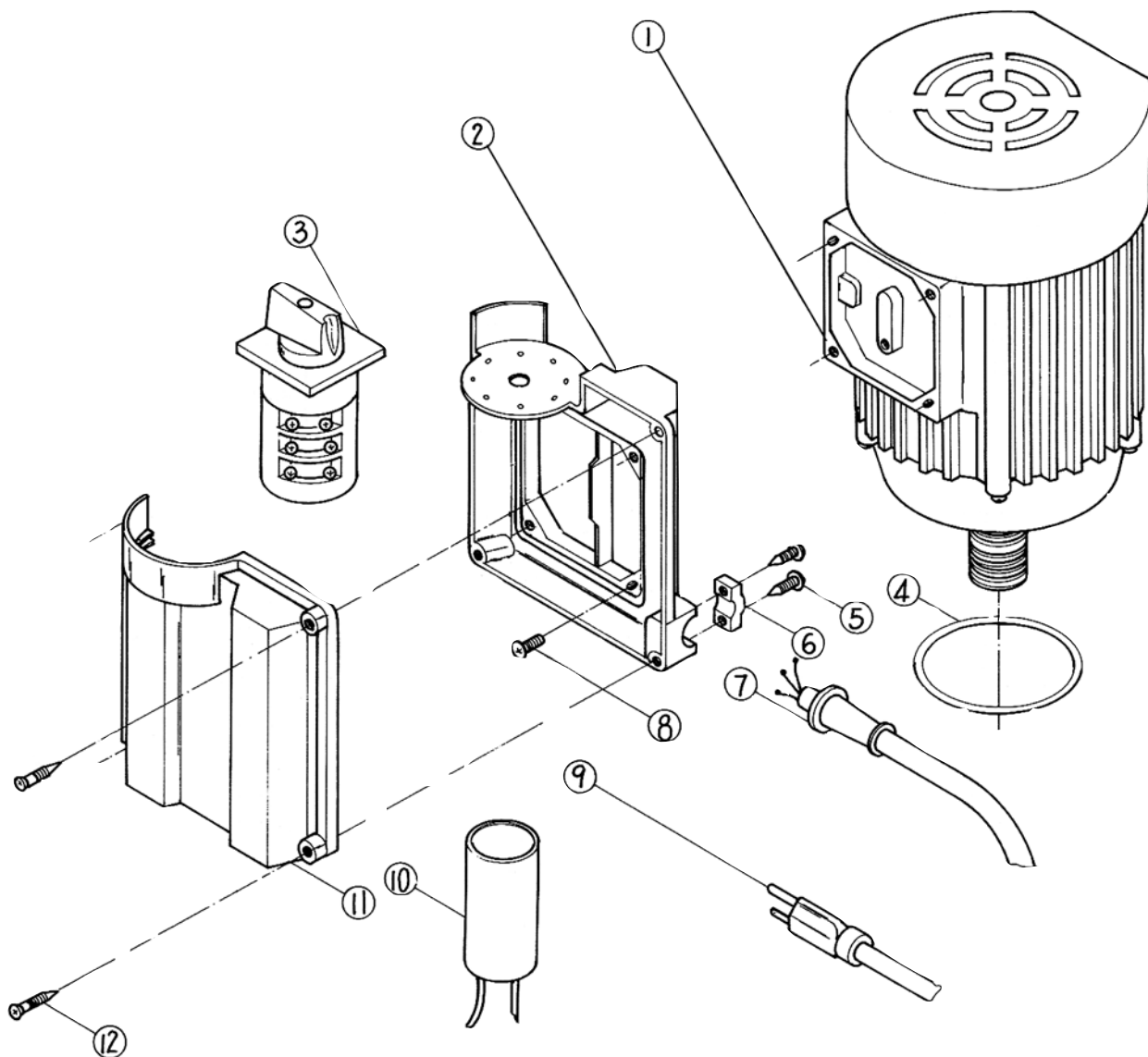
C. COLUMN DIAGRAM



D. PARTS LIST – COLUMN DIAGRAM

Ref. #	Part #	Description	Ref. #	Part #	Description
101	P1778101	Base	112	P1778112	Handle
102	PN03M	Nut M8-1.25mm	113	PSS04M	Setscrew M6-1.0x12mm
103	P1778103	Column	114	PSS14M	Setscrew M8-1.25x12mm
104	P1778104	Leadscrew	115	PB24M	Bolt M12-1.75x45mm
105	P1778105	Bracket	116	PW01	Flat Washer 1/2"
106	P1778106	Bolt	117	PN05M	Nut M16-1.5mm
107	PB20M	Bolt M8-1.25x35mm	118	P1778118	Lock Handle
108	PW01M	Flat Washer 8mm	119	P1778119	Angular Joint
109	P1778109	Lock Handle	120	P1778120	Angular Joint
110	P1778110	Column Cap	121	PW01M	Flat Washer 8mm
111	P1778111	Handwheel			

E. MOTOR DIAGRAM



F. PARTS LIST – MOTOR DIAGRAM

Ref. #	Part #	Description	Ref. #	Part #	Description
201	P1778201	Motor	208	P1778208	Screw M4.5-0.75x13mm
202	P1778202	Switch Half	209	P1778109	Cord
203	P1778203	Switch	210	P1778110	Capacitor
204	P1778204	O-Ring	211	P1778111	Switch Cover
205	P1778205	Screw M3.5-0.6x13mm	212	P1778212	Handle
206	P1778206	Wire Clamp	213	P1778213	Grease Gun
207	P1778207	Strain Relief			