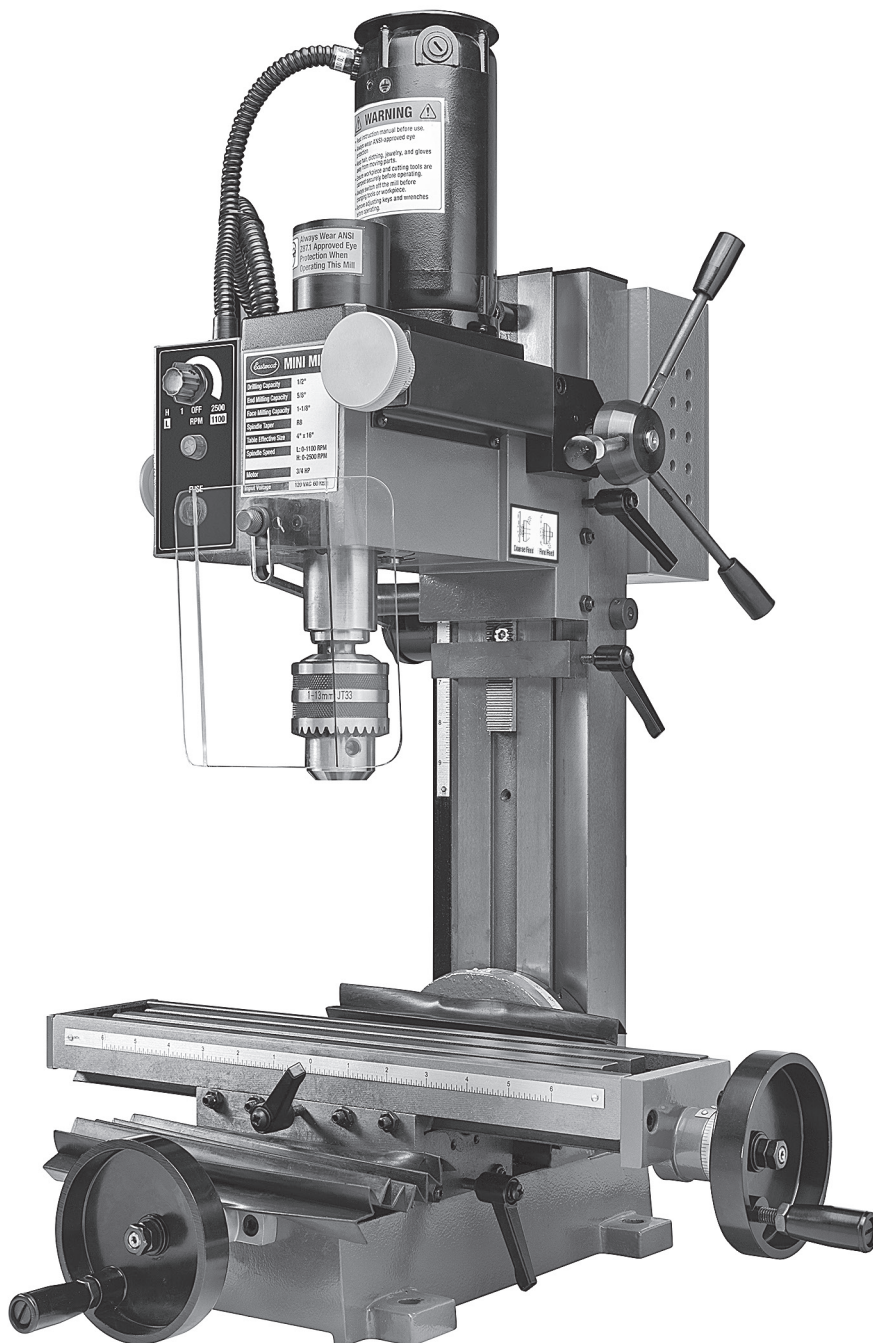


Eastwood®

DO THE JOB RIGHT.®

Item #32498

4" x 16" MINI MILL INSTRUCTIONS



The **EASTWOOD 4" X 16" MINI MILL** is a highly capable machine able to perform as a Drill Press with up to 1/2" [13mm] drill shank capacity and as a fully functional manual Milling Machine with up to 5/8" end mill capacity (3/8" included). The 2 axis Table, along with a 45° left or right tilting column design, allows drilling or milling virtually any surface. A 0-2500 RPM Motor Control with a 2 Speed gearbox provides the versatility to accommodate most materials. The standard R8 Taper arbor will accept a wide variety of Collets, Drills and other accessories.

SPECIFICATIONS

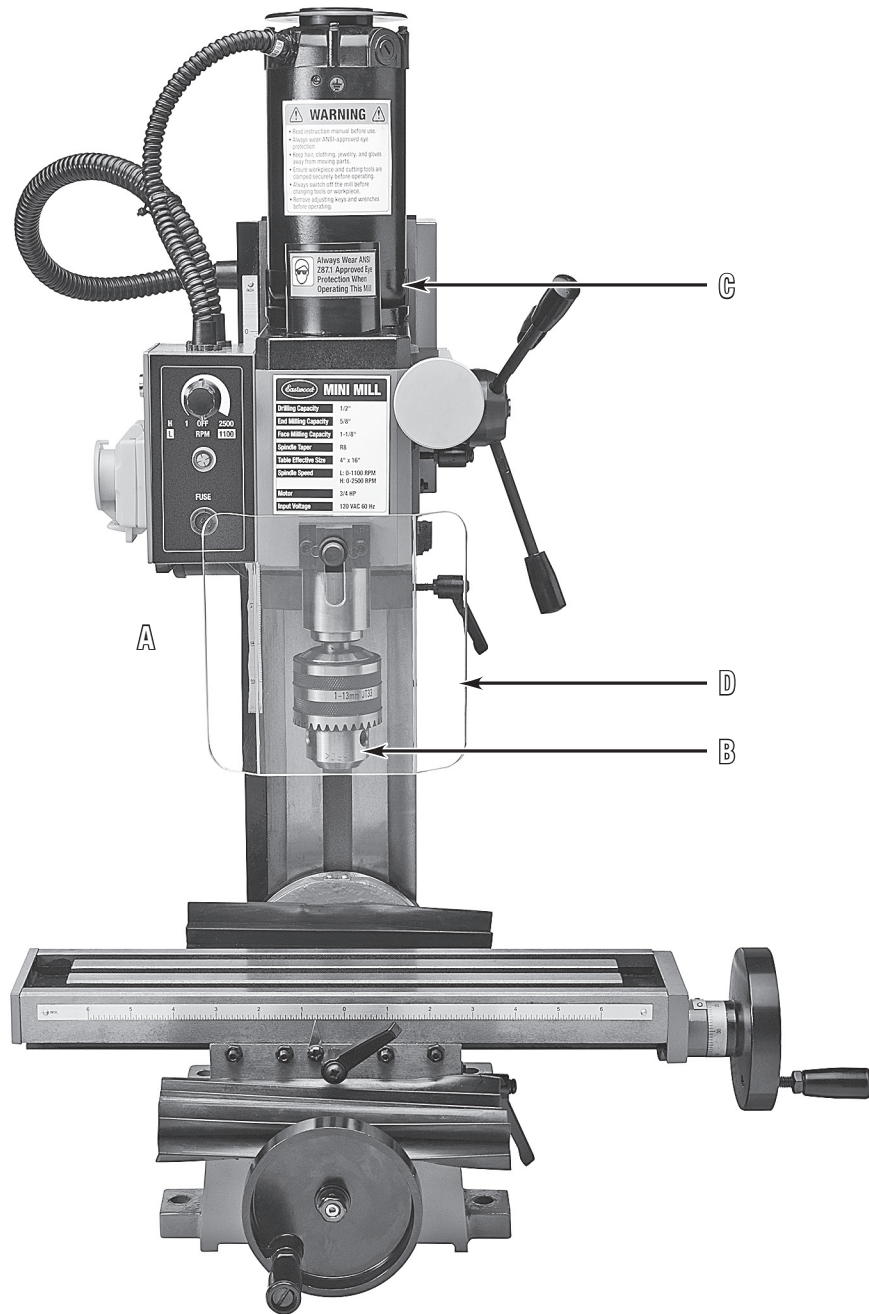
Power Requirements: 120 VAC, 60hz.
Motor Amps: 4.5Amps
Cross Table Travel: 4" [100mm]
Longitudinal Table Travel: 7" [180mm]
Spindle Rotary Angle: 90° (+/- 45° of vertical)
Spindle Speed:
 - Low Range: 0-1100 RPM
 - High Range: 0-2500 RPM

Spindle Bore Taper: R8
Maximum Drilling Capacity: 1/2" [13mm]
Maximum End Milling Capacity: 5/8" [16mm]
Maximum Face Milling Capacity: 1-1/8" [30mm]
Spindle Bearings: Sealed and Permanently Lubricated

CONTENTS

MILL UNIT

- (1) Main Mill Unit [A]
- (1) [R8] 1/2" [13mm] Drill Chuck (installed) [B]
- (1) Drawbar (installed) [C]
- (1) Chip Shield (installed) [D]



CONTENTS

ACCESSORIES

(2) Handwheel Crank Handles [E]

(1) Set of 4 Hex Keys (3mm, 4mm, 5mm, 6mm) [F]

(1) Chuck Key [G]

(1) 8mm x 10mm Double Open-End Wrench [H]

(1) 14mm x 17mm Double Open-End Wrench [J]

(1) 17mm x 19mm Double Open-End Wrench [K]

(1) 36mm Wrench [L]

(1) 45mm to 52mm Spanner Wrench [M]

(2) T Nuts, M10-1.5 [P]

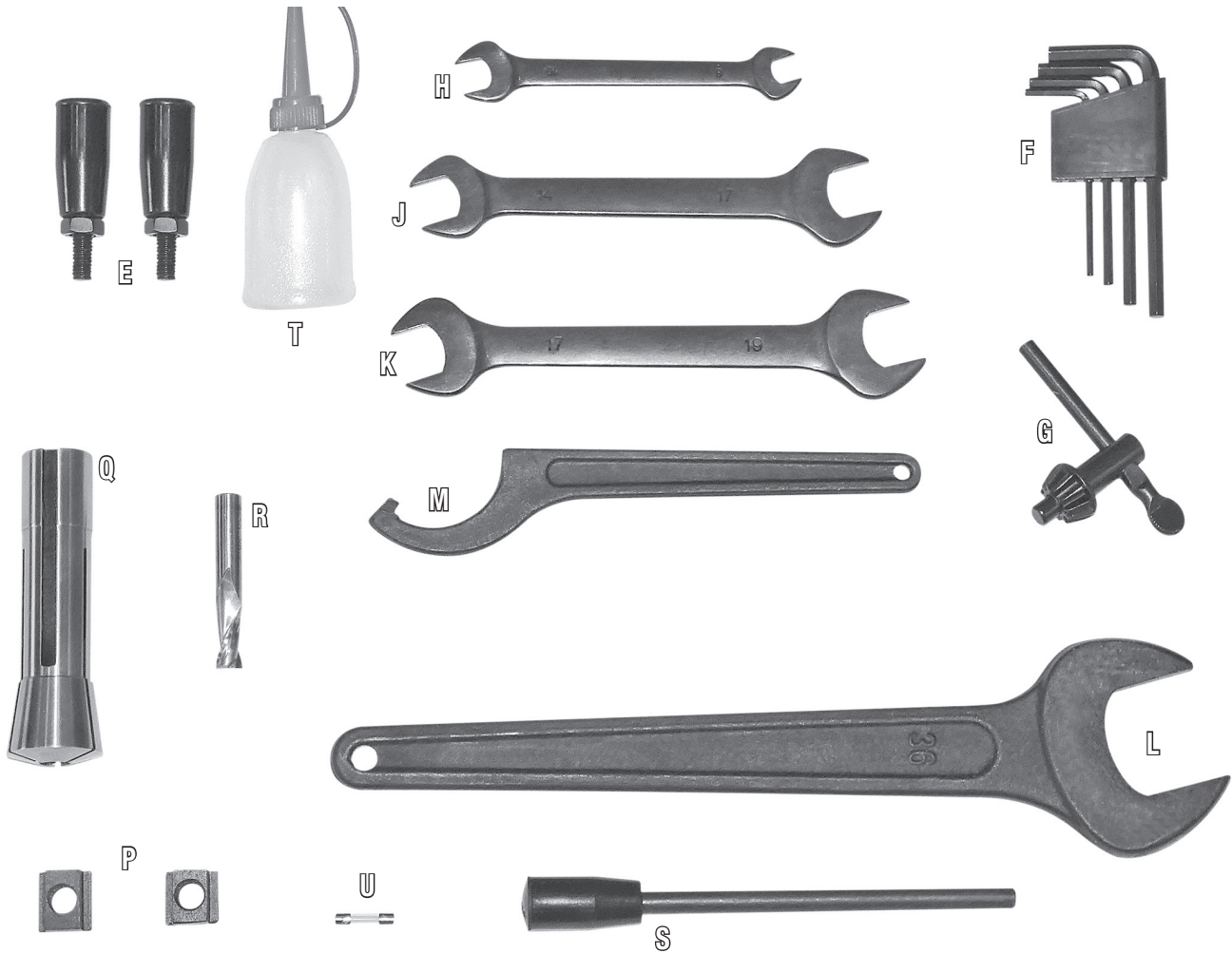
(1) R8 Taper, 3/8" Collet [Q]

(1) 3/8" End Mill [R]

(1) Spindle Locking Pin [S]

(1) Oil Dispenser [T]

(1) Spare 5 Amp Fuse [U]



LEARN HOW TO SET UP AND USE YOUR MILL

with FREE Instructional Videos Available at easwood.com – keyword search “MILL”

SAFETY INFORMATION

The following explanations are displayed in this manual, on the labeling, and on all other information provided with this product:

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

CAUTION used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

⚠ NOTICE

NOTICE is used to address practices not related to personal injury.



⚠ READ ALL INSTRUCTIONS BEFORE USING THIS MILL!

- Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury. The term “electrical equipment” in all of the warnings listed below refers to your mains-operated (corded) electrical equipment or battery-operated (cordless) electrical equipment.



⚠ WARNING PINCH AND CRUSH HAZARD!

- Keep fingers and hands away from moving parts when operating.



⚠ WARNING CUT HAZARD!

- Sharp cut edges on work pieces can cause serious cuts. Cutting tools are sharp and can cause serious cuts.
- Wear thick, well-fitting work gloves to prevent cuts from handling sharp edges.



⚠ WARNING EYE INJURY HAZARD!

- The cutting process can suddenly eject particles at high velocity. Always wear ANSI approved eye protection when operating this equipment.



⚠ CAUTION INJURY HAZARD!

- The Mill includes changeable components which can present hand/finger pinch hazard injuries if dropped. Avoid pinching hands while handling parts during assembly and/or operation.



⚠ CAUTION

- The Mill was specifically designed to be operated by one person only. Never have one person operate some of the controls while another operates the others or serious injury could occur.
- Inspect all tooling, fixtures and mechanical components of the Mill before beginning any work. Attempting to operate the Mill with damaged tooling or fixtures can result in serious injury and severe Mill damage.



⚠ NOTICE

- Operation of this Mill should be performed only by those with an acceptable level of knowledge of standard machining practices. For novices or those unfamiliar with machining equipment, Eastwood strongly recommends the use of the book: *Milling for Home Machinists* by Harold Hall (Eastwood item #22288).

GENERAL SAFETY RULES

Read all instructions. Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury. The term “electrical equipment” in all of the warnings listed below refers to your mains-operated (corded) electrical equipment or battery-operated (cordless) electrical equipment.

SAVE THESE INSTRUCTIONS

1) WORK AREA SAFETY

- a) Keep work area clean and well lit. Cluttered or dark areas invite accidents.
- b) Do not operate electrical equipment in explosive atmospheres, such as in the presence of flammable liquids, gases or dust. Electrical equipment creates sparks which may ignite the dust or fumes.
- c) Keep children and bystanders away while operating electrical equipment. Distractions can cause you to lose control.

2) ELECTRICAL SAFETY

- a) Electrical equipment plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) electrical equipment. Unmodified plugs and matching outlets will reduce risk of electric shock.
- b) Avoid body contact with earthed or grounded surfaces such as pipes, radiators, ranges and refrigerators. There is an increased risk of electric shock if your body is earthed or grounded.
- c) Do not expose electrical equipment to rain or wet conditions. Water entering electrical equipment will increase the risk of electric shock.
- d) Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the electrical equipment. Keep cord away from heat, oil, sharp edges or moving parts. Damaged or entangled cords increase the risk of electric shock.
- e) When operating electrical equipment outdoors, use an extension cord suitable for outdoor use. Use of a cord suitable for outdoor use reduces the risk of electric shock.

3) PERSONAL SAFETY

- a) Stay alert, watch what you are doing and use common sense when operating electrical equipment. Do not use electrical equipment while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating electrical equipment may result in serious personal injury.
- b) Use safety equipment. Always wear eye protection. Safety equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.
- c) Avoid accidental starting. Ensure the switch is in the off position before plugging in. Carrying electrical equipment with your finger on the switch or plugging in electrical equipment that have the switch on invites accidents.
- d) Remove any adjusting key or wrench before turning the electrical equipment on. A wrench or a key left attached to a rotating part of the electrical equipment may result in personal injury.
- e) Do not overreach. Keep proper footing and balance at all times. This enables better control of the electrical equipment in unexpected situations.
- f) Dress properly. Do not wear loose clothing or jewelry. Keep your hair, clothing and gloves away from moving parts. Loose clothes, jewelry or long hair can be caught in moving parts.
- g) If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used. Use of these devices can reduce dust-related hazards.

4) ELECTRICAL EQUIPMENT USE AND CARE

- a) Do not force the electrical equipment. Use the correct electrical equipment for your application. The correct electrical equipment will do the job better and safer at the rate for which it was designed.
- b) Do not use the electrical equipment if the switch does not turn it on and off. Any electrical equipment that cannot be controlled with the switch is dangerous and must be repaired.
- c) Disconnect the plug from the power source and/or the battery pack from the electrical equipment before making any adjustments, changing accessories, or storing electrical equipment. Such preventive safety measures reduce the risk of starting the electrical equipment accidentally.
- d) Store idle electrical equipment out of the reach of children and do not allow persons unfamiliar with the electrical equipment or these instructions to operate the electrical equipment. Electrical equipment is dangerous in the hands of untrained users.
- e) Maintain electrical equipment. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the electrical equipment operation. If damaged, have the electrical equipment repaired before use. Many accidents are caused by poorly maintained electrical equipment.
- f) Keep cutting tools sharp and clean. Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
- g) Use the electrical equipment, accessories and tool bits etc., in accordance with these instructions and in the manner intended for the particular type of electrical equipment, taking into account the working conditions and the work to be performed. Use of the electrical equipment for operations different from those intended could result in a hazardous situation.

5) SERVICE

- a) Have your electrical equipment serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the electrical equipment is maintained.

MILL SAFETY FEATURE

▲ NOTICE

Should a malfunction occur during the operation of the Mill, hitting the **RED STOP BUTTON** will stop all motion immediately.

INSTALLATION LOCATION

- The Mill **MUST** be installed on a solid and level surface for proper operation, accuracy and safety.
- There **MUST** be a minimum of 3 ft. of open space surrounding the Mill.
- This Mill **MUST** be located in a clean, dry, well lighted environment free of dust, grit or other contaminants.

▲ NOTICE

It is necessary that the Mill be permanently mounted to a firm, secure workbench with a solid and level top surface of a minimum of 1/2" [13mm] thick capable of supporting the weight of the Mill and any extreme imbalance conditions resulting from angle Milling/Drilling operations. To do so:

- Place the Mill over the selected location.
- Trace the four mounting holes in the Base onto the mounting surface.

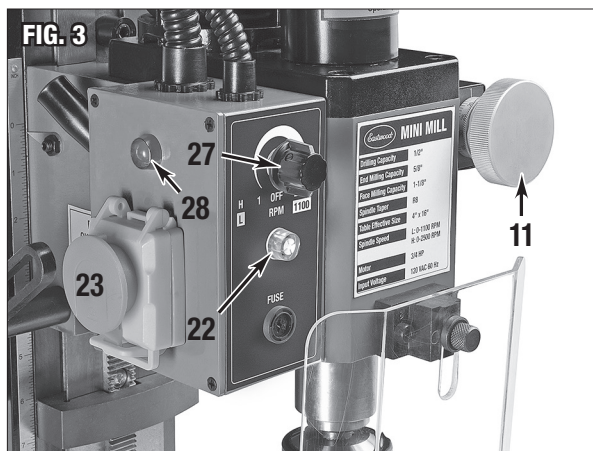
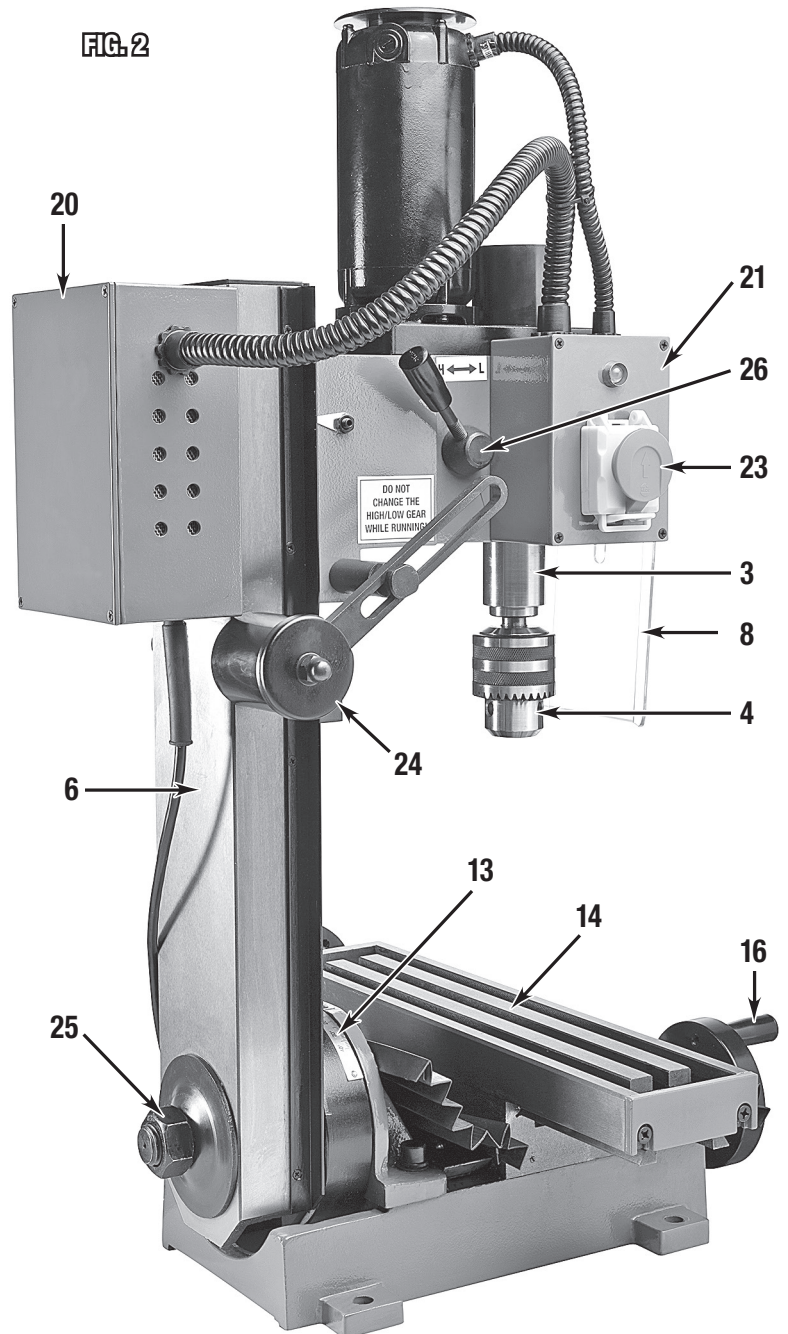
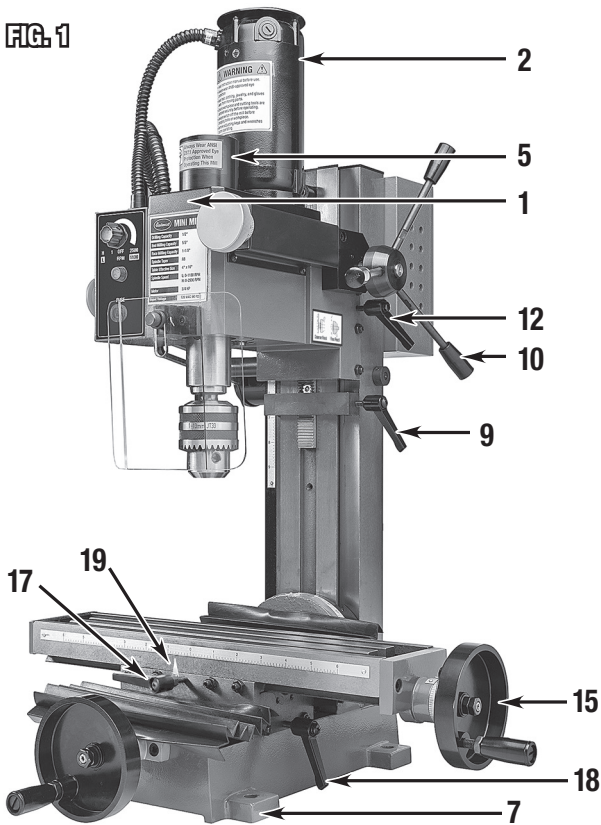
▲ CAUTION

Check that no electrical wires or other hazards exist under the mounting surface before drilling.

- Drill four 3/8" [9.5mm] holes in the surface.
- Secure with four 3/8" screws of adequate length (not included) with washers under the heads through the mounting feet of the Mill Base.

FEATURES AND COMPONENT DESCRIPTIONS (FIGS 1, 2, AND 3)

- "1" Headstock
- "2" Motor
- "3" Spindle
- "4" Drill Chuck
- "5" Drawbar/ Drawbar Cover
- "6" Column
- "7" Base
- "8" Chip Guard
- "9" Headstock Limit Stop
- "10" Downfeed Handwheel
- "11" Fine Downfeed Handwheel
- "12" Headstock Lock
- "13" Column Pivot and Angle Gauge.
- "14" Mill Table
- "15" Table Travel Handwheel (X Axis)
- "16" Cross Feed Handwheel (Y Axis)
- "17" Table Travel Lock Lever (X Axis)
- "18" Cross Feed Lock Lever (Y Axis)
- "19" Table Pointer and Scale
- "20" Electrical Box
- "21" Control Panel
- "22" Power Indicator Light
- "23" Emergency Stop Switch
- "24" Headstock Tensioner
- "25" Column Pivot Lock Nut
- "26" High/Low Speed Range Lever
- "27" Spindle Motor "ON/OFF/ Speed Control" Switch
- "28" Fault Indicator Light



ASSEMBLY

Identify and separate the following items from the parts and accessories in the carton:

- (1) Main Mill Unit [A]
- (2) Handwheel Crank Handles [E]
- There are 2 Handwheels already installed in the Cross Feed “16” and the Table Travel “15” however the Crank Handles [E] are left uninstalled to prevent damage.

To install: Thread the exposed threaded post of the Crank Handle [E] into the tapped hole of the Handwheel using a screwdriver in the slot on the outer end (FIG 4). When fully threaded in, tighten the locknut to secure in place. Verify that the Handle freely rotates.



MILL FEATURES AND COMPONENTS

THE CONTROL PANEL “21” (FIG 3)

- The Control Panel has 2 facets and contains the following Features and Functions:
 - Spindle Motor “ON/OFF/ Speed Control” Switch “27” – The Switch feature has a detent for the “Off” position and must be switched beyond the detent to begin motor rotation. Rotating the Knob Clockwise increases speed while rotating it fully left past the detent switches the motor “OFF”
 - Amber, Fault Light “28” – Illuminates if the motor has stopped due to a fault condition.

▲ NOTICE

If at any time the Amber Light is illuminated, this indicates a Fault condition and the Mill will not run. Potential Fault causes are:

- The Mill was overloaded.
- The Mill was stopped by depressing the Emergency Stop Button.
- Loss of power to Mill while in operation.

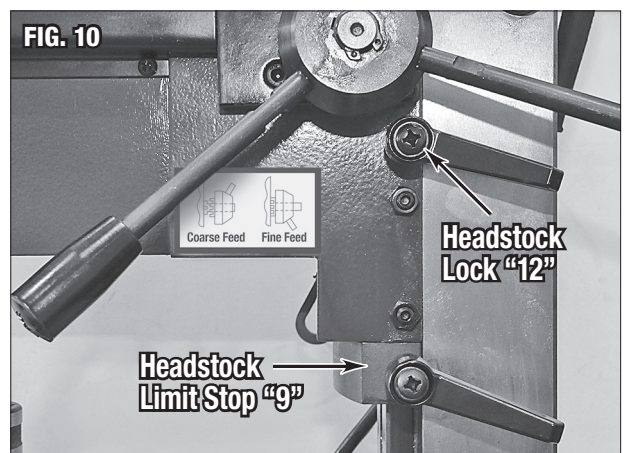
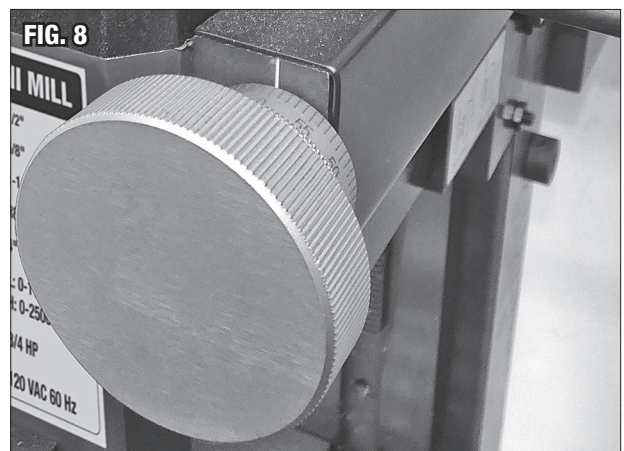
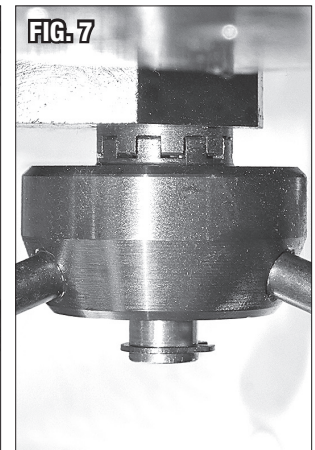
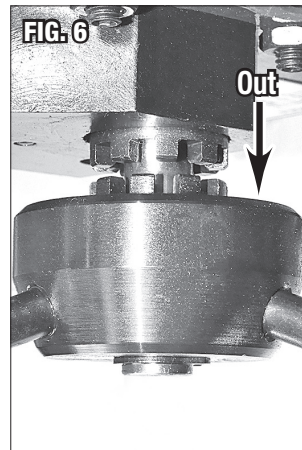
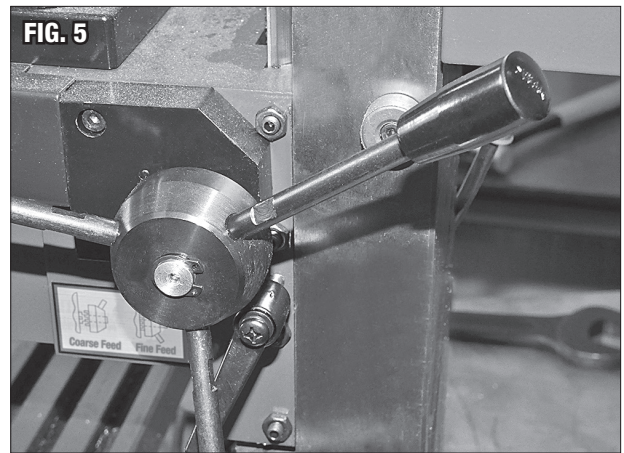
To reset: Switch Motor to “OFF” then switch back “ON” again.

- Green, Power Indicator Light “22” – Illuminates whenever 120 VAC is supplied to the Mill unit.
- Emergency Stop Switch “23” – Push in to activate, slide to unlatch and reset.

THE HEADSTOCK “1”:

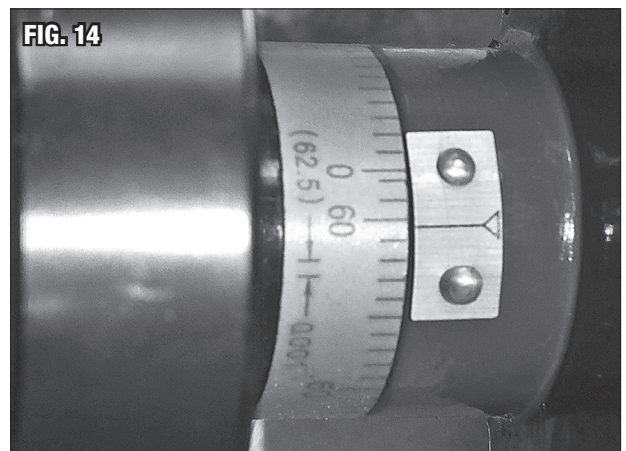
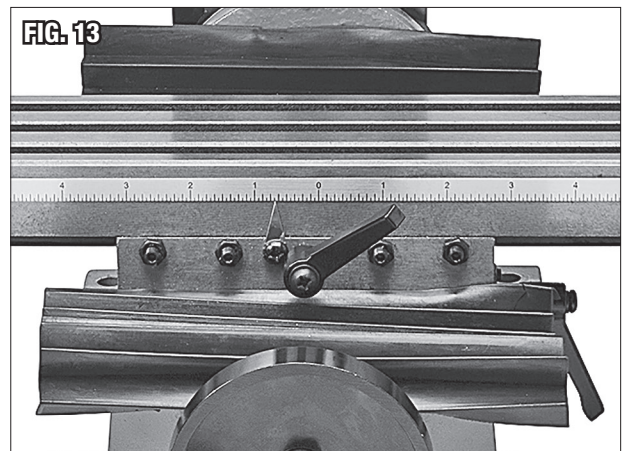
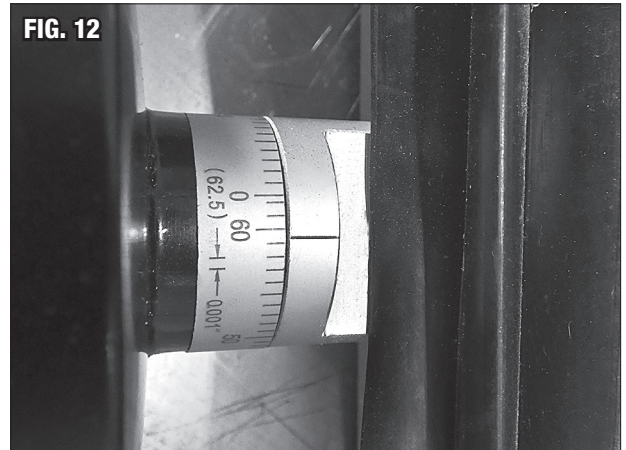
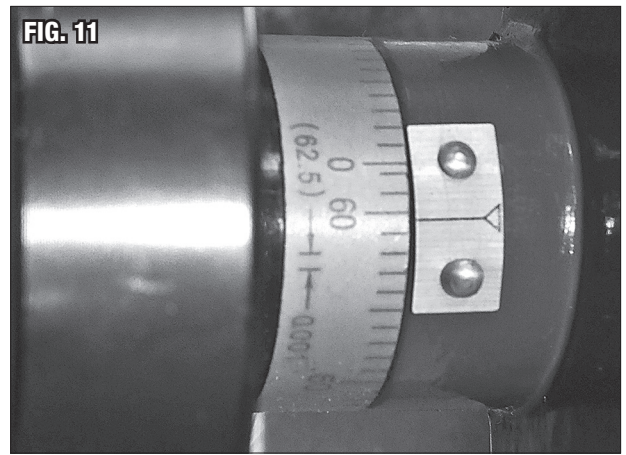
- The integral Motor “2” provides a geared drive to the Spindle “3” via an internal reduction gear cluster. Spindle speed is variable and is regulated by the Spindle Motor “ON/OFF/ Speed Control” Switch “27” located on the Control Panel “21” (FIG 3).
- The Spindle is designed with an internal, R8 Taper to accommodate an Arbor for a 1/2” [13mm] Drill Chuck or R8 Taper Collets. The Drill Chuck or Collets are easily interchanged as described in the “Spindle Accessory Interchange” section of this Manual.

- The Headstock vertical travel is controlled by the Downfeed Handwheel “10” (FIG 5) which drives a pinion gear along a Column mounted toothed rack. It has both “Coarse” and “Fine” adjustments as described below:
 - The “Coarse” adjustment provides a faster downward motion when using as a drill press or as a rough positioning adjustment for precision cutting operations. For “Coarse” adjustment, pull the Downfeed Handwheel out to disengage the Castellated Drive Collar, allowing it to turn (FIG 6). **NOTE:** The Gauge and Pointer for the “Coarse” adjustment are located at the left side of the Column.
 - To lock in the “Fine” adjustment, push the Downfeed Handwheel in to engage the Castellated Drive Collar (FIG 7).
- The vertical Headstock travel is then finely adjusted by the Fine Downfeed Handwheel “11” which provides a “fine tuning” precise positioning of the Headstock along the Column (FIG 8).
- Rotate the Fine Downfeed Handwheel Clockwise to lower the Headstock and Counterclockwise to raise it. The Fine Headstock Handwheel moves the Headstock vertically 0.060” per revolution in fine increments of 0.001” as indicated on the Pointer and Radial Gauge (FIG 9) built into the base of the Fine Downfeed Handwheel “11”. Note that the Radial Gauge can be rotated to allow for indexing. **NOTE:** Refer to “Backlash Compensation” section of this Manual.
- The Headstock Limit Stop “9” limits the downward travel of the Headstock which serves to limit depth of travel cut (FIG 10).
- The Headstock Lock “12” locks the vertical position of the Headstock on the Column (FIG 10).



THE MILL TABLE "14"

- The Mill Table "14" is moveable in two axis: The X Axes which is side to side and the Y Axis which is forward and back. In addition, by tilting the angle of the Column up to 45° in either direction, the Table is angularly adjustable in relation to the cutting tools.
- The X Axis movement is controlled by the Table Travel Handwheel "15" located at the right side of the Table. Rotating it Clockwise moves the Table to the Left by exactly 0.0625" per revolution, while rotating the Handwheel Counterclockwise moves it Right by exactly 0.0625" per revolution (FIG 11).
- The Y Axis movement is controlled by the Cross-Feed Handwheel "16" located at the front of the Table. Rotating it Clockwise moves the Table Inward by exactly 0.0625" per revolution, while rotating the Handwheel Counterclockwise moves it Outward by exactly 0.0625" per revolution (FIG 12).
- A Table Pointer and Scale "19" at the Front of the Table (FIG 13) indicates the rough dimensional location of the X Axis while a precise Pointer and Radial Gauge marked in 0.001" intervals are integral with the stem of the Handwheel (FIG 14). Note that the Radial Gauge can be rotated to allow for indexing. **NOTE:** Refer to "Backlash Compensation" section of this Manual.
- A Pointer and Radial Gauge is built into the base of the Table Travel Handwheel "16" marked in 0.001" intervals, indicates the precise dimensional location of the Y Axis (FIG 11). Note that the Radial Gauge can be rotated to allow for indexing. **NOTE:** Refer to "Backlash Compensation" section of this Manual.



- The Table Travel Lock Lever (X Axis) “17” is located at the Front of the Table and is used to lock the Table in position (FIG 15).
- The Cross-Feed Lock Lever (Y Axis) “18” is located at the Right side of the Base and is used to lock the Table in position (FIG 15).
- The Column supporting the Mill Table is assembled in a vertical position. It can be tilted up to 45° in either direction, left or right, for the purpose of performing angled milling. This is controlled by the large 36mm Locknut on the Pivot of the Column (FIG 16).

⚠ WARNING

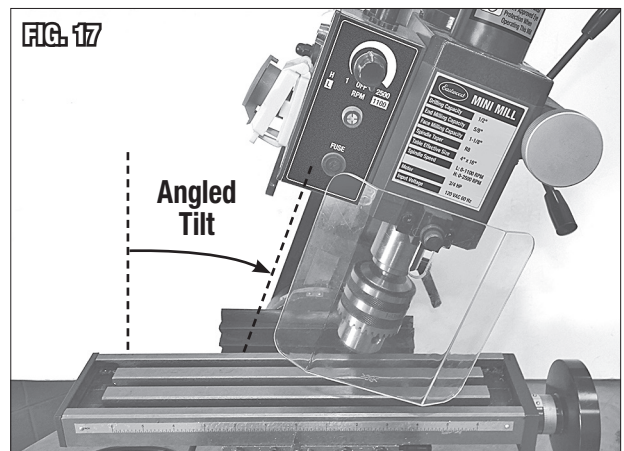
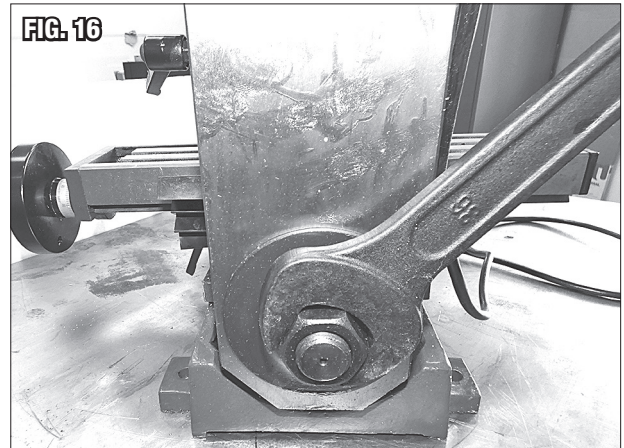
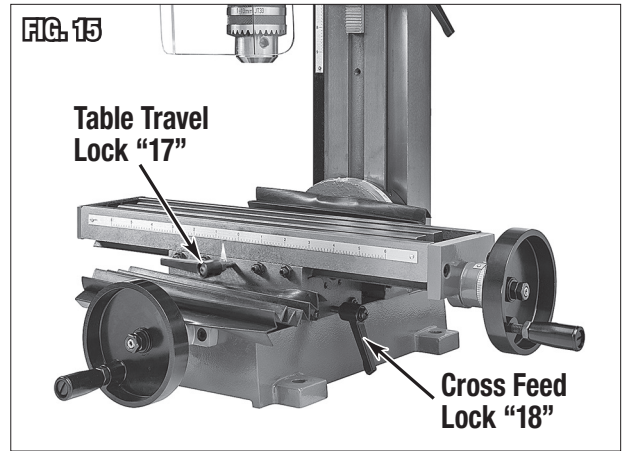
Before attempting tilting of the Column, the Mill **MUST** be securely bolted to a firm, level and secure surface as an extreme imbalance condition will result when the Column is tilted.

- To Tilt the Column:
 - SLOWLY Loosen the 36mm Locknut with the included 36mm Wrench to release the clamping action keeping it vertical.

⚠ CAUTION CRUSH/PINCH INJURY HAZARD!

The Column is heavy and will suddenly swing to the side without support.

- While securely gripping the Column, allow it to pivot in the desired direction while reading the Gauge and Pointer located at the Base of the Mill and Column. **NOTE:** The pointer remains fixed on the Mill Base while the Gauge will rotate with the Column (FIG 17).
- When the desired angle is reached, securely tighten the large 36mm Nut to lock the Column in place.



SPINDLE ACCESSORY INTERCHANGE

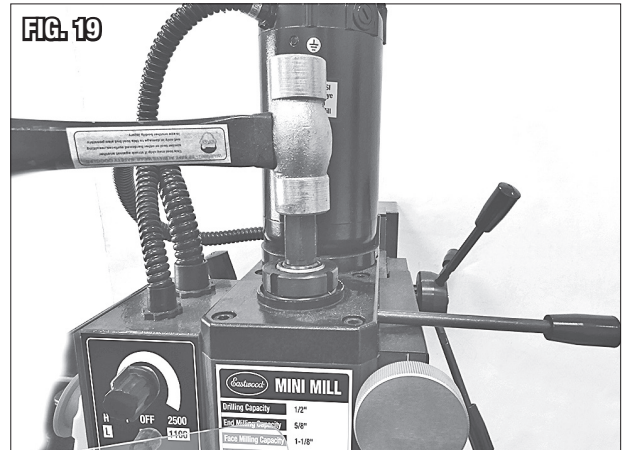
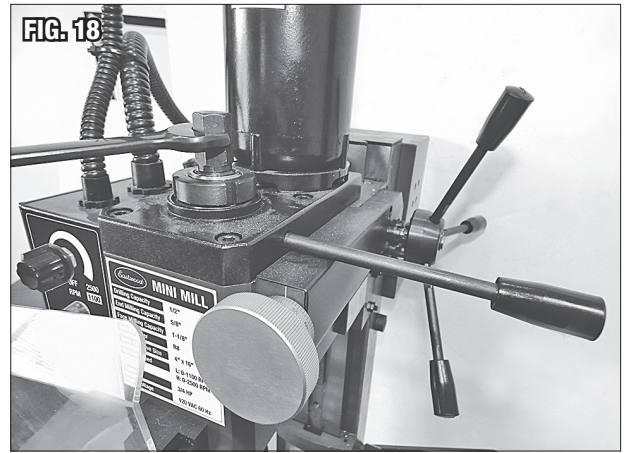
- Rotate the Spindle Motor “ON/OFF/ Speed Control” Switch to “OFF” (Noticeable Detent) and unplug the Mill unit from the power source.
- The Mill is supplied with the 1/2” [13mm] Drill Chuck installed in the R8 Taper Spindle Arbor.
- The Included 3/8” [9.5mm] R8 Taper Collet may be substituted to accept the Included 3/8” End Mill (or other 3/8” tool).
- To Interchange:

Uninstall Chuck (or Collet)

- Remove the plastic Drawbar Cover “5” from the top of the Headstock exposing the Drawbar.
- Rotate the Spindle by grasping the installed Chuck (or Collet) and at the same time, insert the Spindle Locking Pin [S] into the hole located at the right side of the Upper Headstock Plate (FIG 18) and allow it to slip into a notch machined into the upper Spindle. This will prevent the Spindle from rotating.
- Using the included 17mm Wrench (FIG 18), loosen the Drawbar “5” several turns but DO NOT REMOVE IT.
- Use a Brass Mallet (not included) to tap the top of the Drawbar (FIG 19) to dislodge the tapered Arbor in the Spindle.
- Once the Chuck (or Collet) drops slightly, continue to loosen the Draw Bar by hand until the Arbor is released into a waiting hand. DO NOT ALLOW IT TO DROP.

Install Collet (or Chuck)

- Insert the Tapered section of the Collet (or Chuck) up into the Spindle until the Taper is seated.
- Tighten the Drawbar sufficiently to draw the Tapered Arbor into the Spindle. DO NOT OVERTIGHTEN THE DRAW BAR.
- Remove the Spindle Locking Pin.
- Replace the plastic Drawbar Cover.



STARTUP PROCEDURE

Refer to the Control Panel (FIG 20):

1. Check that the Chuck Key is removed from the Chuck (when in drill configuration)
2. Check that the Power Cord is unplugged from the power source.
3. Verify that the Spindle Motor "ON/OFF/ Speed Control" Switch is OFF.
4. Check that the STOP Button is not activated.
5. Verify that the Plastic Chip Guard is in position over Spindle.
6. Shift the High/Low Speed Lever (FIG 21) to the selected position.
7. Plug power cord into Properly Grounded 120VAC, 60hz receptacle.
8. Set the Spindle Motor "ON/OFF/ Speed Control" Switch to the "1" position.
9. Rotate the Speed Control Knob to approx. 20%. The Spindle should now rotate.
10. Set the RPM Spindle Motor "ON/OFF/ Speed Control" Switch to the correct speed for the operation being performed.
11. Always use the Spindle Motor "ON/OFF/ Speed Control" Switch to stop the Mill.

⚠ CAUTION

NEVER attempt to shift from HIGH to LOW range while the Mill is running otherwise severe drive train damage will occur.

⚠ CAUTION

The Plastic Chip Guard is an important safety feature and should be checked frequently for physical damage and proper function.

⚠ CAUTION INJURY HAZARD!

ALWAYS turn the Mill OFF at the ON/OFF/SPEED CONTROL Switch and unplug the power supply cord BEFORE changing ANY settings or making ANY adjustments. This includes shifting from High to Low range.

⚠ NOTICE

If at any time the Amber Light is illuminated, this indicates a Fault condition and the Mill will not run. Potential Fault causes are:

- The Mill was overloaded.
- The Mill was stopped by depressing the Emergency Stop Button.
- Loss of power to Mill while in operation.



SETTINGS AND ADJUSTMENTS

Occasionally, it may be necessary to readjust various components in order to maintain optimum performance. The adjustments that may be performed are as follows:

GIB STRIP ADJUSTMENTS

Both the Headstock and the Table are mounted in "Dovetail Slides". Between the sloping surfaces on one side of the Dovetails, a 'Gib Strip' (FIGS 22 & 23) is inserted, which may be tightened against the Dovetails by four adjusters, or 'Gib' Screws, mounted along their length (FIGS 24 & 25).

The Headstock Gib Screws are located on the right-hand side of the Headstock, directly behind the Downfeed Handwheel (FIG 24), while the Table Gib Screws are located at the front of the Table Bed adjacent to the Cross-Feed Lock Lever (FIG 25).

In time, wear will occur on the mating surfaces resulting in a 'sloppiness' of action.

To adjust the Gib Strips, make up for normal wear and keep the Slides moving evenly and smoothly, proceed as follows:

1. Loosen and back off all lock nuts, then thread in the Gib Screws an even amount.
2. The Slide should be held firmly. Test by trying to rotate the Handwheel, but do not force it.
3. Back out each Gib Screw 1/4 of a turn only, then retighten the lock nuts.
NOTE: do not allow the Gib Screws to turn while tightening the lock nuts.
4. Test once again by turning the Handwheel. The Slide movement should be even and smooth along the complete length.
5. If movement is too loose, loosen the lock nuts, turn in each Gib Screw 1/8 of a turn and re-tighten locknuts without moving the Gib Screws.
6. If movement is too tight, loosen the lock nuts, back out Gib Screws 1/8 turn each and re-tighten locknuts without moving the Gib Screws.
7. Test once again and repeat steps 4 and 5 or 6 if required.
8. When adjustments are completed, retract the Slide fully and apply a light machine oil to all mating surfaces and the Feed Screw thread, then wind the Slide back to the normal position.

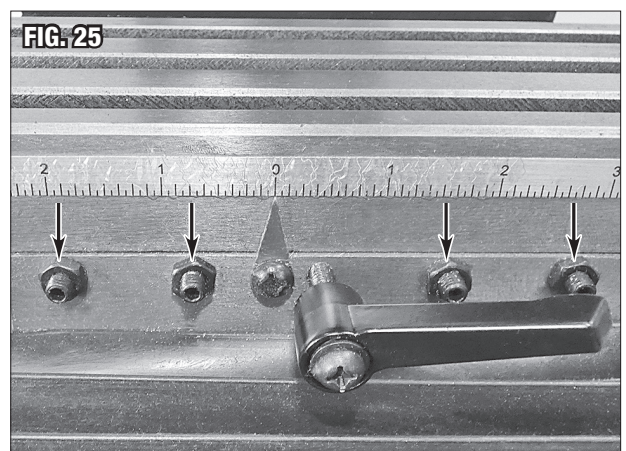
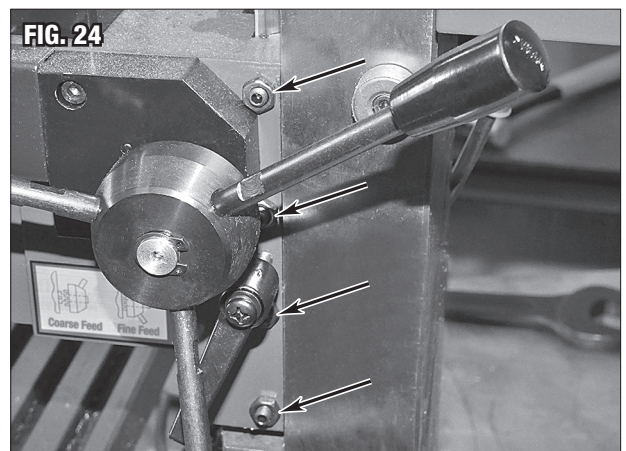
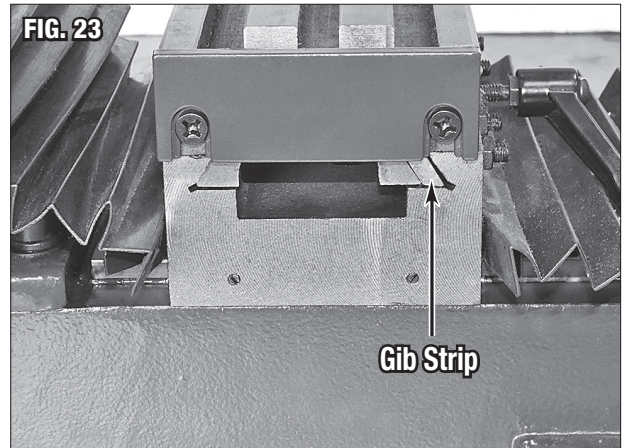
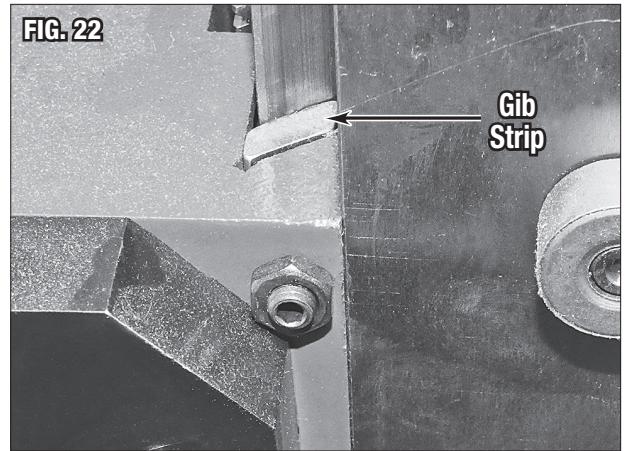
NOTE: It is extremely important that the Gib adjustments are correctly performed, and that no "sloppiness" exists.

Any mis-adjustments will have an adverse effect on the ability of the Mill to hold tolerances and will transfer to the cutting operation. It is critical to have as little movement of the Headstock and Table as possible.

BACKLASH COMPENSATION

It is inherent to the function of the drive mechanisms in the Headstock and Table Slides that some backlash exists. To compensate:

1. Rotate the Handwheel a small amount in the OPPOSITE direction of the intended dimension then stop.
2. Very Slowly begin to rotate the Handwheel to the desired dimension until the Slide begins to move. Stop all motion.
3. At this point, all backlash has been removed, the Radial Gauge can be rotated to align the Pointer with Zero and the slide moved to the desired dimension.
4. Be sure to engage the appropriate Lock Lever to prevent the Table Travel, Cross-Feed or Headstock from moving.



MILL MAINTENANCE

For maximum performance, maximum operating safety and long life, it is critical that the Mill be properly maintained.

BEFORE EACH USE:

1. Fully inspect the Mill for any damage. Any damage should be repaired before use.
2. Any damage or scratches to machined surfaces should be worked out with a good quality Oil Stone.
3. WITH UNIT UNPLUGGED and POWER OFF, operate all manual Handwheels, Cranks and Levers by hand to make sure they all operate smoothly and accurately.
4. If any operating features are found to be loose or out of adjustment, follow the adjustment procedures outlined in the appropriate section of this manual.
5. Add a few drops of a good quality, medium bodied machine oil to all sliding, rotating and pivoting points.

AFTER EACH USE:

1. Carefully remove all swarf and metal chips from the Mill.
2. If coolant has been used, make sure it is all removed from the Mill
3. All components must be dry. All machined surfaces should be coated with a light bodied machine oil to prevent surface rust.
4. Remove all cutting tools or drills, cover machine and store in a dry, temperature stabilized location.

MOTOR BRUSH REPLACEMENT (NOT INCLUDED):

1. The Motor Brush Retainer Caps are located at the upper end of the Motor Housing (**FIG 26**).
2. Remove by unthreading the Caps and pulling out the Brushes from their bores.
3. Replace the Brushes into the bores using extreme care not to chip them or damage the springs.
4. Replace the Retainer Caps.



TROUBLESHOOTING

PROBLEM	CAUSE	CORRECTION
Does Not Run When Switch is Turned On	No power	Check 120 VAC power source and connection to unit.
	Emergency Stop Button was used and not reset	Unlatch Stop Button Cover.
	Fuse has been blown	Replace Fuse with a 5 AMP, 120 VAC Fuse (replacement included).
Motor Stops Running	Workpiece too large for size of Mill	Re-plan work to accommodate limits of machine.
	Too aggressive/deep of cut being attempted	Decrease depth of cut.
	Too fast of a feed rate	Use slower feed rate.
	Fuse has been blown	Replace Fuse with a 5 AMP, 120 VAC Fuse (replacement included).
Motor Runs Too Slow/ Develops Low Power	Excessive voltage drop	Under-sized and or too long of an extension cord used. Extension cord not recommended. If necessary, use only 16 Gauge or larger cord and limit length to 25'.
	Workpiece too large for size of Mill	Re-plan work to accommodate limits of machine.
	Too aggressive/deep of cut being attempted	Decrease depth of cut.
	Too fast of a feed rate	Use slower feed rate.
Motor Overheating	Motor overloaded	Reduce workload on motor.
	Workpiece too large for size of Mill	Re-plan work to accommodate limits of machine.
	Too aggressive/deep of cut being attempted	Decrease depth of cut.
	Too fast of a feed rate	Use slower feed rate.
Excessive or Unusual Mill Vibration and Noise While Running	Arbor in Morse Taper is loose	Tighten Drawbar.
	Mill located on unstable surface	Stabilize Mill on work surface.
	Too aggressive/deep of cut being attempted	Re-plan work to accommodate limits of machine.
	Too fast of a feed rate	Use slower feed rate.
Poor surface finish on workpiece	Too fast of a feed rate	Use slower feed rate.
	Worn or incorrect Tool profile	Sharpen Tool or select better profile.
	Too much play in the Gibs	Adjust Gibs per procedure described in this manual.
	Tool mounted too high or above center	Adjust Tool below center.

TROUBLESHOOTING

PROBLEM	CAUSE	CORRECTION
Inaccuracies in tolerances/ dimensions along entire workpiece	Backlash has not been compensated	Compensate for Backlash per procedure described in this manual.
	Worn or incorrect Tool profile	Sharpen Tool or select better profile.
	Too much play in the Gibs	Adjust Gibs per procedure described in this manual.
Table Travel, Cross-Feed or Headstock loose or sloppy	Too much play in the Gibs	Adjust Gibs per procedure described in this manual.
	Handwheel loose	Tighten Handwheel attachment.
Table Travel, Cross-Feed or Headstock difficult to move	Gib Screws adjusted too tightly	Adjust Gib Screws per procedure described in this manual.
	Buildup of dirt or chips in Gibs	Loosen and remove Gibs to clean and lubricate. Readjust Gib Screws per procedure described in this manual.
	Slides dirty and/or dry	Clean and lubricate Slides.

ADDITIONAL ITEMS

- #22288 *Milling for Home Machinists* Book
- #22289 *Metalworkers Data Book for Home Machinists* Book
- #33114 Eastwood 29 Piece High Speed Drill Bit Set

If you have any questions about the use of this product, please contact

The Eastwood Technical Assistance Service Department: 800.343.9353 >> email: tech@eastwood.com

PDF version of this manual is available at eastwood.com

The Eastwood Company 263 Shoemaker Road, Pottstown, PA 19464, USA 800.343.9353 eastwood.com

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