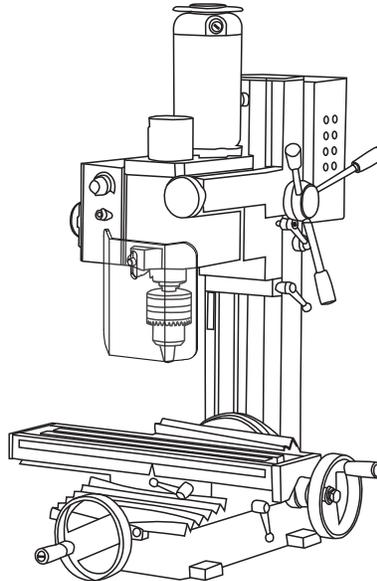




MILLING MACHINE



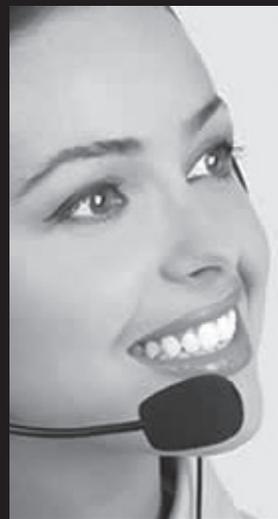
Intertek
3072101

For replacement parts visit
WENPRODUCTS.COM

Model # 33013
bit.ly/wenvideo

IMPORTANT:

Your new tool has been engineered and manufactured to WEN's highest standards for dependability, ease of operation, and operator safety. When properly cared for, this product will supply you years of rugged, trouble-free performance. Pay close attention to the rules for safe operation, warnings, and cautions. If you use your tool properly and for its intended purpose, you will enjoy years of safe, reliable service.



NEED HELP? CONTACT US!

Have product questions? Need technical support?
Please feel free to contact us at:

 **800-232-1195** (M-F 8AM-5PM CST)

 **techsupport@wenproducts.com**

 **WENPRODUCTS.COM**

NOTICE: Please refer to wenproducts.com for the most up-to-date instruction manual.

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PRODUCT SPECIFICATIONS

Model Number:	33013
Motor:	120V, 60Hz, 4.5A
Drilling Bit Diameter Capacity:	1/2 in. (13 mm)
End Milling Bit Diameter Capacity:	5/8 in. (16 mm)
Face Milling Bit Diameter Capacity:	1-1/8 in. (30 mm)
Spindle Speed:	0 to 1100 RPM (Low) 0 to 2500 RPM (High)
Spindle Taper	R8
Cross (X) Axis Travel:	11-13/16 in. (300 mm)
Longitudinal (Y) Axis Travel:	5-1/8 in. (130 mm)
Vertical (Z) Axis/Headstock Travel:	7 in. (180 mm)
Bevel Angle:	45° Left & Right
Noise Level:	70 - 75 dB
Table Dimensions:	18-1/8 x 4-3/4 in. (460 x 120 mm)
Maximum Product Dimensions:	23-1/4 x 22 x 29-1/2 in.
Net Product Weight:	130.1 lbs

SAFETY INTRODUCTION

Thanks for purchasing the WEN Milling Machine. This is an exciting moment. You have received your new tool, opened the box, and are now about to read through the instruction manual. This manual provides information regarding potential safety concerns, as well as helpful assembly and operating instructions. Safe operation of this tool requires that you read and understand this operator's manual and all labels affixed to the tool.



SAFETY ALERT SYMBOL: Indicates danger, warning, or caution. The safety symbols and the explanations with them deserve your careful attention and understanding. Always follow the safety precautions to reduce the risk of fire, electric shock and personal injury. However, please note that these instructions and warnings are not substitutes for proper accident prevention measures.

NOTE: The following safety information is not meant to cover all possible conditions and situations that may occur. WEN reserves the right to change this product and specifications at any time without prior notice.

Keep this manual available to all users during the entire life of the tool and review it frequently to maximize safety for both yourself and others.

GENERAL SAFETY RULES



WARNING! Read all safety warnings and instructions. Failure to follow all instructions may result in electric shock, fire and serious injury. The term “power tool” in the warnings refers to your mains-operated (corded) power tool. **Save all warnings and instructions for future reference.**

WORK AREA SAFETY

1. Keep work area clean and well lit. Cluttered or dark areas invite accidents.
2. Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust. Power tools create sparks which may ignite the dust or fumes.
3. Keep children and bystanders away while operating a power tool. Distractions can cause you to lose control.

ELECTRICAL SAFETY

1. Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools. Unmodified plugs and matching outlets will reduce risk of electric shock.
2. 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.
3. Do not expose power tools to rain or wet conditions. Water entering a power tool will increase the risk of electric shock.
4. Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts. Damaged or entangled cords increase the risk of electric shock.
5. When operating a power tool outdoors, use an extension cord suitable for outdoor use. Use of a cord suitable for outdoor use reduces the risk of electric shock.
6. If operating a power tool in a damp location is unavoidable, use a ground fault circuit interrupter (GFCI) protected supply. Use of a GFCI reduces the risk of electric shock.

PERSONAL SAFETY

1. Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating power tools may result in serious personal injury.
2. Use personal protective equipment. Always wear eye protection. Protective equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.
3. Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool. Carrying power tools with your finger on the switch or energizing power tools that have the switch on invites accidents.
4. Remove any adjusting key or wrench before turning the power tool on. A wrench or a key left attached to a rotating part of the power tool may result in personal injury.
5. Do not overreach. Keep proper footing and balance at all times. This enables better control of the power tool in unexpected situations.

GENERAL SAFETY RULES

6. 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.
7. If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used. Use of dust collection can reduce dust-related hazards.

POWER TOOL USE AND CARE

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

SERVICE

Have your power tool serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the power tool is maintained.

CALIFORNIA PROPOSITION 65 WARNING

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities may contain chemicals, including lead, known to the State of California to cause cancer, birth defects, or other reproductive harm. Wash hands after handling. 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 with approved safety equipment such as dust masks specially designed to filter out microscopic particles.

SPECIFIC RULES FOR THE MILLING MACHINE

1. Your milling machine is designed for drilling, end milling and face milling operations on small workpieces. Using the machine for any other purpose for which it is not designed may result to serious injuries and/or damage to the machine.
2. This machine is intended for use by properly trained and experienced personnel only. If you are not familiar with the proper and safe operation of milling, do not use it until proper training and knowledge have been acquired.
3. Always wear ANSI Z87.1-approved eye protection and a face shield/dust mask when using this machine. Chips and dust fly at high speed during operation, and may cause injuries if they hit you.
4. **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 the tool.
5. Securely mount the machine to a stable workbench to prevent it from sliding or tipping over.
6. Select the right tool for your task at hand. Make sure all cutters and bits are sharp and free of damage. **DO NOT** use dull or damaged tools. Securely tighten both the cutter holder and cutter before operation.
7. Use a milling vise (not included) to clamp your workpiece securely. Never hold the material with your hands.
8. Use the appropriate speed for the task and workpiece. The harder the workpiece and the larger the cutter diameter, the slower the spindle speed should be.
9. Never attempt to change the **HIGH/LOW** speed range when the machine is running.
10. Allow the machine to ramp up to the operating speed before engaging the workpiece. Do not turn on the machine while the cutter is contacting the workpiece.
11. Remove the chuck key, spindle lock rod and all adjustment devices before starting the machine.
12. Maintain a balanced stance at all times and do not lean over the machine during operation.
13. Always keep fingers and other body parts away from the cutter when the machine is running to prevent accidental injury. Never try to move workpieces while the cutter is in motion.
14. Always turn **OFF** and unplug the machine before cleaning, making adjustments or changing attachments. Accidental start-ups may occur if the tool is plugged in during an accessory change or adjustment.
15. Follow the maintenance instructions for cleaning, lubricating and making adjustments to the machine.
16. Check for damaged or worn out parts before using the machine. Check for alignment of moving parts, jamming, breakage, improper mounting, or any other conditions that may affect the tool's operation. Any part that is damaged should be properly repaired or replaced before use.

These safety instructions can't possibly warn of every scenario that may arise with this tool, so always make sure to stay alert and use common sense during operation.

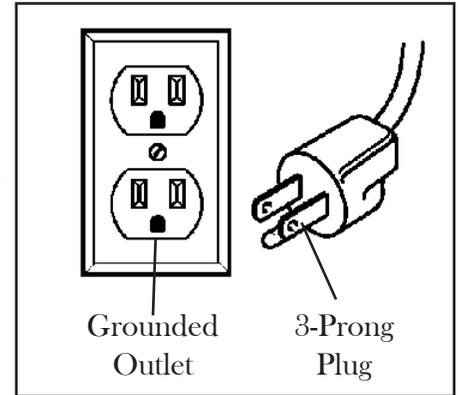
ELECTRICAL INFORMATION

GROUNDING INSTRUCTIONS

In the event of a malfunction or breakdown, grounding provides the path of least resistance for an electric current and reduces the risk of electric shock.

This tool is equipped with an electric cord that has an equipment grounding conductor and a grounding plug. The plug **MUST** be plugged into a matching outlet that is properly installed and grounded in accordance with **ALL** local codes and ordinances.

Do not modify the plug provided. If it will not fit the outlet, have the proper outlet installed by a licensed electrician.



IMPROPER CONNECTION of the equipment grounding conductor can result in electric shock. The conductor with the green insulation (with or without yellow stripes) is the equipment grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment grounding conductor to a live terminal.

In all cases, make certain the outlet in question is properly grounded. If you are not sure, have a licensed electrician check the outlet.

GUIDELINES FOR USING EXTENSION CORDS

When using an extension cord, be sure to use one heavy enough to carry the current your product will draw. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating. The table below shows the correct size to be used according to cord length and nameplate ampere rating. When in doubt, use a heavier cord. The smaller the gauge number, the heavier the cord.

AMPERAGE	REQUIRED GAUGE FOR EXTENSION CORDS			
	25 ft.	50 ft.	100 ft.	150 ft.
4.5A	18 gauge	16 gauge	16 gauge	14 gauge

Make sure your extension cord is properly wired and in good condition. Always replace a damaged extension cord or have it repaired by a qualified person before using it. Protect your extension cords from sharp objects, excessive heat and damp/wet areas.

USE ONLY THREE-WIRE EXTENSION CORDS that have three-pronged plugs and outlets that accept the tool's plug as shown in Fig. A. Repair or replace a damaged or worn cord immediately.

Use a separate electrical circuit for your tools. This circuit must not be less than a #12 wire and should be protected with a 15 A time-delayed fuse. Before connecting the motor to the power line, make sure the switch is in the OFF position and the electric current is rated the same as the current stamped on the motor nameplate. Running at a lower voltage will damage the motor.



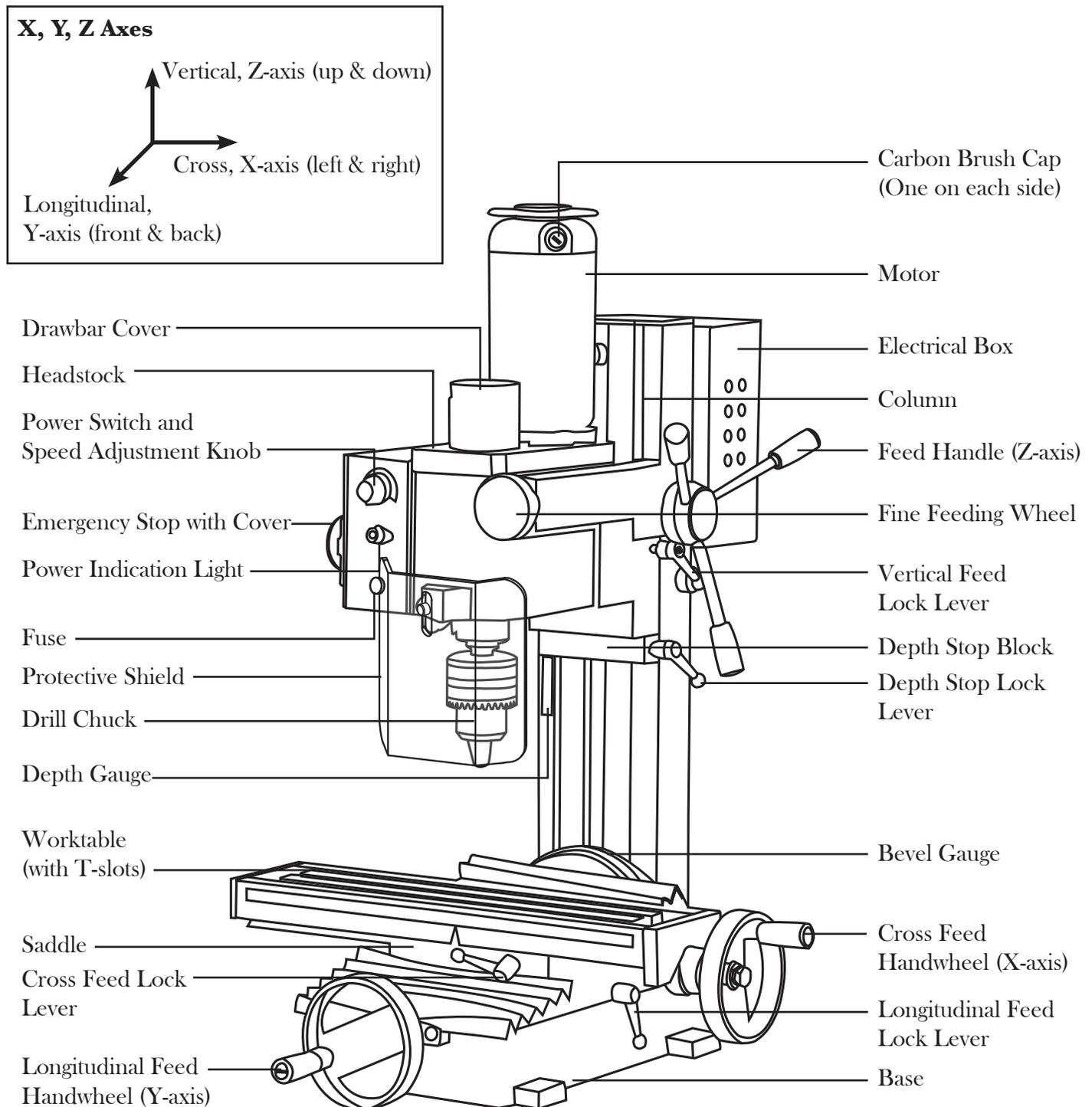
WARNING: This tool is for indoor use only. Do not expose to rain or use in damp locations.

KNOW YOUR MILLING MACHINE

UNPACKING THE MACHINE

Prepare a sturdy and level surface on the ground that can support the weight of the machine. Open the crate and unbolt the machine from the skid. This big boy is very heavy, so get a good friend (or a trustworthy foe) to help you lift and assemble the machine.

Carefully remove the tool and all contents from the packaging. Check all components and compare against the machine and packing list diagrams. If any part is damaged or missing, please contact our customer service at (800) 232-1195, M-F 8-5 CST or email us at techsupport@wenproducts.com.

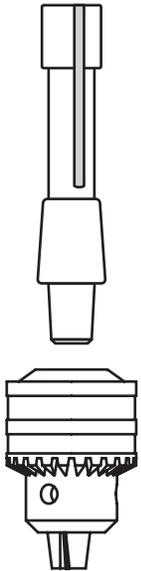


KNOW YOUR MILLING MACHINE

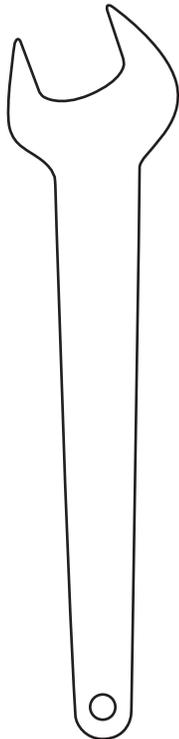
PACKING LIST

Drill Chuck & Taper Shank

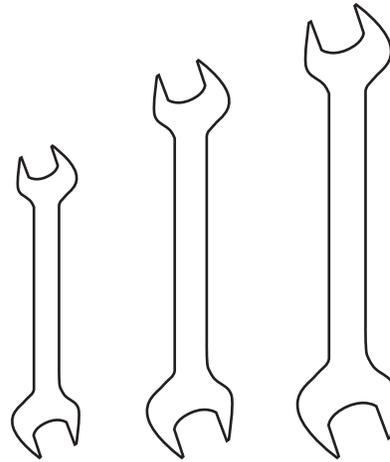
(Pre-installed, for holding drill bits)



Large Wrench M36 (For loosening the bevel lock nut)



Double End Wrench x 3

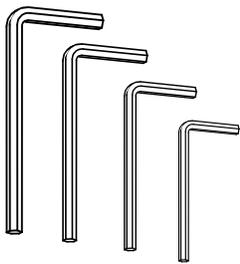


M8/M10 M14/M17 M17/M19

Spindle Lock Rod

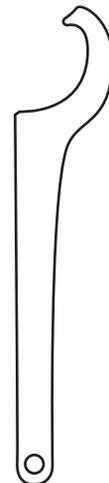


Hex Wrench x 4

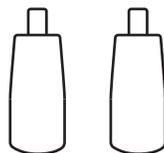


M6 M5 M4 M3

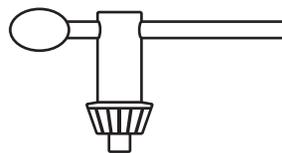
Hook Spanner Wrench D45-52



Handle x 2 (To be mounted onto the handwheels)



Drill Chuck Key (For tightening/loosening the drill chuck)



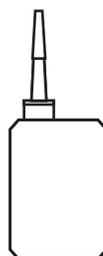
M10-1.5 T-Nut x 2 (For vise mounting on table)



5A Spare Fuse



Oil Bottle (Comes without oil. Fill with lubricating oil for dispensing)



ASSEMBLY & PREPARATION



WARNING: To prevent injury from accidental operation, make sure the tool is switched OFF and unplugged from the power source before assembling the tool or making any adjustments.

CLEANING THE SURFACES

Your tool comes protected with a layer of heavy-duty anti-rust coating. Remove the protective coating from surfaces using a soft cloth, moistened with kerosene (do not use cellulose-based solvents such as paint thinner or lacquer thinner, as these will damage the painted surfaces). Apply a light layer of good-quality machine oil onto the machine's surfaces to protect from rust and corrosion.

MOUNTING TO A BENCHTOP

For safe operation, the machine must be securely mounted onto a flat, secure workbench. Place the workbench away from direct sunlight, high moisture or dust.

Position the machine on the benchtop and leave enough space around the machine for table travel. For unrestricted handwheel operation, make sure the cross feed and longitudinal feed handwheels extend out beyond the edge of the benchtop. Square the machine to the benchtop using a precision level.

Drill four 10 mm-diameter mounting holes on the benchtop (same size as the machine's mounting hole). Mount the machine using four M10 bolts and nuts (mounting hardware not included).

TIP: Your milling machine is compatible with the WEN 6588 Multipurpose Planer Stand, available at wenproducts.com. Forget measuring and drilling holes on your workbench, simply mount your machine onto the mobile stand with pre-drilled holes, and transport your machine around the workshop with ease.

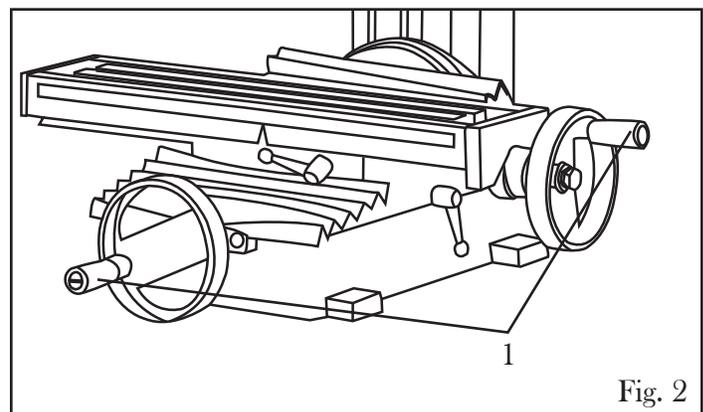
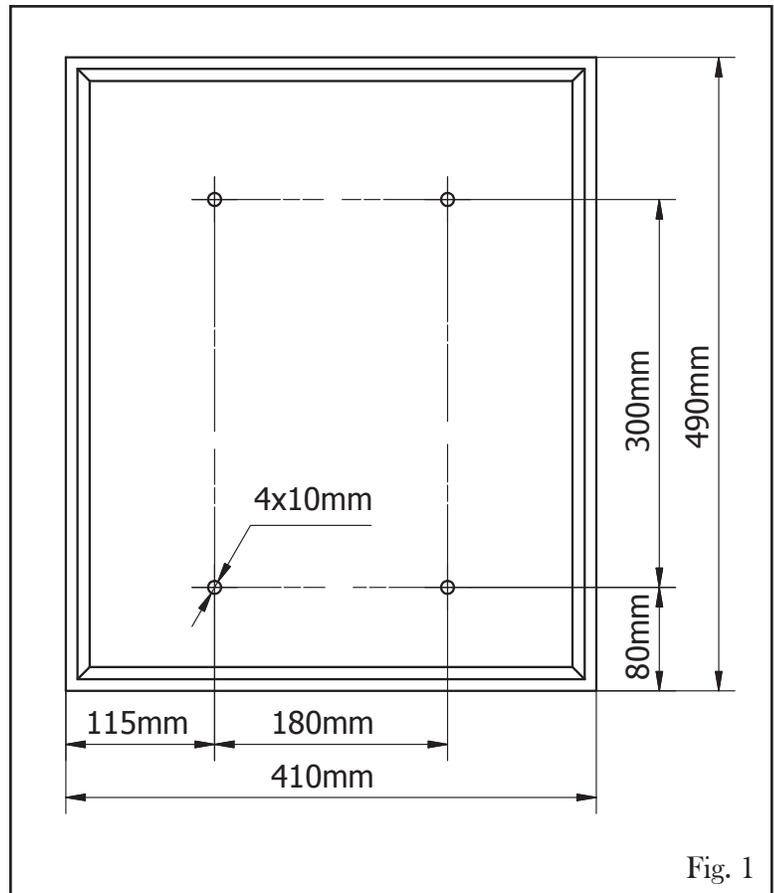
INSTALLING THE HANDLES

Install the two handles (Fig. 2 - 1) onto the longitudinal feed handwheel and cross feed handwheel. Fully tighten the handles.

PREPARING VISES TO SECURE WORKPIECE

A vise (not included) is a crucial attachment to hold your workpiece in place when using the milling machine. You can purchase a milling vise or quick vise that is suitable for your workpiece and milling operation.

You may also use clamping kits to hold the workpieces to the machine's worktable. Follow the instructions with your accessory for proper installation and operation.



ASSEMBLY & PREPARATION

Your machine can work as both a milling and drilling machine, depending on the type of cutter that is installed. Refer to the introduction below for some common cutter holders and cutting tools that you can install onto your machine.

CUTTER HOLDER

The two most common cutting tools for the milling machine are drill bits and end mills. Drill bits are held in place by drill chucks (one included), while end mills are held in place by either collets or end mill holders (not included). Use the suitable holder for your cutting bit. The shank taper is R8.

- **Drill Chucks**

The included drill chuck is **ONLY** able to hold drill bits for drilling operations. It is **NOT** able to hold milling bits. For end milling or face milling operations, collets or end mill holders are needed.

- **Collets (not included)**

Collets are shorter than end mill holders to allow more vertical work area. It secures the end mill all the way around the shank to provide a better grip. They are also less expensive than end mill holders.

- **End Mill Holders (not included)**

End mill holders are longer than collets and so the cutter can reach closer to the machine's worktable. The end mill is secured in the holder by a set screw that bears on the flat shank of the end mill. Changing end mills is easier to do on an end mill holder. They are also more robust than collets and are less prone to wearing out.

Collets, end mill holders, and drill chucks are held in the spindle by the drawbar (Part No. 210). The drawbar is tightened from the top of the spindle and extends through the spindle to the holder/chuck. When tightening the drawbar, make sure it is snug in the spindle threads, but do not overtighten.

CUTTING TOOLS

An end mill is the most common type of cutting tool for the milling machine. While a drill bit can only make plunge cuts in the vertical direction, an end mill can cut from the side of the workpiece. Some can also make plunge cuts.

- **End Mills**

End mills can be classified into center-cutting and non-center-cutting mills. In a center-cutting mill, the flutes meet in the center on the tip of the end mill. This allows the mill to be plunged into the workpiece as is done with a drill press. In a non-center-cutting mill, the flutes do not meet at the tip, leaving a gap with no flutes in the center. The non-center-cutting mill can only cut from the side of the workpiece. It is recommended to use center-cutting mills for their cutting versatility.

End mills can also be classified into 2-flute and 4-flute end mills, identified by the number of flutes on the tip of the mill. Commonly, 2-flute end mills are used for making bigger cuts or when cutting soft metals such as aluminum, as there is more room between the flutes to extract larger chips. 4-flute end mills can produce a better finish because there are twice as many cutting edges, each taking off less material. These end mills are used more commonly on harder metal such as steel and brass.

- **Drill bits**

Drill bits can be used on the milling machine for it to function as a drill press. However, drill bits are not designed to cut from the sides as they are not built to withstand the lateral forces imposed by sideways cutting.

DO NOT USE A DRILL BIT IN PLACE OF AN END MILL.

ASSEMBLY & PREPARATION

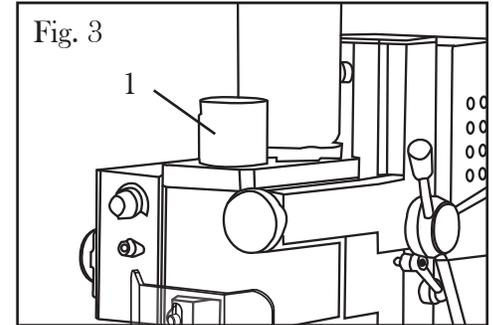


WARNING: To prevent injury from accidental operation, make sure the tool is switched OFF and unplugged from the power source before assembling the tool or making any adjustments.

REMOVING THE DRILL CHUCK TAPER SHANK

The drill chuck and taper shank are pre-installed on your milling machine. To replace the drill chuck with a collet or end mill holder, follow the steps below for removing the drill chuck. Cover the table to protect it from getting damaged, in case parts and bits are dropped onto the table.

1. Make sure the machine is unplugged to prevent accidental starting.
2. Remove the cylinder protective cover by pulling it upward (Fig. 3 - 1).
3. Insert the spindle lock rod into the hole on the right side to lock the spindle. Using the M14 open end wrench, loosen the spindle drawbar a few turns by turning it counterclockwise (as viewed from above). Do not loosen it fully or remove it.



4. Hold the drill chuck gently with your hand. With the other hand, gently tap the top of the drawbar with a rubber or plastic mallet to unseat the tapered shank in the spindle. Then remove the taper shank. **NOTE:** To protect the table from getting damaged,
5. Wipe clean the taper shank and the inside of the spindle sleeve. Safety store the taper shank and drill chuck.

INSTALLING THE DRILL CHUCK TAPER SHANK/END MILL HOLDER

1. Make sure the machine is unplugged to prevent accidental starting.
3. Wipe clean the taper shank and inside of the spindle sleeve. The mating surfaces should be clean of any debris, oil, or other detritus, as they can improperly orient the taper shank when tightening.
4. Insert the taper shank into the spindle sleeve.
5. With the cylinder protective cover (Fig. 3 - 1) removed, insert the spindle lock rod into the right side hole to lock the spindle. Using the M14 open end wrench, tighten (clockwise) the spindle drawbar to fix the taper shank in place. The drawbar should be snug in the spindle threads, but do not overtighten it.
6. Remove the spindle lock rod and reinstall the protective cover.

INSTALLING A DRILL BIT

1. Grab the drill chuck key and fully insert the tip into the hole on the chuck. Hold the bottom part of the chuck stationary while rotating the chuck key counterclockwise to loosen.
2. Wear work gloves when handling drill bits to prevent injuries. Clean the shank of your drill bit and insert the it into the drill chuck.
3. Insert the drill chuck key and rotate it clockwise to fully tighten.

NOTE: The above steps only applies for installing drill bits into the drill chuck. For installing end mills onto the collet and end mill holder, follow the instructions included with your accessory.

ADJUSTMENTS



WARNING: To prevent injury from accidental operation, make sure the tool is switched OFF and unplugged from the power source before assembling the tool or making any adjustments.

ADJUSTING THE TABLE TRAVEL

The milling machine's worktable can be adjusted along the X axis and Y axis to accurately set the cutting location. The gauge on each handwheel indicates the distance of travel.

1. To move the table along the cross (X) axis (left and right), loosen the cross feed lock lever (Fig. 4 - 2), and rotate the cross handwheel (Fig. 4 - 4). Tighten the cross feed lock lever to lock the cross travel.
2. To move the table forward and back along the longitudinal (Y) axis, loosen the longitudinal feed lock lever (Fig. 4 - 3), and rotate the longitudinal feed handwheel (Fig. 4 - 1). Tighten the longitudinal feed lock lever to lock the longitudinal travel.

NOTE: The lock lever can be pulled outwards and repositioned on the screw.

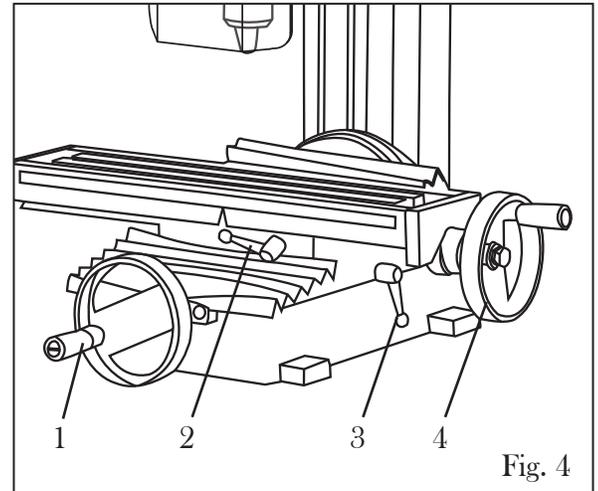


Fig. 4

ADJUSTING THE BEVEL ANGLE

The machine's bevel angle can be adjusted up to 45 degrees to the left and right.

1. Loosen the bevel lock nut on the back of the machine using the large wrench. Keep hold of the column to prevent it from falling.
2. Adjust the bevel angle as indicated on the bevel gauge.
3. Fully tighten the lock nut with the M36 large wrench to secure the bevel angle setting.

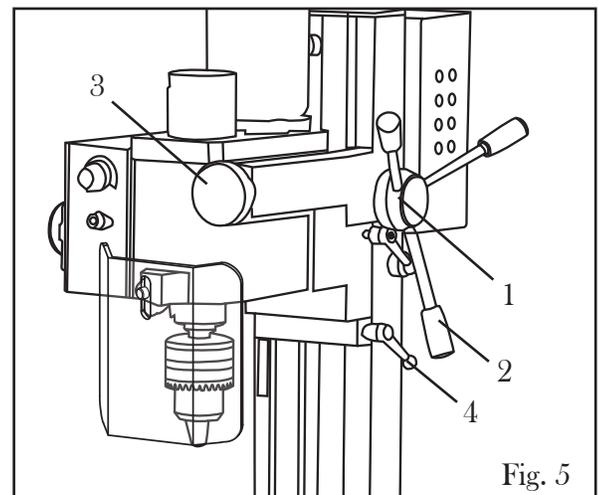


Fig. 5

ADJUSTING THE HEADSTOCK HEIGHT

For normal feeding, the handle clutch (Fig. 5 - 1) should be in the outer position, disengaged from the pinion (Fig. 6 - Normal Adjustment). Rotate the feed handles (Fig. 5 - 2) to bring the headstock up or down. Use the depth gauge on the left of the column to calculate the cutting depth.

For fine feeding adjustment (down to 0.001 inch increments), push the handle clutch into the pinion (Fig. 6 - Fine Adjustment). Rotate the fine feeding wheel (Fig. 5 - 3) to make fine adjustments to the headstock position. Use the fine adjustment gauge to calculate the cutting depth.

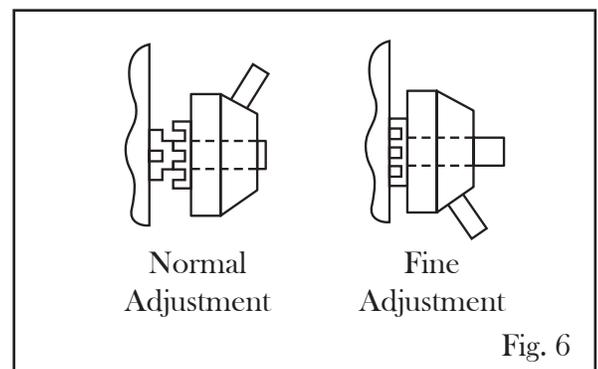


Fig. 6

ADJUSTMENTS



WARNING: To prevent injury from accidental operation, make sure the tool is switched OFF and unplugged from the power source before assembling the tool or making any adjustments.

SETTING THE DEPTH STOP

1. Loosen the depth stop lock lever (Fig. 5 - 4 p. 13).
2. Use the depth gauge and depth arrow on the left of the column to check and calculate the cutting depth.
3. Slide the depth stop block along the column to the desired position. Tighten the depth lock lever. Now your vertical feed will stop at the stop block to ensure the same cutting depth for multiple cutting operations.

SETTING THE SPEED RANGE

The suitable operating speed depends on the size and material of the workpiece. Generally, use higher speeds for cutting softer materials and smaller holes; use lower speeds for cutting harder materials and bigger holes.

Your machine has two speed ranges: 0 - 1100 RPM (LOW) and 0 - 2500 RPM (HIGH). Use the speed range lever on the left side of the headstock to select the desired speed range. For wood drilling, to avoid burning the wood, do not exceed 2300 RPM.

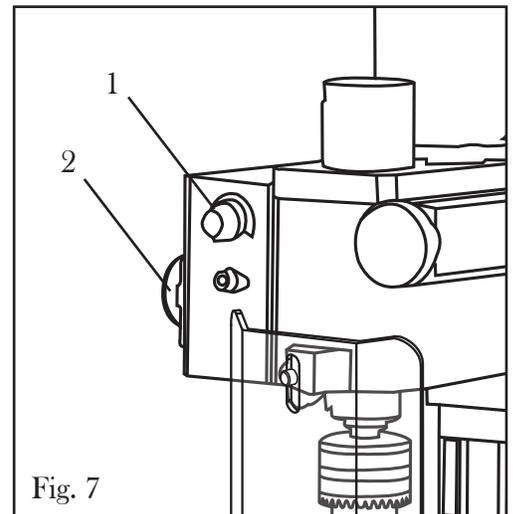


WARNING: Do not change the HIGH/LOW speed range when the machine is running!

TURNING ON/OFF AND ADJUSTING THE SPEED

The speed adjustment knob on the front of the control panel (Fig. 7 - 1) turns the machine ON/OFF and adjusts the speed within your selected speed range.

1. Always make sure the speed adjustment knob is in the OFF setting before plugging in the machine
2. Release the emergency stop switch (Fig. 7 - 2) by pressing upwards on the red button and allowing the cover to spring outward. The cover's bottom latch must be disengaged before the machine can be turned ON.
3. Turn ON the machine by rotating the knob clockwise. A "click" will be heard as the motor is turned ON, but the spindle will not rotate until the knob is turned further clockwise.



4. SLOWLY rotate the knob further and allow the speed to increase.

CAUTION: It is crucial to adjust the speed slowly or you may risk damaging the gears.

5. Wait a few minutes to allow the machine to ramp up to the operating speed before lowering the headstock into the workpiece.

6. To turn OFF the machine, SLOWLY rotate the knob counterclockwise until a "click" is heard and the knob points to the OFF position. For emergency stop, press down the STOP button on the left of the control box. Make sure to always return the speed adjustment knob to the OFF position so that you don't risk accidental starting the machine next time.

OPERATION



WARNING: To prevent serious injury, make sure all the warnings and instructions have been read and understood before operating this tool.



WARNING: Always wear ANSI Z87.1-approved eye protection and a face shield/dust mask when using this machine. Chips and dust fly at high speed during operation, and may cause injuries if they hit you.

PRIOR TO OPERATION

Check that the following requirements are met before plugging in the machine:

- The anti-rust protection has been cleaned off from the machine.
- All obstacles have been cleaned and removed from the machine area and worktable.
- All adjustment tools (chuck key, rod, wrenches) have been removed from the machine.
- The cutter is properly installed and tightened in the holder.
- The workpiece is properly secured in a milling vise or quick vise (not included).
- The workpiece position has been adjusted on the X and Y axes to suit your task.
- The protective shield is in position.
- You are wearing ANSI Z87.1-approved eye protection and a face shield/dust mask.

DRILLING/MILLING OPERATIONS

1. Install the suitable holder/chuck and cutter bit. Tighten them securely.

2. Slowly rotate the speed adjustment knob to turn ON and set it to the appropriate speed. Wait a few seconds for the machine to reach full speed.



WARNING: Do not turn on the machine while the cutter is contacting the workpiece.

3A. **DRILLING OPERATION.** Pull the feed handle towards you to lower the cutter into the workpiece. If a depth stop has been set, the headstock will automatically stop when it hits the depth stop block. You can also use the depth gauge on the left of the column to calculate the cutting depth.

3B. **MILLING OPERATION.** Pull the feed handle towards you to lower the cutter to the desired depth and tighten the feed lock lever. Rotate handwheels make the cut along the X or Y axis.

NOTE: Make your cut in several progressive passes, instead of trying to take off too much material in one pass.

4. When the cut is complete, clear the cutter from the workpiece.

5. Rotate the speed adjustment knob to the OFF position. Wait for the cutter to come to a complete stop and raise the headstock all the way to the upper position.

OVERLOAD PROTECTION

The overload protection will shut off the machine automatically during an overload. When this happens, the yellow overload light on the left control box will illuminate.

The machine may overload if the feed rate is too fast or if the cutting depth is too deep. When this happens, rotate the speed adjustment knob to the OFF position. Wait a few minutes to allow the motor to cool down and start the machine again. This time, reduce the feeding rate and cutting depth to prevent overloading the motor again.

MAINTENANCE



WARNING: To avoid accidents, make sure the power switch is in the OFF position and unplug the tool from the electrical outlet before cleaning or performing any maintenance. Servicing of the tool must be performed by a qualified technician.

GENERAL MAINTENANCE

1. Before each use, inspect the general condition of the tool. Check for:
 - Loose hardware,
 - Misalignment or binding of moving parts,
 - Damaged cord/electrical wiring,
 - Cracked or broken parts, and
 - Any other condition that may affect its safe operation.
2. After every use, wipe the tool with a soft cloth. Do not let water enter the tool. Clean the worktable and apply a small amount of general purpose machine oil to protect the worktable.
3. Keep the top ventilation openings free from dust and debris to prevent the motor from overheating.
4. Store the tool in a clean and dry place away from the reach of children.

CUTTER & TAPER SHANK MAINTENANCE

Use a rag to protect your hands while handling or installing the cutter to prevent injuries. Keep the taper shank and cutter shank clean. Always use sharp cutters; do not use if the cutter is dull or damaged. Store the cutter and holder in a wooden or plastic box after use to maintain its condition.

LUBRICATION

To ensure smooth operation and precision of the machine, keep the moving contact surfaces lubricated. Fill the included oil bottle with lubricating oil ISO 68 or SAE 20W non-detergent oil, and inject the oil onto the contact surfaces before operation.

- Base and saddle slide face
- Saddle and worktable slide face
- Column and bevel center slide face
- Column and headstock slide face.

Then, apply light-weight lithium based lubricating grease onto the following parts.

- X-Axis feeding leadscrew (saddle)
- Y-axis feeding leadscrew (worktable)
- Z-axis feeding gear rack (column)

MAINTENANCE



WARNING: To avoid accidents, make sure the power switch is in the OFF position and unplug the tool from the electrical outlet before cleaning or performing any maintenance. Servicing of the tool must be performed by a qualified technician.

GIBS ADJUSTMENT

The gib act as a sliding interface between two slide faces. The gibs have been pre-adjusted from the manufacturer and should not require further adjustment until about after a year of operation. In order to maintain mechanical precision, the gib needs to be adjusted to maintain the correct pressure between the two slide faces. Check and adjust the gibs every year, more frequently if under heavier usage.

There are 4 gibs on this machine. Refer to the exploded view and parts list to locate the gibs below:

- X-axis gib (Part No. 33013-036), between saddle seat and worktable slide face.
- Y-axis gib (Part No. 33013-034), between base and saddle seat slide face.
- Z-axis lower gib (Part No. 33013-045), between column and bevel center slide face.
- Z-axis upper gib (Part No. 33013-064), between column and headstock slide face.

1. To adjust each gib, first loosen the lock nuts using the M10 wrench.
2. Each gib has multiple lock nuts and set screws that need to be adjusted. Adjust the pressure by tightening or loosening the adjustment screws using the M3 hex wrench. When properly adjusted, the gib should provide slight resistance without constriction.

NOTE: Adjust the middle screws first, then move towards the two sides to adjust the outer screws to ensure an even pressure. All adjustments screws should be adjusted to the same protrusion.

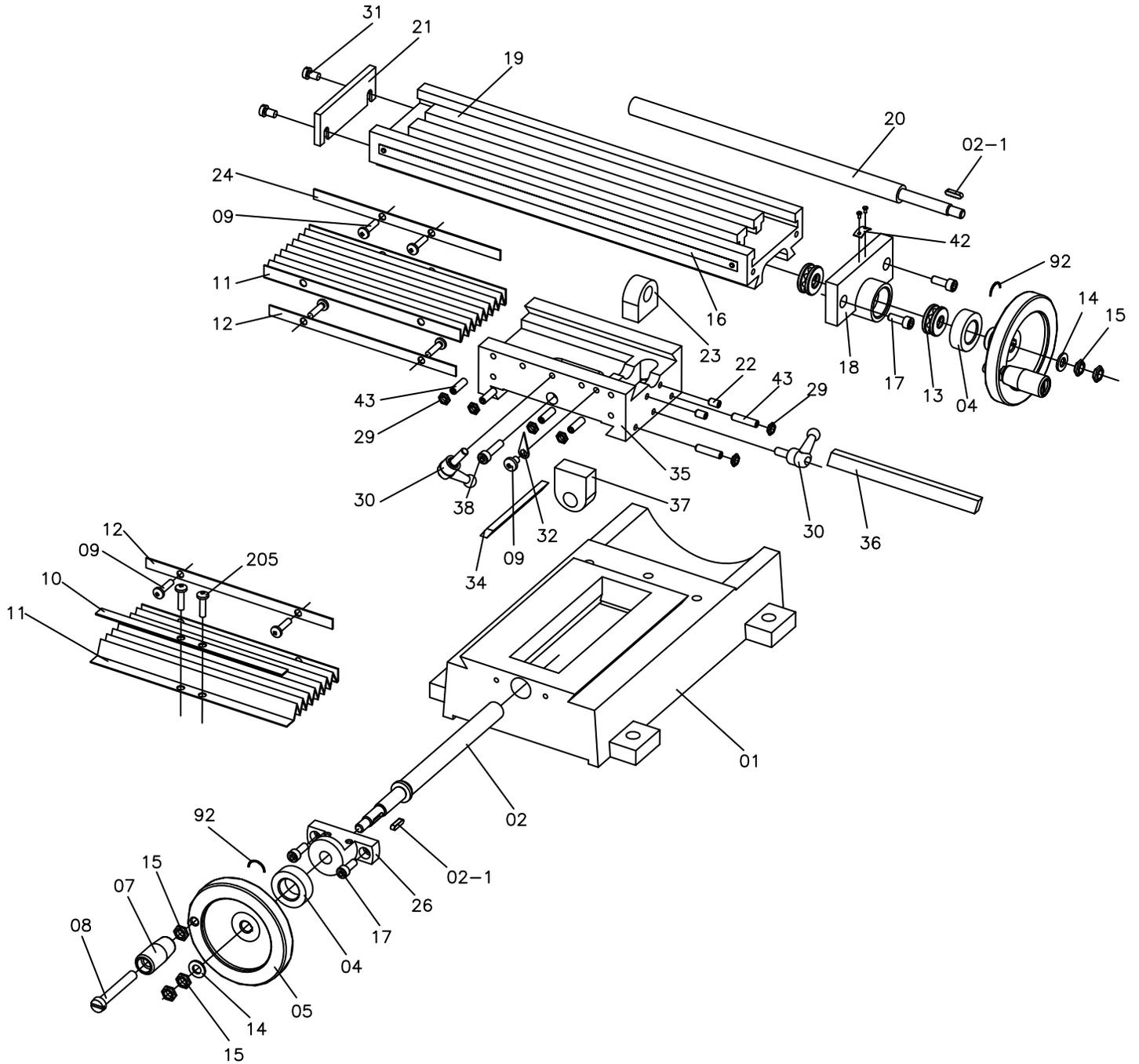
3. Tighten all lock nuts uniformly.

PRODUCT DISPOSAL

Used power tools should not be disposed of together with household waste. This product contains electronic components that should be recycled. Please take this product to your local recycling facility for responsible disposal and to minimize its environmental impact.

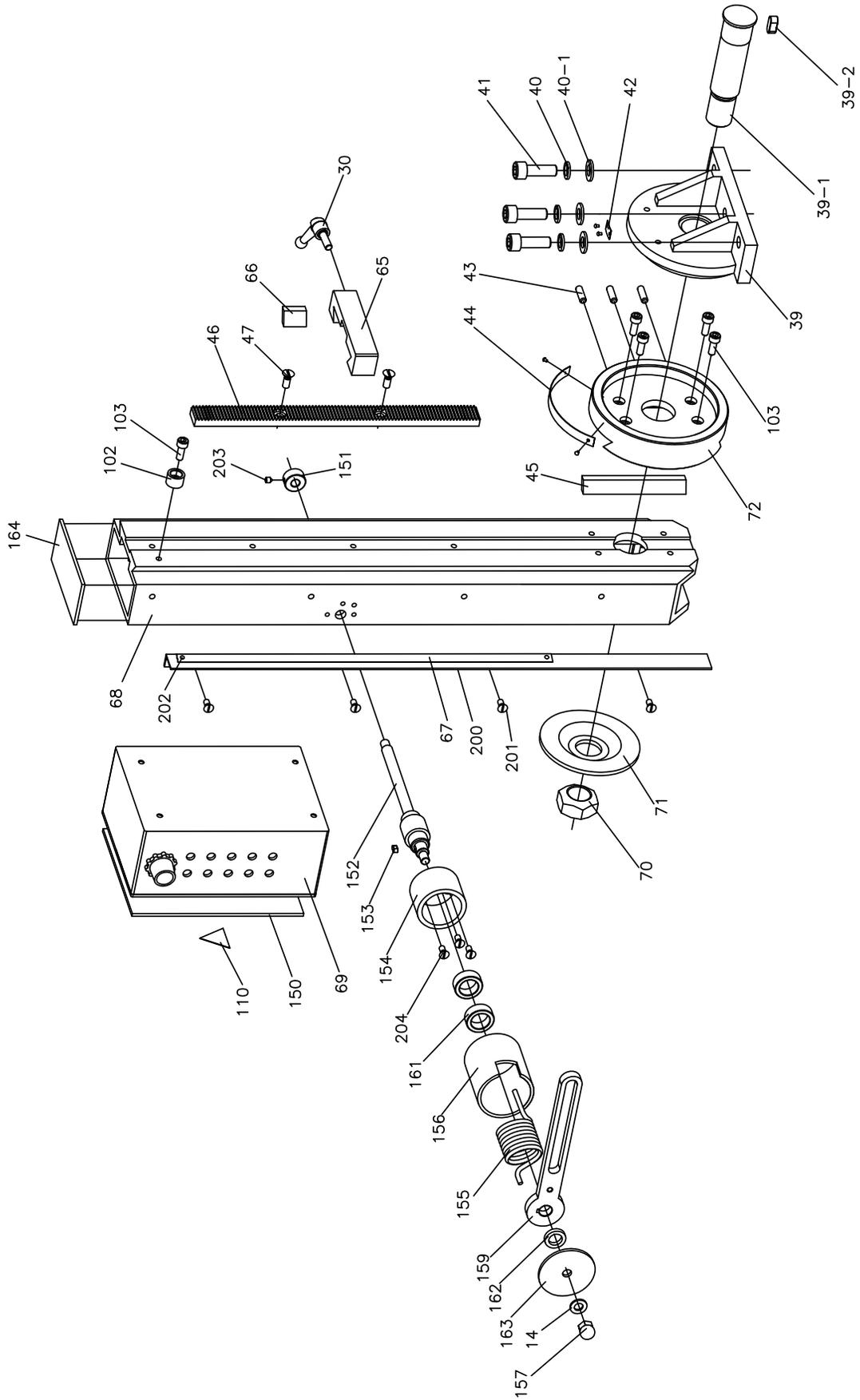
EXPLODED VIEW & PARTS LIST

Cross (X) Axis & Longitudinal (Y) Axis



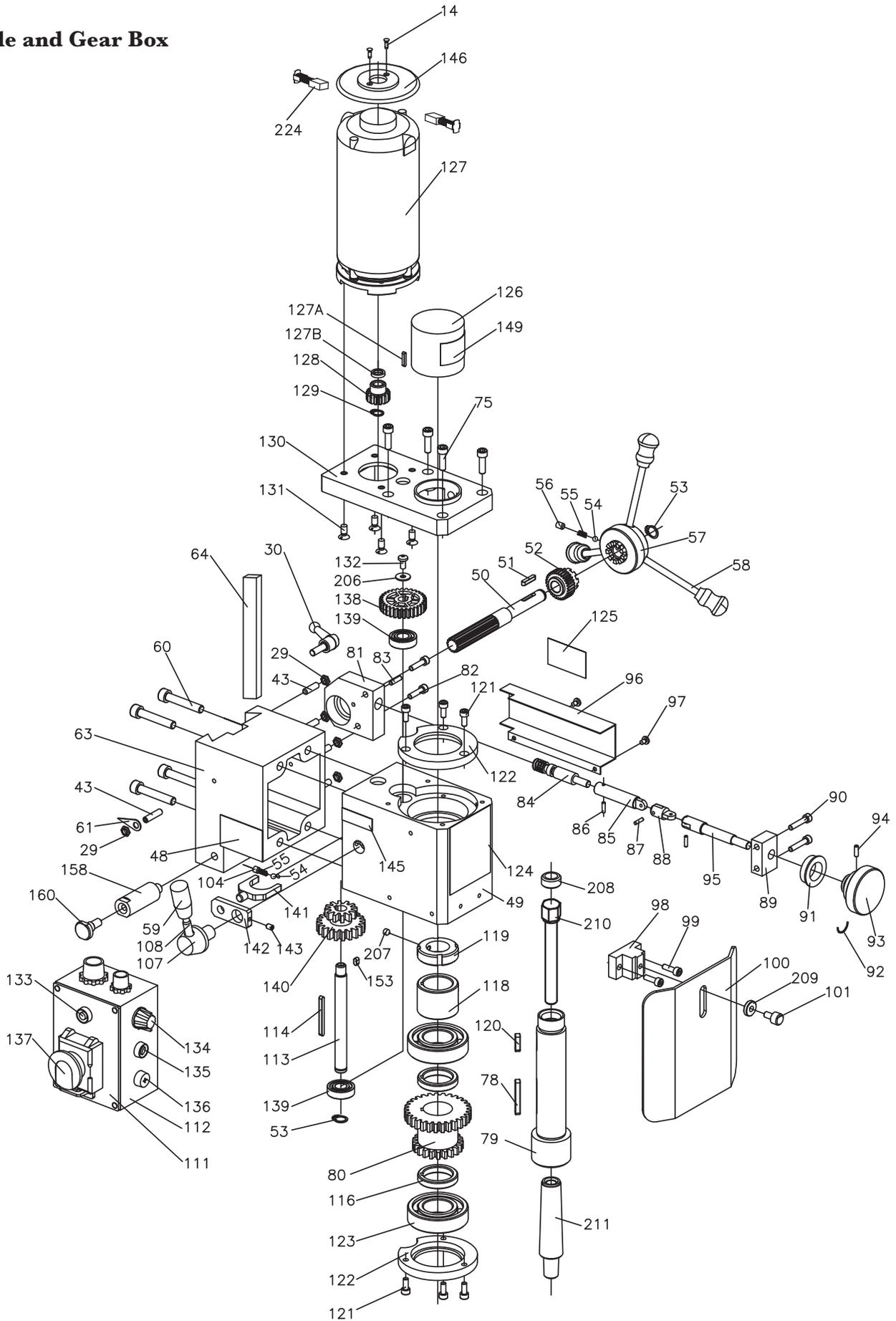
EXPLODED VIEW & PARTS LIST

Vertical (Z) Axis



EXPLODED VIEW & PARTS LIST

Spindle and Gear Box



EXPLODED VIEW & PARTS LIST

No.	Part No.	Description
1	33013-001	Base
2	33013-002	Y-Axis Feed Screw
2-1	33013-002-1	Key, 4 X 16
4	33013-004	Dial
5	33013-005	Handwheel
7	33013-007	Handle Sleeve
8	33013-008	Handle Screw, M8 X 55
9	33013-009	Cap Screw, M6 X 8
10	33013-010	Holding Plate (1)
11	33013-011	Chip Shield
12	33013-012	Holding Plate (2)
13	33013-013	Ball Bearing, 8200
14	33013-014	Washer, M8
15	33013-015	Nut, M8
16	33013-016	X-Axis Ruler
17	33013-017	Cap Screw, M6 X 16
18	33013-018	X-Axis Bearing Seat
19	33013-019	Table
20	33013-020	Y-Axis Feed Screw
21	33013-021	End Cover
22	33013-022	Screw, M6 X 10
23	33013-023	X-Axis Screw Nut
24	33013-024	Holding Plate (3)
26	33013-026	Screw Seat
29	33013-029	Nut, M6
30	33013-030	Locking Handle
31	33013-031	Screw, M6 X 10
32	33013-032	Guiding Label With Rivet
34	33013-034	Y-Axis Gib
35	33013-035	Saddle
36	33013-036	X-Axis Gib
37	33013-037	Y-Axis Screw Nut
38	33013-038	Cap Screw, M6 X 25
39	33013-039	Column Seat
39-1	33013-039-1	Shaft
39-2	33013-039-2	Key, 8 X 12
40	33013-040	Lock Washer, M10
40-1	33013-040-1	Flat Washer, M10
41	33013-041	Cap Screw, M10 X 30
42	33013-042	Column Angle Indicator
43	33013-043	Set Screw, M6 X 22
44	33013-044	Column Angle Ruler
45	33013-045	Z-Axis Gib, Lower
46	33013-046	Gear Rack
47	33013-047	Cap Screw, M6 X 12
48	33013-048	High/Low Speed Warning Label

No.	Part No.	Description
49	33013-049	R8 Spindle Box
50	33013-050	Gear Shaft, 14T
51	33013-051	Key, 4 X 25
52	33013-052	Bevel Gear, 29T
53	33013-053	Retaining Ring, Ø12
54	33013-054	Ball, Ø5.0
55	33013-055	Spring, Ø0.8 X 10
56	33013-056	Screw, M6 X 8
57	33013-057	Handle Body, Z Axis
58	33013-058	Handle Shaft With Grip, Z Axis
59	33013-059	Handle Grip, Z Axis
60	33013-060	Cap Screw, M8 X 80
61	33013-061	Z-Axis Pointer
63	33013-063	Spindle Box Seat
64	33013-064	Z-Axis Gib, Upper
65	33013-065	Depth Stop Block
66	33013-066	Gib, Limit Block
67	33013-067	Z-Axis Ruler
68	33013-068	Column
69	33013-069	Electric Box
70	33013-070	Lock Nut, M24
71	33013-071	Washer, M24
72	33013-072	Connecting Plate
75	33013-075	Screw, M6 X 20
78	33013-078	Key 5 X 43
79	33013-079	R8 Spindle
80	33013-080	Compound Gear, 21/29T
81	33013-081	Support Block
82	33013-082	Screw, M5 X 20
83	33013-083	Pin4 X 15
84	33013-084	Worm Gear Shaft
85	33013-085	Worm Gear Shaft Sleeve
86	33013-086	Pin 3 X 12
87	33013-087	Pin 3 X 12
88	33013-088	Adjustable Coupler
89	33013-089	Fine Adjustment Block
90	33013-090	Screw, M5 X 25
91	33013-091	Dial, Z-Axis Fine Tuning
92	33013-092	Damper Spring
93	33013-093	Z-Axis Fine Tuning Handwheel
94	33013-094	Screw, M4 X 12
95	33013-095	Small Shaft
96	33013-096	Fine Tuning Cover
97	33013-097	Screw, M4 X 6
98	33013-098	Face Shield Mounting Block
99	33013-099	Screw, M5 X 16

EXPLODED VIEW & PARTS LIST

No.	Part No.	Description
100	33013-100	Face Shield
101	33013-101	Clamping Bolt, M6 X 12
102	33013-102	Upper Limiting Bushing, M6
103	33013-103	Upper Limiting Screw, M6 x 16
104	33013-104	Set Screw, M6 X 6
107	33013-107	Handle Seat, Gear Transmission
108	33013-108	Double Head Bolt, M8 X 70
110	33013-110	Warning Label, Electric Box
111	33013-111	Control Box Cover
112	33013-112	Control Box
113	33013-113	Spindle Gear Shaft
114	33013-114	Key, 4 X 45
116	33013-116	Spacing Ring
118	33013-118	Spacing Ring
119	33013-119	Spindle Nut
120	33013-120	Key, 5 X20
121	33013-121	Cap Screw M5 X 12
122	33013-122	Bearing Cover Plate
123	33013-123	Ball Bearing, 80206
124	33013-124	Name And Specifications Label
125	33013-125	Fine Adjustment Label
126	33013-126	Drawbar Cover
127	33013-127	110 Motor
127A	33013-127-A	Key, 3X16
127B	33013-127-B	Motor Gear Washer
128	33013-128	Motor Gear 14T
129	33013-129	C-Clip, Ø9.0
130	33013-130	Motor Seat Plate
131	33013-131	Flat Screw, M6 X 12
132	33013-132	Round Screw M5 X 8
133	33013-133	Yellow LED
134	33013-134	Speed Control Knob With Potentiometer
135	33013-135	Green LED
136	33013-136	Fuse Cap
136-1	33013-136-1	Fuse, 5A
137	33013-137	Emergency Stop Switch
138	33013-138	Gear, 30T
139	33013-139	Ball Bearing, 80101
140	33013-140	Transmission Compound Gear, 20/12T
141	33013-141	Clutch Fork
142	33013-142	Clutch Plate
143	33013-143	Set Screw, M5 X 8

No.	Part No.	Description
144	33013-144	Self-Tapping Screw, St2.9 X 8
145	33013-145	High/Low Label
146	33013-146	Motor Cover
149	33013-149	Warning Label, Drawbar Cover
150	33013-150	PCB
151	33013-151	Lock Sleeve
152	33013-152	Pivot Shaft
153	33013-153	Key 4 X 6
154	33013-154	Spring Support Bushing
155	33013-155	Torsion Spring
156	33013-156	Spring Cover
157	33013-157	Acorn Nut, M8
158	33013-158	Pivot Bar
159	33013-159	Slotted Support Bar
160	33013-160	Screw
161	33013-161	Bushing
162	33013-162	Washer, M12
163	33013-163	Support Bar Cover
164	33013-164	Column Cover
200	33013-200	Z-Axis Ruler Base Flange
201	33013-201	Screw, M3 X 8
202	33013-202	Rivet, M2 X 3
203	33013-203	Screw, M5 X 6
204	33013-204	Screw, M5 X 8
205	33013-205	Screw, M5 X 8
206	33013-206	Washer, M5
207	33013-207	Screw, M6 X 8
208	33013-208	Fixed Sleeve
209	33013-209	Washer
210	33013-210	Drawbar, M12-1.75
211	33013-211	Collet, R8
212	33013-212	Chuck, JT33, 1 - 13mm
213	33013-213	Box Wrench, 36mm
214	33013-214	Spindle Locking Rod
215	33013-215	Hook Wrench, D45-52
216	33013-216	Combi Box Wrench, 19/17mm
217	33013-217	Combi Box Wrench, 17/14mm
218	33013-218	Combi Box Wrench, 10/8mm
219	33013-219	Chuck Key
220	33013-220	Extra Fuse, 5A
221	33013-221	T-Nut
222	33013-222	Oil Bottle
223	33013-223	Hex Wrench Set (M6 M5 M4 M3)
224	33013-224	Carbon Brushes Set

NOTE: Repairs and replacements should only be performed by an authorized technician. Parts and accessories that wear down over the course of normal use are not covered by the two-year warranty.

LIMITED TWO YEAR WARRANTY

WEN Products is committed to build tools that are dependable for years. Our warranties are consistent with this commitment and our dedication to quality.

LIMITED WARRANTY OF WEN CONSUMER POWER TOOLS PRODUCTS FOR HOME USE

GREAT LAKES TECHNOLOGIES, LLC (“Seller”) warrants to the original purchaser only, that all WEN consumer power tools will be free from defects in material or workmanship for a period of two (2) years from date of purchase. Ninety days for all WEN products, if the tool is used for professional use.

SELLER’S SOLE OBLIGATION AND YOUR EXCLUSIVE REMEDY under this Limited Warranty and, to the extent permitted by law, any warranty or condition implied by law, shall be the repair or replacement of parts, without charge, which are defective in material or workmanship and which have not been misused, carelessly handled, or misrepaired by persons other than Seller or Authorized Service Center. To make a claim under this Limited Warranty, you must make sure to keep a copy of your proof of purchase that clearly defines the Date of Purchase (month and year) and the Place of Purchase. Place of purchase must be a direct vendor of Great Lakes Technologies, LLC. Third party vendors such as garage sales, pawn shops, resale shops, or any other secondhand merchant void the warranty included with this product. Contact techsupport@wenproducts.com or 1-800-232-1195 to make arrangements for repairs and transportation.

When returning a product for warranty service, the shipping charges must be prepaid by the purchaser. The product must be shipped in its original container (or an equivalent), properly packed to withstand the hazards of shipment. The product must be fully insured with a copy of the warranty card and/or the proof of purchase enclosed. There must also be a description of the problem in order to help our repairs department diagnose and fix the issue. Repairs will be made and the product will be returned and shipped back to the purchaser at no charge.

THIS LIMITED WARRANTY DOES NOT APPLY TO ACCESSORY ITEMS THAT WEAR OUT FROM REGULAR USAGE OVER TIME INCLUDING BELTS, BRUSHES, BLADES, ETC.

ANY IMPLIED WARRANTIES SHALL BE LIMITED IN DURATION TO ONE (1) YEAR FROM DATE OF PURCHASE. SOME STATES IN THE U.S., SOME CANADIAN PROVINCES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING BUT NOT LIMITED TO LIABILITY FOR LOSS OF PROFITS) ARISING FROM THE SALE OR USE OF THIS PRODUCT. SOME STATES IN THE U.S. AND SOME CANADIAN PROVINCES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE IN THE U.S., PROVINCE TO PROVINCE IN CANADA AND FROM COUNTRY TO COUNTRY.

THIS LIMITED WARRANTY APPLIES ONLY TO PORTABLE ELECTRIC TOOLS, BENCH POWER TOOLS, OUTDOOR POWER EQUIPMENT AND PNEUMATIC TOOLS SOLD WITHIN THE UNITED STATES OF AMERICA, CANADA AND THE COMMONWEALTH OF PUERTO RICO. FOR WARRANTY COVERAGE WITHIN OTHER COUNTRIES, CONTACT THE WEN CUSTOMER SUPPORT LINE.

**THANKS FOR
REMEMBERING**

