



# OPERATOR'S MANUAL



## TUBE AND PIPE NOTCHER MODEL: TN-800

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## THANK YOU & WARRANTY

Thank you for your purchase of a machine from Baileigh Industrial. We hope that you find it productive and useful to you for a long time to come.

**Inspection & Acceptance.** Buyer shall inspect all Goods within ten (10) days after receipt thereof. Buyer's payment shall constitute final acceptance of the Goods and shall act as a waiver of the Buyer's rights to inspect or reject the goods unless otherwise agreed. If Buyer rejects any merchandise, Buyer must first obtain a Returned Goods Authorization ("RGA") number before returning any goods to Seller. Goods returned without a RGA will be refused. Seller will not be responsible for any freight costs, damages to goods, or any other costs or liabilities pertaining to goods returned without a RGA. Seller shall have the right to substitute a conforming tender. Buyer will be responsible for all freight costs to and from Buyer and repackaging costs, if any, if Buyer refuses to accept shipment. If Goods are returned in unsalable condition, Buyer shall be responsible for full value of the Goods. Buyer may not return any special order Goods. Any Goods returned hereunder shall be subject to a restocking fee equal to 30% of the invoice price.

**Specifications.** Seller may, at its option, make changes in the designs, specifications or components of the Goods to improve the safety of such Goods, or if in Seller's judgment, such changes will be beneficial to their operation or use. Buyer may not make any changes in the specifications for the Goods unless Seller approves of such changes in writing, in which event Seller may impose additional charges to implement such changes.

**Limited Warranty.** Seller warrants to the original end-user that the Goods manufactured or provided by Seller under this Agreement shall be free of defects in material or workmanship for a period of twelve (12) months from the date of purchase, provided that the Goods are installed, used, and maintained in accordance with any instruction manual or technical guidelines provided by the Seller or supplied with the Goods, if applicable. The original end-user must give written notice to Seller of any suspected defect in the Goods prior to the expiration of the warranty period. The original end-user must also obtain a RGA from Seller prior to returning any Goods to Seller for warranty service under this paragraph. Seller will not accept any responsibility for Goods returned without a RGA. The original end-user shall be responsible for all costs and expenses associated with returning the Goods to Seller for warranty service. In the event of a defect, Seller, at its sole option, shall repair or replace the defective Goods or refund to the original end-user the purchase price for such defective Goods. Goods are not eligible for replacement or return after a period of 30 days from date of receipt. The foregoing warranty is Seller's sole obligation, and the original end-user's exclusive remedy, with regard to any defective Goods. This limited warranty does not apply to: (a) die sets, tooling, and saw blades; (b) periodic or routine maintenance and setup, (c) repair or replacement of the Goods due to normal wear and tear, (d) defects or damage to the Goods resulting from misuse, abuse, neglect, or accidents, (e) defects or damage to the Goods resulting from improper or unauthorized alterations, modifications, or changes; and (f) any Goods that has not been installed and/or maintained in accordance with the instruction manual or technical guidelines provided by Seller.

**EXCLUSION OF OTHER WARRANTIES.** THE FOREGOING LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. ANY AND ALL OTHER EXPRESS, STATUTORY OR IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE ARE EXPRESSLY DISCLAIMED. NO WARRANTY IS MADE WHICH EXTENDS BEYOND THAT WHICH IS EXPRESSLY CONTAINED HEREIN.

**Limitation of Liability.** IN NO EVENT SHALL SELLER BE LIABLE TO BUYER OR ANY OTHER PARTY FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES (INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR DOWN TIME) ARISING FROM OR IN MANNER CONNECTED WITH THE GOODS, ANY BREACH BY SELLER OR ITS AGENTS OF THIS AGREEMENT, OR ANY OTHER CAUSE WHATSOEVER, WHETHER BASED ON CONTRACT, TORT OR ANY OTHER THEORY OF LIABILITY. BUYER'S REMEDY WITH RESPECT TO ANY CLAIM ARISING UNDER THIS AGREEMENT IS STRICTLY LIMITED TO NO MORE THAN THE AMOUNT PAID BY THE BUYER FOR THE GOODS.



**Force Majeure.** Seller shall not be responsible for any delay in the delivery of, or failure to deliver, Goods due to causes beyond Seller's reasonable control including, without limitation, acts of God, acts of war or terrorism, enemy actions, hostilities, strikes, labor difficulties, embargoes, non-delivery or late delivery of materials, parts and equipment or transportation delays not caused by the fault of Seller, delays caused by civil authorities, governmental regulations or orders, fire, lightening, natural disasters or any other cause beyond Seller's reasonable control. In the event of any such delay, performance will be postponed by such length of time as may be reasonably necessary to compensate for the delay.

**Installation.** If Buyer purchases any Goods that require installation, Buyer shall, at its expense, make all arrangements and connections necessary to install and operate the Goods. Buyer shall install the Goods in accordance with any Seller instructions and shall indemnify Seller against any and all damages, demands, suits, causes of action, claims and expenses (including actual attorneys' fees and costs) arising directly or indirectly out of Buyer's failure to properly install the Goods.

**Work By Others; Safety Devices.** Unless agreed to in writing by Seller, Seller has no responsibility for labor or work performed by Buyer or others, of any nature, relating to design, manufacture, fabrication, use, installation or provision of Goods. Buyer is solely responsible for furnishing, and requiring its employees and customers to use all safety devices, guards and safe operating procedures required by law and/or as set forth in manuals and instruction sheets furnished by Seller. Buyer is responsible for consulting all operator's manuals, ANSI or comparable safety standards, OSHA regulations and other sources of safety standards and regulations applicable to the use and operation of the Goods.

**Remedies.** Each of the rights and remedies of Seller under this Agreement is cumulative and in addition to any other or further remedies provided under this Agreement or at law or equity.

**Attorney's Fees.** In the event legal action is necessary to recover monies due from Buyer or to enforce any provision of this Agreement, Buyer shall be liable to Seller for all costs and expenses associated therewith, including Seller's actual attorneys' fees and costs.

**Governing Law/Venue.** This Agreement shall be construed and governed under the laws of the State of Wisconsin, without application of conflict of law principles. Each party agrees that all actions or proceedings arising out of or in connection with this Agreement shall be commenced, tried, and litigated only in the state courts sitting in Manitowoc County, Wisconsin or the U.S. Federal Court for the Eastern District of Wisconsin. Each party waives any right it may have to assert the doctrine of "forum non conveniens" or to object to venue to the extent that any proceeding is brought in accordance with this section. Each party consents to and waives any objection to the exercise of personal jurisdiction over it by courts described in this section. Each party waives to the fullest extent permitted by applicable law the right to a trial by jury.

**Summary of Return Policy.**

- 10 Day acceptance period from date of delivery. Damage claims and order discrepancies will not be accepted after this time.
- You must obtain a Baileigh issued RGA number PRIOR to returning any materials.
- Returned materials must be received at Baileigh in new condition and in original packaging.
- Altered items are not eligible for return.
- Buyer is responsible for all shipping charges.
- A 30% re-stocking fee applies to all returns.

Baileigh Industrial makes every effort to ensure that our posted specifications, images, pricing and product availability are as correct and timely as possible. We apologize for any discrepancies that may occur. Baileigh Industrial reserves the right to make any and all changes deemed necessary in the course of business including but not limited to pricing, product specifications, quantities, and product availability.

**For Customer Service & Technical Support:**

Please contact one of our knowledgeable Sales and Service team members at: (920) 684-4990 or e-mail us at [sales@baileighindustrial.com](mailto:sales@baileighindustrial.com)



## **INTRODUCTION**

*The quality and reliability of the components assembled on a Baileigh Industrial machine guarantee near perfect functioning, free from problems, even under the most demanding working conditions. However if a situation arises, refer to the manual first. If a solution cannot be found, contact the distributor where you purchased our product. Make sure you have the serial number and production year of the machine (stamped on the nameplate). For replacement parts refer to the assembly numbers on the parts list drawings.*

*Our technical staff will do their best to help you get your machine back in working order.*

### **In this manual you will find: (when applicable)**

- Safety procedures
- Correct installation guidelines
- Description of the functional parts of the machine
- Capacity charts
- Set-up and start-up instructions
- Machine operation
- Scheduled maintenance
- Parts lists

## **GENERAL NOTES**

After receiving your equipment remove the protective container. Do a complete visual inspection, and if damage is noted, **photograph it for insurance claims** and contact your carrier at once, requesting inspection. Also contact Baileigh Industrial and inform them of the unexpected occurrence. Temporarily suspend installation.

Take necessary precautions while loading / unloading or moving the machine to avoid any injuries.

Your machine is designed and manufactured to work smoothly and efficiently. Following proper maintenance instructions will help ensure this. Try and use original spare parts, whenever possible, and most importantly; **DO NOT** overload the machine or make any unauthorized modifications.



**Note:** This symbol refers to useful information throughout the manual.



## **IMPORTANT** **PLEASE READ THIS OPERATORS MANUAL CAREFULLY**

It contains important safety information, instructions, and necessary operating procedures. The continual observance of these procedures will help increase your production and extend the life of the equipment.



### **SAFETY INSTRUCTIONS**

#### **LEARN TO RECOGNIZE SAFETY INFORMATION**

This is the safety alert symbol. When you see this symbol on your machine or in this manual, **BE ALERT TO THE POTENTIAL FOR PERSONAL INJURY!**



Follow recommended precautions and safe operating practices.

#### **UNDERSTAND SIGNAL WORDS**

A signal word – **DANGER**, **WARNING**, or **CAUTION** is used with the safety alert symbol. **DANGER** identifies a hazard or unsafe practice that will result in severe **Injury or Death.**



Safety signs with signal word **DANGER** or **WARNING** are typically near specific hazards.



General precautions are listed on **CAUTION** safety signs. **CAUTION** also calls attention to safety messages in this manual.



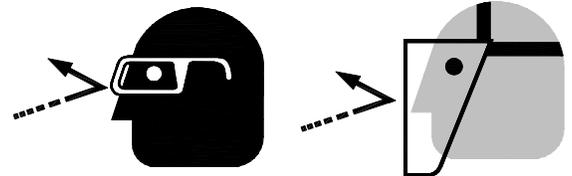


**SAVE THESE INSTRUCTIONS.**  
**Refer to them often and use them to instruct others.**



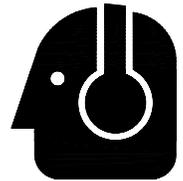
**PROTECT EYES**

Wear safety glasses or suitable eye protection when working on or around machinery.



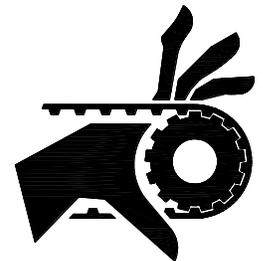
**PROTECT AGAINST NOISE**

Prolonged exposure to loud noise can cause impairment or loss of hearing. Wear suitable hearing protective devices such as ear muffs or earplugs to protect against objectionable or uncomfortable loud noises.



**BEWARE OF PINCH POINTS**

Keep hands and fingers away from the slide plate and pivot points when operating on and around this machine. Keep chuck guard in place at all times while the machine is running.



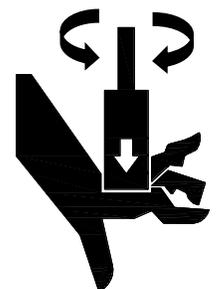
**ROTATING TOOL HAZARD**

Keep hands and body clear while operating. Rotating chuck can cut, dismember, snag, and entrap. Flying chips, splinters, and other particles can cause serious injury or death.



**BEWARE OF PIERCING POINTS**

**NEVER** place Keep hands, fingers, or any part of your body away from rotating tooling bit.





### CUTTING HAZARD

Keep hands and fingers away from the rotating cutters. These rotating cutters can be extremely dangerous if you do not follow proper safety procedures. **NEVER place hands directly over or in front of the cutter. Keep the tooling guard in place and closed at all times while operating this machine.**



### ENTANGLEMENT HAZARD – ROTATING SPINDLE

Contain long hair, **DO NOT** wear jewelry or loose fitting clothing.





## SAFETY PRECAUTIONS



Metal working can be dangerous if safe and proper operating procedures are not followed. As with all machinery, there are certain hazards involved with the operation of the product. Using the machine with respect and caution will considerably lessen the possibility of personal injury. However, if normal safety precautions are overlooked or ignored, personal injury to the operator may result.

Safety equipment such as guards, hold-downs, safety glasses, dust masks and hearing protection can reduce your potential for injury. But even the best guard won't make up for poor judgment, carelessness or inattention. **Always use common sense** and exercise **caution** in the workshop. If a procedure feels dangerous, don't try it.

**REMEMBER: Your personal safety is your responsibility.**



**WARNING: FAILURE TO FOLLOW THESE RULES MAY RESULT IN SERIOUS PERSONAL INJURY**

1. **Only trained and qualified personnel can operate this machine.**
2. **Make sure guards are in place and in proper working order before operating machinery.**
3. **Remove any adjusting tools.** Before operating the machine, make sure any adjusting tools have been removed.
4. **Keep work area clean.** Cluttered areas invite injuries.
5. **Overloading machine.** By overloading the machine you may cause injury from flying parts. **DO NOT** exceed the specified machine capacities.
6. **Dressing material edges.** Always chamfer and deburr all sharp edges.
7. **Do not force tool.** Your machine will do a better and safer job if used as intended. **DO NOT** use inappropriate attachments in an attempt to exceed the machines rated capacity.
8. **Use the right tool for the job. DO NOT** attempt to force a small tool or attachment to do the work of a large industrial tool. **DO NOT** use a tool for a purpose for which it was not intended.
9. **Dress appropriate. DO NOT** wear loose fitting clothing or jewelry as they can be caught in moving machine parts. Protective clothing and steel toe shoes are recommended when using machinery. Wear a restrictive hair covering to contain long hair.
10. **Use eye and ear protection.** Always wear ISO approved impact safety goggles. Wear a full-face shield if you are producing metal filings.



11. **Do not overreach.** Maintain proper footing and balance at all times. **DO NOT** reach over or across a running machine.
12. **Stay alert.** Watch what you are doing and use common sense. **DO NOT** operate any tool or machine when you are tired.
13. **Check for damaged parts.** Before using any tool or machine, carefully check any part that appears damaged. Check for alignment and binding of moving parts that may affect proper machine operation.
14. **Observe work area conditions.** **DO NOT** use machines or power tools in damp or wet locations. Do not expose to rain. Keep work area well lighted. **DO NOT** use electrically powered tools in the presence of flammable gases or liquids.
15. **Blade adjustments and maintenance.** Always keep blades sharp and properly adjusted for optimum performance.
16. **Keep children away.** Children must never be allowed in the work area. **DO NOT** let them handle machines, tools, or extension cords.
17. **Store idle equipment.** When not in use, tools must be stored in a dry location to inhibit rust. Always lock up tools and keep them out of reach of children.
18. **DO NOT operate machine if under the influence of alcohol or drugs.** Read warning labels on prescriptions. If there is any doubt, **DO NOT** operate the machine.
19. **DO NOT** touch live electrical components or parts.
20. **Turn off** power before checking, cleaning, or replacing any parts.
21. Be sure **all** equipment is properly installed and grounded according to national, state, and local codes.
22. Inspect power and control cables periodically. Replace if damaged or bare wires are exposed. **Bare wiring can kill!**
23. **DO NOT** bypass or defeat any safety interlock systems.
24. Keep visitors a safe distance from the work area.



## TECHNICAL SPECIFICATIONS

Mill Speed	350rpm
Maximum Notching Capacity	3" Diameter using a 1" end mill (76mm / 25mm)
Minimum Notching Capacity	.5" Diameter using a .5" end mill and .5" reducer bushing (12mm / 12mm / 12mm)
Angle Adjustment	0 – 60°
End Mill Size	1" Standard / 1/2" Optional (25mm / 12mm optional)
Power	110/220V, 60hz Prewired 110V
Motor	1hp (.75kw)
Shipping Weight	540lbs. (245kg)
Shipping Dimensions	66" x 44" x 60" (1676 x 1118 x 1524mm)

## TECHNICAL SUPPORT

Our technical support department can be reached at 920.684.4990, and asking for the support desk for purchased machines. Tech Support handles questions on machine setup, schematics, warranty issues, and individual parts needs: (other than die sets and blades).

For specific application needs or future machine purchases contact the Sales Department at: [sales@baileighindustrial.com](mailto:sales@baileighindustrial.com), Phone: 920.684.4990, or Fax: 920.684.3944.



**Note:** *The photos illustrations used in this manual are representative only and may not depict the actual color, labeling or accessories and may be intended to illustrate technique only.*



**Note:** *The specifications and dimensions presented here are subject to change without prior notice due to improvements of our products.*



## UNPACKING AND CHECKING CONTENTS

Your Baileigh machine is shipped complete in one crate. Separate all parts from the packing material and check each item carefully. Make certain all items are accounted for before discarding any packing material.

**⚠ WARNING: SUFFOCATION HAZARD!** Immediately discard any plastic bags and packing materials to eliminate choking and suffocation hazards to children and animals.  
If any parts are missing, do not plug in the power cable, or turn the power switch on until the missing parts are obtained and installed correctly.

### Cleaning

Your machine may be shipped with a rustproof waxy oil coating and grease on the exposed unpainted metal surfaces. To remove this protective coating, use a degreaser or solvent cleaner. For a more thorough cleaning, some parts will occasionally have to be removed. **DO NOT USE** acetone or brake cleaner as they may damage painted surfaces. Follow manufacturer's label instructions when using any type of cleaning product. After cleaning, wipe unpainted metal surfaces with a light coating of quality oil or grease for protection.

**⚠ WARNING: DO NOT USE** gasoline or other petroleum products to clean the machine. They have low flash points and can explode or cause fire.

**⚠ CAUTION:** When using cleaning solvents work in a well-ventilated area. Many cleaning solvents are toxic if inhaled.





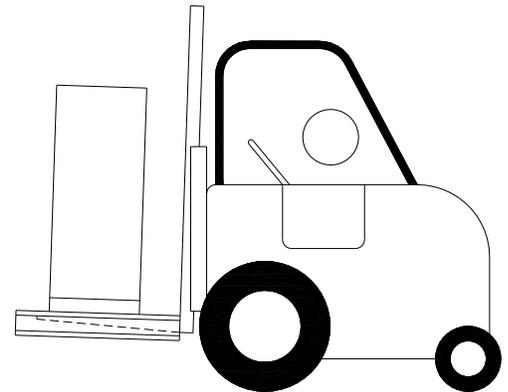
## TRANSPORTING AND LIFTING



**IMPORTANT:** *Lifting and carrying operations should be carried out by skilled workers, such as a truck operator, crane operator, etc. If a crane is used to lift the machine, attach the lifting chain carefully, making sure the machine is well balanced.*

### **Follow these guidelines when lifting with truck or trolley:**

- The lift truck must be able to lift at least 1.5 – 2 times the machines gross weight.
- Make sure the machine is balanced. While transporting, avoid rough or jerky motion, and maintain a safe clearance zone around the transport area.
- Use a fork lift with sufficient lifting capacity and forks that are long enough to reach the complete width of the machine.
- Remove the securing bolts that attach the machine to the pallet.
- Approaching the machine from the side, lift the machine on the frame taking care that there are no cables or pipes in the area of the forks.
- Move the machine to the required position and lower gently to the floor.
- Level the machine so that all the supporting feet are taking the weight of the machine and no rocking is taking place.



## INSTALLATION

### **IMPORTANT:**

Consider the following when looking for a suitable location to place the machine:

- Overall weight of the machine.
- Weight of material being processed.
- Sizes of material to be processed through the machine.
- Space needed for auxiliary stands, work tables, or other machinery.
- Clearance from walls and other obstacles.
- Maintain an adequate working area around the machine for safety.
- Have the work area well illuminated with proper lighting.
- Keep the floor free of oil and make sure it is not slippery.



- Remove scrap and waste materials regularly, and make sure the work area is free from obstructing objects.
- If long lengths of material are to be fed into the machine, make sure that they will not extend into any aisles.
- **LEVELING:** The machine should be sited on a level, concrete floor. Provisions for securing it should be in position prior to placing the machine. The accuracy of any machine depends on the precise placement of it to the mounting surface.
- **FLOOR:** This tool distributes a large amount of weight over a small area. Make certain that the floor is capable of supporting the weight of the machine, work stock, and the operator. The floor should also be a level surface. If the unit wobbles or rocks once in place, be sure to eliminate by using shims.
- **WORKING CLEARANCES:** Take into consideration the size of the material to be processed. Make sure that you allow enough space for you to operate the machine freely.
- **POWER SUPPLY PLACEMENT:** The power supply should be located close enough to the machine so that the power cord is not in an area where it would cause a tripping hazard. Be sure to observe all electrical codes if installing new circuits and/or outlets.

## ASSEMBLY AND SET UP

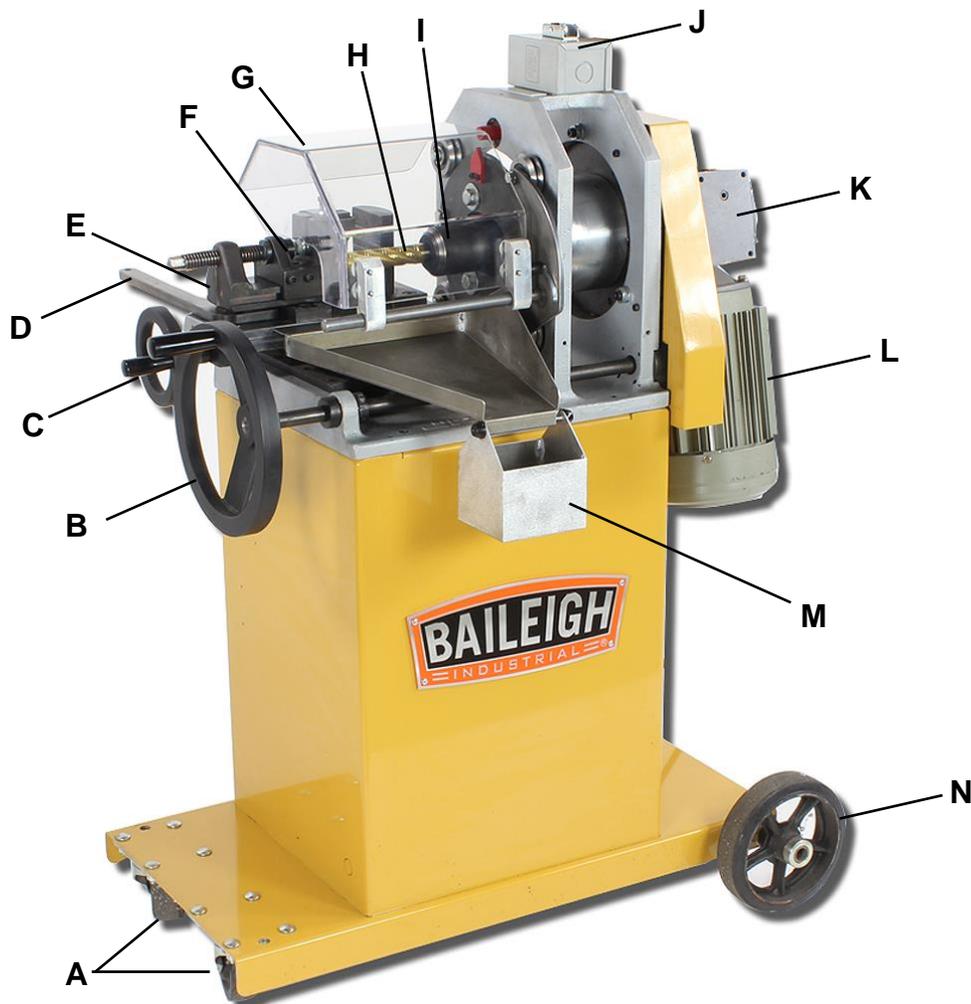
 **WARNING:** For your own safety, **DO NOT** connect the machine to the power source until the machine is completely assembled and you read and understand the entire instruction manual.

1. Remove the machine from the skid it was shipped on and install the casters.
2. Check the oil level and top off if necessary.
3. Read through the remainder of the manual and become familiar with the tool installation and settings as well as normal operation.
4. Position the machine as desired following the installation guidelines.
5. Follow the electrical guidelines to connect the machine to a power supply.



## GETTING TO KNOW YOUR MACHINE

- You have made a practical choice in purchasing a Model TN-800 Eccentric Cut Notching Machine. It has been carefully built of high quality materials and designed to give many years of efficient service. The simplicity of design and minimum effort required to operate the machine contributes towards meeting schedules and producing greater profits.
- The TN-800 is an electric powered end-mill notching machine specially designed to notch a variety of materials using only one end mill. The Patented Eccentric Cut feature, allows the user to feed an end mill cutter through an adjustable eccentric path. Creating a perfect weld joint when mating two or more pieces of tubing together.
- The TN-800 Notching Machine you have purchased is built of solid steel and high quality components, ensuring maximum rigidity and long life.





Item	Description	Function
A	Swivel Casters	Steer and control the machine when moving.
B	Large Feed Wheel	Rotates the spindle head on the oscillation plate to create the eccentric pattern used for milling.
C	Y Feed Hand Wheel	Used to move the vise bed along the length of the end mill.
D	Vise Pivot Clamp Handle	Release the handle to rotate the vise to the desired angle. Lock the handle to lock the vise at the desired angle.
E	X Feed Hand Wheel (far side not shown)	Used to move the vise bed into and away from the end mill.
F	Vise	Used to hold and secure the material to be notched. May be rotated to feed the material into the end mill at an angle from 0° - 45°
G	Lexan Guard	Safety cover to covers the mill and milling area during machining to prevent inadvertent contact.
H	End Mill	Machining tool to create the cut.
I	Spindle	Turns the end mill.
J	On/Off Switch	Starts and stops the notcher motor and herby the notcher.
K	Gear Box	Transfers power from the motor to the spindle.
L	Motor	Powers the notcher for milling.
M	Chip Box	Collets the chips from the cutting process.
N	Wheels	Used to roll the machine to various locations.



## ELECTRICAL

**⚠ CAUTION:** HAVE ELECTRICAL UTILITIES CONNECTED TO MACHINE BY A CERTIFIED ELECTRICIAN!  
Check if the available power supply is the same as listed on the machine nameplate.

**⚠ WARNING:** Make sure the grounding wire (green) is properly connected to avoid electric shock. DO NOT switch the position of the green grounding wire if any electrical plug wires are switched during hookup.

### Motor Specifications

Your tool is wired for 110 volt, 60Hz alternating current. Before connecting the tool to the power source, make sure the machine is cut off from power source.

### Considerations

- Observe local electrical codes when connecting the machine.
- The circuit should be protected with a time delay fuse or circuit breaker with a amperage rating slightly higher than the full load current of machine.
- A separate electrical circuit should be used for your tools. Before connecting the motor to the power line, make sure the switch is in the "OFF" position and be sure that the electric current is of the same characteristics as indicated on the tool.
- All line connections should make good contact. Running on low voltage will damage the motor.
- In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This tool is equipped with an electric cord having 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.

**⚠ WARNING:** In all cases, make certain the receptacle in question is properly grounded. If you are not sure, have a qualified electrician check the receptacle.



- Improper connection of the equipment-grounding conductor can result in risk of electric shock. The conductor with insulation having an outer surface that is green 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.
- Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the tool is properly grounded.
- Repair or replace damaged or worn cord immediately.

### **Extension Cord Safety**

Extension cord should be in good condition and meet the minimum wire gauge requirements listed below:

AMP RATING	LENGTH		
	25ft	50ft	100ft
1-12	16	16	14
13-16	14	12	12
17-20	12	12	10
21-30	10	10	No
WIRE GAUGE			

An undersized cord decreases line voltage, causing loss of power and overheating. All cords should use a ground wire and plug pin. Replace any damaged cords immediately.

### **Plug Connection**

- Have an electrician install the correct power supply for the application.
- Once hooked up, turn on the power supply and start the machine.



## OPERATION

**⚠ CAUTION:** Always wear proper eye protection with side shields, safety footwear, and leather gloves to protect from burrs and sharp edges.

**⚠ WARNING:** BEFORE THE MAIN LEXAN GUARD IS OPENED, THE POWER CORD MUST BE UNPLUGGED FROM ITS SOURCE.

### Cutter Selection

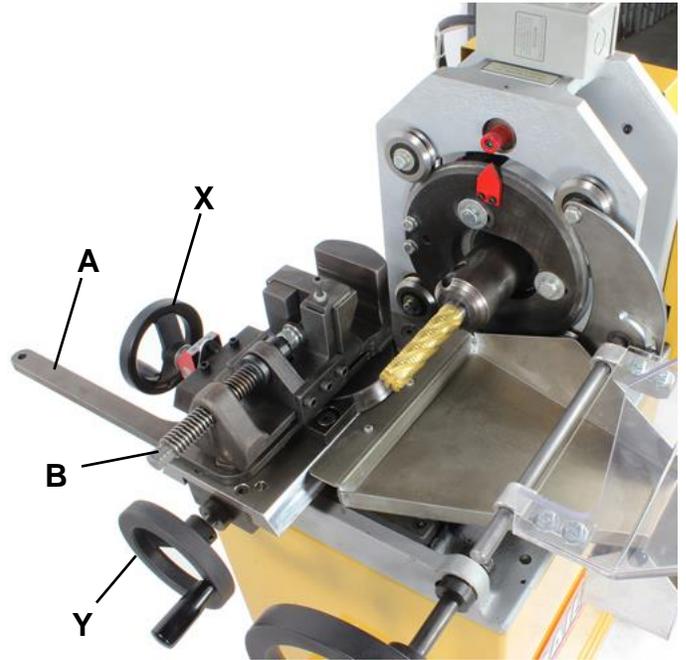
1. Before any notching can take place, the proper cutter must be chosen. If the material to be notched is 1" (25.4mm) diameter up to 3" (76.2mm) diameter, the supplied 1" (25.4mm) cutter will work properly.
2. If the material is smaller than 1" (25.4mm), then an optional reducer bushing and 1/2" (12.7mm) diameter cutter must be installed. (This will notch from 1/2" (12.7mm) up to 1" (25.4mm) diameter material.
3. To install the cutter, first unplug the power cord and open the Lexan guard.
4. Loosen the set screws (A) located on the spindle and insert the desired cutter, align the flats on the cutter with the holes on the spindle.
5. Tighten the set screws (A).





## Material Insertion

1. Once the proper cutter is installed, the material to be notched can be inserted into the vise.
2. Open the vise and insert the material so that the end toward the cutter extends past the vise jaw approximately 2" (50.8mm). Material should be kept as close as possible to the vise jaws to get accurate notches.
3. Tighten the vise.
4. If an angle notch is required, loosen the cam handle (A) and rotate vise to the desired angle, not to exceed 45 deg. DO NOT rotate the vise so that the lead screw (B) is in front of the end mill.
5. Using the "X" and "Y" hand wheels, position the material up to the cutter leaving about 1/2" (12.7mm) of clearance between the cutter and material.
6. The "X" and "Y" Table gibs are set tight from the factory. This is because they are only used in positioning. The gibs may be loosened; however, this may induce chatter or vibration when notching material.
7. Position the material as far back (toward the chuck) on the cutter as possible. Visually check for possible interferences and correct by extending out more material and/or repositioning.





## Setting Offset

1. Once the cutter and material are installed, the cutter offset can be set.
2. If using the 1" (25.4mm) cutter on 1" (25.4mm) material or the 1/2" (12.7mm) cutter on 1/2" (12.7mm) material, set the machine to the "12 o'clock" position (fine tune as needed) and move on to setting any desired angle and notching the material.



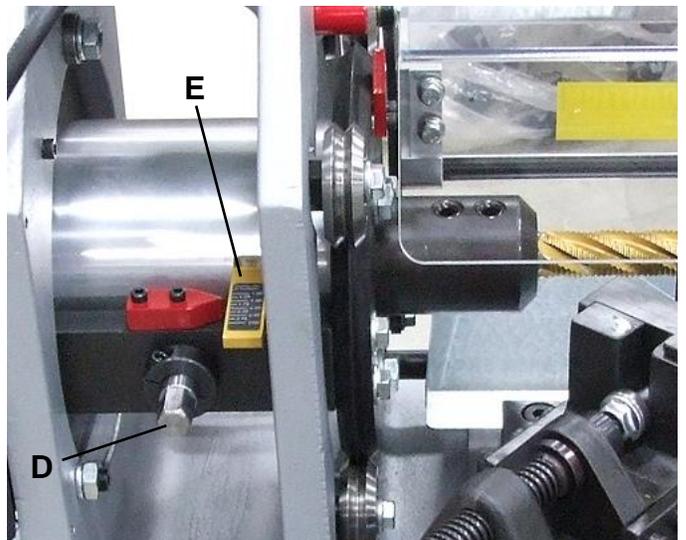
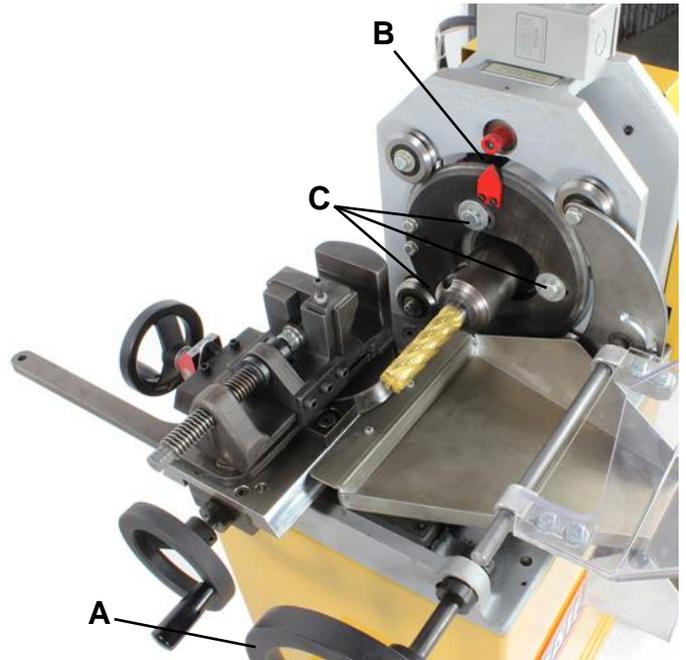
**Important:** Machine must be in the home or "12 o'clock" position.

3. Do this by rotating the large feed hand wheel (A) in the counter clockwise direction until the red pointer lines (B) up with the red indicator at the 12 o'clock position.
4. At this point all offset adjustments and table positioning will be made, this is also the start and end point of every notch.
5. On the face of the "V" groove guide plate, there will be (3) 3/4" main bolts (C) which need to be loosened before the offset screw can be activated.
6. Once the (3) bolts are loose, use the 5/8" wrench included to adjust the offset screw (D) until the desired notch diameter is displayed on the scale (E).



**Note:** The scale readings are based on using 1" diameter cutter.

7. After the offset is reached, tighten the (3) main bolts. **VERY IMPORTANT!**
8. Be sure nothing is in contact with the cutter and reconnect the power cord.





## Notching

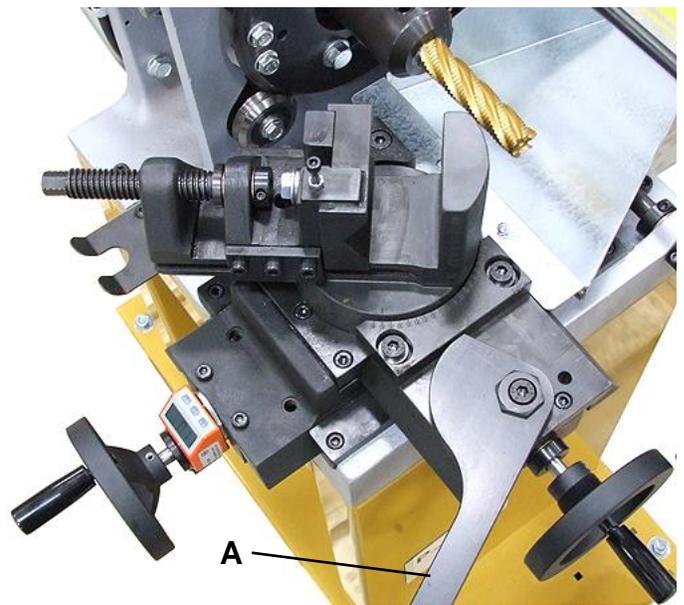
1. Activate the start switch making sure the cutter is rotating the correct way. With the cutter rotating, the notch can be created.
2. Using the large feed hand wheel, slowly rotate in the counter clockwise direction. As the cutter makes contact with the material, continue to rotate feeding slow enough not to damage the cutter. The cutter control shaft is equipped with a 1-way clutch which prevents the cutter from being turned in the counterclockwise direction.
3. Once the cutter passes completely through the material, continue to rotate the hand wheel until the red pointer lines up with the red indicator pin at the 12 o'clock position.
4. If the material needs to be notched deeper, advance the "X" hand wheel, moving the material closer toward the cutter, repeat these steps until the desired notch depth is achieved.
5. Alternate depth notch, if you know how deep you need to notch, mark that depth on the material. Rotate the red indicator to the 6' o'clock position, then feed with the "X" handwheel until the cutter reaches the mark, Then make one complete revolution to complete the notch.

## Angle Notching

To notch at an angle, the vise needs to be rotated left or right. For small angles, rotating to the right is ok, but for large angle, rotating the vise to the left is preferred.

 **IMPORTANT:** Never rotate the vise to the right so that the lead screw is in front of the end mill. The vise could be inadvertently moved into the end mill damaging the vise, end mill and possibly the spindle.

1. Precut the material to the desired angle prior to notching. This will create an edge that is parallel to the end mill.
2. Loosen the vise pivot lock handle and rotate the vise to the desired angle and lock the pivot handle.
3. Load the material into the vise similar to a square end cut and proceed with the milling.



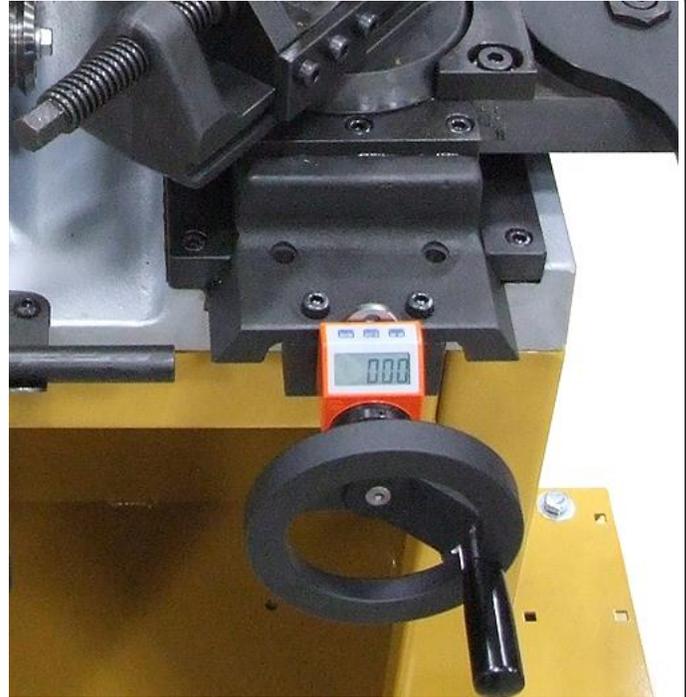


## **Repeat Notching**

1. For repeat notching perform the above steps and document the number on the counter. This number can also be used to make precise notches to the depth desired.

The calibration of the counter is:

Counter display	Actual distance in inches
0000.0	0.000
0001.0	0.100
0002.0	0.200

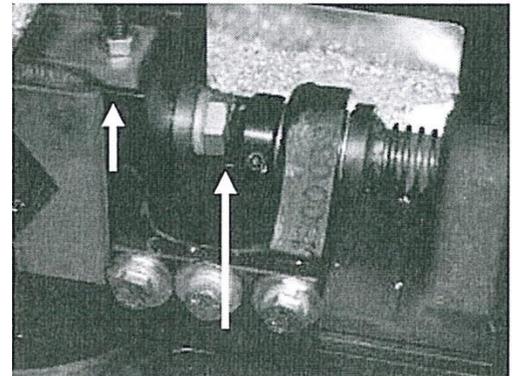


## **Material Removal**

1. After the desired notch depth is reached, activate the stop switch.
2. Make sure the spindle has stopped completely before removing completed part and installing new material.

## **Off-Center Notching**

For off-center notching use the vise jaw adjustment screw to adjust the height of the vise jaw to the offset needed.





## MATERIAL SELECTION

**⚠ CAUTION:** It must be determined by the customer that materials being processed through the machine are NOT potentially hazardous to operator or personnel working nearby.

When selecting materials keep these instructions in mind:

- Material must be clean and dry. (without oil)
- Material should have a smooth surface so it processes easily.
- Dimensional properties of material must be consistent and not exceed the machine capacity values.
- Chemical structure of material must be consistent.
- Buy certificated steel from the same vendor when possible.

## STANDARD PIPE SIZES AND SCHEDULES TABLE

PIPE SIZES	O.D.	Pipe Schedules and Wall Thickness					
		5	10	40	80	160	XX STRONG
1/8	0.405	0.400	0.050	0.068	0.095		
1/4	0.540	0.500	0.070	0.088	0.119		
3/8	0.675	0.500	0.070	0.091	0.126		
1/2	0.840	0.700	0.080	0.109	0.147	0.188	0.294
3/4	1.050	0.700	0.080	0.113	0.154	0.219	0.308
1	1.315	0.700	0.110	0.133	0.179	0.250	0.358
1-1/4	1.660	0.700	0.110	0.140	0.191	0.250	0.382
1-1/2	1.900	0.700	0.110	0.145	0.200	0.281	0.400
2	2.375	0.700	0.110	0.154	0.218	0.344	0.436
2-1/2	2.875	0.800	0.120	0.203	0.276	0.375	0.552

All sizes are in inches



## TROUBLESHOOTING



**WARNING:** Make sure the electrical disconnect is OFF before working on the machine.

Problem	Solution
Chattering	Material too far out past vise
	Material not clamped tight in vise
	Vise lock lever is too loose
	Cutter is dull or loose
	"X", "Y" table gibs set too loose
Motor stops while notching	"V" rollers set too loose
	Feeding to fast
	Cutter is dull
Main handwheel is tight or sticks in spots	Not a good power source, circuit should be dedicated to this machine only
	Chips are stuck in the "v" rollers
	"V" rollers are set too tight, The "V" roller can be adjusted





## LUBRICATION AND MAINTENANCE



**WARNING:** Make sure the electrical disconnect is OFF before working on the machine.

Maintenance should be performed on a regular basis by qualified personnel.

Always follow proper safety precautions when working on or around any machinery.

- Check daily for any unsafe conditions and fix immediately.
- Check that all nuts and bolts are properly tightened.
- On a weekly basis clean the machine and the area around it.
- Lubricate threaded components and sliding devices.
- Apply rust inhibitive lubricant to all non-painted surfaces.
- The gearbox oil should be changed every three years, with 80 W90 gear lube. (1.5 – 2 years if used more than 12hrs/day).
- Periodically lubricate the "V" rollers and rear cam rollers with light machine oil.
- Be sure to keep the slide ways clean and the gib screws properly adjusted.
- Be sure always to use sharp cutters, dull or worn tools will decrease the performance of the machine and may be unsafe.
- Periodically check the power cord for cuts or bare wire and replace if damaged.

### Oil Disposal

Used oil products must be disposed of in a proper manner following your local regulations.

### Storing Machine for Extended Period of Time

If the Vertical Milling Machine is to be inactive for a long period of time, prepare the machine as follows:

- Disconnect the electrical supply from the power panel.
- Empty and clean the coolant reservoir.
- Clean and grease the machine.
- Cover the machine.

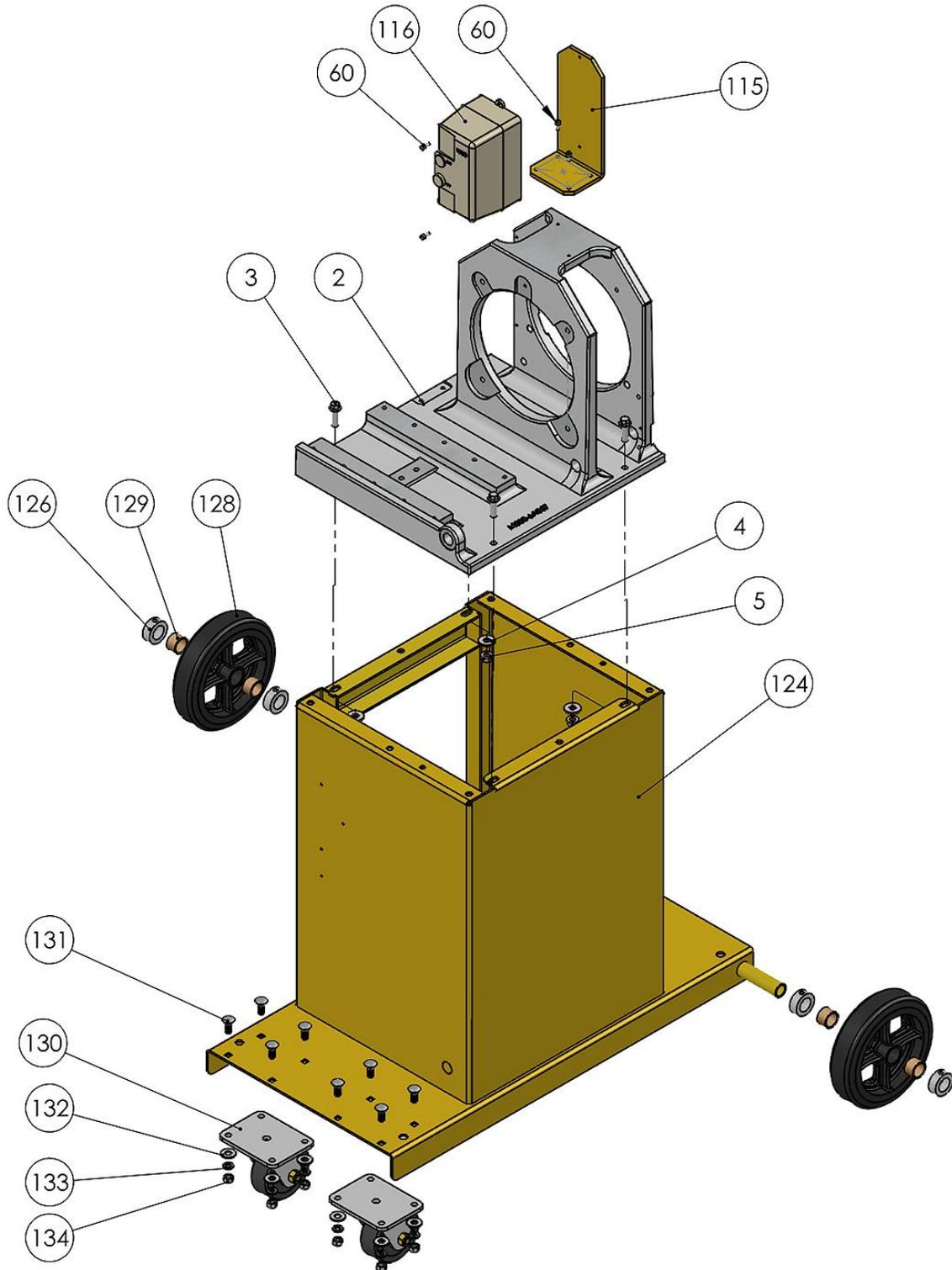


**Note:** Proper maintenance can increase the life expectancy of your machine.

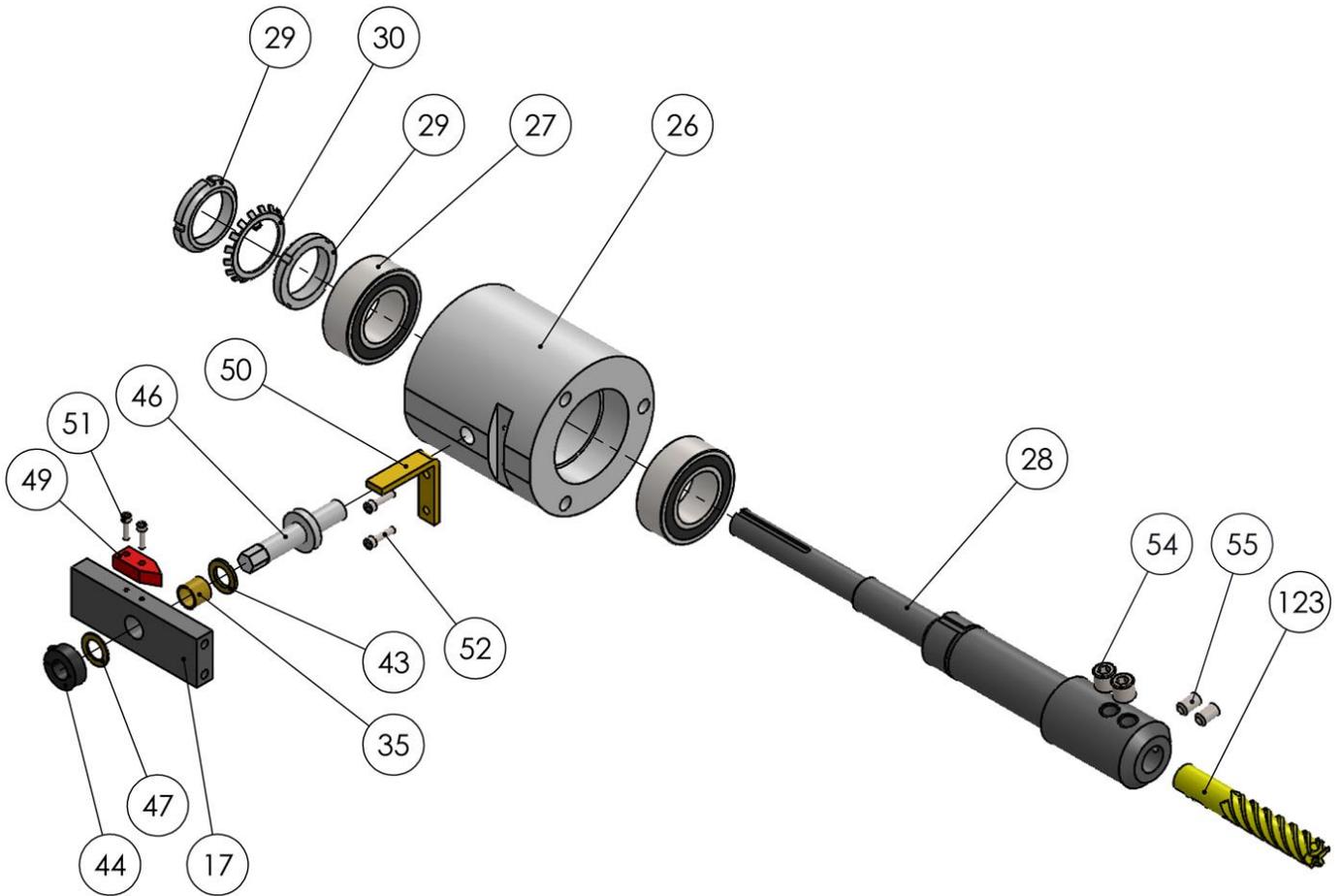


# PARTS DIAGRAM

## Base Assembly

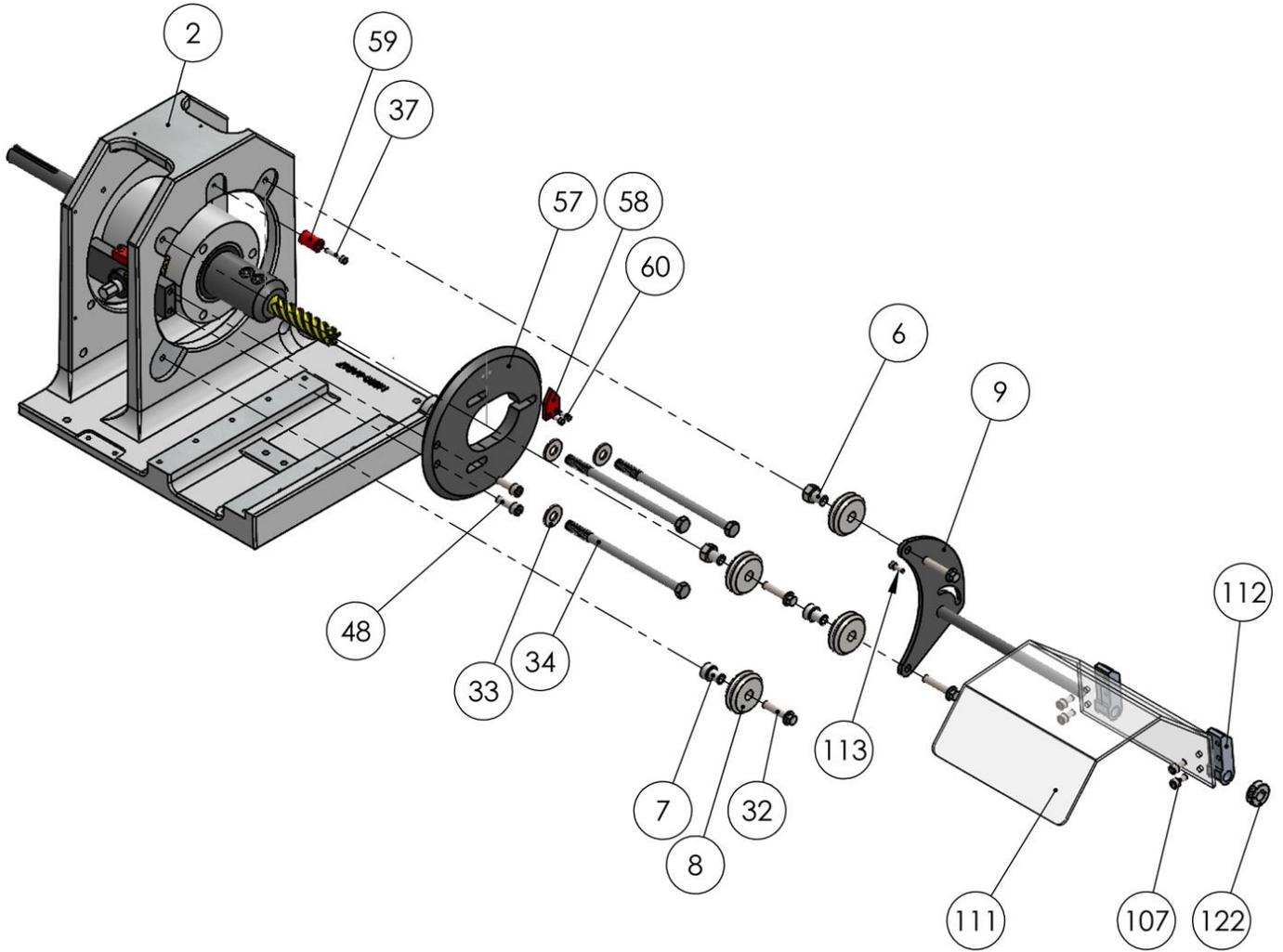


## Spindle Assembly

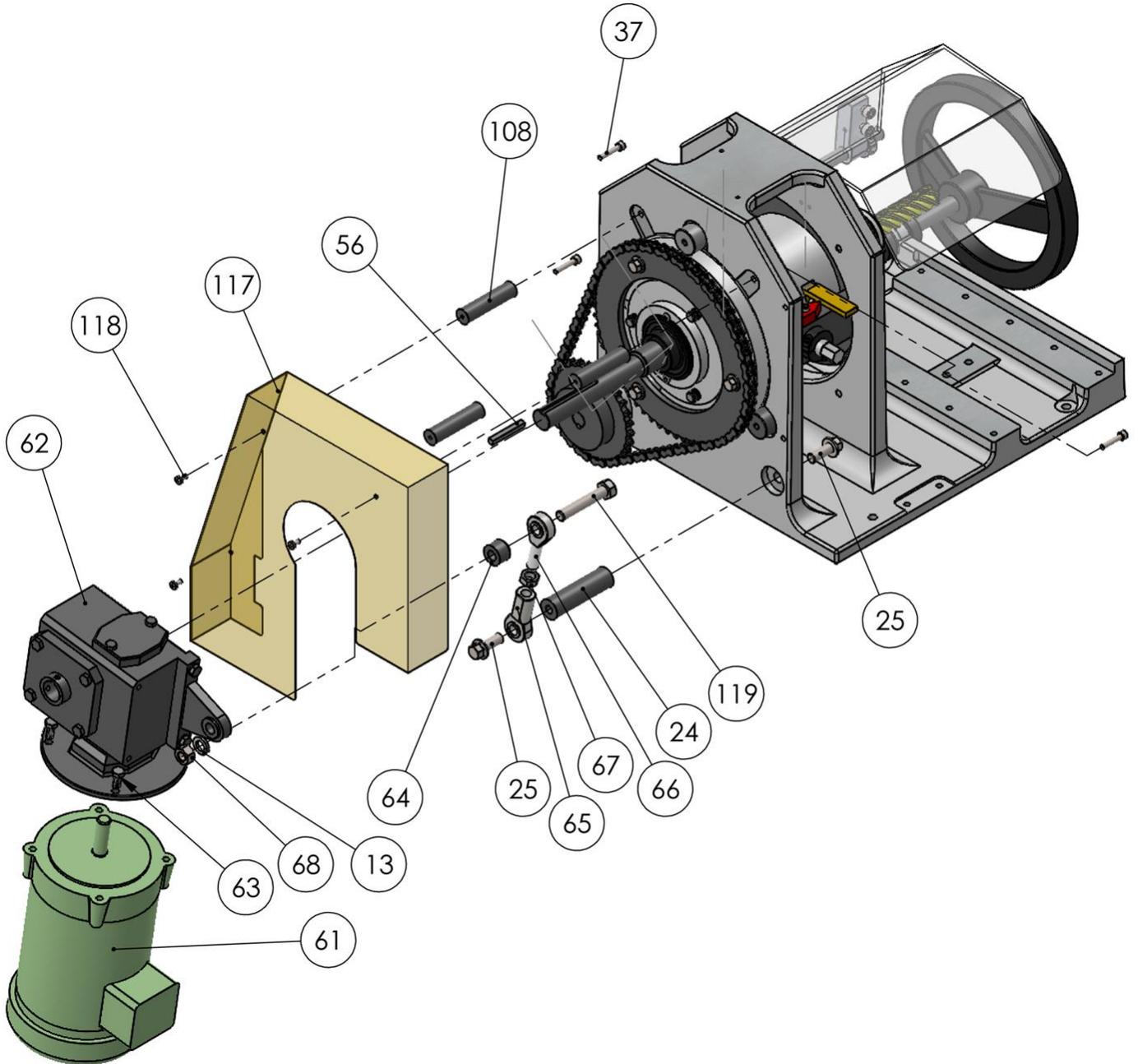




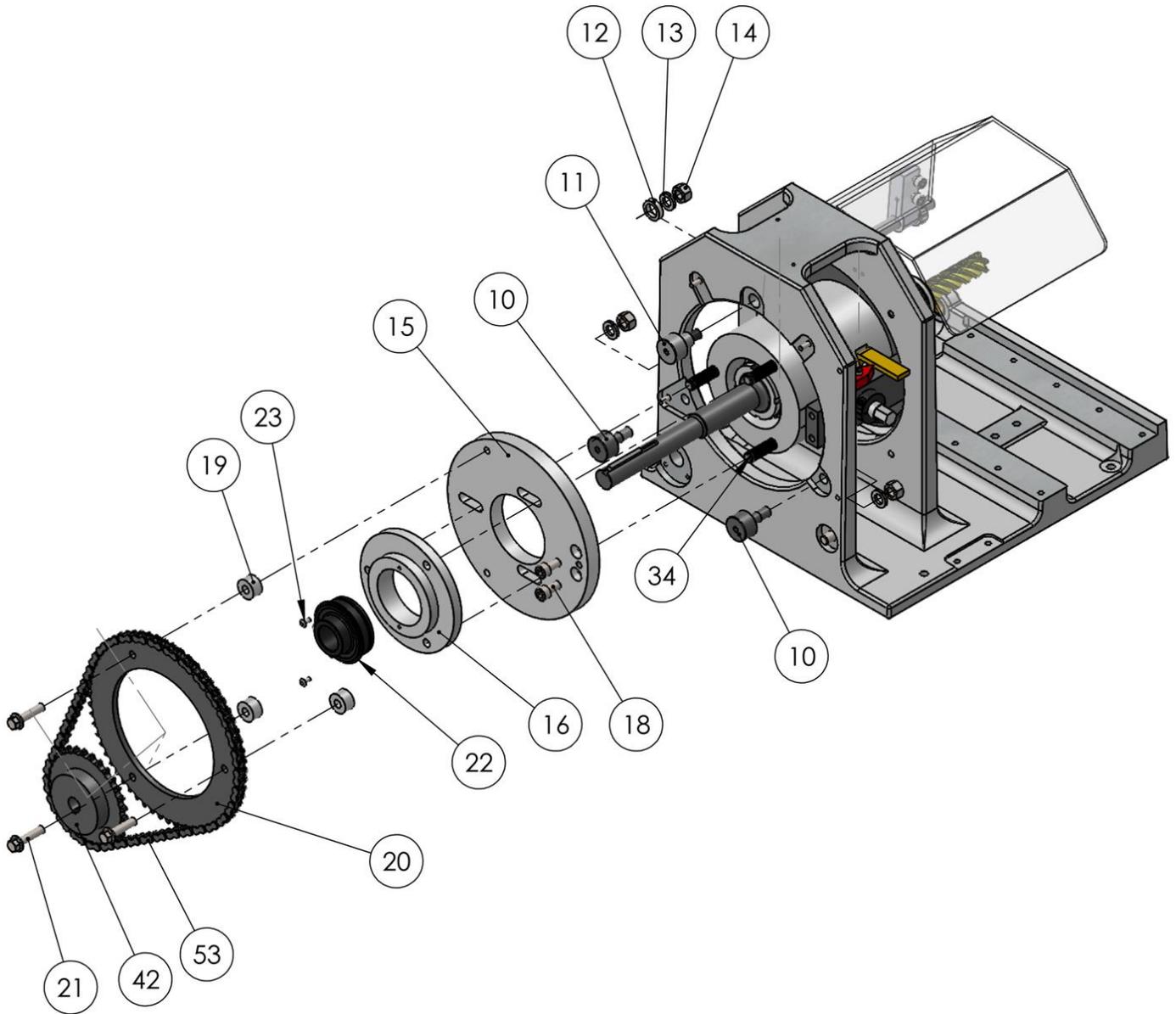
### Forward Riser Assembly



## Motor and Gearbox Assembly

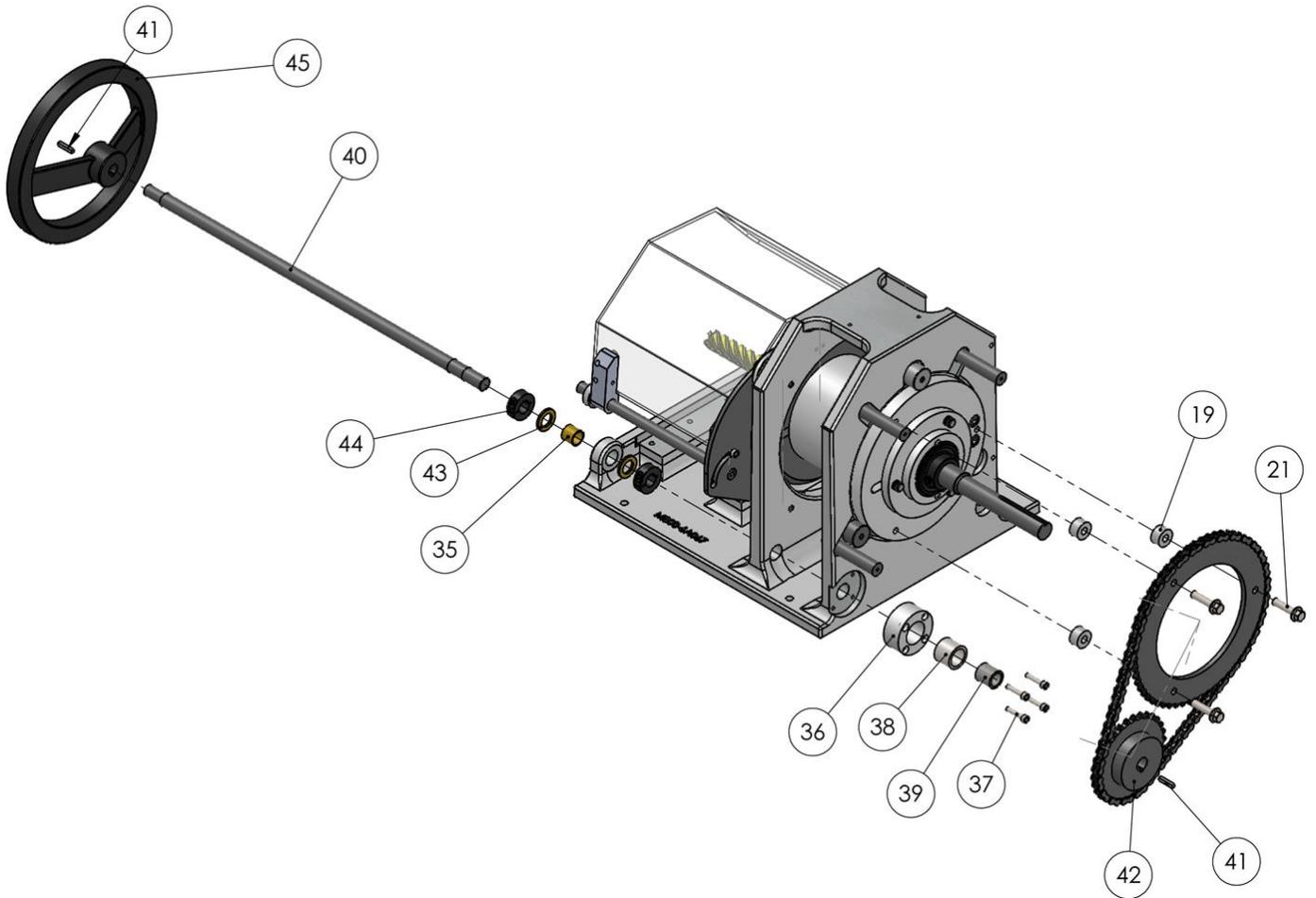


## Rear Riser Assembly



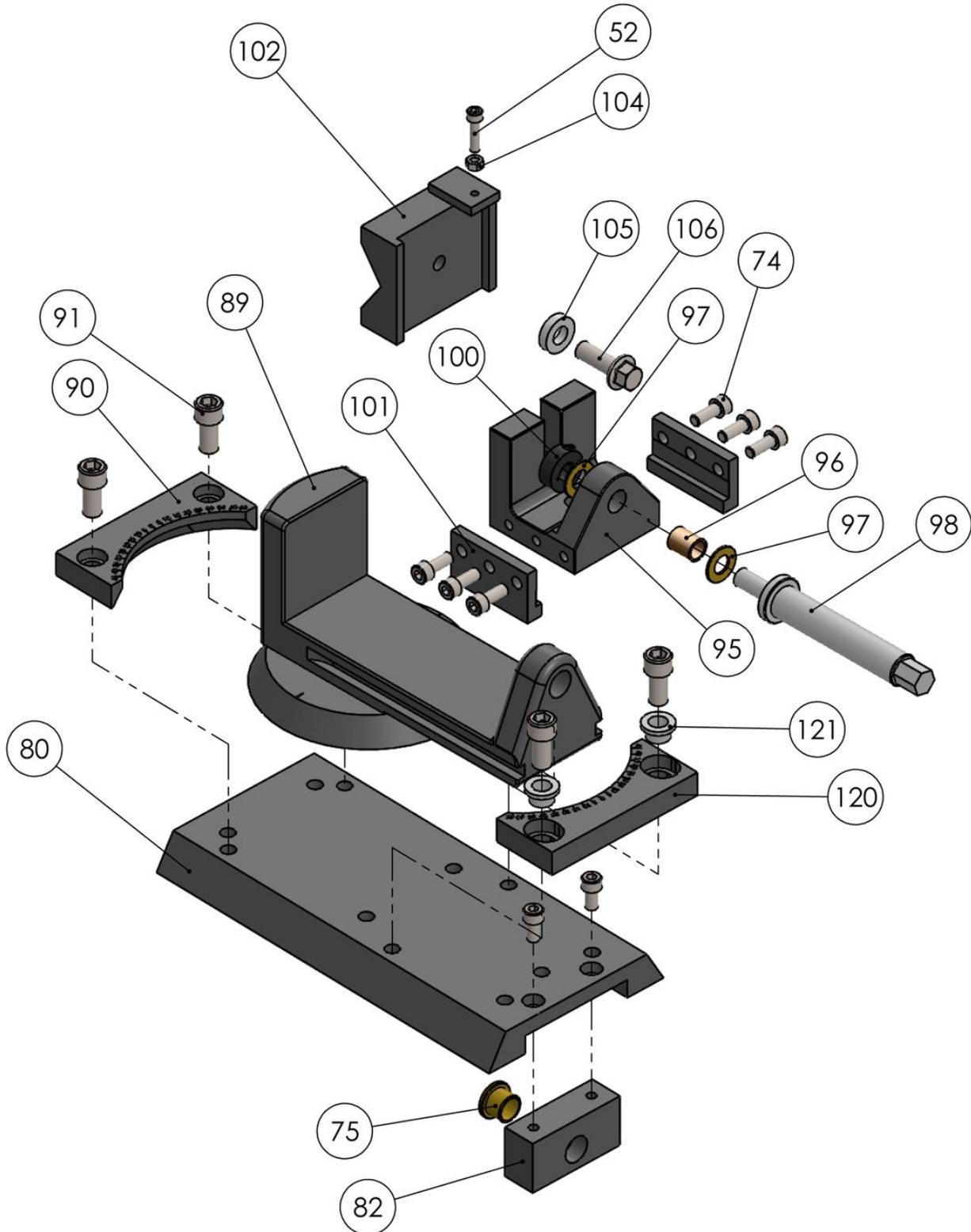


## Crank Shaft Assembly





**Vise Assembly**







## Parts List

Item	Part Number	Description	Qty.
2	ME-M800-6A067	M800 Main Frame (Metric)	1
3	M10 X 1.5 X 35	Hex Flange	4
4	M10	Flatwasher	4
5	Imperial	M10 X 1.5 Hex Flange Nut	4
6	ME-M800-7A041	Adjustable Bushing	2
7	ME-M800-7A040	Non Adjusting Bushing	2
8	PP-0091	V Roller	4
9	ME-M800-6A095	Straddle Bracket	1
10	PP-0086	Cam Follower	2
11	PP-0087	Adjustable Cam Follower	1
12	M800-7A029	Cam Follower Spacer	1
13	Imperial	1/2" Lockwasher	4
14	Imperial	1/2-13 Hex Nut	3
15	ME-M800-6A005	Support Disc	1
16	ME-M800-7A005	Tapping Plate	1
17	ME-M800-6A006	Tie Block	1
18	M10 X 1.5 X 20	SHCS	2
19	ME-M800-7A007	Sprocket Spacer	3
20	M800-6A011	60T Sprocket	1
21	M10 X 1.5 X 40	Hex Flange	3
22	PP-0096	Bearing, Fafnir, ER20	1
23	M5 X 0.8 X 10	BHCS	2
24	ME-M800-7A014	Spacer Shaft	1
25	M12 X 1.75 X 30	Hex Flange	2
26	ME-M800-7A002	Spindle Hub	1
27	PP-0119	Spindle Bearing	2
28	ME-M800-7A012	Spindle	1
29	PP-0114	Lock Nut	2
30	PP-0115	Lock Ring	1
31	M10 X 1.5 X 50	Hex Flange	2
32	M10 X 1.5 X 45	Hex Flange	2
33	Imperial	1/2" Flat Washer	3
34	Imperial	1/2-13 X 9 Hex Bolt	3



Item	Part Number	Description	Qty.
35	PP-0053	0.75 ID X 0.875 OD X 0.75 Wide	2
36	ME-M800-7A020	Bearing Block	1
37	M6 X 1.0 X 30	SHCS	8
38	PP-0094	Outer Race	1
39	PP-0095	IR-1216 (0.75 ID X 1.0 OD X 1.03 LG)	1
40	M800-7A009	Handle Shaft	1
41	Imperial	.1875 X 1 Keystock	2
42	PP-0150	30 Tooth Sprocket	1
43	PP-0322	0.75 ID X 1.25 OD X .125 THK	3
44	PP-0090	3/4" Split Collar	3
45	PP-1031	10" Handwheel	1
46	M800-7A004	Adjustment Shaft	1
47	PP-0101	0.75 ID X 1.25 OD X .0625 THK	1
48	M10 X 1.5 X 30	SHCS	2
49	ME-M800-6A015	Pointer	1
50	M800-5A002	Indicator Plate	1
51	M5 X 0.8 X 20	SHCS	2
52	M6 X 1.0 X 25	SHCS	3
53	PP-0042	39" #40 Chain	1
54	Imperial	M20 X 2.5 X 20 Set Screw	2
55	Imperial	M12 X 1.75 X 20 Set Screw	2
56	Imperial	1/4 X 2 Keystock	1
57	ME-M800-6A004	Front Vee Disc	1
58	ME-M800-6A012	Pointer	1
59	M800-7A015	Indicator Pin	1
60	M5 X 0.8 X 12	SHCS	6
61	PP-0710-B	1/2Hp (.75kw) 1Phase Motor	1
62	PP-0710-A	Gearbox	1
63	0.313-18 X 0.75 HHCS	5/16-18 X 3/4 Hex Bolt	4
64	M800-7A008	Rod End Spacer	1
65	PP-0268	1/2" Female Rod End	1
66	PP-0107	1/2" Male Rod End	1
67	Imperial	1/2-20 Hex Jam Nut	1
68	Imperial	1/2-13 Hex Nut	1
69	ME-M800-6A033	Leadscrew Block	2



Item	Part Number	Description	Qty.
70	M8 X 1.25 X 40	SHCS	2
71	ME-M800-6A025	Base Plate	1
72	ME-M800-6A072	End Block	1
73	PP-0168	.625 ID X 1.0 OD X .0625 LG	2
74	M8 X 1.25 X 20	SHCS	8
75	PP-0167	0.625 ID X 0.75 OD X 0.625 LG	2
76	M800-7A019	Long Lead Screw	1
77	PP-0169	5/8-18 UNF Clamp Collar	2
78	ME-M800-6A074	Counter Support	1
79	Imperial	M5 X 0.8 X 10 Hex FHCS	2
80	ME-M800-6A073	Slide Base (Top)	1
81	M8 X 1.25 X 25	SHCS	12
82	ME-M800-6A075	End Block (W/O Tap)	1
83	M800-7A018	Short Lead Screw	1
84	ME-M800-6A070	4.75" Gib (Thick)	1
85	ME-M800-6A071	4.75" Gib (Thin)	1
86	M8 X 1.25 X 30	SHCS	6
87	ME-M800-6A069	Gib (Thin)	1
88	ME-M800-6A068	Gib (Thick)	1
89	M800-6A037	Vise Casting	1
90	ME-M800-6A059	Fixed Vise Clamp	1
91	M12 X 1.75 X 25	SHCS	4
92	PP-0350	Counter	1
93	600091	Screw Thumb S/S 10-24 X 1.0" LG	1
94	PP-1032	5.0 Handwheel	2
95	ME-M800-6A039	Vise Slide Block	1
96	PP-0051	0.5 ID X 0.625 OD X 0.75 LG	1
97	PP-0055	0.5 ID X 1.0 OD X .0625 THK	2
98	M800-5A008	Vise Screw	1
99	M800-7A024	Weld On Washer	1
100	PP-0037	1/2" Clamp Collar	1
101	M800-6A040	Gib Key	2
102	ME-M800-6A041	Vise Block	1
103	ME-M800-6A047	Screw Block	1
104	Imperial	M6 X 1 Hex Nut	1



Item	Part Number	Description	Qty.
105	M800-7A022	Vise Spacer	1
106	M12 X 1.75 X 35	Hex Flange	1
107	M8 X 1.25 X 16	SHCS	6
108	ME-M800-7A010	Guard Spacer	3
109	M800-6A089	Tapered Chip Tray	1
110	M800-7A031	Guard Shaft	1
111	M800-6A096	Lexan Guard	1
112	ME-M800-6A098	Guard Pivot	2
113	M6 X 1.0 X 14	SHCS	1
114	M800-6A091	Chip Bin	1
115	ME-M800-6A085	CE Switch Mount	1
116	PP-1296	CE On/Off Switch	1
117	M800-6A046	Sprocket Guard	1
118	M5 X 0.8 X 10	PPMS	5
119	Imperial	1/2-13 X 2.75 Hex Bolt	1
120	M800-6A060	Moveable Vise Clamp	1
121	M800-7A025	Shoulder Washer	2
122	PP-0958	5/8" Clamp Collar	1
123	PP-0215	1" X 4" End Mill	1
124	M150-5A014	Upright, Base	1
126	PP-0035	1" Set Screw Collar	4
128	PP-0064	8" Rubber Wheel	2
129	PP-0043	1.0 ID X 1.1875 OD X 0.75 LG Bushing	4
130	PP-0048	4.0 Inch Caster	2
131	.375-16 X 1 Carriage Bolt	3/8-16 X 1 Carriage Bolt	8
132	Imperial	3/8" Flat Washer	8
133	Imperial	3/8" Lock Washer	8
134	Imperial	3/8-16 Hex Nut	8



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