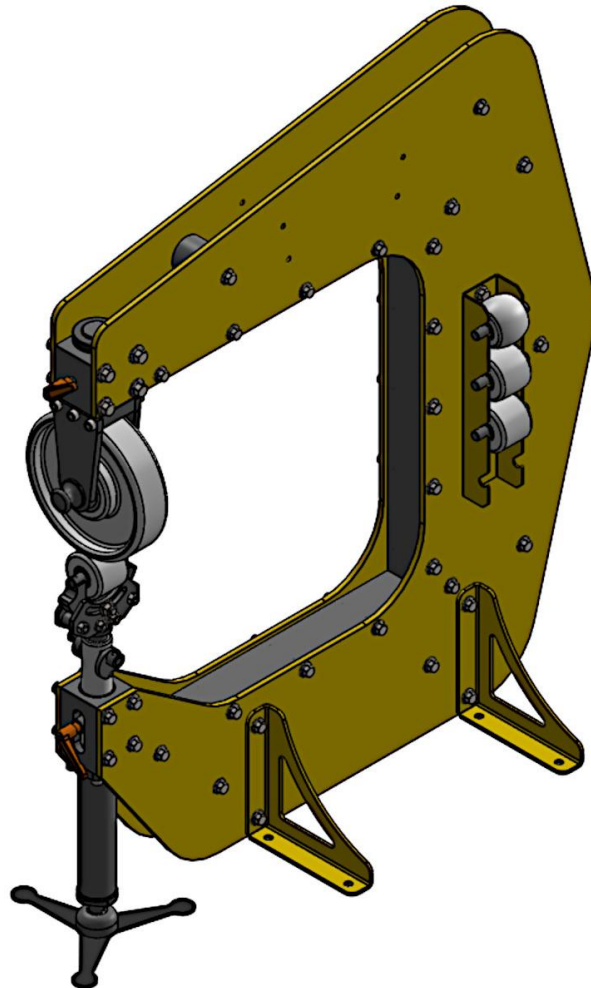




# OPERATOR'S MANUAL

Metal Working



## ENGLISH WHEEL MODEL: EW-21

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Rev. 01/2021



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## THANK YOU & WARRANTY

Thank you for your purchase of a machine from Baileigh Industrial Holdings LLC. 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 an 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 10 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 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 attorney 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 Holdings LLC 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 Holdings LLC 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@baileigh.com](mailto:sales@baileigh.com)



## **INTRODUCTION**

*The quality and reliability of the components assembled on a Baileigh Industrial Holdings LLC 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
- Setup 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 Holdings LLC 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 modifications.



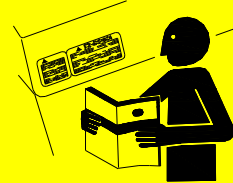
**Note:** This symbol refers to useful information throughout the manual.



## 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. **NOTICE**, which is not related to personal injury, is used without a symbol.

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

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

**CAUTION:** Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

**NOTICE:** Indicates a situation which, if not avoided, could result in property damage.

**DANGER**

**WARNING**

**CAUTION**

**NOTICE**

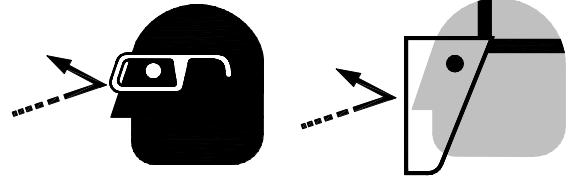


**SAVE THESE INSTRUCTIONS.**  
**Refer to them often and use them to instruct others.**



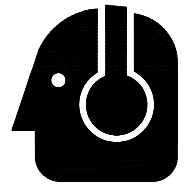
**PROTECT EYES**

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



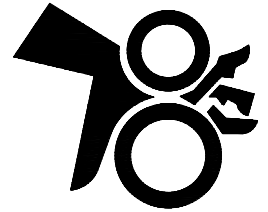
**PROTECT AGAINST NOISE**

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.



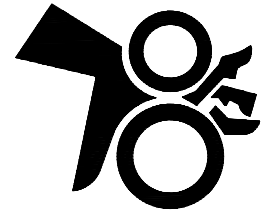
**BEWARE OF CRUSH HAZARD**

**NEVER** place your hands, fingers, or any part of your body in the die area of this machine.



**BEWARE OF PINCH POINTS**

Keep hands and fingers away from the rolls when the machine is in operation.



**ENTANGLEMENT HAZARD – ROTATING SPINDLE**

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



**CALIFORNIA PROPOSITION 65**

WARNING: Cancer and Reproductive Harm.  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)





## **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 will not 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**

### **Dear Valued Customer:**

- All Baileigh machines should be used only for their intended use.
- Baileigh does not recommend or endorse making any modifications or alterations to a Baileigh machine. Modifications or alterations to a machine may pose a substantial risk of injury to the operator or others and may do substantial damage to the machine.
- Any modifications or alterations to a Baileigh machine will invalidate the machine's warranty.

### **PLEASE ENJOY YOUR BAILEIGH MACHINE! ....PLEASE ENJOY IT SAFELY!**

1. **FOR YOUR OWN SAFETY, READ INSTRUCTION MANUAL BEFORE OPERATING THE MACHINE.** Learn the machine's application and limitations as well as the specific hazards.
2. **Only trained and qualified personnel can operate this machine.**
3. **Make sure guards are in place and in proper working order before operating machinery.**
4. **Remove any adjusting tools.** Before operating the machine, make sure any adjusting tools have been removed.
5. **Keep work area clean.** Cluttered areas invite injuries.
6. **Overloading machine.** By overloading the machine, you may cause injury from flying parts. **DO NOT** exceed the specified machine capacities.
7. **Dressing material edges.** Always chamfer and deburr all sharp edges.





8. **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 machine's rated capacity.
9. **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.
10. **Dress appropriately. 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.
11. **Use eye protection.** Always wear ISO approved protective eye wear when operating machinery. Wear a full-face shield if you are producing metal filings. Eye wear shall be impact resistant, protective safety glasses with side shields which comply with ANSI Z87.1 specification. Use of eye wear which does not comply with ANSI Z87.1 specification could result in severe injury from breakage of eye protection.
12. **Do not overreach.** Maintain proper footing and balance at all times. **DO NOT** reach over or across a running machine.
13. **Stay alert.** Watch what you are doing and use common sense. **DO NOT** operate any tool or machine when you are tired.
14. **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.
15. **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.
16. **Keep children away.** Children must never be allowed in the work area. **DO NOT** let them handle machines, tools, or extension cords.
17. Keep visitors a safe distance from the work area.
18. **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.
19. **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.



## TECHNICAL SPECIFICATIONS

Country of Manufacture	United States
Top Roll Diameter	8" (203.2mm)
Bottom Roll Diameter	2.5" (63.5mm)
Head Style	Rotating
Throat Depth	21" (533.4mm)
Contact Wheel (Diameter x Width)	8" x 2" (203.2 x 50.8mm)
Lower Die Radius	Flat, 24" (609.6mm), 8" (203.2mm), 2" (50.8mm)
Mild Steel Capacity	16ga. (0.0598" [1.519mm])
Aluminum Capacity	14ga. (0.0641" [1.628mm])
Power	Manual
Shipping Weight	600lbs (273kgs)
Shipping Dimensions	60" x 48" x 80" (1524 x 1220 x 2032mm)

## 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@baileigh.com](mailto:sales@baileigh.com), Phone: 920.684.4990, or Fax: 920.684.3944.



**Note:** *The photos and 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. 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** place the machine into service until the missing parts are obtained and installed correctly.

### Cleaning

**⚠ 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.

Your machine may be shipped with a rustproof waxy coating and/or grease on the exposed unpainted metal surfaces. Fully and completely remove this protective coating using a degreaser or solvent cleaner. Moving items will need to be moved along their travel path to allow for cleaning the entire surface. 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.



**Important:** This waxy coating is **NOT** a lubricant and will cause the machine to stick and lose performance as the coating continues to dry.



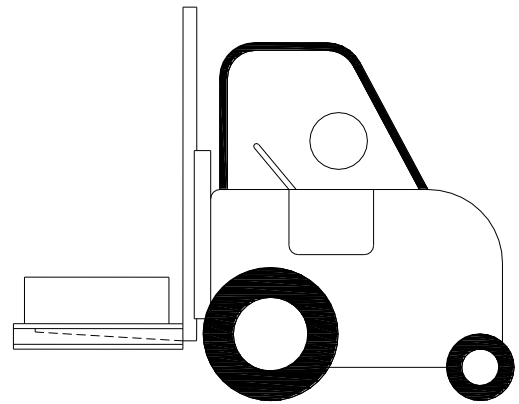


## **TRANSPORTING AND LIFTING**

**NOTICE:** *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 forklift 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.



### **Follow these guidelines when lifting crane or hoist:**

- Always lift and carry the machine with lifting straps supporting the frame of the machine.
- Use lift equipment such as straps, chains, capable of lifting 1.5 to 2 times the weight of the machine.
- Take proper precautions for handling and lifting.
- Check if the load is properly balanced by lifting it an inch or two.
- Lift the machine, avoiding sudden accelerations or quick changes of direction.
- Locate the machine where it is to be installed, then lower slowly until it touches the floor.





## **INSTALLATION**

### **IMPORTANT:**

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

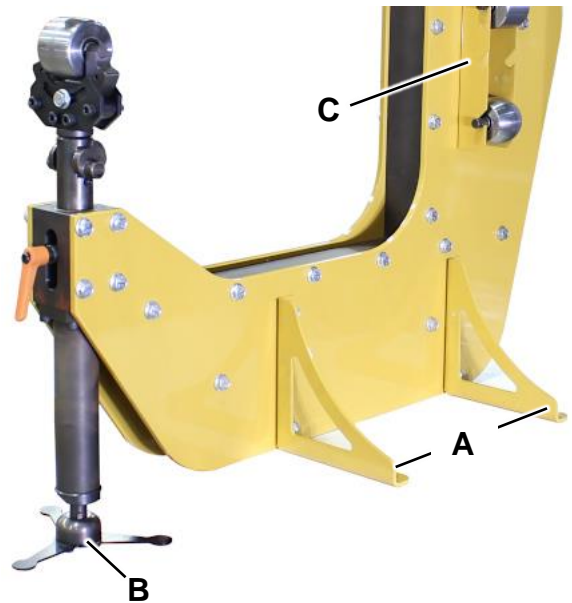
- Overall weight of the machine.
- Weight of material being processed.
- Sizes of material to be processed through the machine.
- Space needed for auxiliary stands, worktables, or other machinery.
- Clearance from walls and other obstacles.
- Maintain an adequate working area around the machine for safety.
- 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 machine 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. Using the M10 x 1.5 x 25 Hex FLG bolts and M10 x 1.5 FLG Nuts included, install the four leg brackets (A) onto the frame.
2. Once the legs have been installed, the machine may be placed and secured in location.
3. Install the Kick Wheel (B) onto the ram shaft with the key and socket head cap screw.
4. Using the M10 x 1.5 x 25 Hex FLG bolts and M10 x 1.5 FLG Nuts included, install the anvil storage bracket (C) onto the frame. The bracket may be mounted on either side of the frame.



### Anchoring the Machine

This machine is intended to be mounted on a bench top; therefore, when mounting the Baileigh English Wheel on a workbench be aware of the following:

- Overall weight of the machine and the weight of material being processed.
- The dynamic forces that will occur during operation from pushing and pulling material through the wheels.
- Make sure the workbench is properly reinforced to support the total weight.
- The strongest mounting option is where the holes are drilled all the way through the workbench and the machine is secured with bolts, washers, and nuts.

### Mounting the Machine

1. Ensure that the workbench is secure and meets the minimum requirements listed.
2. Place the machine in the desired location and check for full operating clearance for the machine, materials, and the machine adjustments.
3. Once the position has been determined, use the mounting legs as a template and mark the hole locations.
4. Move the machine aside enough to remain secure, and to allow access to the marked holes to drill mounting holes as needed.



- Once the holes have been drilled, install the fasteners (customer supplied) needed to match the chosen mounting method, and secure the machine to the workbench.

### Optional Stand Assembly



**Note:** Refer to the parts diagram as an additional assembly and mounting guide.

The optional stand mounts to the frame using the same mounting holes as the bench top legs.

- Support the machine so that the feet may be removed and replaced with the optional stand.
- Insert the stand posts into the machine between the frame side plates.
- Align the mounting holes and hold this position.
- Insert a shim plate on each side of the stand post to fill the gap and center the post between the side plates.
- Using the four bolts and nuts provided, secure the stand, shims and side plate assembly.

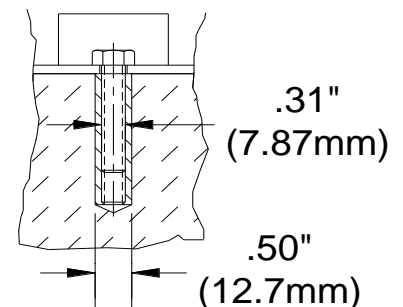


### Anchoring the Machine – Optional



**WARNING:** Before operating the Baileigh English Wheel, make sure it is firmly bolted to the floor. If it tips over on you, it could cause severe injury or death.

- Once positioned, anchor the machine to the floor, as shown in the diagram. Use bolts and expansion plugs or sunken tie rods that connect through and are sized for the holes in the base of the stand.
- This machine requires a solid floor such as concrete at a minimum of 4" (102mm) thick. 6" (153mm) minimum is preferred.



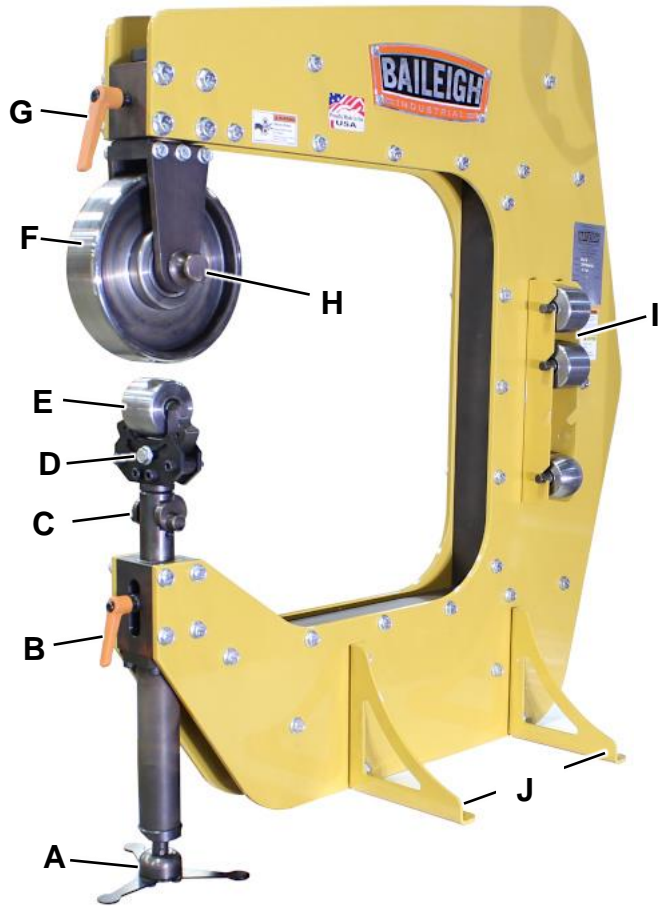


## GETTING TO KNOW YOUR MACHINE

The English wheel stretches metal workpieces thinner and longer as they are rolled between the upper wheel and anvil wheel. Simultaneously, a track is pressed into the metal, creating a convex curve in the workpiece.

By varying the amount and pattern of the tracks, a wide variety of contours can be produced.

The English wheel can be used to produce curves in mild steel up to 16ga. (0.0598" [1.519mm]) and aluminum up to 14ga. (0.0641" [1.628mm]).



Item	Description	Function
A	Kick Wheel	Adjusts the lower ram up or down as needed to provide the pinch used for forming the material.
B	Lower Ram Lock Handle	Unlocks to allow the ram to rotate 90°.
C	Quick Release Lever	Quickly raise or lowers to assist in loading and unloading material while maintaining a consistent amount of pinch.
D	Anvil Wheel Tilt Bolt	Allows the anvil wheel to be tilted up to 45° in either direction.
E	Anvil Wheel	The anvil wheel provides the forming radius for the material.
F	Upper Wheel	The upper wheel provides the pinching force to stretch the material against the anvil wheel.
G	Upper Wheel Lock Handle	Unlocks to allow the upper wheel to rotate 90°.
H	Upper Wheel Axle	Removable pin used as the wheel axle and may be removed as when replacing the upper wheel.
I	Anvil Holder Bracket	Holds the anvils when not in use.
J	Mounting Plates	Support the machine and secures it to the bench.





## 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.

## MACHINE ADJUSTMENTS

### Wheel Replacement



**Important:** Hold an upper wheel securely when installing or removing it or it may fall causing injury or damage! Wear steel toe foot-wear to protect your feet.

### Upper Wheel Replacement

1. Raise the lower wheel until the top lightly touches the bottom of the upper wheel. This help to supply some support to the upper wheel.
2. Remove the cotter pin from the inside of the upper wheel axle.
3. Hold the upper wheel firmly to prevent dropping and remove the upper wheel axle.
4. Carefully remove the upper wheel and set it on the upper wheel rack using a bracket mounting shaft.
5. Place a different upper wheel into the upper wheel bracket.



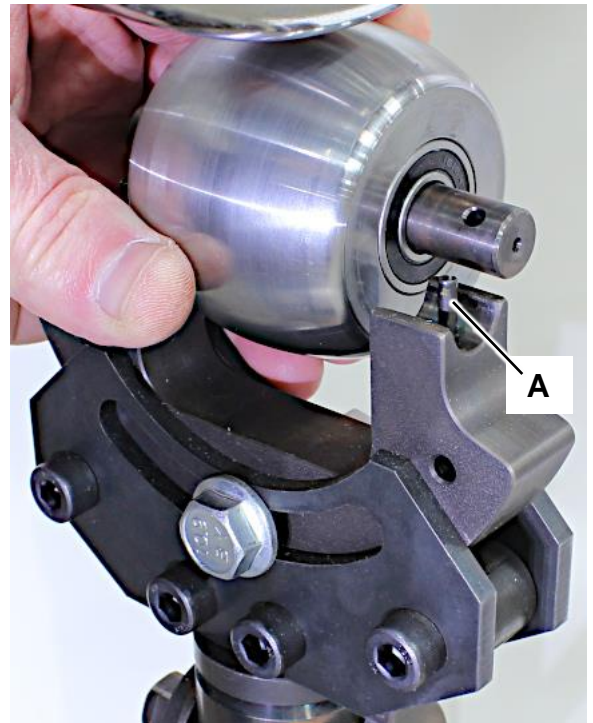
**Note:** Adjust the lower wheel height as needed to allow the upper wheel to fit into the upper wheel bracket.

6. Align the bracket and wheel bearing holes, insert the axle, and rotate the latch to secure the wheel.



### Lower Wheel Replacement

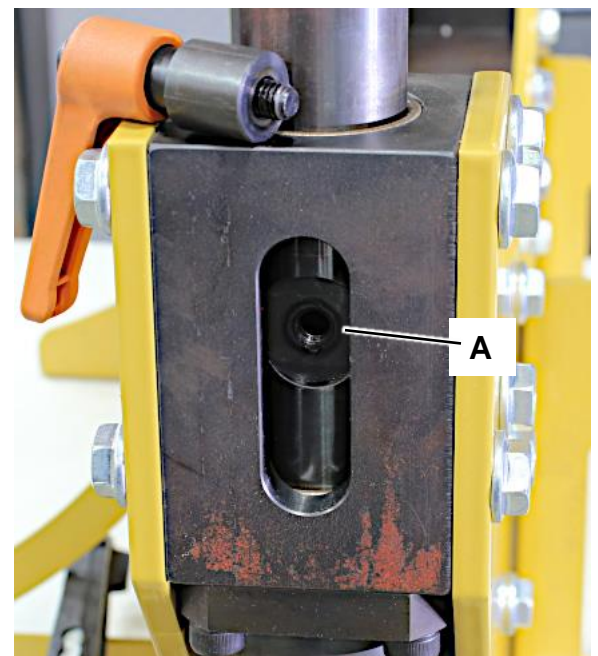
1. Use a wrench to disengage the quick release cam and lower the anvil wheel bracket until it stops.
2. Lift the anvil wheel up and off the spring pins (A).
3. Install the anvil axle onto the spring pins and be sure that the axle is seated into the saddle.
4. Engage the quick release lever and raise the lower wheel to the operating position.



### Rotating Wheels

The wheels can be positioned perpendicular to the frame for long workpieces or parallel to the frame for wide workpieces.

1. Disengage the quick release lever.
2. Lower the anvil wheel bracket.
3. Remove the lower lock handle and rotate the ram 90° until the flat index (A) is exposed.
4. Install and tighten the lower lock handle.
5. Loosen the upper lock handle and rotate the upper wheel 90° to match the lower anvil.
6. Tighten the upper lock handle.
7. Engage the quick release lever and raise the upper wheel to the operating position.





## Anvil Tilting

Given the artistic nature of rolling metal; tilting the lower anvil provides yet another variable into the process and thus the project outcome.

Tilting may be done using any of the anvil. While the basic process is about stretching and thinning the material. Tilting concentrates the force to a narrower area. This will focus the change on the material into a smaller area.

Because this is not an exact process; practice and testing will be required to develop the experience needed to obtain and if desired, repeat the outcome.

1. Loosen the center pivot bolt and tilt the anvil to the desired angle.
2. Tighten the center bolt to hold the angle.
3. Set the clearance for the anvil to the upper wheel the same any other rolling position.
4. To get the anvil holder back to (near) the 0° position, install the Flat anvil. Lower the anvil ram as needed for clearance.
5. Loosen the center bolt and tilt the anvil holder to approximately 0° position.
6. Carefully raise the anvil until it just contacts the upper wheel.
7. Adjust the anvil to have the same slight gap on both sides of the roller.
8. Hold the anvil holder in this position and tighten the center bolt.





## OPERATION

**⚠ CAUTION:** Always wear proper eye protection with side shields, safety footwear, and leather gloves to protect from burrs and sharp edges. Keep hands and fingers clear of the rollers. When handling large heavy sheets make sure they are properly supported.

1. Clean the workpiece and wheels thoroughly, making sure any abrasive particles are removed. Grit or dirt will mar your workpiece and even damage the wheels.
2. Dull sharp edges with a deburring tool and put on a pair of leather gloves to prevent injury to your hands.
3. Check the distance between the bottom of the upper wheel and top of the lower wheel. They should be about an inch apart.
  - a. To adjust the distance, loosen the ram lock handle and rotate the kick wheel to lower or raise the lower wheel.
  - b. Tighten the lock handle before working the material.
4. Engage the quick release cam (A) to raise the lower wheel to the operating position.
5. Insert the workpiece between the wheels.
6. Rotate the kick wheel counterclockwise until there is light pressure on the workpiece.
7. Roll the workpiece up to an edge, rotate it slightly, then pull it back.
8. Turn the kick wheel counterclockwise to increase pressure on the workpiece; turn the kick wheel clockwise to decrease pressure.

To reinsert a workpiece or insert another workpiece of the same thickness, use the quick release lever.





## **ROLLING TIPS**

**PRACTICE AND PATIENCE.** An English wheel is a simple tool that is easy to start to use however, it is the type of tool that requires experience to master.

When an operator keeps in mind a few safety considerations as noted in the front of the manual they can create and form metal to almost any shape.

**⚠ CAUTION:** Always wear proper eye protection with side shields, safety footwear, and leather gloves to protect from burrs and sharp edges.  
Keep hands and fingers clear of the rollers.  
When handling large heavy sheets make sure they are properly supported.

They can use the following tips to learn to operate the English wheel more successfully:

- Clean the workpiece and wheels; making sure all grit is removed.
- Start rolling slowly and increase your speed.
- Try rolling the wheels up to, but not past the workpiece edge.
- Mark the workpiece with a non-permanent marker to make it easier to follow tracking patterns or contour the metal.
- Try using the lightest wheel pressure possible to shape the workpiece. Too much pressure will crease or ruin the metal.
- Light pressure is best for smoothing; higher pressure is best for rough shaping.
- Consistent patterns and movements generally return consistent results.

### **Tracking Patterns**

As metal passes between the upper and lower wheels, a "track" or shiny line is pressed into the metal. Various tracking patterns can be used to shape workpieces depending upon their shape or size.



### Zigzag Pattern

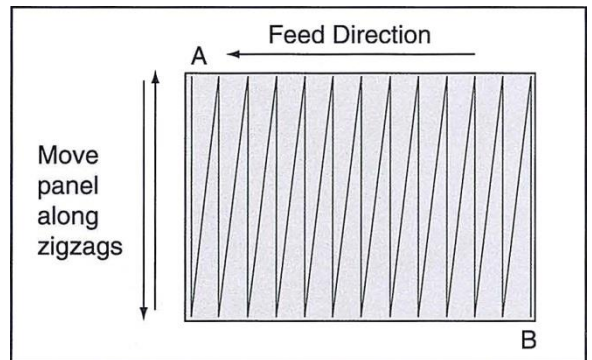
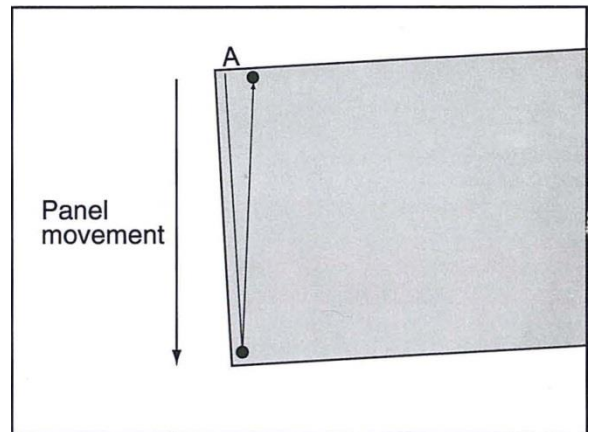
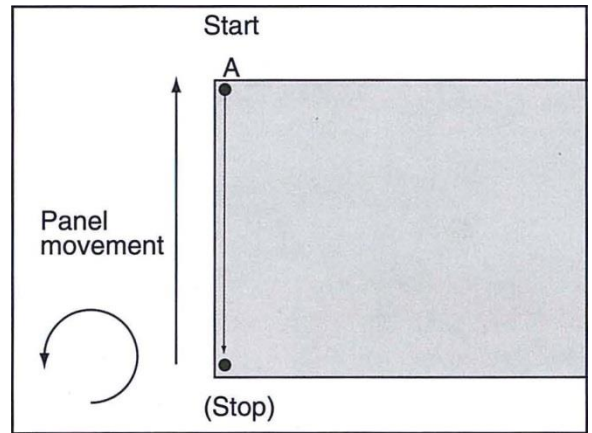
This pattern uses closely-spaced tracks to move from one end of the material to the other. It can be used for a variety of workpiece shapes.

1. Insert the workpiece between the wheels at point A and start rolling it along the edge. Left edge shown.
2. Push the workpiece forward to the stop point.
3. Turn the workpiece counterclockwise slightly.
4. Pull the workpiece back until it reaches the next point near the far edge.
5. Turn the workpiece clockwise slightly.
6. Continue feeding the workpiece to the other side in the same manner, following the pattern as shown.



**Note:** Try keeping the tracks close to each other.

7. When the wheels reach point B, feed the workpiece in the opposite direction and return to point A.

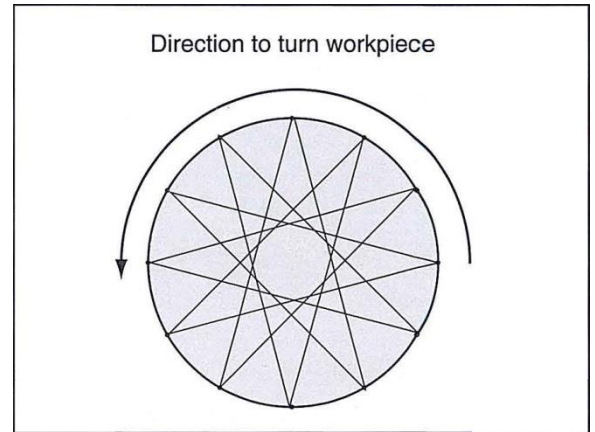


### **Star Pattern**

The star pattern is useful for shaping round workpieces.



**Note:** Avoid rolling directly over the center of the workpiece, as too many passes could overstretch the metal.



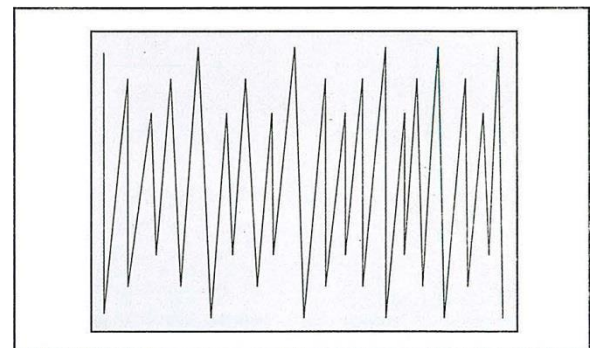
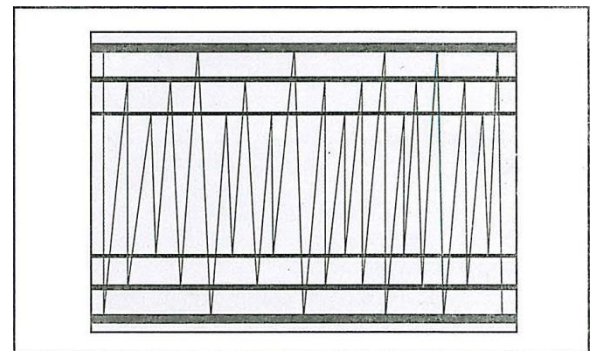
### **Staggered Stop Pattern**

With this pattern, the track alternates randomly between three different sets of lines.



**Note:** Marking the workpiece with a non-permanent marker so you can see the outside, middle and inside lines more clearly. Clean the wheels and workpiece when you are finished.

1. From the starting point, roll the workpiece from the outside line on one side to the outside line on the opposite side.
2. Roll the workpiece from the middle line on one side to the middle line on the opposite side.
3. Roll the workpiece from the inside line on one side to the inside line on the opposite side.
4. Repeat Steps 1-3, as you move across the workpiece, randomly alternating between outside, middle, and inside lines.

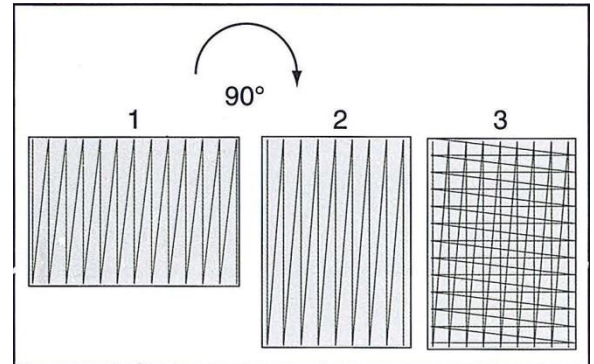




### **Crisscrossing Tracks**

Crisscrossing tracks can help produce smoother curves in your workpiece using the zigzag or staggered stop pattern.

After running tracks along one length of the workpiece, turn the metal sheet 90° and run tracks along the opposite length so the workpiece is equally covered by both sets of tracks.



### **Selecting Lower Wheels**

Choose a lower wheel that will produce the contour you desire.

Flat lower wheels are good for adding gentle curves to large metal panels; these wheels have wide flat surfaces profiles

Domed lower wheels create tighter curves. The flat areas range from 1/8" to 3/4" (3.175 to 19.05mm). The wider the flat area, the wider the track produced on the workpiece.

Roll a workpiece between a grooved lower wheel and a ridged upper wheel to emboss metal.

The step roller can be used with the flat upper wheel to add a small crease in a metal panel.





## LUBRICATION AND MAINTENANCE

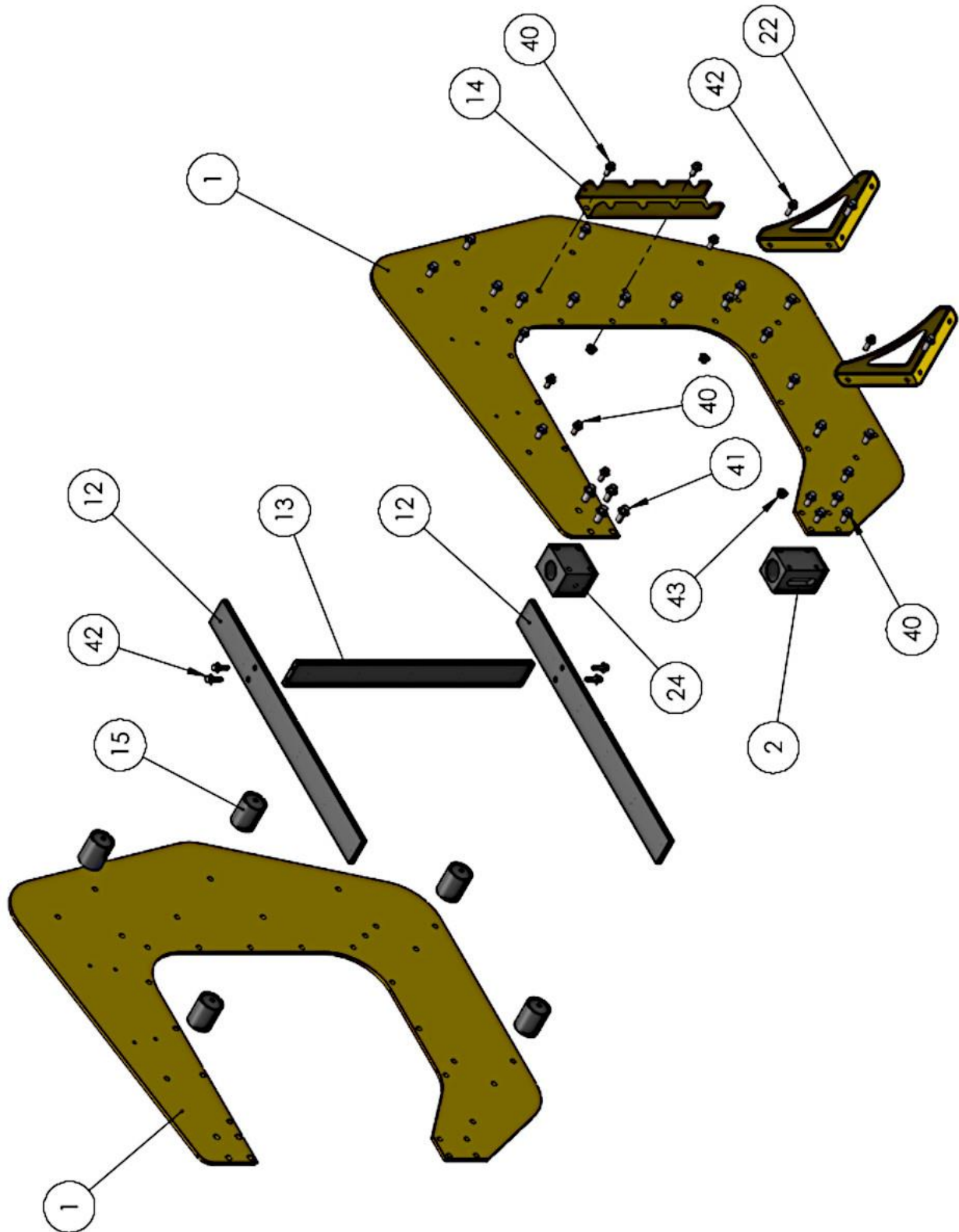
**⚠ WARNING:** Maintenance should be performed on a regular basis by qualified personnel.  
Always follow proper safety precautions when working on or around any machinery.

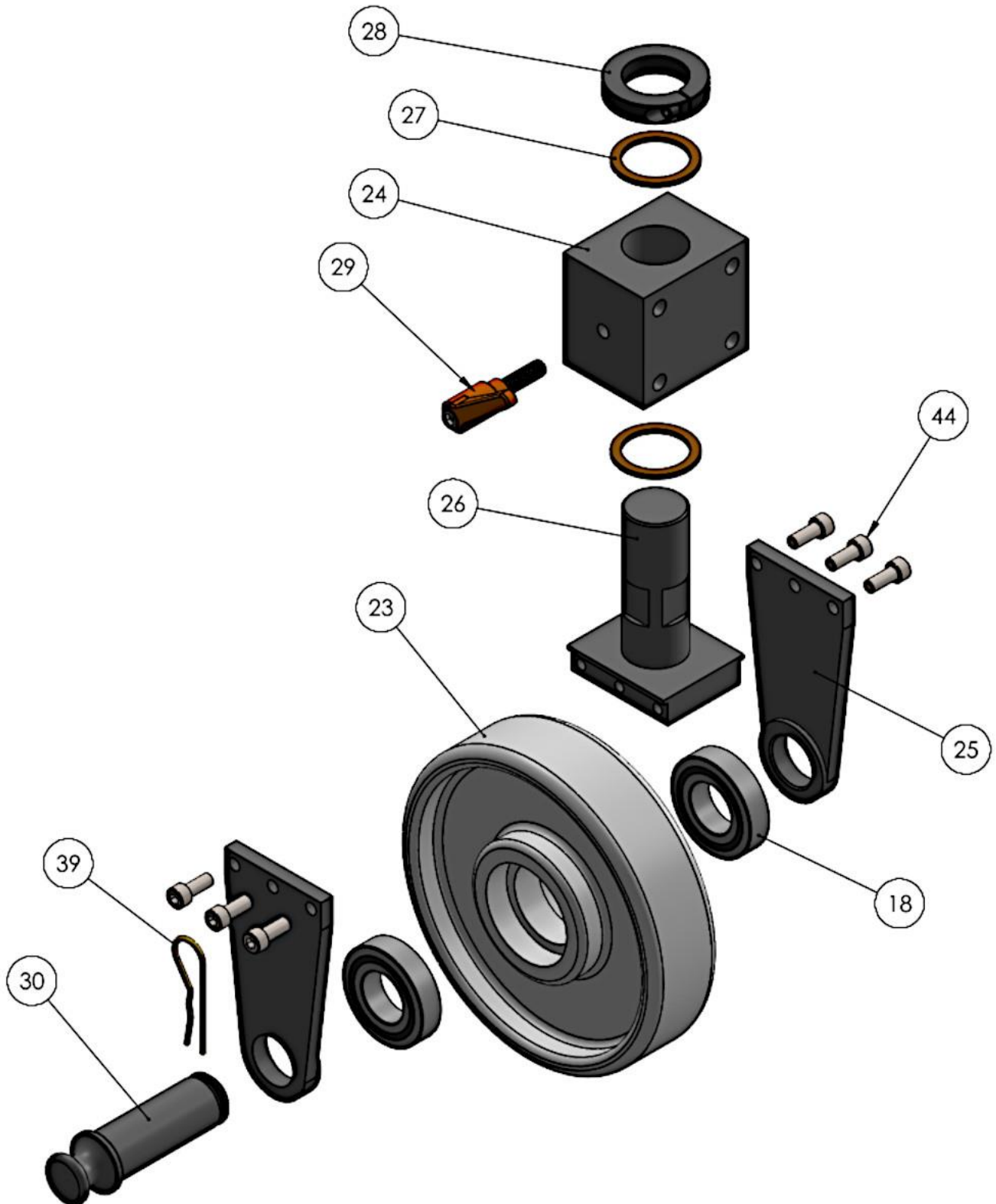
- Check daily for any unsafe conditions and fix immediately.
- Check that all nuts and bolts are properly tightened.
- On a weekly basis clean the machine and the area around it.
- Lubricate threaded components and sliding devices.
- Apply rust inhibitive lubricant to all non-painted surfaces.
- On a weekly basis apply a drop or two of any general purpose 30 or 40 weight oil to the bronze bushing for the lower ram.

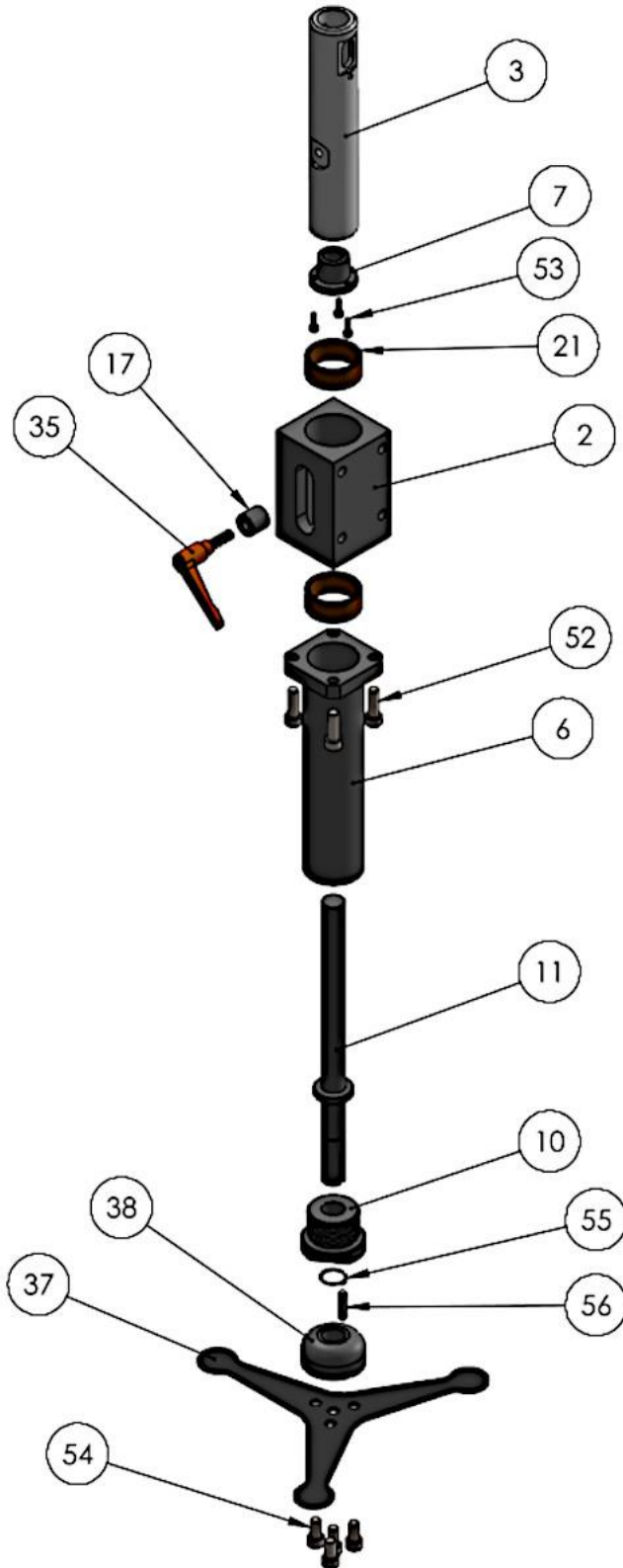
## TROUBLESHOOTING

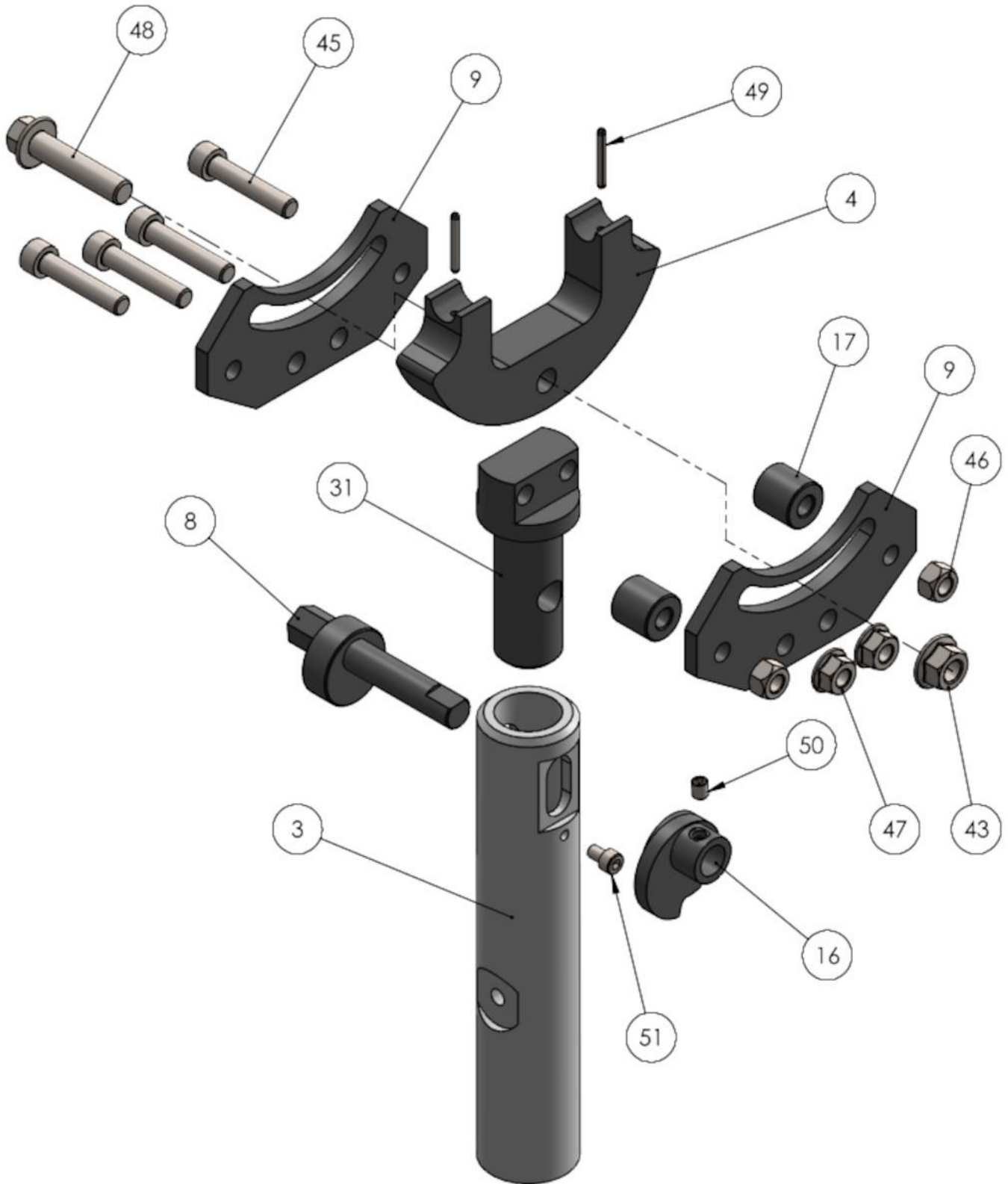
Symptom	Possible Cause	Possible Solution
Quick release lever will not engage, or has trouble engaging.	<ol style="list-style-type: none"> <li>1. Lower wheel bracket and cams bind.</li> <li>2. Setscrews on cams loose and not contacting quick release lever flats.</li> </ol>	<ol style="list-style-type: none"> <li>1. Lubricate top of cams where they contact the bracket</li> <li>2. Align setscrews over lever flats and tighten</li> </ol>
Upper wheel swivels.	<ol style="list-style-type: none"> <li>1. Upper wheel is not secured by frame bracket.</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn upper wheel knob clockwise to raise upper wheel bracket so it is snug against frame bracket.</li> </ol>
Wheel does not shape workpiece.	<ol style="list-style-type: none"> <li>1. Workpiece is too thick.</li> <li>2. Crown is too low.</li> <li>3. Incorrect pressure.</li> </ol>	<ol style="list-style-type: none"> <li>1. Use sheet metal of appropriate thickness.</li> <li>2. Use a lower wheel with a higher crown.</li> <li>3. Increase pressure on workpiece.</li> </ol>
Upper wheel bracket will not seat against frame.	<ol style="list-style-type: none"> <li>1. Upper wheel bracket catches on frame bracket; surfaces are not parallel.</li> </ol>	<ol style="list-style-type: none"> <li>1. Align upper wheel and upper frame bracket surfaces and raise upper wheel bracket up to frame.</li> </ol>
Wheels form too high a crown in workpiece.	<ol style="list-style-type: none"> <li>1. Using lower wheel with too small a flat area.</li> </ol>	<ol style="list-style-type: none"> <li>1. Use a lower wheel with a larger flat.</li> </ol>
Wheels form too low a crown in workpiece.	<ol style="list-style-type: none"> <li>1. Lower wheel flat is too large.</li> </ol>	<ol style="list-style-type: none"> <li>1. Use a lower wheel with a smaller flat area.</li> </ol>

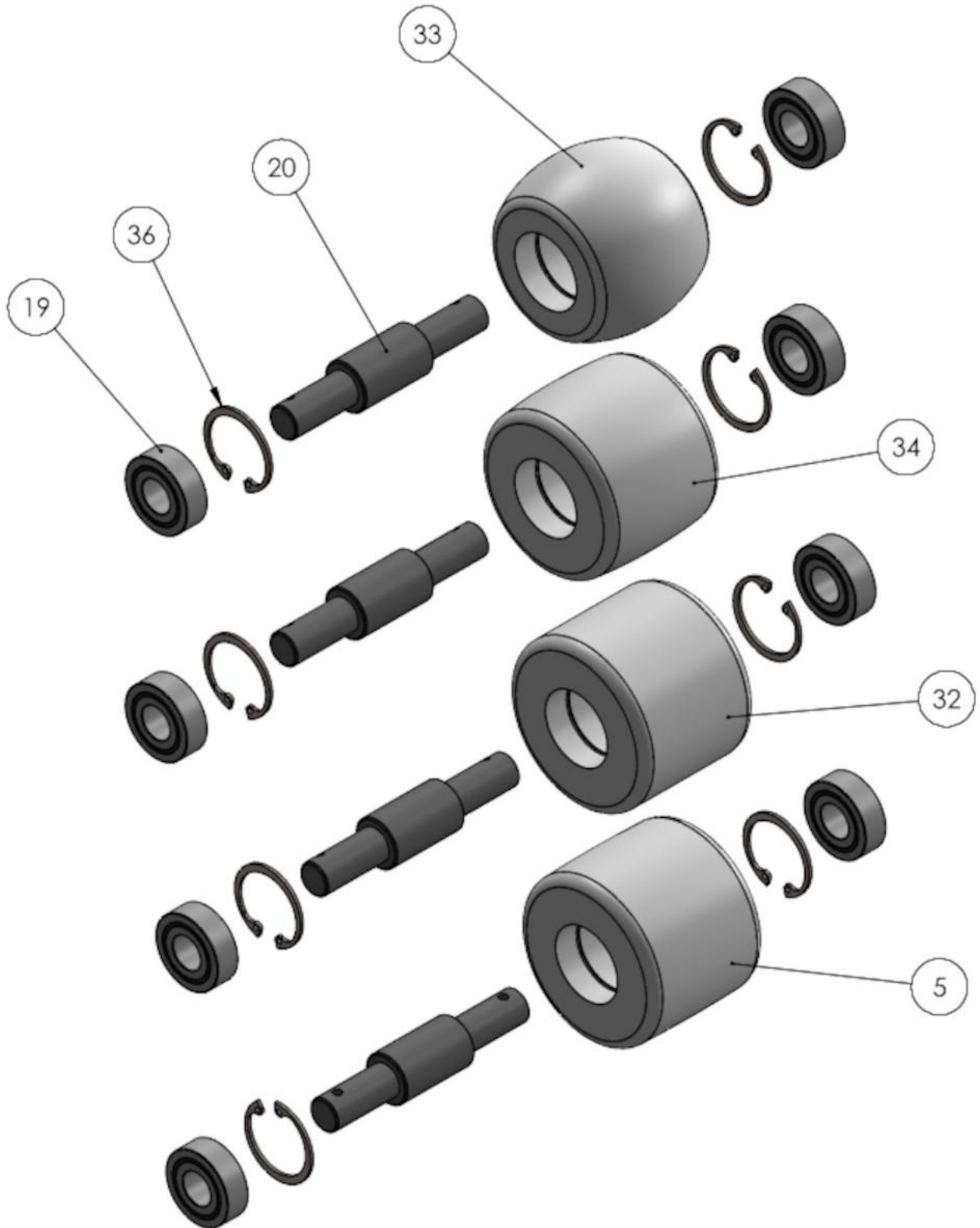
## PARTS DIAGRAM





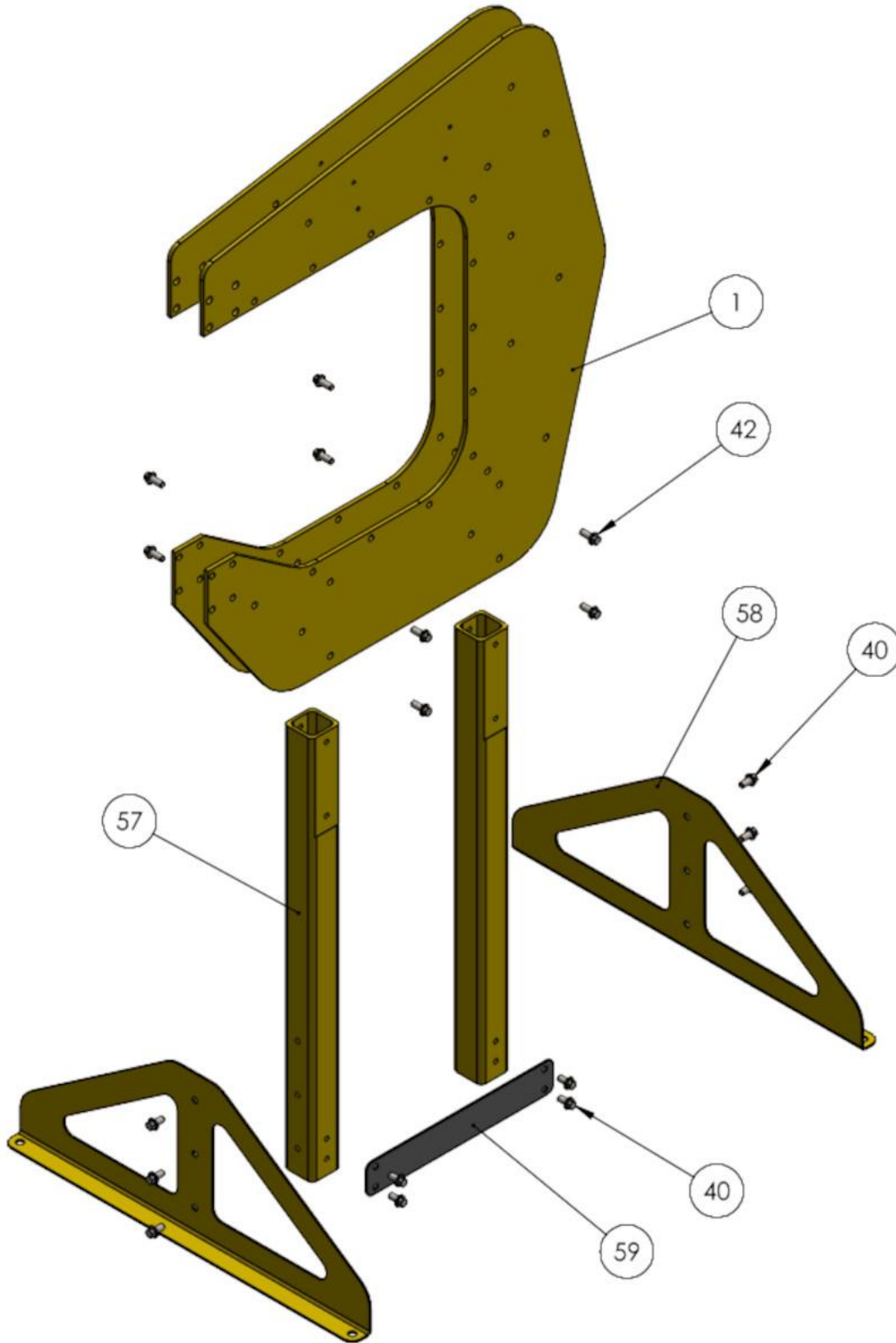








# OPTIONAL STAND PARTS DIAGRAM





## Parts List

Item	Part No.	Description	Qty.
1	EW21-6001	Side Frame	2
2	EW21-6009	Lower Slide Block	1
3	EW21-7009	Lower Ram	1
4	EW21-6007	Roller Saddle	1
5	LR-R240-V2	24.0"R Lower Roller	1
6	EW21-7011	Lower End Cap	1
7	EW21-7010	Adjustment Nut	1
8	EW21-7007	Quick Release Eccentric	1
9	EW21-6008	Cradle Support	2
10	EW21-7012	Lower Thrust Nut	1
11	EW21-5002	Adjustment Shaft Assembly	1
12	EW21-6002	Spacer Bar	2
13	EW21-6003	Rear Spacer Bar	1
14	MH19-6A045	Wheel Rack	1
15	EW21-7005	Plate Spacer	5
16	EW21-7008	Quick Release Cap	1
17	EW21-7003	Cradle Roller & Orientation Pin	3
18	PP-0942	1.25"ID x 2.50"OD Bearing	2
19	PP-0675	0.50"ID x 1.125"OD x 0.375" Bearing	8
20	EW21-7004	Lower Roller Shaft	4
21	PP-2176	1.50"ID x 1.75"OD x 0.75" Bushing	2
22	EW21-6010	Leg	4
23	MH19-7A043	Top Roller	1
24	EW21-6006	Top Roller Block	1
25	EW21-6005	Top Roller Upright	2
26	EW21-5001	Top Roller Pivot Assembly	1
27	PP-1195	1.50" Thrust Washer	2
28	PP-1196	1.50" Clamp Collar	1
29	PP-2177	M10 x 32 Handle	1
30	EW21-7002	Top Roller Pin	1
31	EW21-7006	Quick Release Housing	1
32	LR-R000-V2	0.0"R Lower Roller (Flat)	1
33	LR-R020-V2	2.0"R Lower Roller	1





Item	Part No.	Description	Qty.
34	LR-R080-V2	8.0"R Lower Roller	1
35	PP-2178	M8 x 25 Handle	1
36	BS-0346	1.125" Internal Retaining Ring	8
37	EW21-6011	Handwheel	1
38	EW21-7015	Handwheel Hub	1
39	PP-0476-A	Cotter Pin	1
40	BSM-0058	M10 x 1.5 x 20 Hex FLG	64
41	BSM-0066	M12 x 1.75 x 25 Hex FLG	8
42	BSM-0059	M10 x 1.5 x 25 Hex FLG	12
43	BSM-0187	M10 x 1.5 FLG Nut	11
44	BSM-0008	M8 x 1.25 x 20 SHCS	6
45	BSM-0011	M8 x 1.25 x 40 SHCS	4
46	BSM-0161	M8 x 1.25 Nylock Nut	2
47	BSM-0242	M8 x 1.25 FLG Nut	2
48	BSM-0062	M10 x 1.5 x 45 Hex FLG	1
49	BS-0088	0.125" x 1" Split Pin	2
50	BSM-0084	M6 x 1.0 x 8 Set Screw	1
51	BSM-0116	M5 x 0.8 x 6 SHCS	1
52	BSM-0009	M8 x 1.25 x 25 SHCS	4
53	BSM-0290	M4 x 0.7 x 12 SHCS	3
54	BSM-0149	M8 x 1.25 x 16 SHCS	4
55	BS-0173	0.75" External Retaining Ring	1
56	EW21-6012	Adjustment Shaft Key	1
57	EW21-6014	Stand Upright	2
58	EW21-6015	Leg Brace	2
59	EW21-6017	Leg Brace	1



NOTES



NOTES



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