



OPERATOR'S MANUAL

Metal Working



POWER HAMMER

MODEL: MH-19

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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, (f) 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 Baileigh-Service@jpwindustries.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.

DANGER

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

WARNING

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

CAUTION

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

NOTICE

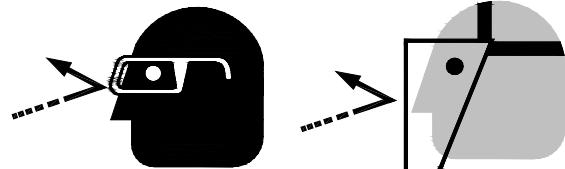


SAVE THESE INSTRUCTIONS.
Refer to them often and use them to instruct others.



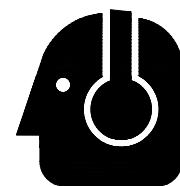
PROTECT EYES

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



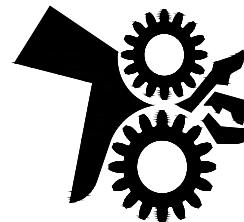
PROTECT AGAINST NOISE

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



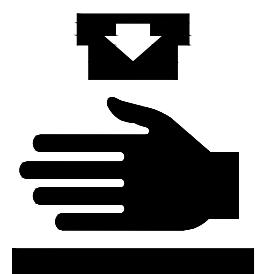
BEWARE OF PINCH POINTS

Keep hands and fingers clear of any gears or mechanisms. Make sure guard is in place before operating machine.



BEWARE OF CRUSH HAZARD

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



CALIFORNIA PROPOSITION 65

WARNING: Cancer and Reproductive Harm.
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.
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!** **DO NOT** touch live electrical components or parts.
23. **DO NOT** bypass or defeat any safety interlock systems.



TECHNICAL SPECIFICATIONS

Mild Steel Capacity	16ga. (1.52mm)
Aluminum Capacity	12ga. (2mm)
Tooling Height Adjustment	2" (50.8mm)
Throat Depth	19" (483mm")
Length of Stroke Adjustment	.177" - .550" (4.5 – 14mm)
Speed	0~1500 bpm (beats/minute)
Power	220VAC, 20A, 50/60hz
Motor	220V, 2Hp (1.5kw)
Shipping Weight	1600lbs (726kgs)
Shipping Dimensions	60" x 60" x 84" (1524 x 1524 x 2134mm)

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: Baileigh-Service@jpwindustries.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.*



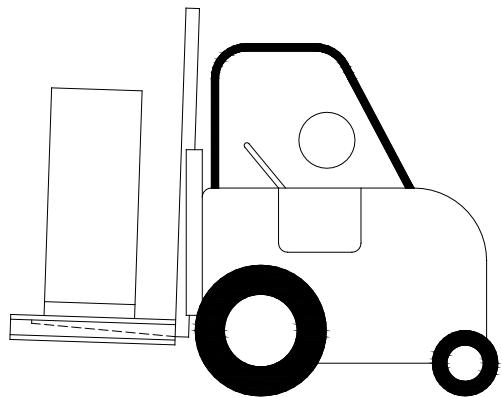


TRANSPORTING AND LIFTING

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 the lifting holes provided at the top 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

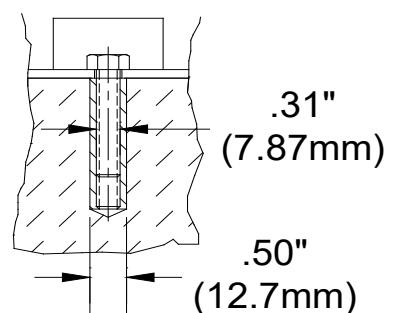
IMPORTANT:

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.

Anchoring the Machine

- 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.





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.

Power Specifications

Your machine is wired for 220 volts, 50/60hz alternating current. Before connecting the machine to the power source, make sure the power source is OFF.

Before switching on the power, you must check the voltage and frequency of the power to see if they meet with the requirement, the allowed range for the voltage is $\pm 5\%$, and for the frequency is $\pm 1\%$.

Considerations

- Observe local electrical codes when connecting the machine.
- The circuit should be protected with a time delay fuse or circuit breaker with an amperage rating slightly higher than the full load current of machine.
- A separate electrical circuit should be used for your machines. 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 machine.
- 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 machine 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 qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the machine 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.

Power cord connection:

1. Turn the main disconnect switch on the control panel to the OFF position.
2. Unwrap the power cord and route the cord away from the machine toward the power supply.
 - a. Route the power cord so that it will NOT become entangled in the machine in any way.
 - b. Route the cord to the power supply in a way that does NOT create a trip hazard.
3. Connect the power cord to the power supply and check that the power cord has not been damaged during installation.
4. When the hammer and dies area is clear of any obstruction. The main disconnect may be turned ON to test the operation.
5. Turn the main disconnect to OFF when the machine is not in operation.

OPERATION

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

The MH-19 Reciprocating Hammer is a multi-stroke reciprocating machine, capable of many different metal forming operations. In the next few steps, we will explain each mode of operation as well as setting the tooling.

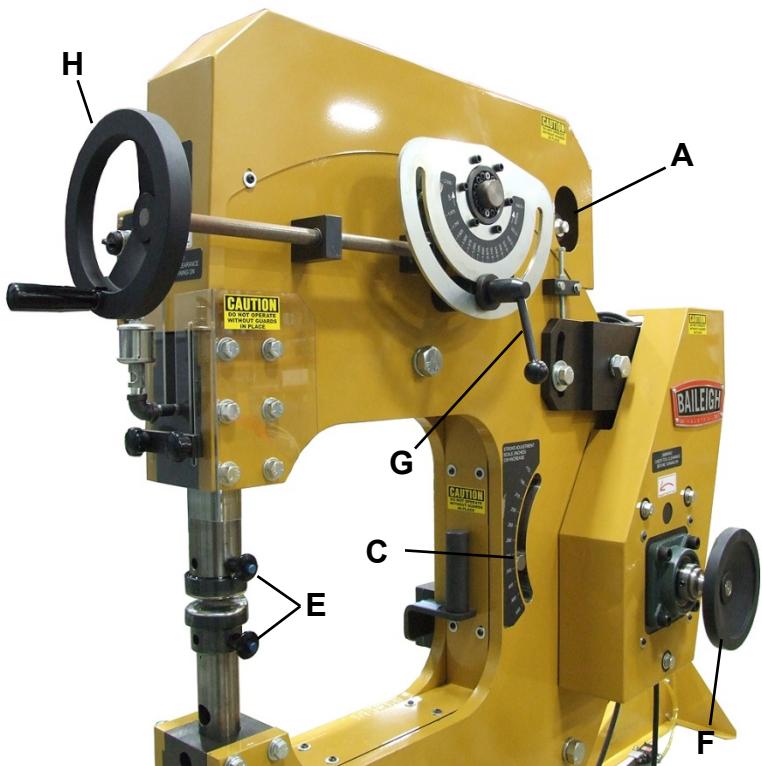
⚠ WARNING: HEARING PROTECTION MUST BE WORN AT ALL TIMES WHEN OPERATING THIS MACHINE.

Power Hammer Mode

In power hammer mode, the upper slide ram is connected to the crank toggle mechanism via a multi stack leaf spring. As the crank turns, speed and momentum load the spring which in turn "throws" the upper slide ram down with spring force and gravity. The amount of throw and force are controlled by speed and/or stroke.

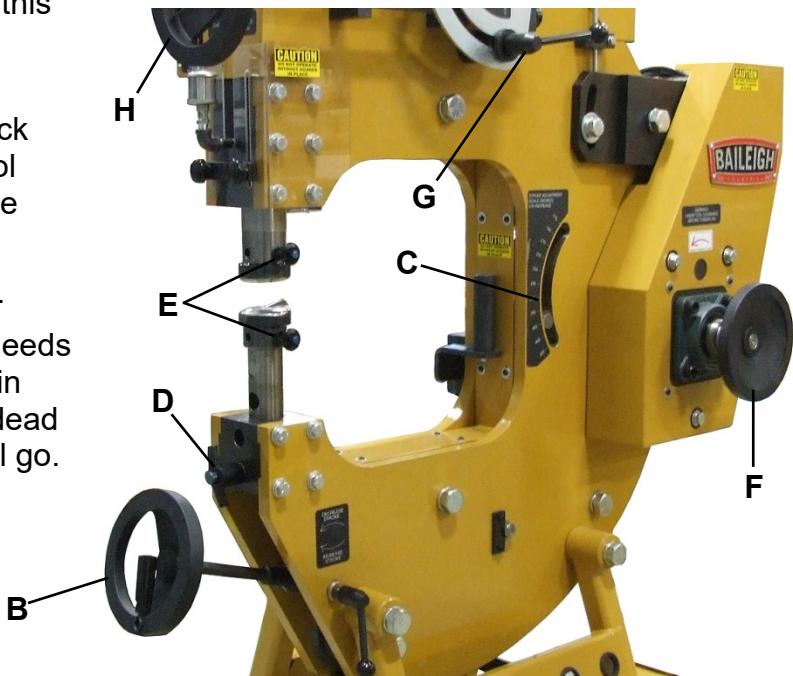
The speed is controlled through a variable foot control and a limiting potentiometer on the upper control box. The foot control fully depressed will max out at whatever the limiting potentiometer is set to.

1. To set the machine to power hammer mode the control box must be turned in the "off" position.
2. Remove the shear bolt (A) and bushings in the upper rear lever connection point. Store the bolt and spacer bushings in a safe place. Removing the bolt will separate the leaf spring from rigid mode and the spring will be free to move.
3. Next, the stroke can be set. Insert the hand wheel (B) onto the hex shaft.





4. Rotate until the scale (C) reads .400, this is a good place to start for thumbnail shrink dies. Tighten the lock lever.
5. To install the tools, remove the 1" quick release pin (D) and drop the lower tool holder out of the way, then remove the 1/2" pins (E).
6. Install the tools and re install the pins.
7. After the tools are installed, the gap needs to be set. To set the gap, turn the main crank hand wheel (F) to the "bottom dead center" or the lowest the slide ram will go.



WARNING: The tools on this machine should never come in contact with each other, if they do, machine damage will occur.

8. Loosen the down feed lock lever (G) and rotate the down feed hand wheel (H) until the gap between the tools is about 1/4". This is where most dies work the best. Make sure all lock levers are tight and the quick release pins are fully installed. Check the motion, tool clearance and verify the gap by rotating the main crank hand wheel (F).
9. Set the control switch (I) to the "ON Foot Control" position.
10. Set the limiting potentiometer (J) to about 1000 BPM (Beats Per Minute), slowly press the foot control, the machine should begin to "hammer", hitting harder the faster you go.





11. Shrinking as well as most of the shaping functions will take time to learn and control. To practice shrinking, use 3003-H14 .059 wall aluminum. This is a good material to learn on because it shapes easily and is more forgiving. To shrink start feeding the metal in slowly controlling the shrink by your foot control; slowing as you pull out not to flatten the edge too much.
12. The hammer mode is also used for planishing. Install the flat top die and the 6000R x 1000F lower hammer die. This die has a contact patch of 1" diameter. Install the tools following the same steps as before. Adjusting the stroke will give different results. Shortening the stroke will allow different speed settings, faster speeds can be achieved by finding the "sweet spot", just before the spring begins to float. The stroke CAN be adjusted on the fly. The combinations of stroke / speed / down feed are almost endless.
13. These dies can be used for planishing as well as stretching. The flat top die is used for most of the stretching applications except for aggressive doming. The rubber die can be installed on either the top or bottom depending on your application.

Rigid Mode

Rigid mode is used for functions similar to a Pullmax® machine. The hammer spring is deactivated and bolted rigid. This mode is used for short stroke tooling such as beading, flanging, mechanical shrinking, mechanical stretching etc.

1. To set the machine in this mode, turn the control switch to "Off".
2. Loosen the down feed lock lever and rotate the down feed hand wheel to lift the upper tooling all the way "up". This will allow enough clearance to install the lock bolt.
3. Install the lock bolt and bushings through the lever assembly and tighten to 50ft.lbs. The lock bolt is designed to shear off if the machine is set to crash, or the load is too great.
4. With the bolt in place, install the mechanical stretch dies. There is no top or bottom, but make sure they are both "stretch" dies.



IMPORTANT: With the tools installed, it is very important that the tool gap is set properly or the shear bolt will fail.

5. Always set your tools with the main crank hand wheel. The gap should be set to material thickness first, then slowly bring the slide ram down to get the desired stretch. Be careful not to give it too much stretch or the tools may bottom out. The stroke should be no greater than .250 and the max speed around 200 BPM. Use the foot control to work the stretching tools.
6. Beading tools can be installed in the same fashion; but the tool clearance is more critical. It must be slightly greater than the material thickness.
7. When beading or flanging, use of the roller fence will ensure perfectly straight forms. Setting the roller fence is self-explanatory.



8. When beading, flanging, or forming the control can be either foot or the preset "on", whichever the user wants.
9. The maximum speed is 1500 BPM; you should only use maximum BPM if the stroke is set to the minimum. Most forming applications in rigid mode work at 1000 BPM.
10. Another common tool in this mode is a joggle tool which can be simply made from 1/2" mild steel and installed in the universal tool holder.

English Wheel Mode



Note: Optional tooling required.

1. To set the machine to English wheel mode, the main power switch must be turned off to prevent accidental machine start up.
2. The machine must be in rigid mode.
3. Set the stroke to the minimum and bottom dead center.
4. Remove all the tooling and quick release pins.
5. Now you can install the upper wheel assembly. The down feed may need to be adjusted down to gain enough clearance for the wheel assembly. It is best if two people do this job, one person holding the wheel assembly, and one person to install the 1/2" quick release pin.
6. Once the pin is installed, the pinch bolt can be tightened locking the upper wheel assembly onto the slide ram.
7. Raise up the upper wheel with the down feed hand wheel and install the lower wheel holder onto the lower tool holder receiving hole, install the 1/2" quick release pin.
8. Choose a lower roller and drop it into the saddles and lower the upper wheel to match the material thickness. The lower wheel can be tipped by loosening the center arc bolt and rotating its holder, this is used for "tipping" or edging panels.
9. When wheeling, the down force is controlled by the down feed hand wheel.



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.

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.

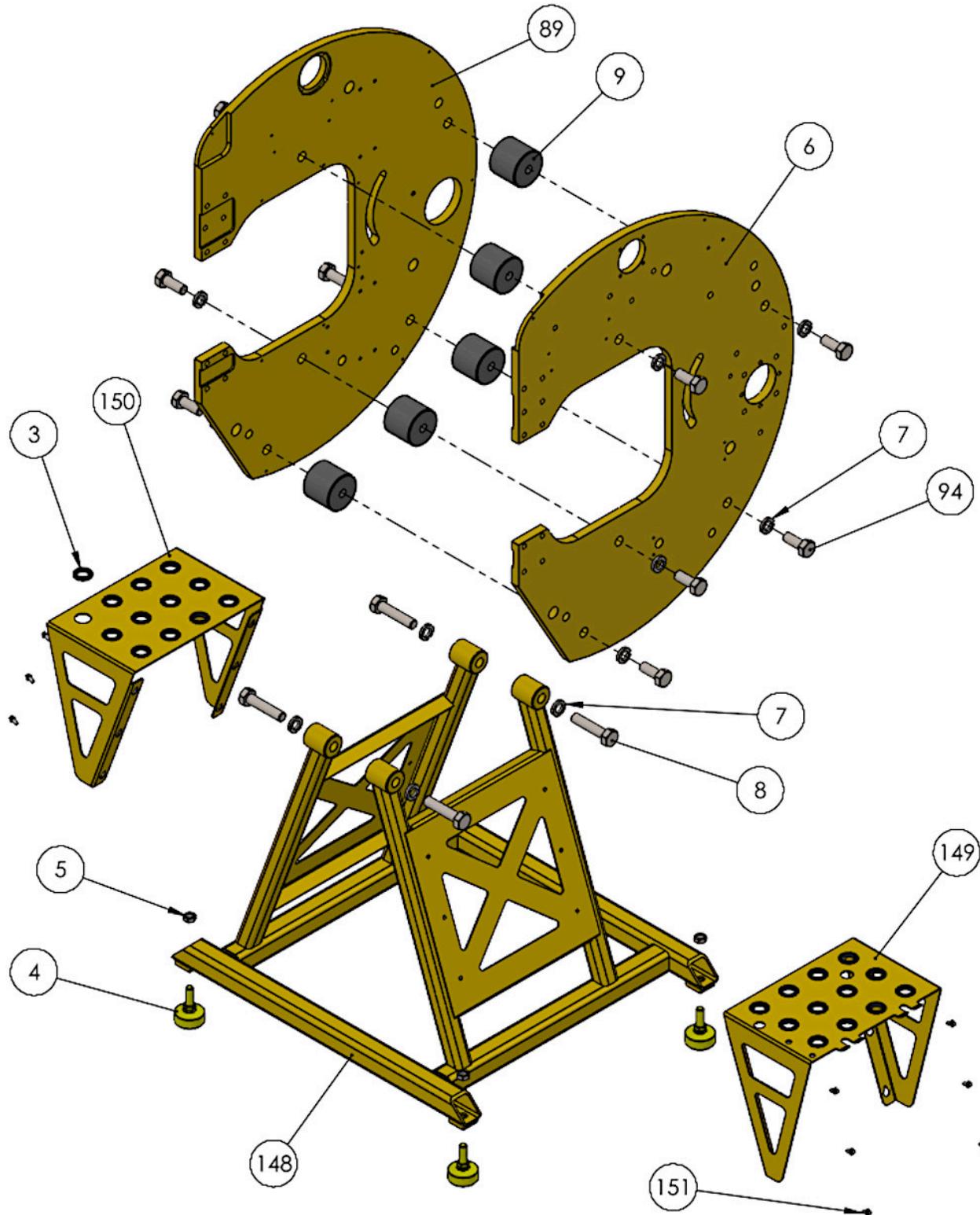
- Check daily for any unsafe conditions and fix immediately.
- Check that all nuts and bolts are properly tightened.
- On a weekly basis clean the machine and the area around it.
- Lubricate threaded components and sliding devices.
- Apply rust inhibitive lubricant to all non-painted surfaces.
- There are 7 grease fittings on the machine. Grease these fittings every month with two pumps from a standard grease gun.
- Check for any worn or damaged parts and replace immediately.
- Check and fill oil cup as needed. Use AW-46 hydraulic oil.



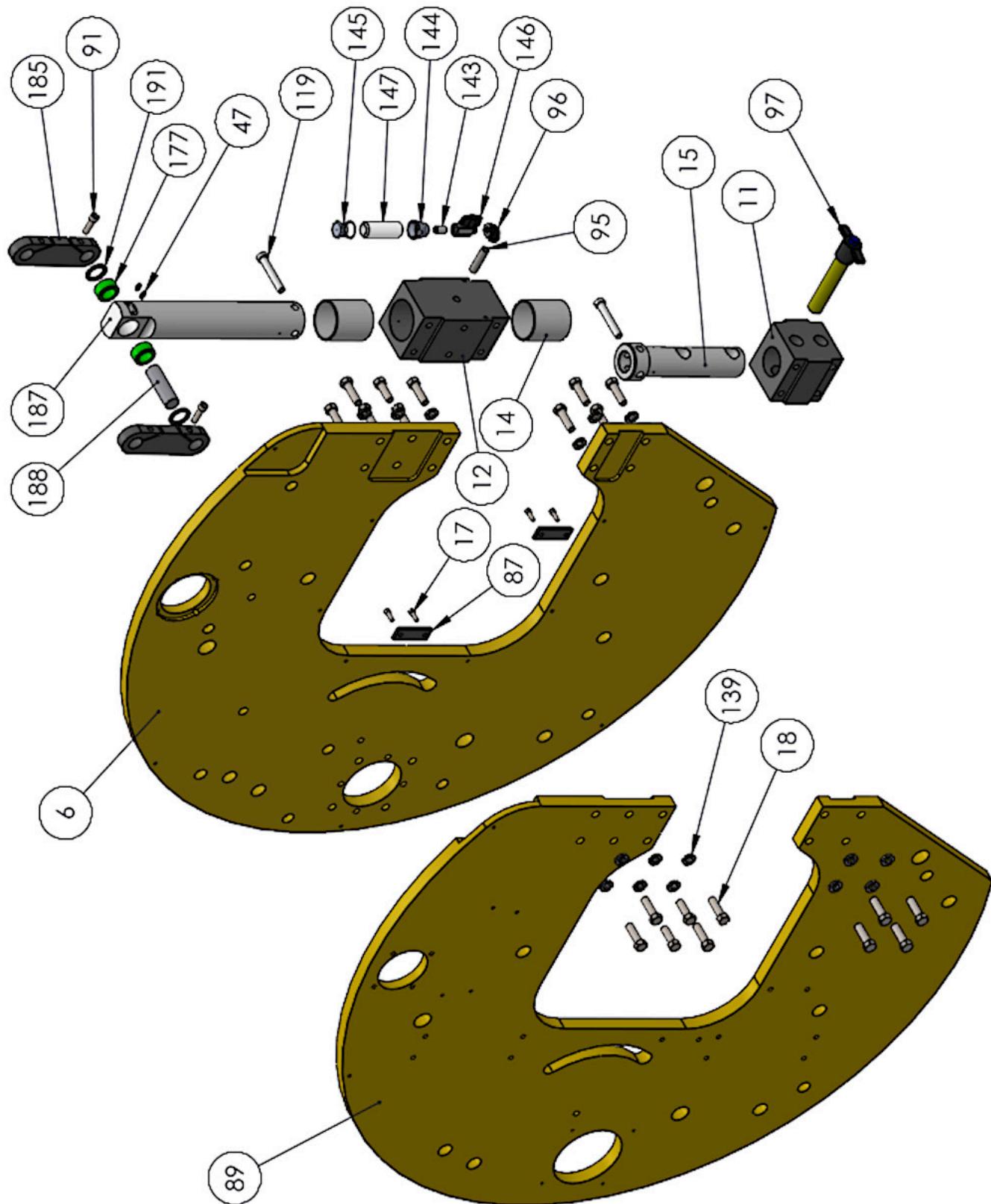
Note: Proper maintenance can increase the life expectancy of your machine.

PARTS DIAGRAM

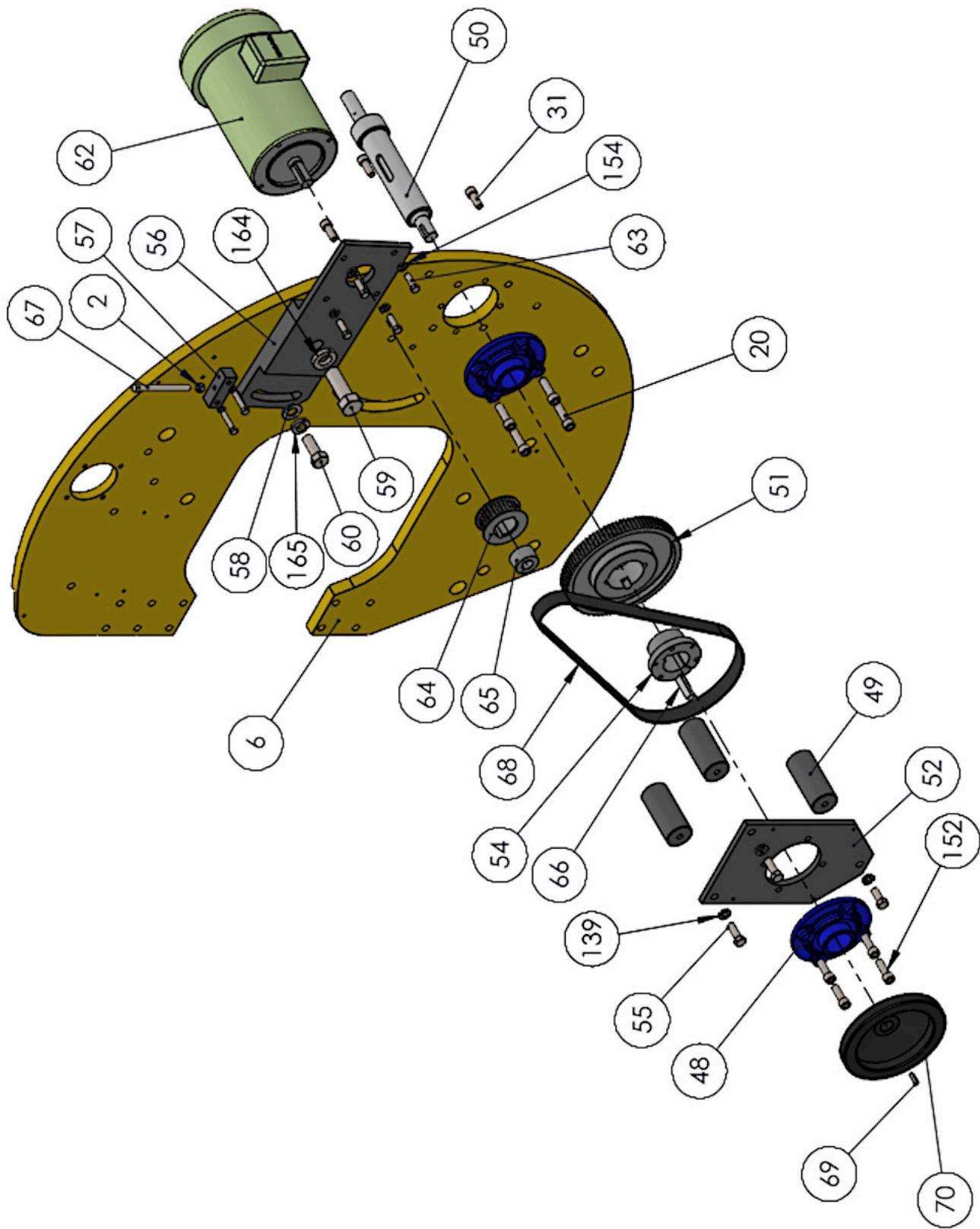
Stand/Frame Assembly Parts Diagram



Slide Block Assembly Parts Diagram

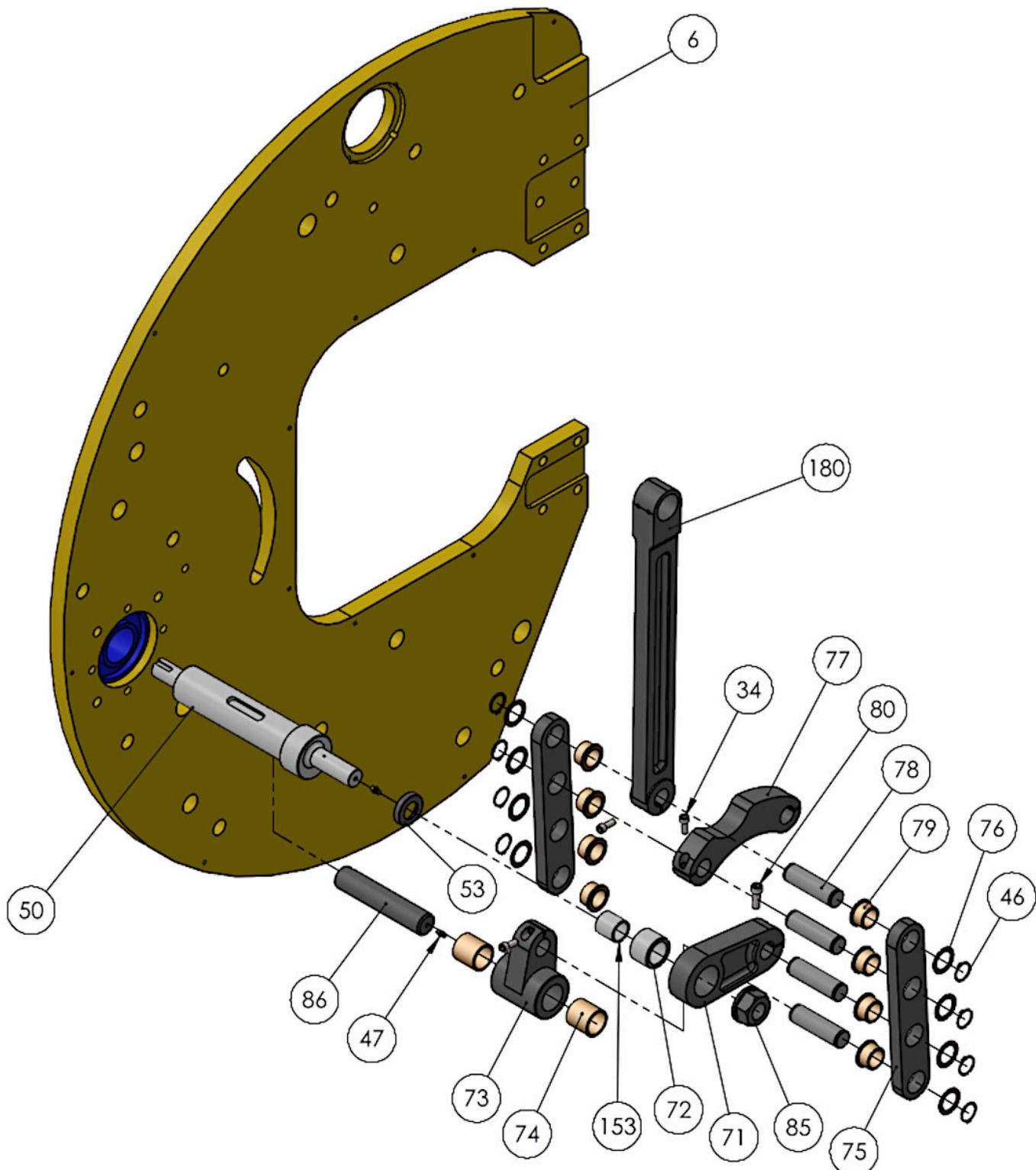


Pulley Assembly Parts Diagram

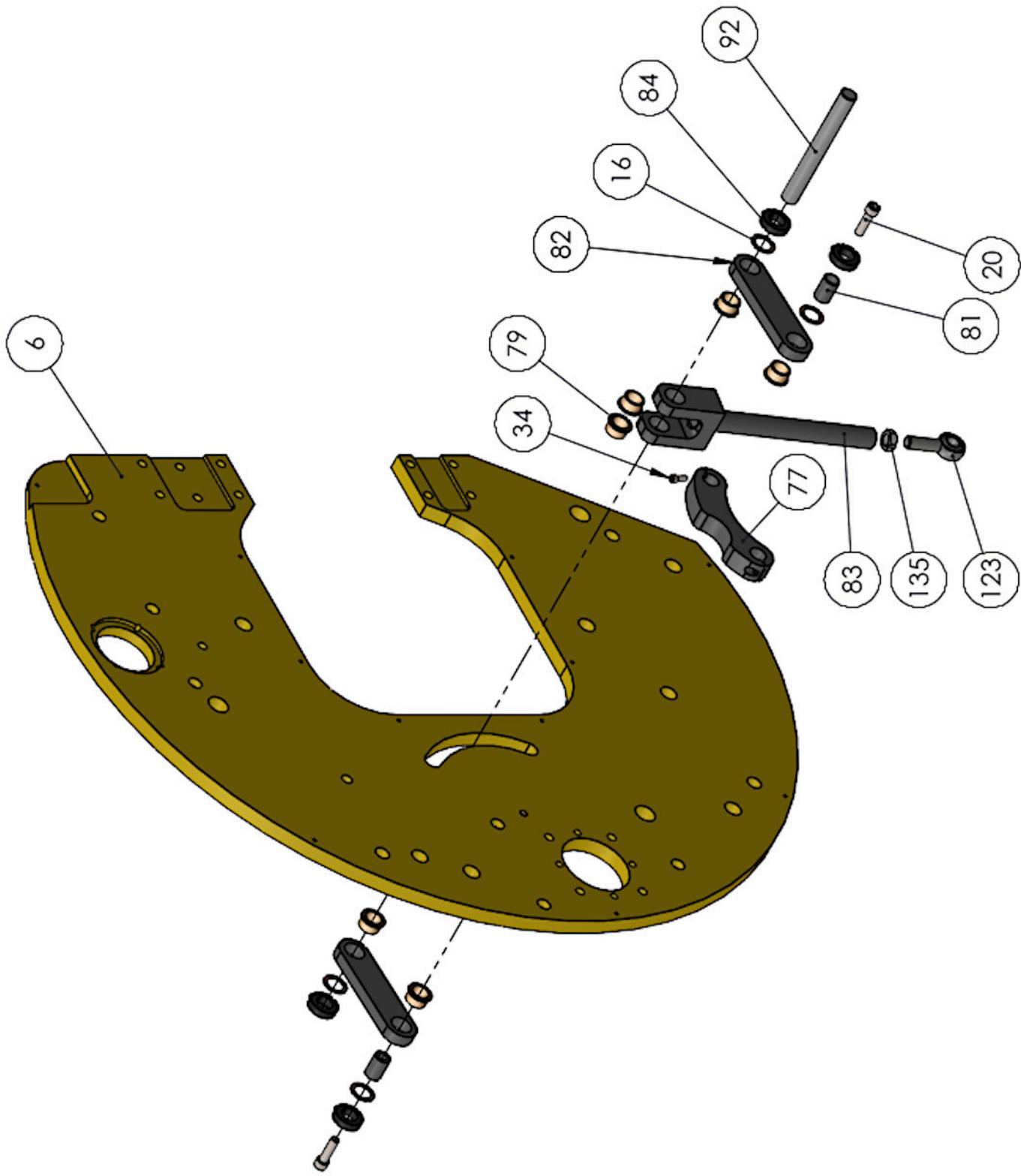




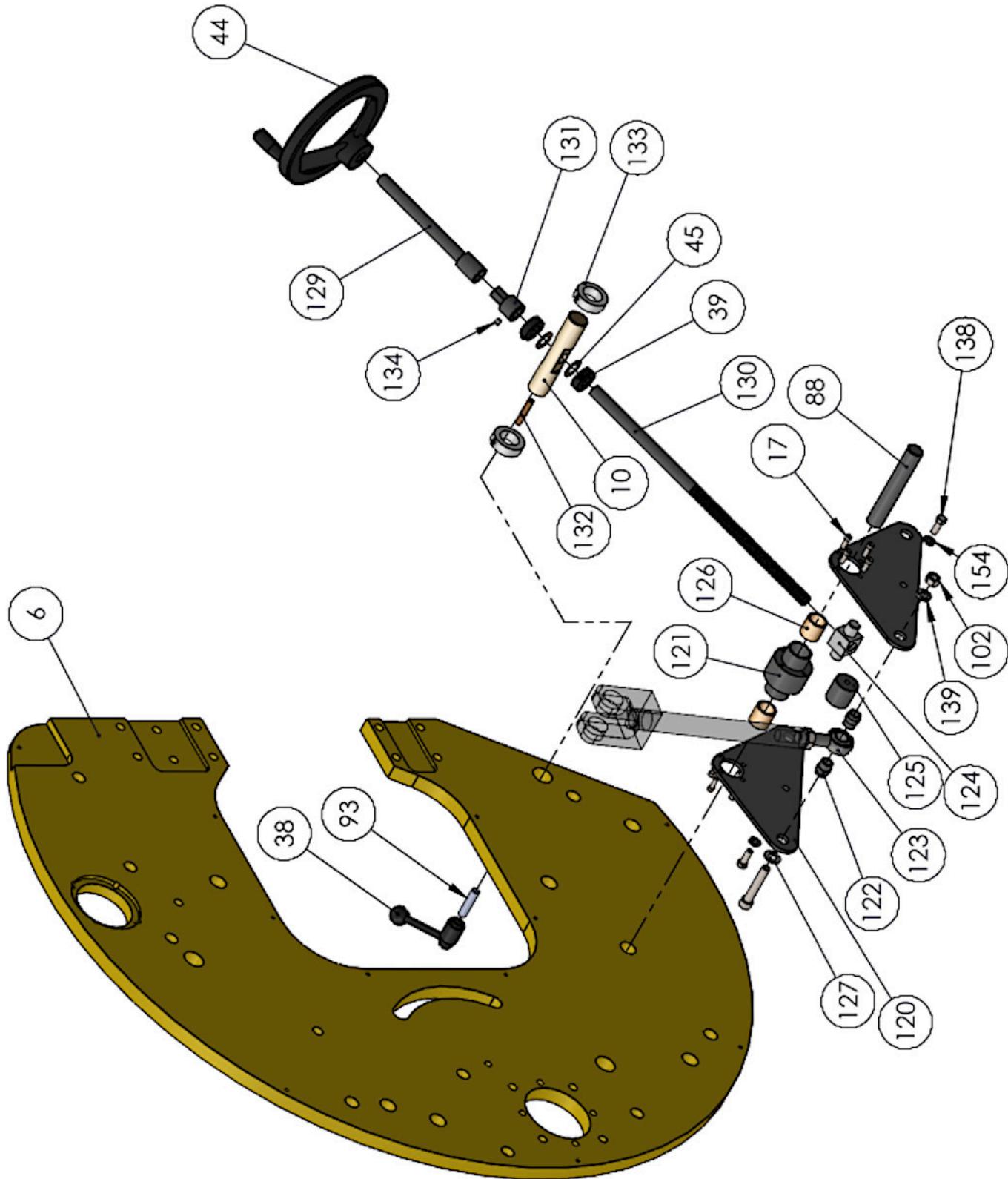
Crankshaft Assembly Parts Diagram



Clevis Shaft Assembly Parts Diagram

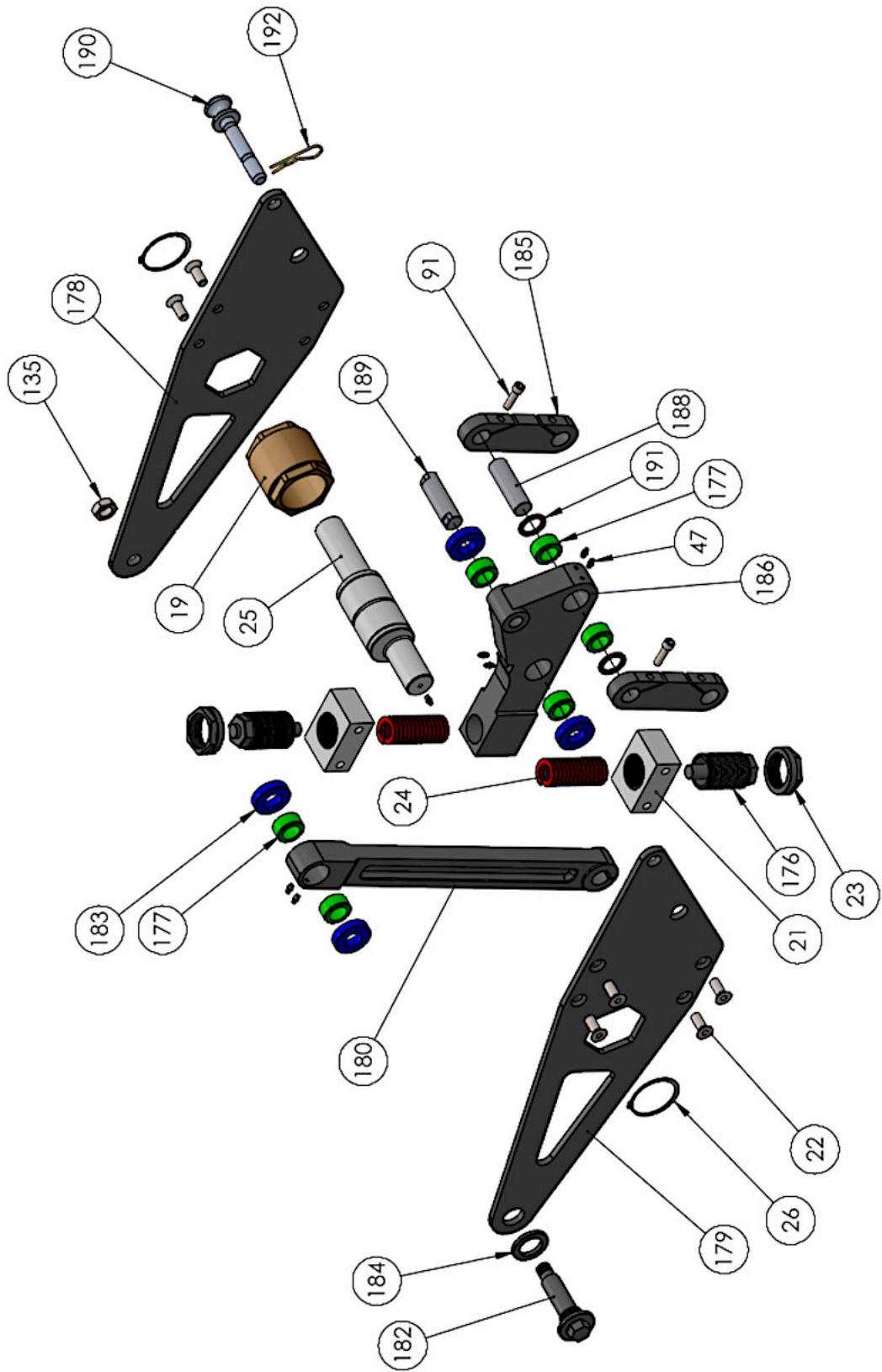


Bell Crank Assembly Parts Diagram

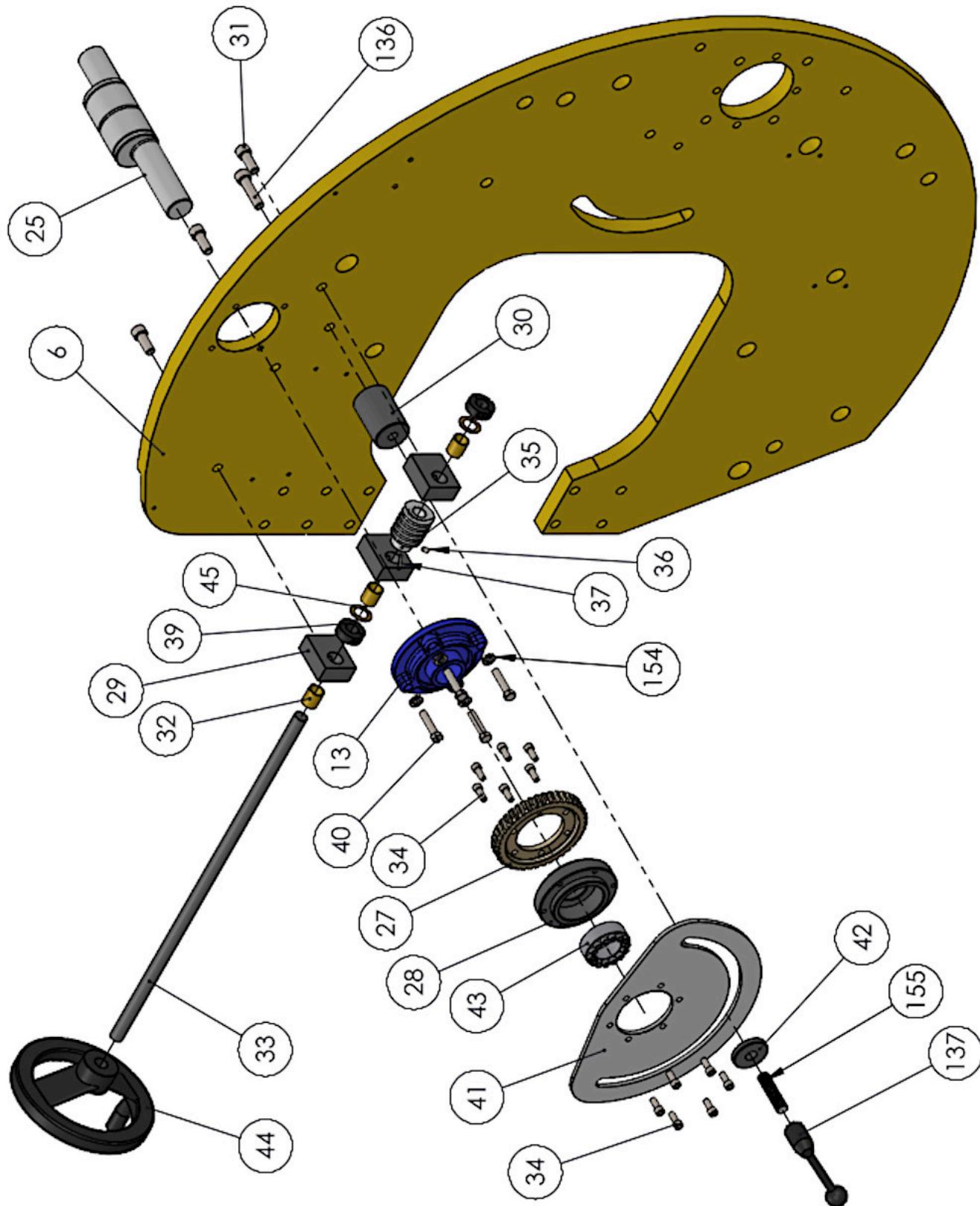




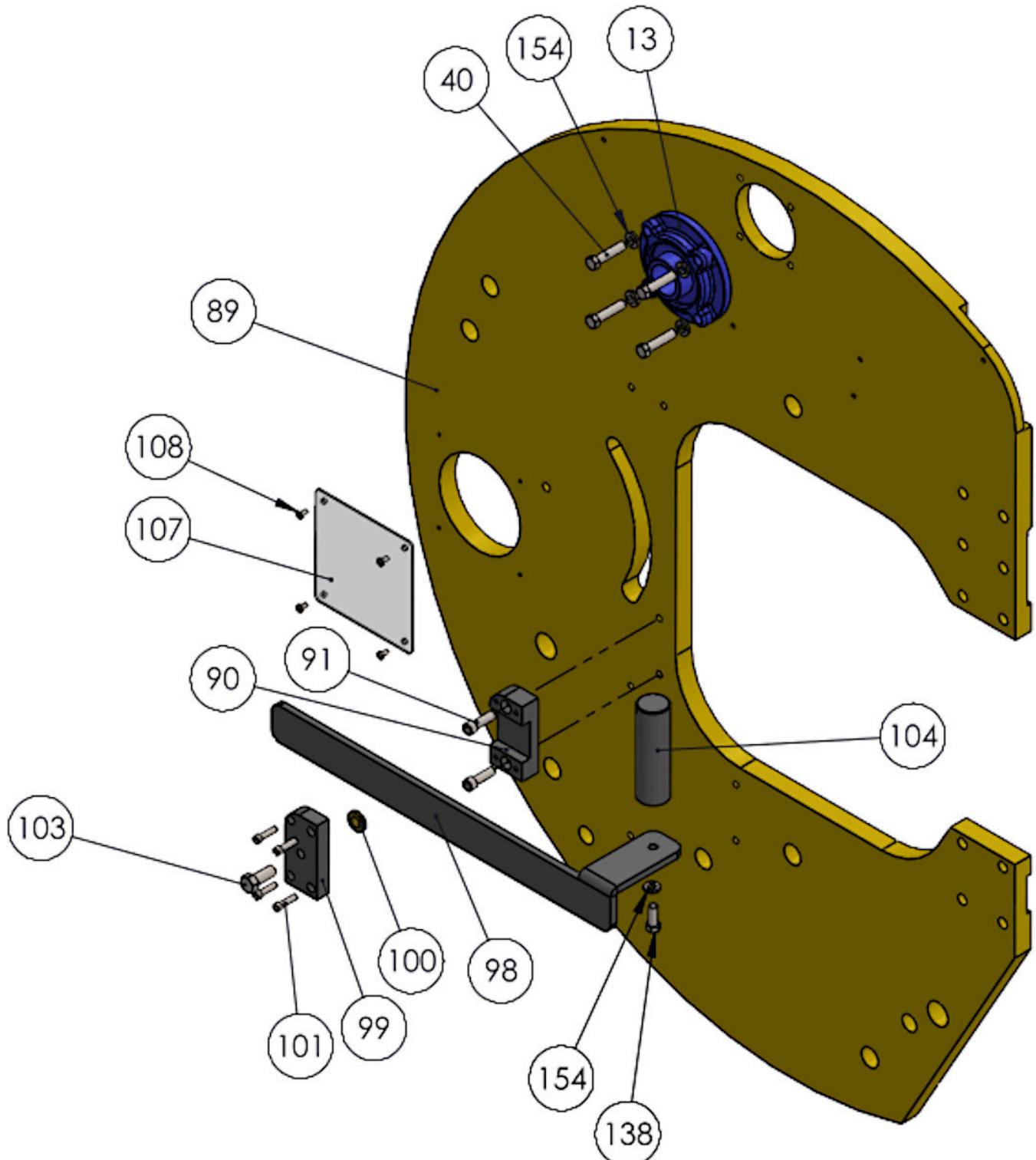
Main Lever Assembly Parts Diagram



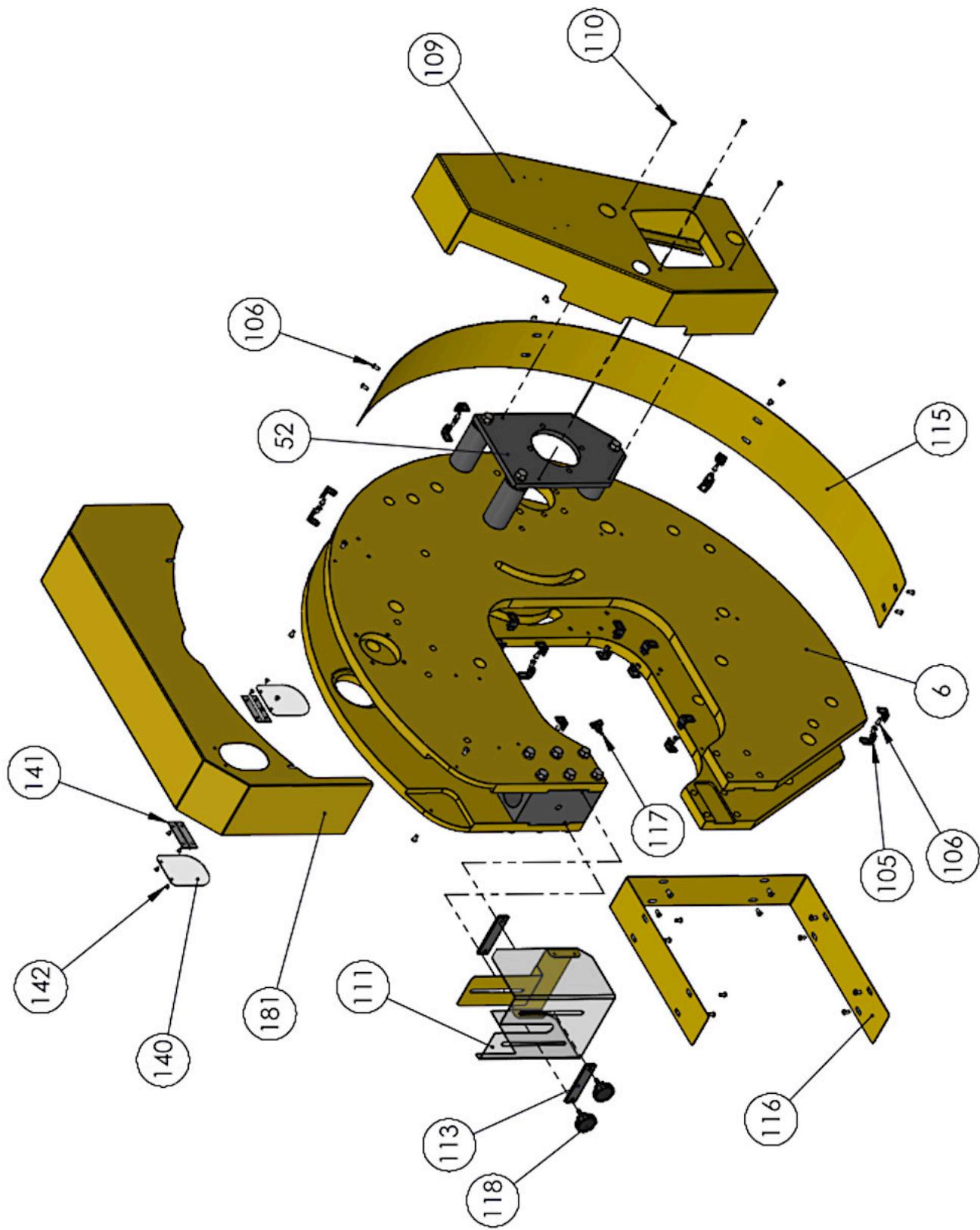
Height Adjustment Assembly Parts Diagram



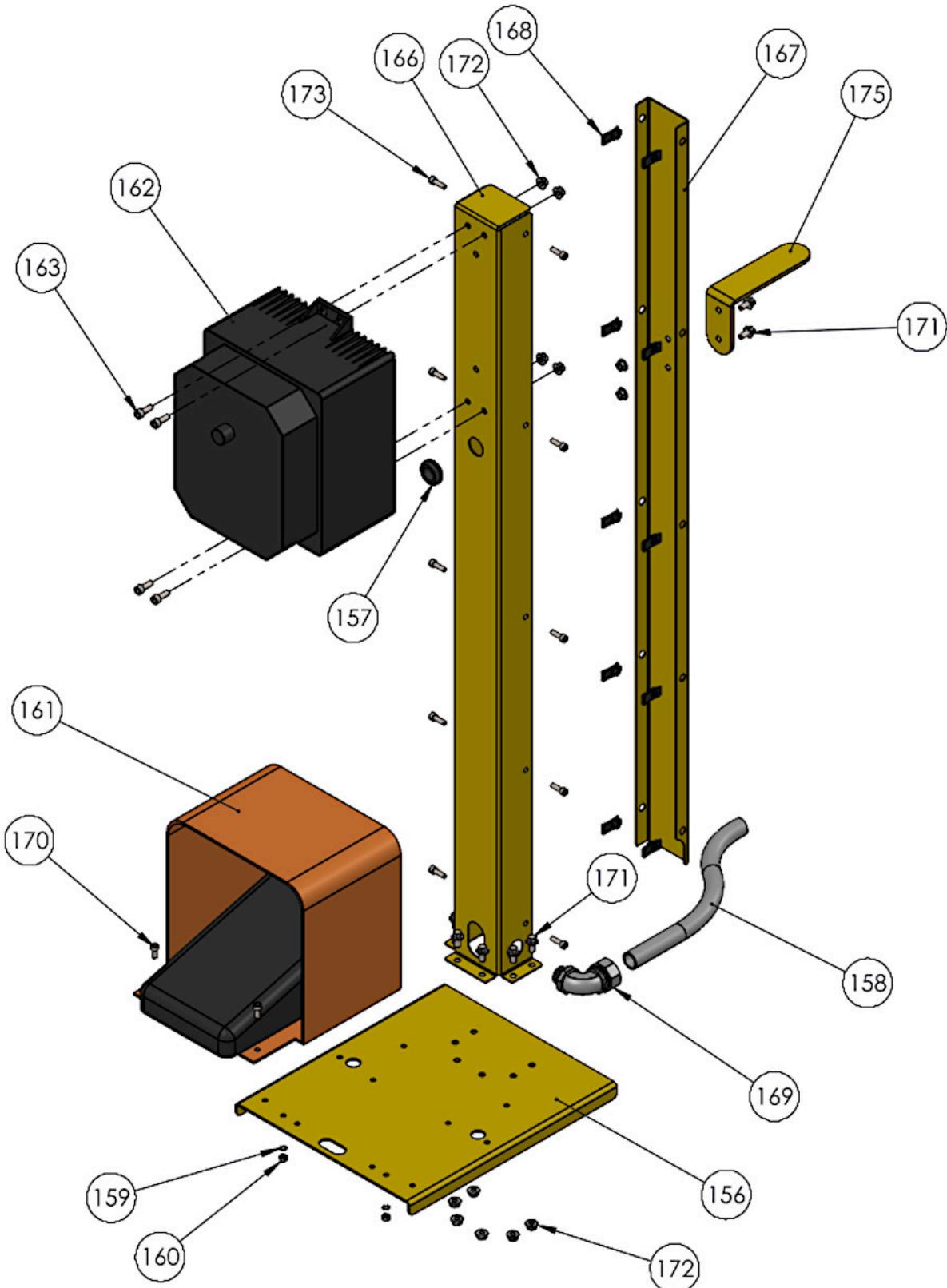
Left Hand Frame Assembly Parts Diagram



Guard Assembly Parts Diagram



Pendant Assembly Parts Diagram





Parts List

Item	Part No.	Description	QTY.
2	BS-0125	3/8-16 Hex Nut	1
3	PP-0895	Rubber Grommet	24
4	PP-0919	Leveling Pad	4
5	BS-0141	3/4-10 Hex Jam Nut	4
6	MH19-6D009	Right Side Frame	1
7	BS-0133	1.0 Lockwasher	14
8	BS-0370	1.0-8 X 4.50 HHCS	4
9	MH19-7A002	Frame Spacer	5
10	MH19-7A012	Trunnion	1
11	MH19-6A006	Bottom Die Holder	1
12	MH19-6A007	Top Slide Block	1
13	PP-1548	1.5 Bore Cartridge Bearing	2
14	PP-0825	Slide Block Bushing	2
15	MH19-7A019	Lower Die Mount	1
16	PP-0935	1.0 ID X 1.5 OD X .0625 THK	4
17	BS-0006	.25-20 X .75 SHCS	12
18	BS-0049	1/2-13 X 1.75 HHCS	16
19	MH19-7A008-V2	Pivot Bushing	1
20	BS-0091	1/2-13 X 1.75 SHCS	6
21	MH19-6A065	Spring Mounting Block	2
22	BS-0157	1/2-13 X 1.25 FHCS	8
23	MH19-7A055	Spring Lock Nut	2
24	PP-1300	Spring	2
25	MH19-7A007	Height Eccentric	1
26	PP-1072	2.5" External Retaining Ring	2
27	MH19-7A009	40 Tooth Worm Gear	1
28	MH19-7A006	Gear Hub	1
29	MH19-6A028	Worm Shaft Block	3
30	MH19-7A024	Lock Spacer	1
31	BS-0022	1/2-13 X 1.25 SHCS	6
32	PP-0838-B	.75 ID X 1.0 OD X 1.0 Long Bushing	3
33	MH19-7A017	Worm Shaft	1
34	BS-0011	5/16-18 X .75 SHCS	16



Item	Part No.	Description	QTY.
35	PP-0507	Worm Gear	1
36	BS-0063	1/4-20 X .375 Set Screw	1
37	BS-0403	1/8 X 1.25 Split Pin	1
38	PP-0570	1/2 Handle	1
39	PP-0090	3/4" Split Collar	4
40	BS-0044	3/8-16 X 1.75 HHCS	8
41	MH19-6A029	Locking Ring	1
42	MH19-7A031	Special Washer	1
43	PP-1047	Tapered Locking Bushing	1
44	PP-1035	8" Handwheel	2
45	PP-0101	0.75 ID X 1.25 OD X .0625 THK	4
46	BS-0238	1.0 External Retaining Ring	8
47	BS-0070	.25-28 Grease Zerk	11
48	PP-1454	2" Bore Cartridge Bearing	2
49	MH19-7A013	Plate Spacer	3
50	MH19-7A005-V2	Crank Shaft (.25 Offset)	1
51	PP-0907	90 Groove Pulley	1
52	MH19-6A021	Bearing Plate	1
53	MH19-7A036	Bearing Spacer	1
54	PP-0828	Tapered Lock Bushing	1
55	BS-0048	1/2-13 X 1.50 HHCS	6
56	MH19-6C022	Motor Mount	1
57	MH19-6A024	Jack Screw Block	1
58	BS-0087	3/4 Flat Washer	1
59	BS-0130	1-8 X 3.0 HHCS	1
60	BS-0237	3/4-10 X 2.0 HHCS	1
61	BS-0126	5/16-18 X 1.75 HHCS	2
62	PP-1075	2 Hp Yen Motor	1
63	BS-0042	3/8-16 X 1.25 HHCS	4
64	PP-0908	30 Groove Pulley	1
65	PP-0918	1210 Taper Bushing	1
66	MH19-6A071	Crankshaft Key	1
67	BS-0349	3/8-16 X 4.50 HHCS	1
68	PP-0826	Belt	1
69	MH19-6A080	.25 X .25 X 1.0 Key	1



Item	Part No.	Description	QTY.
70	PP-1034	8" Solid Handwheel	1
71	MH19-6A014	Connecting Rod 4.375 B.C.	1
72	PP-0921	Needle Bearing	1
73	MH19-6A012	Base Link	1
74	PP-0837	1.25 ID X 1.50 OD X 1.50 Bushing	2
75	MH19-6A013	Toggle Link	2
76	MH19-7A059	Thrust Washer	8
77	MH19-6A015	Stroke Link	1
78	MH19-7A011	Pivot Pin	4
79	PP-0913	1.0 ID X 1.25 OD X 0.75 Long	14
80	BS-0016	3/8-16 X 1.0 SHCS	1
81	MH19-7A058	Pivot Pin	2
82	MH19-6A069	Pivot Link	2
83	MH19-5A002	Clevis Shaft Assembly	1
84	PP-0036	1.0 Clamp Collar (Split)	4
85	MH19-7A057	Crank Nut	1
86	MH19-7A032	Pivot Pin	1
87	MH19-6A030	Shaft Keeper	2
88	MH19-7A010	Pivot Pin	1
89	MH19-6D008	Left Side Frame	1
90	MH19-6A032	Slide Base	1
91	BS-0017	3/8-16 X 1.25 SHCS	6
92	MH19-7A038	Pivot Shaft	1
93	BS-0345	1/2-13 X 2.0 Threaded Rod	1
94	BS-0234	1.0-8 X 2.50 HHCS	10
95	PP-0587	1/4" X 2" Pipe	1
96	PP-0589	1/4" Elbow	1
97	PP-0893	Quick Release Pin	1
98	MH19-6A031	Fence Arm	1
99	MH19-6A033	Slide Cap	1
100	MH19-7A050	Lock Disc	1
101	BS-0007	1/4-20 X 1.0 SHCS	4
102	BS-0149	1/2-13 Hex Nut	1
103	BS-0047	1/2-13 X 1.25 HHCS	2
104	MH19-7A029	Guide Shaft	1



Item	Part No.	Description	QTY.
105	M19-5A005	Guard Tab	20
106	BS-0105	1/4-20 X .50 BHCS	44
107	MH19-6A058	Crank Guard	1
108	BS-0068	10-24 X .375 PPHMS	4
109	MH19-6D044-V2	Belt Guard	1
110	BS-0005	1/4-20 X .25 BHCS	4
111	MH19-6A059	Hammer Guard	1
112	MH19-6A062	Guard Back For CE	1
113	MH19-6A027	Guard Strap	2
114	MH19-6A043	Back Panel	1
115	MH19-6A042-ARC	Rear Guard	1
116	MH19-6A041	Inside Guard	1
117	PP-0529	1/4-20 Knob	1
118	PP-1024	5/16-18 Knob	2
119	PP-1492	Tooling Pin	2
120	MH19-6A020-V2	Bell Crank	2
121	MH19-7A060	Bell Crank Hub	1
122	MH19-7A061	Rod End Spacer	2
123	PP-0927	.75 Male Rod End	1
124	MH19-6A019	Threaded Trunnion	1
125	MH19-7A035	Plate Spacer	1
126	PP-0143	1.25 OD X 1.0 ID X 1.25 Long	2
127	BS-0085	1/2 Flat Washer	1
128	BS-0151	1/2-13 X 2.75 SHCS	1
129	MH19-5A004	Shaft Extension	1
130	MH19-5A003	Adjusting Shaft	1
131	MH19-7A020	Hex Drive Collar	1
132	MH19-7A037	Pressure Shaft	1
133	PP-0138	1.25" Set Screw Collar	2
134	BS-0064	5/16-18 X .375 Set Screw	1
135	BS-0210	3/4-16 Hex Jam Nut	2
136	BS-0024	1/2-13 X 2.0 SHCS	1
137	PP-0571	5/8 Handle	1
138	BS-0041	3/8-16 X 1.0 HHCS	3
139	BS-0075	1/2 Lock Washer	24



Item	Part No.	Description	QTY.
140	MH19-6A078	Shear Pin Guard	2
141	MH19-6A079	3.0 Piano Hinge	2
142	PP-0487	M800 Guard Rivets	8
143	PP-1698	1/4 NPT Adaptor	1
144	MH19-7A062	Filler Adapter	1
145	MH19-7A063	Breather Cap	1
146	PP-1673	Ball Valve	1
147	PP-1672	Sight Tube	1
148	MH19-5D001-V3	Main Frame Stand	1
149	MH19-6A068-V3	RH Tool Rack	1
150	MH19-6A070-V2	LH Tool Rack	1
151	BSM-0166	M8 X 1.25 X 16 Hx Flange	12
152	BS-0023	1/2-13 X 1.50 SHCS	4
153	PP-0922	1.25 OD X 1.0 ID X 1.25 Inner Race	1
154	BS-0074	3/8 Lock Washer	15
155	BS-0353	5/8-11 X 2.50 Threaded Stud	1
156	RP-6009	Pendant Base	1
157	PP-2062	.875 Grommet	1
158	PP-2064	1/2 Seal Tight Tube	1
159	BSM-0197	M5 Star Washer	3
160	BSM-0131	M5 X 0.8 Nut	3
162	PP-1831 (US) PP-1832 (CE)	Control Box	1
163	BSM-0001	M6 X 1.0 X 14 SHCS	4
164	BS-0133	1.0 Lock Washer	1
165	BS-0077	3/4 Lock Washer	1
166	RP-6012	Control Box Upright	1
167	RP-6013	Control Box Upright Cover	1
168	PP-0280	M5 X 0.8 Fold Over Nut	10
169	PP-0022	1/2" Seal Tight Elbow	1
170	BSM-0115	M5 X 0.8 X 12 SHCS	3
171	BSM-0045	M6 X 1.0 X 14 Hx Flange	8
172	BSM-0121	M6 X 1.0 Flanged Nut	12
173	BSM-0186	M5 X 0.8 X 16 SHCS	10
174	BSM-0116	M5 X 0.8 X 6 SHCS	4
175	RP-6014	Handle	1



Item	Part No.	Description	QTY.
176	MH19-5A010	Upgraded Spring Cup	2
177	PP-1841	1.0 ID X 0.75 Long Needle Bearing	8
178	MH19-6A073	Lever Arm (R.H.)	1
179	MH19-6A074	Lever Arm (L.H.)	1
180	MH19-6A075	Long Link	1
181	MH19-6A077	V3 Lever Top Guard	1
182	MH19-7A070	Rear Drive Pin	1
183	MH19-7A071	Plastic Spacer	4
184	MH19-7A072	Thread Spacer	1
185	MH19-6A072	Ram Link	2
186	MH19-6A076	Toggle Bar	1
187	MH19-7A067	Main Slide	1
188	MH19-7A068	Ram Pin	2
189	MH19-7A069	Intermediate Pivot	1
190	MH19-7A073	Shear Pin	1
191	MH19-7A074	Bronze Thrust Washer	4
192	PP-0476-A	Cotter Pin	1
193	PHD-SH-BTM-V7.1	Bottom Shrink Die V7.1	1
194	PHD-SH-TOP-V7	Top Shrink Die V7	1
195	PHD-ST-BTM-6000R-1000F	Stretch Die 6.0R X 1.0 Flat	1
196	PHD-ST-TOP-FLAT	Master Flat Top Die	1



NOTES



NOTES



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