



OPERATOR'S MANUAL

Metal Working



5 STATION IRONWORKER MODEL: SW-621 AND SW-623

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Book 1 of 2

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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 an 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 an 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 convenient" 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



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

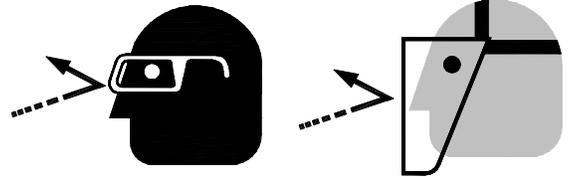


SAVE THESE INSTRUCTIONS.
Refer to them often and use them to instruct others.



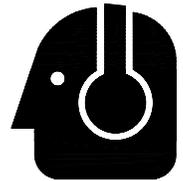
PROTECT EYES

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 earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.



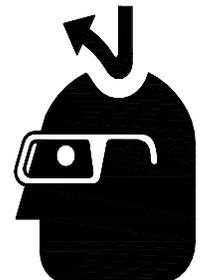
HYDRAULIC HOSE FAILURE

Exercise **CAUTION** around hydraulic hoses in case of a hose or fitting failure.



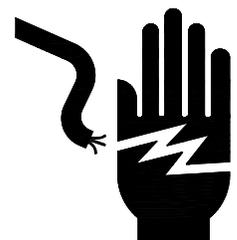
KEEP CLEAR OF MOVING OBJECTS

Always be aware of the position of the material being formed. It may be heavy and moving with considerable force and can swing back suddenly causing serious body or head injuries.



HIGH VOLTAGE

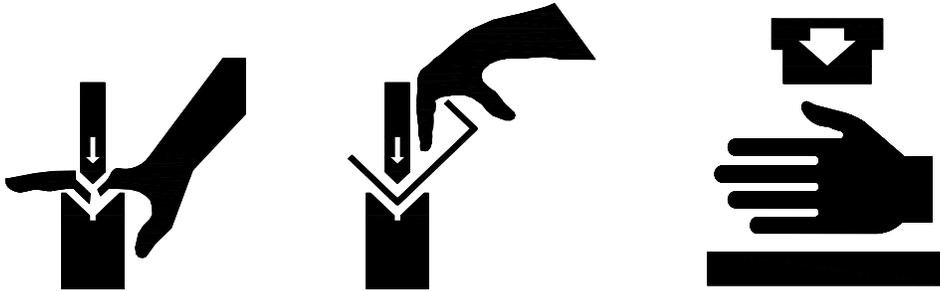
USE CAUTION IN HIGH VOLTAGE AREAS. DO NOT assume the power to be off.
FOLLOW PROPER LOCKOUT PROCEDURES.





BEWARE OF CRUSH HAZARD

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



BEWARE OF SHEAR, PINCH, AND CRUSH HAZARD

NEVER place your hands, fingers, or any part of your body in the die area of this machine. Keep hands and fingers away from the shear blade and the punching and notching dies when the machine is in operation.



EMERGENCY STOP BUTTON

In the event of incorrect operation or dangerous conditions, the machine can be stopped immediately by pressing the **E-STOP** button. Twist the emergency stop button clockwise (cw) to reset. Note: Resetting the E-Stop will not start the machine.





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 and ear protection.** Always wear ISO approved impact safety goggles. Wear a full-face shield if you are producing metal filings.
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. **Blade adjustments and maintenance.** Always keep blades sharp and properly adjusted for optimum performance.
17. **Keep children away.** Children must never be allowed in the work area. **DO NOT** let them handle machines, tools, or extension cords.
18. Keep visitors a safe distance from the work area.
19. **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.
20. **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.
21. **Turn off** power before checking, cleaning, or replacing any parts.
22. Be sure **all** equipment is properly installed and grounded according to national, state, and local codes.
23. Keep **all** cords dry, free from grease and oil, and protected from sparks and hot metal.
24. 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.



25. **DO NOT** bypass or defeat any safety interlock systems.

26. Learn the function and controls. Know the location of the **ON - OFF** switch and the **“E”-STOP** button.



IMPORTANT: *It is the duty of both the employer and employee to acquaint themselves with the safe working practices contained in this manual and ensure that all operators adopt these practices.*

The SW-621 and SW-623 Ironworker has these working stations:

- PUNCHING
 - FLAT BAR SHEAR
 - ANGLE BAR SHEAR
 - SQUARE BAR / ROUND BAR SHEAR
 - NOTCHING
-
- To ensure safe operation, guards are provided for each of the five workstations. **NEVER REMOVE THESE GUARDS.** If any guards are damaged or worn out, replace immediately with new guards.
 - While every effort has been made to furnish sufficient safeguards, this equipment if not operated or maintained properly, has the potential to cause **serious injury or death.**
 - All operations are controlled by the foot switch. The operator should be familiar with all controls, especially the Emergency Stop button.

Additional Safety Precautions

- On the SW-621 and SW-623 there is vertical motion at all stations at the same time, yet only one station must be used at one time. **There is the potential for SERIOUS BODILY INJURY.** During operation, make sure that any station **NOT** in use is free from any obstructions, material, and personnel. **When using the shearing stations, turn the selector switch to SHEAR mode and make sure that the punching stripper is closed, and the notching cover is closed.**
- The **PUNCH / NOTCH** switch requires the use of a key. The key is intended for Authorized Personnel only. Misuse of the key may increase the risk of injury at the Notching station. **NEVER LEAVE THE KEY ON THE MACHINE.** Refer to the section “Getting to know your machine” in regard to the PUNCH / NOTCH switch and the notch station guard interlock switch.
- **Turn off** main power to the machine when changing tooling or performing any maintenance work.



- **DO not** operate the machine unless all safety guards and hold-downs are in place. Use of optional attachments / tooling should also have proper hold-downs and guards installed. Do not use tooling or an attachment to do a job it was not designed for.
- **Keep hands clear of all moving parts at all times. Fingers must not go under or inside the safety guards, stripper, and hold-downs.**
- After tool changes, always check punch and die alignment, and blade clearances before operation.
- **Do not** punch, shear, or notch parts that are too small to fit under the safety hold-downs.
- After completion of operation, remove all slugs and waste material from the machine.
- **Do not** punch partial holes as this creates a side load force on the punch and can result in tool breakage. Special tooling may be available for this purpose.
- **Do not** punch material thicker than the diameter of the punch. Doing so can overload and break the punch and create a hazard.



TECHNICAL SPECIFICATIONS

Punching	
Punching Pressure	62 Tons (55 Tons)
Punch Capacity	1.10" x .59" (28 x 15mm)
(Diameter x Thickness)	1.57" x .433" (40 x 11mm)
Throat Depth	7.87" (200mm)
Maximum Stroke Length	1.968" (50mm)
Cycles / Minute	28 @ 15mm
Working Height Up to Die	39.36" (1000mm)
Flat Shearing	
Flat Bar Shearing	13.7" x .59" (350 x 15mm)
Blade Length	14.125" (360mm)
Angle Flange Trim	3.93" (100mm)
Working Height	31.49" (800mm)
Angle Shearing	
At 90° Shearing	3.93" x 3.93" x .315" (100 x 100 x 8mm)
Working Height	40" (1016mm)
Bar Shearing	
Round Bar Shear	1.57" (40mm)
Square Bar Shear	1.49" x 1.49" (38 x 38mm)
Working Height	44" (1118mm)
Notching	
Rectangle Notcher (W x D x T)	2" x 3.5" x .315" (50.8 x 90 x 8mm)
Working Height	40" (1016mm)
Special Tooling	
Single Vee Press Brake (L x T)*	6.315" x 315"* (160 x 8mm)*
Multi-Vee Press Brake (L x T)*	9.875" x .156"* (250 x 4mm)*
Angle Bending*	2.5" x .315"* (65 x 8mm)*
Pipe Notching*	2.5"* (63mm)*
Vee-Notcher (Side x Side x T)*	3.5" x 3.5" x .315"* (90 x 90 x 8mm)*
Power Supply!!	220V / 60hz / Verify phase to model name plate
Motor!!	5hp (2.25kw) 220V / 60hz / 14A
Net Weight	2310Lbs (1050kg)
Dimensions (L x W x H)	43" x 30" x 68" (1092 x 762 x 1727mm)
Capacities based on a material tensile strength of 64000 PSI – mild steel	



NOTICE:

*!! Model SW-621 operates on 220V single phase power.
!! Model SW-623 operates on 220V three phase power.
Material thickness should not exceed the punch diameter being used.*

MACHINE FEATURES – (Standard on SW-50)

- True vertical movement on all stations.
- 2-piece quick release punching table with adjustable stops.
- CE approved cover interlock system for maximum safety.
- Remote, three position foot switch.
- Adjustable stroke control.
- Long life, multiple edge blades on shearing and notching stations.
- 7 sets of round punches and dies included.
- T-slot punch and notch bases for tool changing.
- 2-piece, self-centering quick release punch retainer system.
- Oversized tables with material guides.
- Jog mode enables accurate tooling alignment in minimal time.
- Adapters to fit Cleveland Tool punch and die sets.
- Easy adjust, swing away material stripper.
- Optional Tooling - Call your Baileigh Representative for specific ordering information.

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, 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.



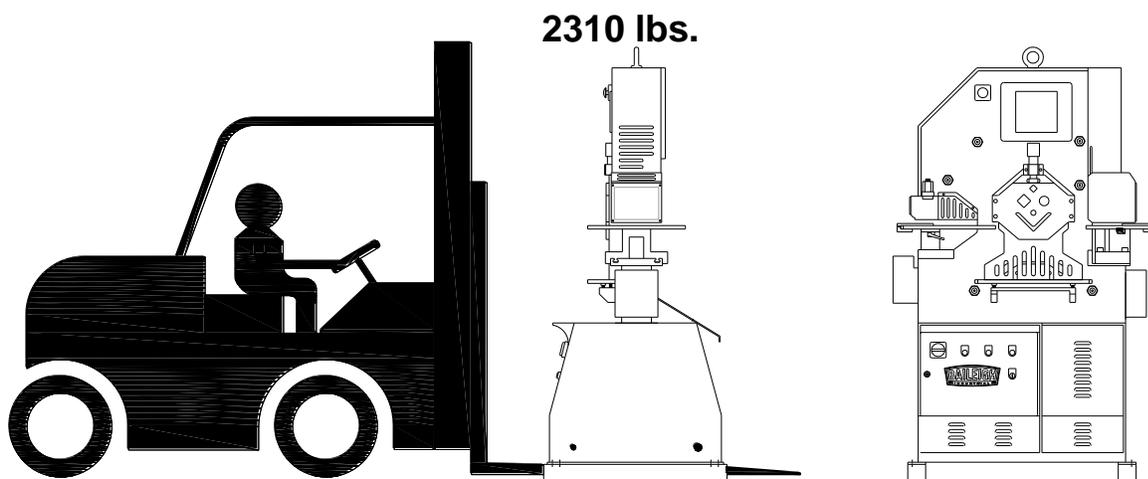


TRANSPORTING AND LIFTING

⚠ CAUTION: 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:

- 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.



- 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.

INSTALLATION

IMPORTANT:

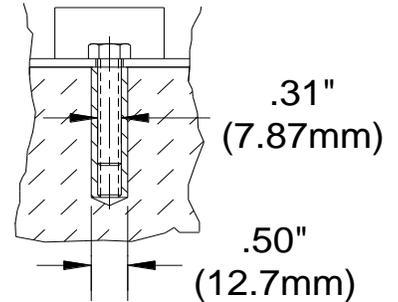
Consider the following when looking for a suitable location to place the machine:

- 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.



Tank Filling

The hydraulic oil is the primary medium for transmitting pressure and also must lubricate the running parts of the pump.

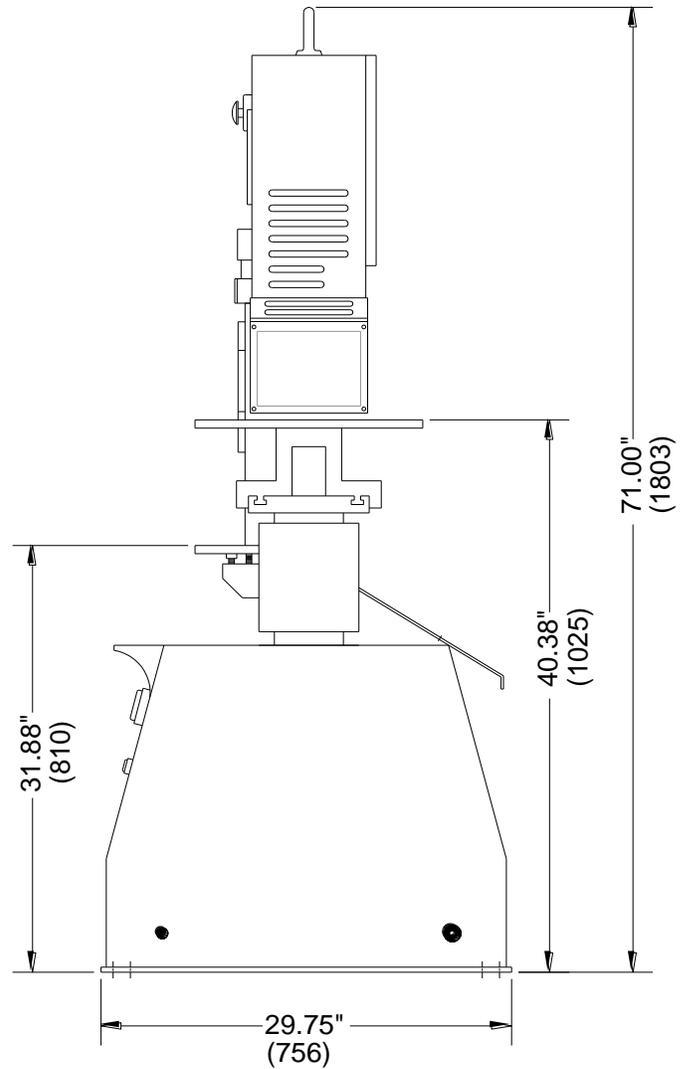
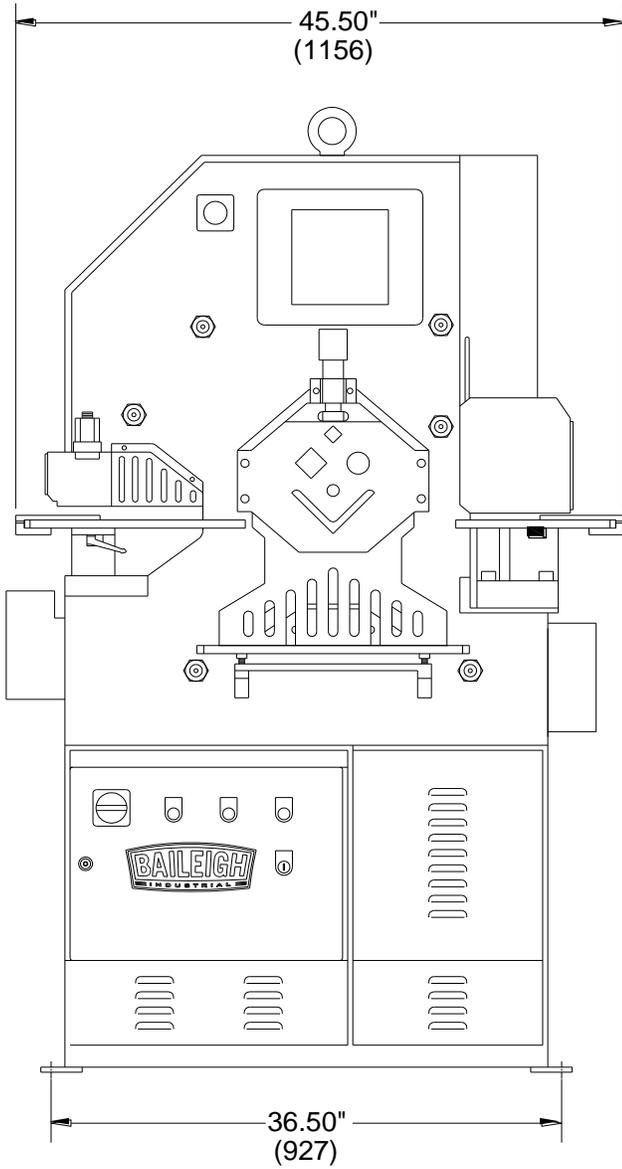
After installation of the machine and before machine startup, bring the oil level up to 90% of capacity. Refer to any labels or marking affixed to the outside of the machine, if none exist, use SHELL BRAND #46 or #68 hydraulic oil or an equivalent with similar specifications. (Based upon location temperature and availability.)

Verify that any cylinder rams are in the retracted position to prevent overfilling of the tank. Recheck the oil level after the first few hours of operation and again after the first full week of operation.

A shortage of hydraulic oil can cause hydraulic system breakdown and damage to major mechanical parts due to overheating.



OVERALL DIMENSIONS



Note: Material Backstop not shown.



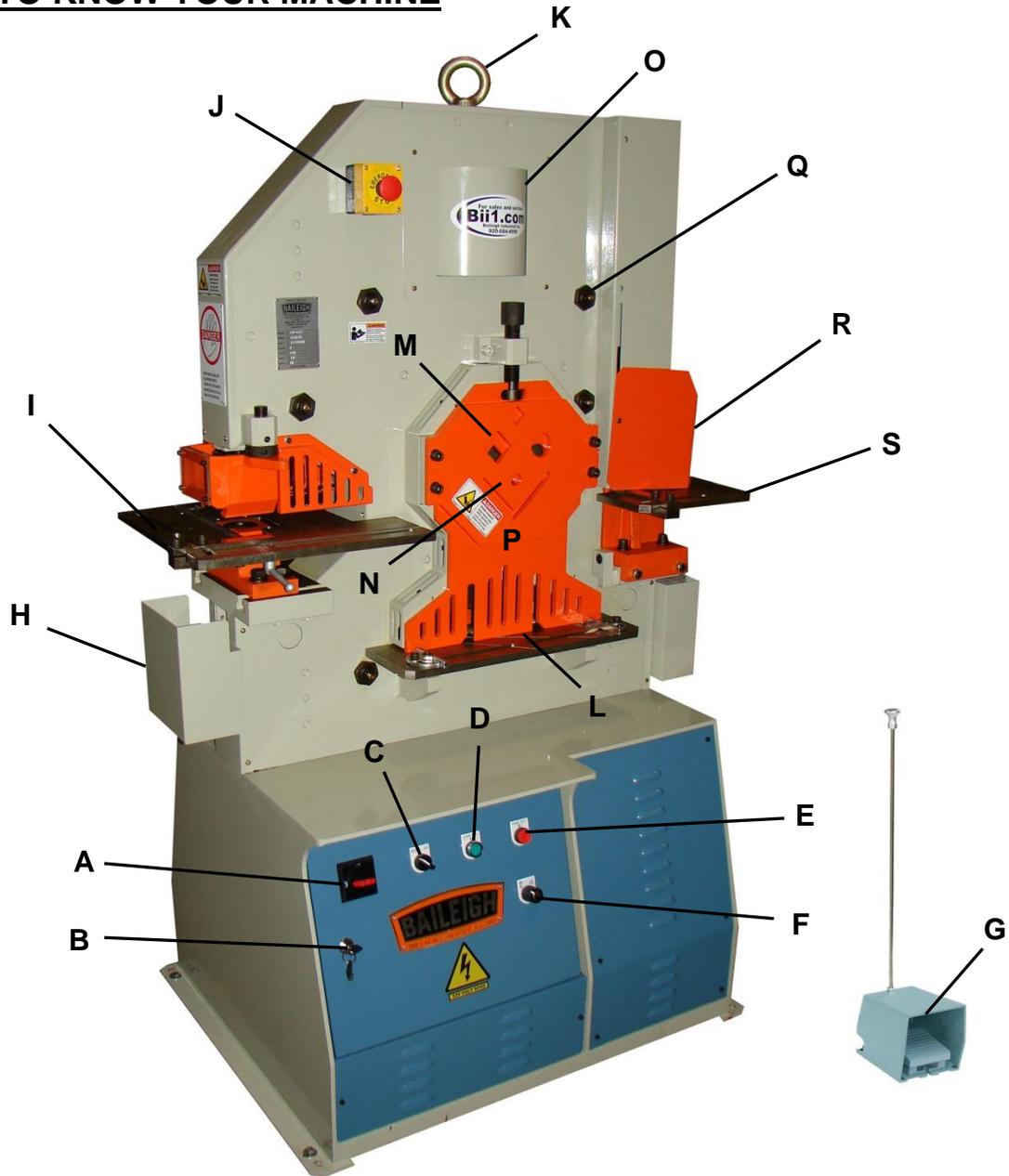
STANDARD EQUIPMENT SUPPLIED WITH SW-62 IRONWORKER

Flat Bar Shear Blades	1 set
Angle / Round / Square Bar Shear Blades	1 set
Rectangular Notch Blades	1 set
Round Punch and Die	7 sets
Punch and Notch Support Tables	1 set
Punch Retaining Nut / Sleeve	1 set
Die Holder	1 pc
1 Miter Back gauge - (in. / mm)	1 pc
Workstation Safety Guards	1 set
Lifting Eye Bolt	1 pc

<u>TOOLBOX</u>	
Grease Gun	1 pc
Adjustable Wrench (300mm)	1 pc
Screwdriver (+)	1 pc
Screwdriver (-)	1 pc
Hex Key Wrench Set	1 pkg
Hex Wrench (12mm)	1 pc
Hex Wrench (14mm)	1 pc
SPA Spanner Wrench	1 pc
Punch Retaining Sleeve	1 pc
Punch Stripper Unit	1 pc
Key for electrical enclosure	2 pc
Fuses – 2A, 6A	1 ea.
4mm x 45mm key (when using square or oblong punches)	1 pc



GETTING TO KNOW YOUR MACHINE





T

U



V



W

A	Disconnect Switch	Controls main power ON / OFF
B	Electrical enclosure lock	Prevents unauthorized access (requires key)
C	Normal / Jog switch	Normal (auto return) - Jog (inching, non-return)
D	Pump "ON" switch	Starts hydraulic pump / motor
E	Pump "OFF" switch	Stops hydraulic pump / motor
F	Punch / Notch switch	Selects between punch / notch (requires key)
G	Foot switch	Controls up / down motion of the central slide
H	Material scrap bin	Collects scrap from the punch and notch stations
I	Punch station	Does punching and more with easy tool changes
J	Emergency stop switch	Shuts down machine in an emergency situation
K	Lift ring	Used when lifting machine with a crane
L	Shear station (flat)	Shears various thicknesses and widths of material
M	Shear station (shapes)	Shears various sized rounds and squares
N	Shear station (angles)	Shears various sized angles
O	Hydraulic cylinder	Supplies the tonnage for shearing and punching
P	Hold down plate	Used for clamping various sized shapes
Q	Grease fittings (multiple)	Directs grease to the main central slide
R	Notching guard	Microswitch activated slide guard for safety
S	Notch station	Notches edges and corners of various materials
T	Upper limit switch	Controls cylinder stroke upper limit
U	Lower limit switch	Controls cylinder stroke lower limit
V	Hydraulic system	Supplies hydraulic oil to the stroke cylinder
W	Back gauge	Back gauge sets the precise length



CAUTION: The shear blade and notch station blade move simultaneously. This means that in notch mode, with the safety guard up, the punch and shearing stations are a potential risk for bodily injury!
NEVER ALLOW MORE THAN ONE OPERATOR AT THE MACHINE AT ANY ONE TIME WHILE THE MACHINE IS RUNNING!

The key for the punch / notch switch is intended **ONLY** for the supervisor of the Ironworker and must **NOT** be left on the machine. All personnel that are authorized to use the notching station must understand the potential risks involved.

Control Panel

A – Disconnect Switch – This switch controls the main electric source to the Ironworker. In the “**ON**” position it enables you to start the machine and also functions as a lock for the electrical enclosure. In the “**OFF**” position power is disabled to the machine and the lock is released.

B – Electrical Enclosure Lock – When disconnect switch **A** is in the “**OFF**” (unlocked position) this switch still allows you to lock and unlock the enclosure.

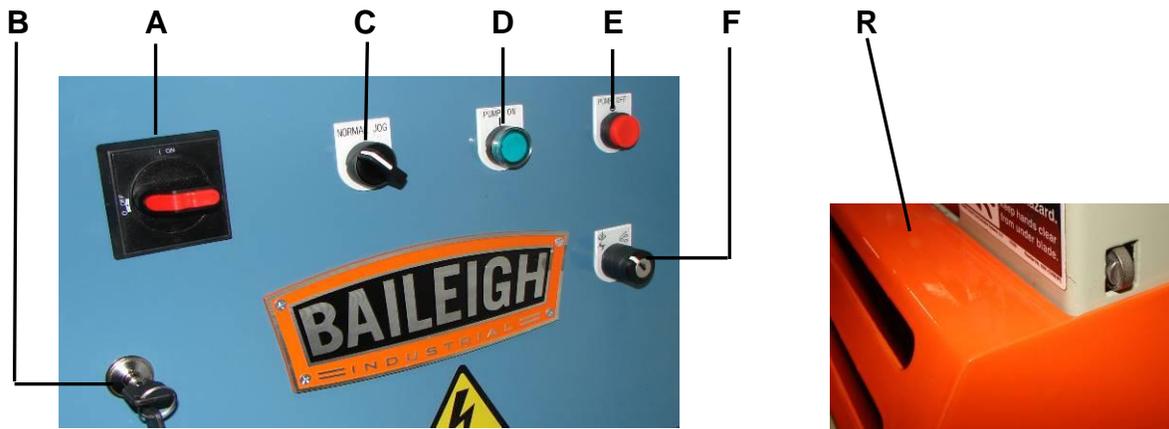
C – Normal/ Jog Switch – This switch allows selection between the normal (automatic return) mode and the jog (inching, non-return) mode. Use the normal mode to operate the machine. Use the jog mode to align the punch / die, to set blade clearance, and to set the strokes. In **NORMAL** mode, the ram / slide moves in both up and down directions. In **JOG** mode, the ram / slide moves only in the downward direction.

D – Pump “ON” Switch – Push this button to power up the hydraulic system. The green light will be lit. (The emergency stop button must be in the reset position.)



E – Pump “OFF” Switch – Push this button to power down the hydraulic system.

F – Punch / Notch Key Switch – Use this switch to select between punching or notching operations. This switch is electrically interlocked with the notch safety guard (**R**). A key is required to switch between shear and notch mode. When in shear mode, the machine is **IMMOBILIZED** if the safety notch guard is lifted.



J – Emergency Stop – Use the Emergency stop button to **STOP** the machine in an emergency. The Emergency button must be reset before the **PUMP ON** switch will function. To reset the Emergency button, turn the knob clockwise (**cw**) till it pops out.





Foot Switch

The SW-62 uses a foot switch for fast and easy operational control. The foot switch enables the operator to cycle the machine while holding the piece part with both hands.

⚠ CAUTION: NEVER LET ONE OPERATOR HOLD THE MATERIAL AND ANOTHER PRESS THE FOOT PEDAL!

The foot switch has three positions: **UP**, **HALFWAY**, and **DOWN**. When not pressed, an internal spring keeps the pedal in the **UP** position. (*push your foot in far enough to release the toe lock or the pedal will not go down.*)

The foot switch functions differently in the **NORMAL** and the **JOG** modes.

In **NORMAL** mode, pressing the foot pedal to the **DOWN** position will lower the blade. Releasing the foot pedal to the **HALFWAY** position will cause the blade to stop. This is useful when positioning the piece part without using the gauge stoppers. Press the foot pedal again to the **DOWN** position and the blade will continue moving downward until reaching the lower limit switch. Release the foot pedal and the blade will return to the **UP** position.

In **JOG** mode, pressing the foot pedal to the **DOWN** position will lower the blade. The blade stops moving when the foot pedal is released to either **HALFWAY** or the **UP** position. The blade does not move back up, even when the foot pedal is completely released. This will allow the operator to make necessary adjustments and to check alignment. In other words, the blade moves only in one direction in **JOG** mode. To move the blade back to the **UP** position, switch the **NORMAL / JOG** switch to **NORMAL**.





ELECTRICAL

⚠ WARNING: Baileigh Industrial Holdings LLC is not responsible for any damage caused by wiring up to an alternative 3-phase power source other than direct 3-phase. If you are using an alternate power source, consult a certified electrician or contact Baileigh Industrial Holdings LLC prior to energizing the machine.

⚠ 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, 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.

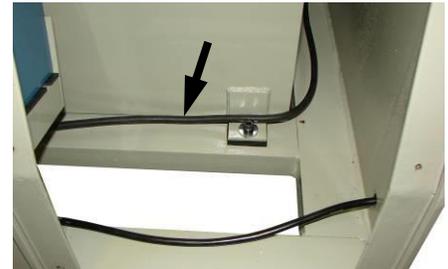


⚠ WARNING: In all cases, make certain the receptacle in question is properly grounded. If you are not sure, have a qualified electrician check the receptacle.

- 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.

Power cord connection:

1. Open the hinged electrical box cover using the supplied key. (Disconnect switch must be turned **OFF**.)
2. Remove the panel located below the electrical box.
3. Insert the required power cord (supplied by customer) through the grommet located at the lower right-hand side of the machine base.
4. Pull the cord around and up through the fitting at the bottom of the electrical box. **DO NOT** run the cord under the base frame as forklift damage may occur.
5. 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.
6. For single phase, connect one of the two power wires to terminal **L1** and the other to terminal **L2**. Connect the ground wire (typically green) to the **PE** (Safety Ground) terminal.
7. For three phase, connect the three power wires as shown in the photo at right to terminals **L1**, **L2**, & **L3**. Connect the ground wire (typically green) to the **PE** (Safety Ground) terminal.





8. Check that the power cord has not been damaged during installation.
9. Reinstall the panel and close the electrical box.
10. To check the correct rotation of the motor: (3 phase)
11. Make sure guards are down and in position, and that **hands and fingers are clear.**
12. With power connected and machine turned on, briefly step on the footswitch. The shear blade should come down. If not, disconnect power to the machine and switch the L1 and L3 wires. **DO NOT** move the ground wire **PE.** **Improper rotation can severely damage the hydraulic pump.**



PUNCHING STATION

Standard Equipment

The Baileigh SW-62 Ironworker comes with seven sets of punches and dies. Many other punching tools of different sizes and configurations are also available upon request from a Baileigh Industrial sales representative at **920.684.4990**. In addition, a large 2-piece support table with material guides is installed as standard equipment.

⚠ CAUTION: The swing away punch stripper must be closed properly during punching operation (fig.1). Utilizing the interlock limit switch inside the stripper back cover (fig. 2), the punching station is immobilized when the stripper cover is opened (fig. 3).



figure 1

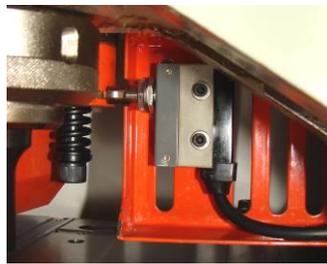


figure 2



figure 3

Alignment of Punch and Die

The punch and die may have previously been centered. However, you should still check the tools regularly for proper alignment. To center the die, follow these steps:

1. Insert punch into the retaining nut, and then tighten the nut onto the retaining thread.
2. Insert the die into the holder and secure the setscrew.
3. Loosen all of the die holder fixing bolts.
4. Lower the punch gradually, (by using the **JOG** mode)

⚠ WARNING: Be very careful that the punch does not hit the die, which can break the punch, creating a potential hazard to the operator.

5. After the punch is inside the die, turn off and lock out the electrical power to the machine.
6. Adjust the position of the die holder until the clearance around the punch and die is even all the way around.



7. Tighten the die holder bolts to firmly fix the die position.
8. Adjust the limit switches to change the stroke length if necessary. (See the section on Adjusting the Machine in this manual)

Optional Punches (setting up)

When setting up square or oblong punches and dies, be sure to properly locate the key on top of the punch in the keyway of the punch retaining thread. **Note:** The key comes attached to the inside cover of the toolbox Carefully check the alignment (both position and direction) of the die with the punch. Incorrect set-up will damage the punch and die, **creating a potential hazard to the operator.**

Punch and Die Clearance

Punch size is the same as the desired hole size. Die size is typically the punch size plus the clearance. The clearance depends on the thickness of the material being punched and is about 10% of the materials thickness. Also refer to the following chart for recommended clearances.

Material Thickness	inch	up to .157"	.157"-.354"	.354"-.551"	.551"-.787"
Die Clearance	inch	.007"	.027"	.047"	.067"

Adjusting the Stripper

- The distance between the stripper and the material should be adjusted from .078" to .118". Adjust the stripper height each time you change to a material of a different thickness.
- Adjust the stripper height by turning the knurled screws at both sides of the stripper.
- If the stripper tends to hang down on the right side, tighten the spring on the left side of the stripper.
- The stripper should be adjusted so that the piece part contacts the stripper evenly when the punch retracts out of the material. Unbalanced stripping may break the punch **creating a potential hazard to the operator.**
- If the material does not have adequate contact with the stripper due to asymmetrical shape, material is too small, or punched hole is too close to the edge of the material, **DO NOT** proceed with the punching operation.

The stripper has interchangeable plates with various opening sizes to match the size of the hole. Select the plate with the smallest suitable opening. Keeping the opening close to the size of the punch will greatly reduce deformation, especially on thinner materials.



figure 4



Actual Punching Force

The actual force required in a punching operation is calculated by taking the circumference of the hole multiplied by the thickness of material multiplied by the tensile strength of the material.

Maximum Capacity = circumference x thickness x tensile strength

The capacity chart of this manual is based on a material tensile strength of 64,000 PSI.

DO NOT attempt a punching operation that requires force greater than the maximum capacity of the Baileigh SW-62 Ironworker.

Punching Precautions

1. **ALWAYS** use die with the proper clearance.
2. **ALWAYS** check the alignment after each tool change.
3. To prevent overloading and breakage of the punch, **DO NOT** punch material which is thicker than the hole diameter.
4. **DO NOT** punch partial holes. Punching incomplete holes will cause the punch and die to bend and break.
5. Applying some lubricant oil on the punch will prolong the life of the punch and reduce the stripping load. The punch and die should be wet with lubrication but not dripping.
6. Regrinding of punching tools is not recommended

Punch and Die Lubricant

SHELL	-	GARIA 927
B.P.	-	SERVORA 68
CASTROL	-	ILOBROACH 219

These are three of the many lubricants to choose from. Find a reliable source that is near to your location.



Punch Operation

For punching flat plates:

1. Turn the **PUNCH / NOTCH** switch to **PUNCH** and be sure the notch station guard is closed.
2. Check again that the stripper, punch / die alignment is properly adjusted, and the height of the stripper is adjusted from .078" to .118" above the piece part.
3. Set the gauging stoppers to the desired position.
4. Position the plate on the working table against the stoppers.
5. Press the foot pedal to the **DOWN** position to execute the punch.
6. Release the foot pedal for the punch to retract. During stripping, the material will be lifted up against the stripper and then drop off when the punch retracts out of the hole.



CAUTION: Material movement has the potential for operator injury!

For punching angles:

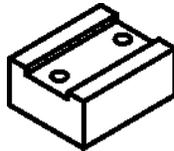
1. Turn the **SHEAR / NOTCH** switch to **SHEAR** and be sure the notch station guard is closed.
2. Check again that the stripper, punch/die alignment is properly adjusted, and the height of the stripper is adjusted from .078" to .118" above the piece part.
3. Remove the front section of the two-piece table.
4. Set the gauging stoppers to the desired position.
5. Position the angle against the die holder with one flange facing downward. **DO NOT POSITION THE ANGLE WITH ONE FLANGE FACING UP!**
6. Press the foot pedal to the **DOWN** position to execute the punch.
7. Release the foot pedal for the punch to retract. During stripping, the material will be lifted up against the stripper and then drop off when the punch retracts out of the hole.



CAUTION: Material movement has the potential for operator injury!



PUNCHING STATION ASSEMBLY



Retaining Thread Support



Punch Retaining Thread



Punch Retaining Nut

Punch Retaining Nut



Key

Round Punch



Oblong Punch



Punch Sleeve



FLAT BAR SHEAR STATION

This station is equipped with an adjustable hold down suitable for shearing various material thicknesses. It also has a feed table with guides for material positioning and support. Besides shearing flat bars, it can also shear angle flanges diagonally.

Blades

Upper blade (moves up and down on central slide.) The blade can be turned to utilize both cutting edges.

Lower blade (stationary) The blade can be turned to utilize all four cutting edges. This provides for a longer blade life.

Cutting Clearance

The width of the cutting clearance (the distance between the moving and stationary blades) has been pre-adjusted at the factory to be between .008" and .012". The cutting clearance depends on the thickness and tensile strength of the material. The thicker the material, the wider the cutting clearance should be. Improper cutting clearance can result in the deformation of the piece part. Too large of a clearance when shearing thin material can cause the material to bend over instead of being sheared.

The cutting clearance can be adjusted by the 3 fix bolts "X" that "pull in" the stationary blade and the 6 adjusting screws "Y" that "push out" the stationary blade. (fig. 7)

Hold down knob



figure 5



figure 6

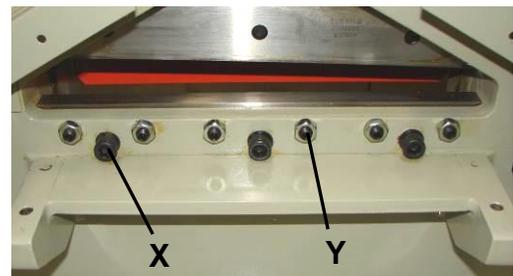


figure 7

To adjust cutting blade clearance, follow these steps:

1. In **JOG** mode, move the top blade down to the lower position so that the opening between blades is closed.
2. Turn **OFF** and lockout power to the machine.



3. Remove the hold down plate (**P**) and the feed table (**Z**). (fig. 5 & 6)
4. Loosen the 3 fixing bolts (**X**) that hold the lower blade.
5. Loosen the locking nuts on the 6 adjusting screws (**Y**).
6. Adjust the clearance by turning the adjusting screws clockwise (**cw**), which pushes the lower blade towards the upper blade.
7. Check the clearance with a feeler gauge. It is very important to make sure that the cutting clearance is uniform along the entire blade.
8. Tighten the fixing bolts to secure the position of the lower blade.
9. Tighten the locking nuts of the adjusting screws (**Y**).
10. Re-check the blade clearance.
11. Reinstall the table and the hold down plate.



CAUTION:

- **DO NOT shear any pieces too small to be secured in position by the hold down. Doing so can seriously damage the machine.**
- **Always feed material from the front of the machine. NEVER insert material from the back.**
- **Keep the cutting edges sharp. By checking the sheared material, you will have an indication whether the clearance is set properly.**
- **Keep the work area clean by removing the scraps and waste material regularly.**

Flat Bar Shear Operation

1. Turn the **PUNCH / NOTCH** switch to **PUNCH** and be sure the notch guard is closed.
2. Push the material under the hold down and use the back gauge for setting the precise length.
3. Be sure that the material is properly positioned on the table and secured under the hold down. Incorrect positioning can damage the blades and/or the machine.

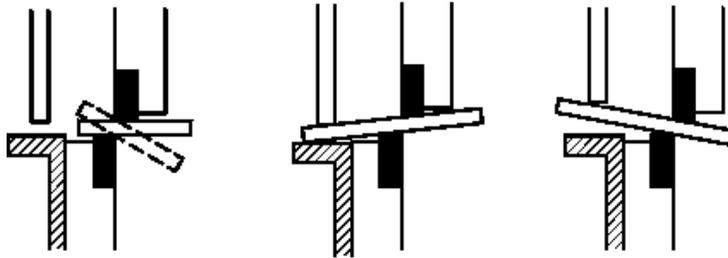


CAUTION: Keep hands clear of the blades.

4. Press the foot pedal to make the cut and release the foot pedal to raise the center blade slide.



INCORRECT



CORRECT

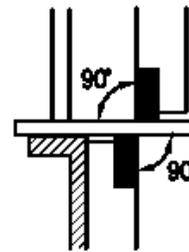


figure 8

ANGLE FLANGE SHEARING OPERATION

The two vertical slots on the hold down plate (indicated below) allow for the shearing of angle flanges at various degrees:

1. Push the material into the vertical slot on the hold down plate until the vertical flange touches the upper blade.
2. Align the material to the desired shearing degree using the lines on the feeding table and the movable guides to stabilize it.
3. Lower the hold down to firmly secure the material.



CAUTION: Keep hands clear of the blades.

4. Press the foot pedal to make the cut and release the foot pedal to raise the center blade slide.

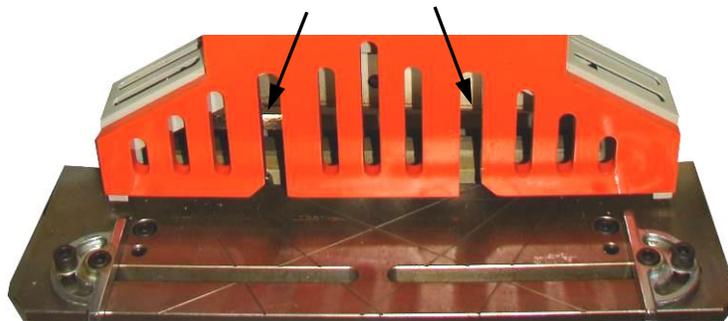


figure 9



ANGLE SHEAR and SQUARE / ROUND BAR SHEAR STATION

This station is equipped with a hold down suitable for shearing angle at 90° and for shearing various sizes of square and round bars. With optional tooling available, this station can also shear various sizes of channel and bar sections.

Cutting Clearance

Clearance between the stationary blade and the moving blade can be set with the four adjusting screws (AA). To adjust the clearance, follow these steps:

1. Turn **OFF** and lockout power to the machine.
2. Remove the hold down plate (plate shown removed in fig. 10)
3. Loosen the four locking nuts.
4. Tighten the four adjusting screws (AA) firmly. Then loosen each screw one third of a turn. Lock in position by tightening the locking nuts.
5. Reinstall the hold down plate.



CAUTION:

- **DO NOT** shear any pieces too small to be secured in position by the hold down. Doing so can seriously damage the machine.
- Always feed material from the front of the machine. **NEVER** insert material from the back.
- Keep the cutting edges sharp. By checking the sheared material, you will have an indication whether the clearance is set properly.
- Keep the work area clean by removing the scraps and waste material regularly.

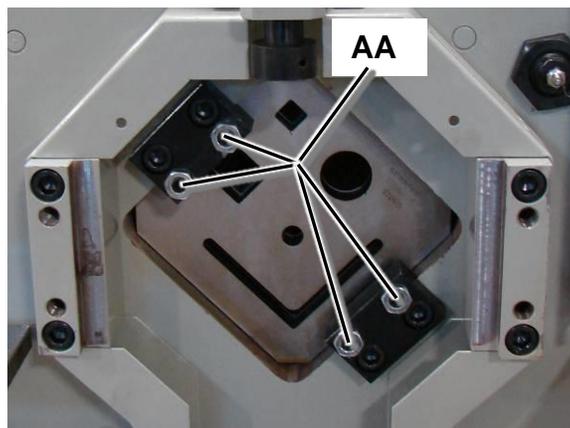


figure 10



Angle Square Bar / Round Bar Shearing Operation

1. Turn the **PUNCH / NOTCH** switch to **PUNCH** and be sure the notch guard is closed.
2. Push the bar through the selected slot on the hold down plate to the back gauge for desired length.
3. Lower the hold down to secure the material.



figure 11

⚠ CAUTION: Keep hands clear of the

4. Press the foot pedal to make the cut and release the foot pedal to raise the center blade slide.

NOTCHING STATION

The rectangular notcher can be used to notch the edges and corners of flat plates and the flanges of angles and channels. The triangular Vee notcher is also available as optional tooling.

Blades

The three lower blades each has four cutting edges. Turn the blades to use the other cutting edges. The top blade cannot be turned. **DO NOT** grind any of these blades to sharpen.

Bolster Adjustment

The notch bolster can be adjusted for alignment of the lower blades to the upper blade. To adjust, follow these steps:

1. Lower the working slide until the upper blade inserts into the lower blades by about 0.118" - 0.196" below the top surface of the lower blades.
2. Turn **OFF** and lockout power to the machine.
3. Lift up the notch guard.
4. Loosen the four bolsters fixing bolts (**AB**).
5. Loosen the four nuts on the side adjust screws (**AC**).
6. Loosen the nut (**AE**) on the back hold-back bolt (**AD**).
7. Adjust the bolster position by turning the side adjust screws and the back hold-back bolt.
8. Check the cutting clearances on all three cutting faces with a feeler gauge. **It is very important to make sure the cutting clearance is uniform along the entire length on all three cutting blades.**
9. Tighten the nuts for the side adjust screws and the back hold-back bolt.



10. Tighten the four bolsters fixing bolts (**AB**) to secure the position of the bolster.
11. Check clearance again.
12. Lower the safety cover.

Notching Operation

1. Turn the PUNCH / NOTCH switch to PUNCH.
2. Raise the safety notch guard.
3. Position the plate or angle on the support table using the gauging stoppers for accuracy.
4. Adjust the screws (**AF**) on the two strippers to a clearance of .039"-.078" above the material.
5. Press the foot pedal to execute the notch and release the foot pedal so the blade returns to the up position. During stripping, the material will be lifted up against the stripper bolts and then drop off when the top blade pulls out of the material.



CAUTION: Material movement has the potential for operator injury!

6. Close the notch safety guard after each operation.
7. When finished notching, switch to PUNCH mode and promptly remove the key.

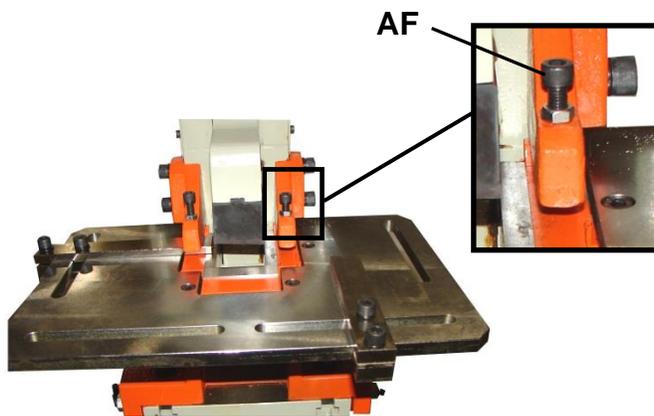


figure 12 (guard not shown)

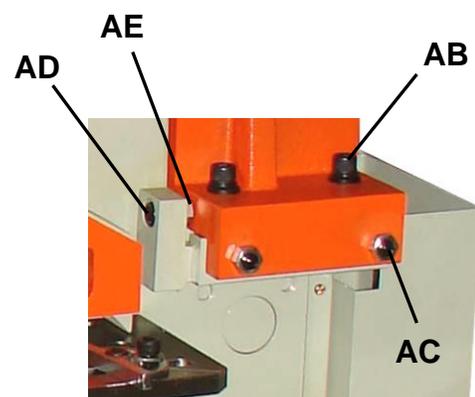


figure 13



ADJUSTING THE MACHINE

Stroke Adjustment

Certain working operations do not require a full working stroke. For large quantities of the same operation, set the required working stroke distance to save operating time. The position and length of the cylinder strokes are controlled by limit switches and actuators on a drive bar installed inside the back panel of the machine. There are two limit switches, one for the upper limit (A) and one for the lower limit (B). Adjust the length of stroke by shifting the position of the actuator mount on the drive bar.

IMPORTANT: The limit switch must be actuated before the cylinder reaches the full extend or full retract position. In other words, the pump should be unloaded in upper or lower limit of the slide travel. **Failure to do so can overload the motor and damage the pump.** If the pump is not in unloading position at either upper or lower limit, a loud noise is heard from the pump. Immediately turn the machine off and adjust the limit switch actuators to set the proper stroke movement.

- The limit switch actuators slide up or down on the stroke adjustment shaft which is connected to the cylinder ram. This is the actuator assembly.
- During operation, the actuator assembly moves with the travel of the cylinder ram.
- The stroke adjustment shaft has a retaining ring at the midpoint. This allows the upper actuator (C) to travel from the midpoint of the shaft to the top of the shaft for up travel of the cylinder ram.
- The lower actuator (D) is allowed to travel from the midpoint of the shaft to the bottom for down travel.
- The greatest travel is obtained when the two actuators are close together near the middle of the shaft (E approximately). This will position the adjustment indicators just slightly above the center of the adjustment slot when the ram is in the full up position.



Note: When the limit switch actuators are moved to the extremes ends of the adjustment slot, the ram may have little to no actual movement. Also, the actuators are to be positioned between the limit switch rollers. If the actuators are moved (forced) above or below the limit switch rollers, the switches and the hydraulics may be damaged. Do not force the adjustment of the actuators.

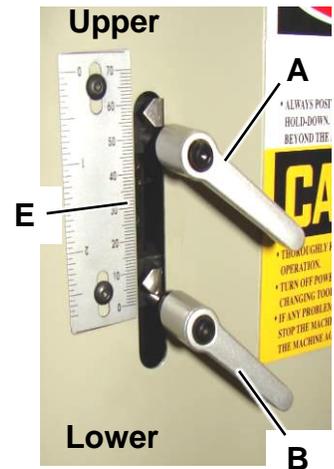


figure 14

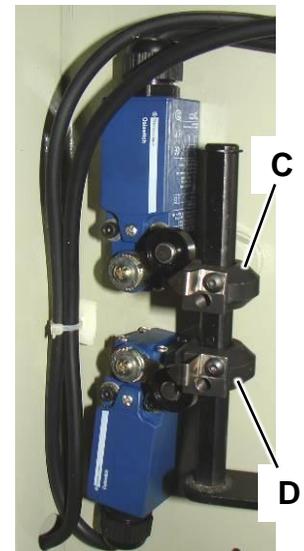


figure 15
(cover removed)



Adjusting the Main Central Slide

The main central slide is the large middle plate that holds the moving shear blades, notching top blade, and the punch. It should be pushed against the rear machine body plate and stay vertical with the machine body. The movement of the main central slide should be stable and without side play. If the main central slide moves sideways, front to back, or left and right, or if the blades wear abnormally, the central slide needs to be adjusted. This service is recommended to be done by authorized trained personnel only.

To adjust the main central slide contact with the rear machine body plate, follow the steps below:

1. Loosen the locking nuts (AG) for the Pressure Pad Screws (AH), that are located on the front body of the machine. They can easily be identified as each has a grease nipple (Q) (same location as the grease points).
2. Turn on the power. Then, tighten the Pressure Pad Screws (AH) firmly while moving the central slide up and down. The Pressure Pad Screws should be adjusted in a diagonal cross order. Now loosen each screw one third of a turn.
3. Repeat the procedure for each of the pressure pads to make sure each screw is adjusted correctly. When finished, lock in position by tightening the locking nuts (AG).

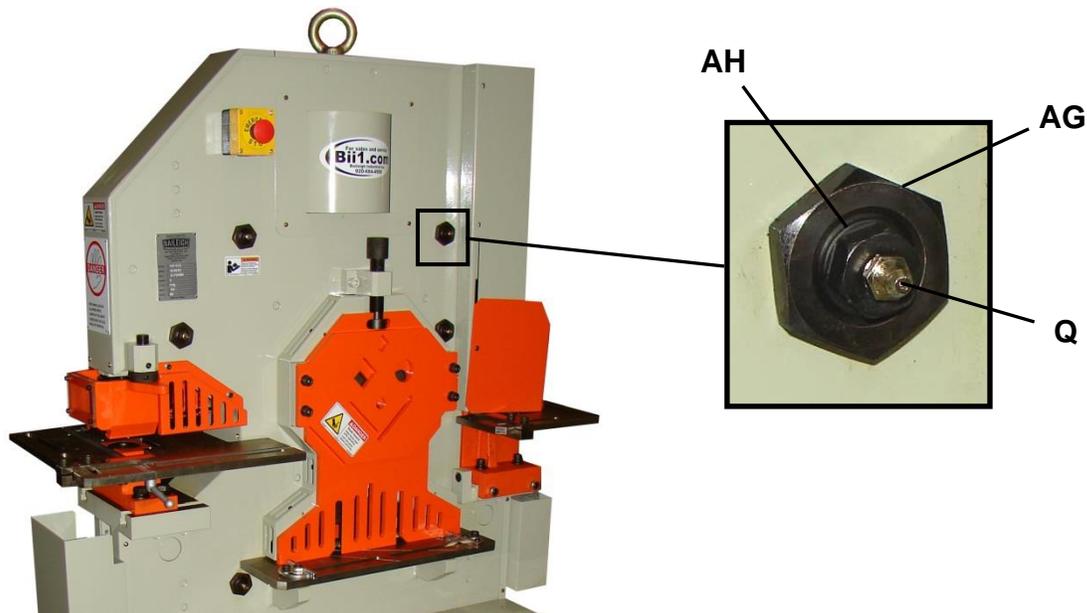


figure 16



The central slide moves straight up and down. This vertical movement is guided by four support guides on both sides of the slide, one at the top and one at the bottom on each side. The two guides on the notcher side are fixed, and the two guides on the punch side can be adjusted. The adjustment is made by turning four eccentric pins that push the support guide against the bronze plate on the central slide. To adjust, follow the steps below:

4. Loosen the four large locking nuts on the back of the machine with special wrench (not supplied).
5. The adjustment pin is eccentric inside (cannot see from outside). Turn the adjustment pin counterclockwise to decrease the gap between support guide and bronze plate (tighten), and clockwise to increase the gap (loosen). This should be done while moving the center slide and the adjustment should be done very evenly on all four pins, so the pressure on the support guide is even on all surfaces.

NOTICE: Incorrect adjustment can seriously damage the machine.

6. Tighten the nuts in the back to fix the pins in position.

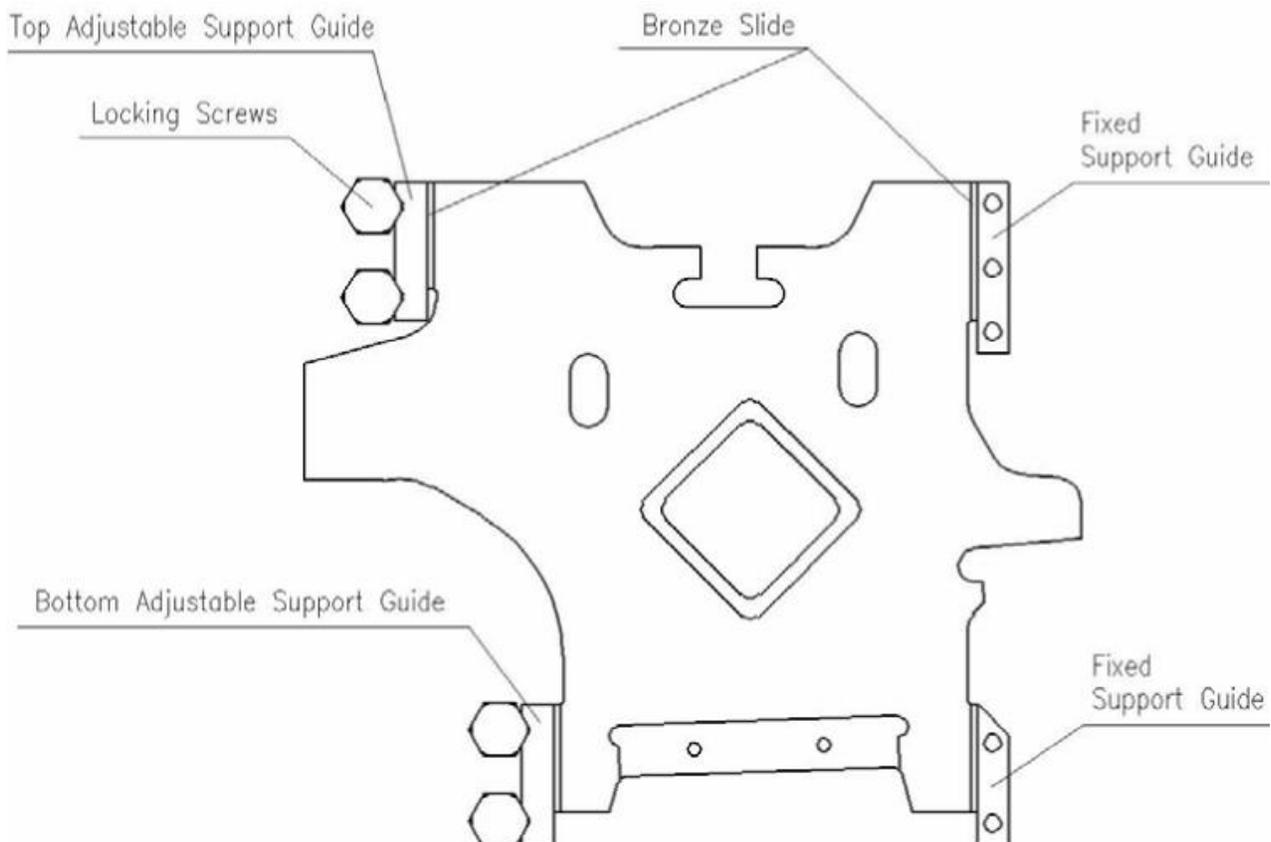


figure 17



BENDING ALLOWANCE

In order to bend sheet metal accurately, you will need to consider the total length of each bend. This is referred to as bend allowance. Subtract the bend allowance from the sum of the outside dimensions of the piece part to obtain the actual overall length or width of the piece. Because of differences in sheet metal hardness, and whether the bend is made with the grain or against it, exact allowances must sometimes be made by trial and error. However, bend allowances for general use can be obtained from metal working books or from the Internet.

UNDERSTANDING SPRINGBACK

Springback, also known as elastic recovery, is the result of the metal wanting to return to its original shape after undergoing compression and stretch. After the bending leaf is removed from the metal and the load is released, the piece part relaxes, forcing the bent portion of the metal to return slightly to its original shape. The key to obtaining the correct bend angle is to over bend the metal a little and allow it to spring back to the desired angle. All metals exhibit a certain amount of spring back.

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.



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

Before Operating the Machine

- Routinely check the electrical power cable and the foot switch cable for any loosening or damage.
- Inspect all the blades, punch, die, and safety guards to ensure they are in good condition.
- Clean all slugs, scrap pieces, and other waste material from each workstation around the machine.

Hydraulic Oil

The hydraulic oil is the primary medium for transmitting pressure and also must lubricate the running parts of the pump.

After installation of the machine and before machine startup, bring the oil level up to 90% of capacity. **A shortage of hydraulic oil can cause hydraulic system breakdown and damage to major mechanical parts due to overheating.**

1. Use SHELL BRAND #46 or #68 hydraulic oil or an equivalent with similar specifications. (Based upon location temperature and availability.)
2. Keep hydraulic reservoir filled to 90% of capacity.
3. **DO NOT** rely totally on the oil gauge as they can sometimes indicate an incorrect level reading. Do a visual inspection with the oil fill cap removed as well.
4. A shortage of hydraulic oil will cause hydraulic system breakdown to major mechanical components due to overheating.



5. Change the hydraulic oil every 12 months along with the oil filter.

Oil Change and Disposal

Change the oil in the hydraulic tank after the first 6 months, and every 12 months after that. Clean the filter basket located under the fill cap before refilling the tank. Used oil products must be disposed of in a proper manner following your local regulations.

Filter and Oil Change

Take off and clean the suction filter inside the oil tank every time the oil is changed. The first oil change should be performed after approximately 600 operating hours. Further oil changes are needed every 1200 operating hours. A drain outlet (**AJ**) is located at the base of the oil tank. Mount the cleaned suction filter after draining the oil. If the suction filter is damaged or clogged, replace the suction filter. Do not mix different brands of oil.

Hydraulic Fluid (or equivalent)

Mobil	DTE 46
Esso	Nuto H46
Shell	Tellus 46 or Hydraulic oil 46
B.P.	Energol HLP 46
Castrol	Hyspin AWS 46 6018



Filter basket under fill cap. Clean before filling tank with oil.

Oil Level

Make sure the hydraulic oil level is in the range as indicated on the oil level sight gauge (**AI**). Keep close to the high mark. Capacity of tank is 18.5 gal. (max.) Required oil capacity is 15.8 gal. Keep the oil level close to the high mark.

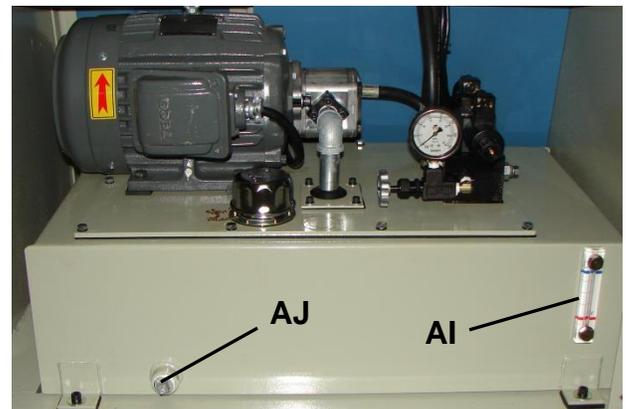


figure 19

Oil Temperature

The oil temperature should be under 122° F. If the upper/lower limit switches are not set correctly for unloading of the pump, the oil temperature can rise quickly.



Hydraulic Pressure

The working pressure of the hydraulic system is pre-set at the factory. The pressure should **ONLY** be adjusted by a service engineer. There is a pressure gauge to indicate the working pressure of the machine. The pressure gauge should normally be closed and used only during service/maintenance work. The max. pressure of the SW-62 is 250 Kg/cm² (3,555 psi).

Lubrication

Lubricate the machine with recommended grease every 8 working hours using the grease gun provided. See (fig. 18) below to locate the grease fittings. There are (6) grease fittings on the front and (10) grease fittings on the back.

Recommended Grease (or equivalent)

Esso	Beacon 2
Shell	Alvania Grease R2

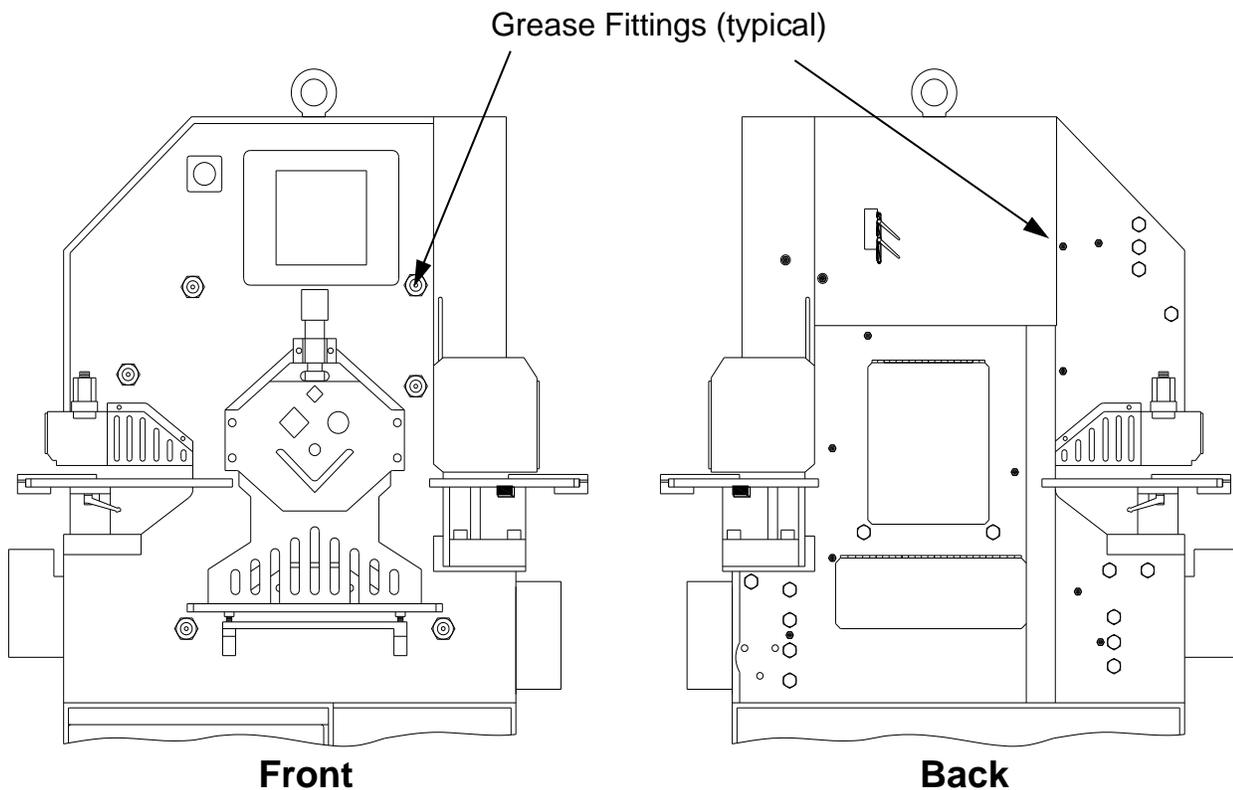


figure 18



TROUBLESHOOTING

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

SYMPTOM	POSSIBLE CAUSE (S)	CORRECTIVE ACTION
Motor Does Not Start	No power.	Check the power source.
	Isolator switch not turned on.	Turn the switch to ON position.
	Emergency button not reset.	Release the emergency button by turning the knob to the right.
	Motor damaged.	Replace motor.
	Motor power cable not connected properly.	Check the cable connection and reconnect cable. Change cable if worn out.
	Motor circuit breaker tripped.	Reset the breaker to ON position.
	Fuse blown.	Check and replace fuse.
Motor is ON, but machine will not move.	Magnetic switch damaged or burned out.	Replace switch.
	Transformer damaged.	Replace transformer.
	Motor turning in the wrong direction.	For 3 Phase-Turn machine OFF. Change any two of the three power source wires. Recheck motor direction.
	Not enough hydraulic oil.	Check oil level and add oil if necessary.
	Solenoid valve stuck.	Clean or replace valve.
Solenoid valve coil burned out.	Replace solenoid valve.	
Foot paddle not sending signal.	Check paddle and replace switch if necessary.	



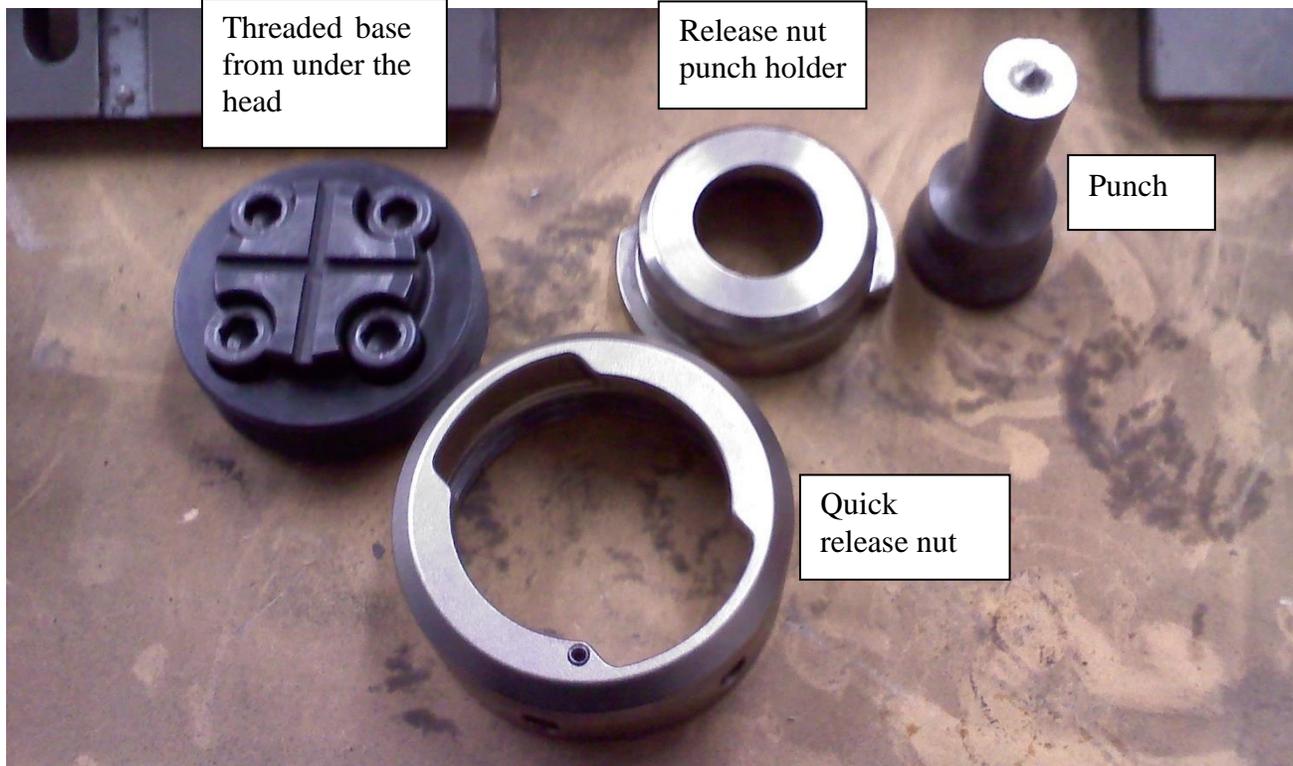
	<p>Relay stuck or burned out.</p> <p>Safety interlock covers not closed.</p> <p>Limit switch not set at correct position.</p>	<p>Replace relay.</p> <p>Close covers / stripper.</p> <p>Adjust the limit switch for proper stroke travel setting.</p>
Machine moves but cannot reach capacity.	<p>Relief valve not set correctly.</p> <p>Relief valve damaged.</p> <p>Pump damaged.</p> <p>Internal cylinder leak.</p> <p>Pilot check valve not set correctly.</p>	<p>Check hydraulic pressure and adjust relief valve (tighten to increase pressure).</p> <p>Replace relief valve.</p> <p>Replace pump</p> <p>Contact dealer for service.</p> <p>Adjust the correct pressure setting of the valve.</p>
Excess hydraulic noise	<p>Motor turning in wrong direction.</p> <p>Pump worn out.</p> <p>Filter is dirty.</p> <p>Not enough oil.</p>	<p>For three phase – Turn machine OFF. Change any two of the three power source wires. Re-check motor direction.</p> <p>Replace pump.</p> <p>Replace filter element.</p> <p>Check oil level and add oil if necessary.</p>



PUNCH TO BREAK CHANGE



Note: Break attachment is an optional piece of tooling and not included with the machine as standard.

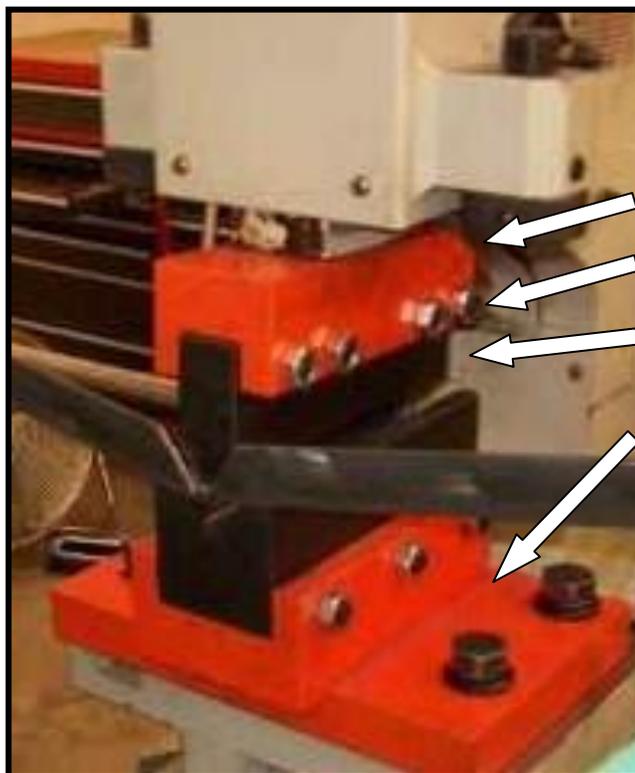
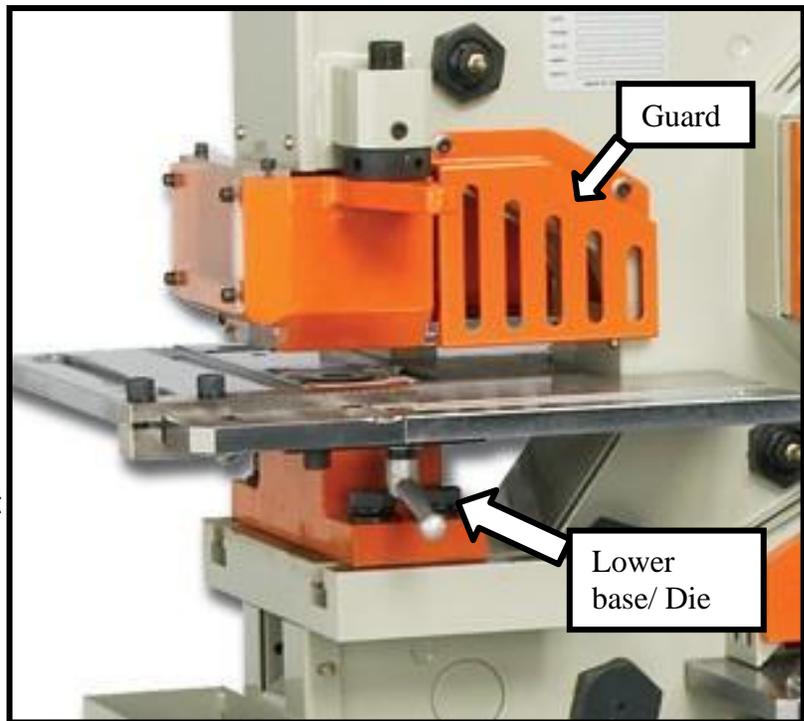


1. Disconnect the machine from the power supply.
2. Loosen and remove the 2 orange guards (one guard must be relocated out of the way because it has a ROLLER Switch) Pictured later.
3. Using the Spanner Wrench, Loosen the Quick Release Nut until you can twist the punch. (left – loose, right – tight).
4. Twist the punch/punch holder till it drops out. This should be less than 1/4 turn.
5. Remove quick release nut.
6. Loosen and remove the four LARGE bolts holding the orange lower base down. A large ratcheting wrench works best.





7. Do not lose these bolts or washers. They will be needed to install the punch base later.
8. Remove Orange lower base.
9. Leave the Tee nuts in the Tee slots below the base.
10. Loosen and remove four socket head cap screws from under the head (where the quick release nut spins on).
11. Remove threaded base from head.
12. DO NOT lose the alignment key but remove it if it stays in the head Set as a unit off to the side.
13. Remove the Swing-a-way stripper assembly.



Upper bracket

Set screws

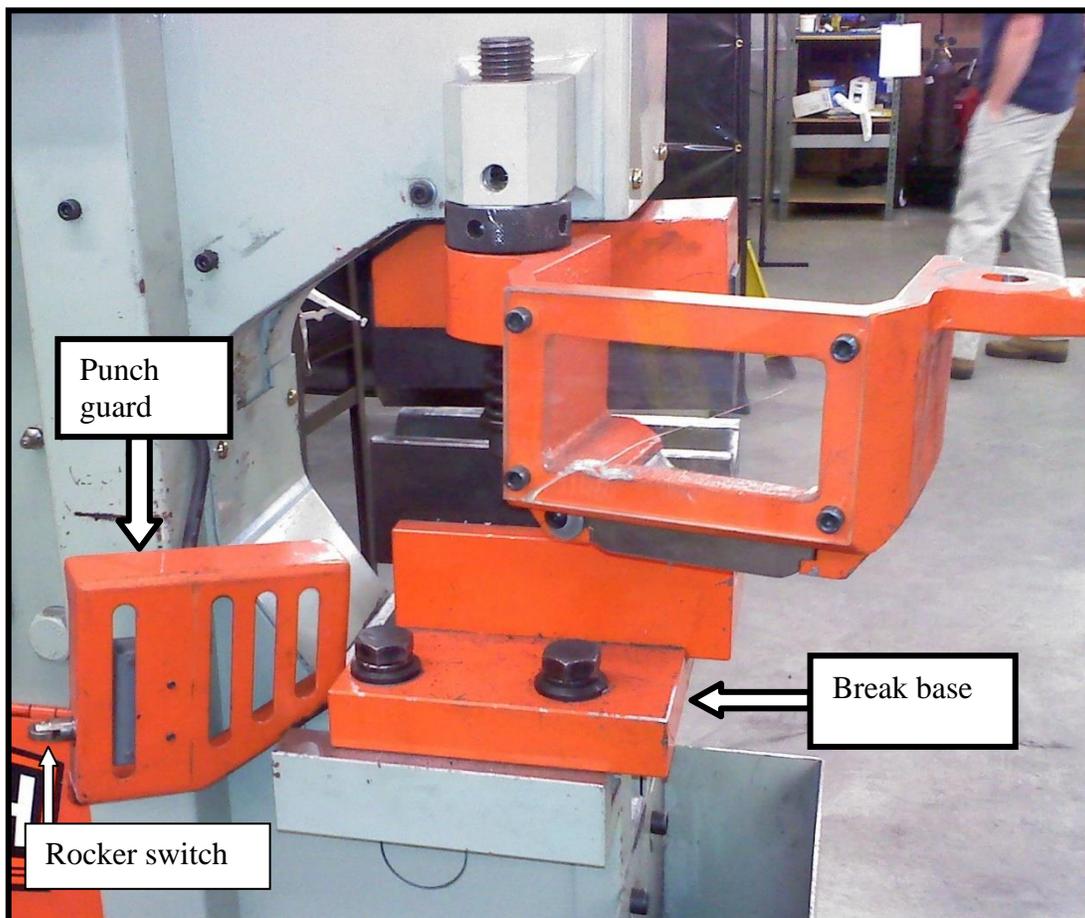
Punch Wedge

Lower base

14. Remove "Punch" piece from the upper bracket of the break. Loosen the four socket set screws with jam nuts just enough to remove the punch.

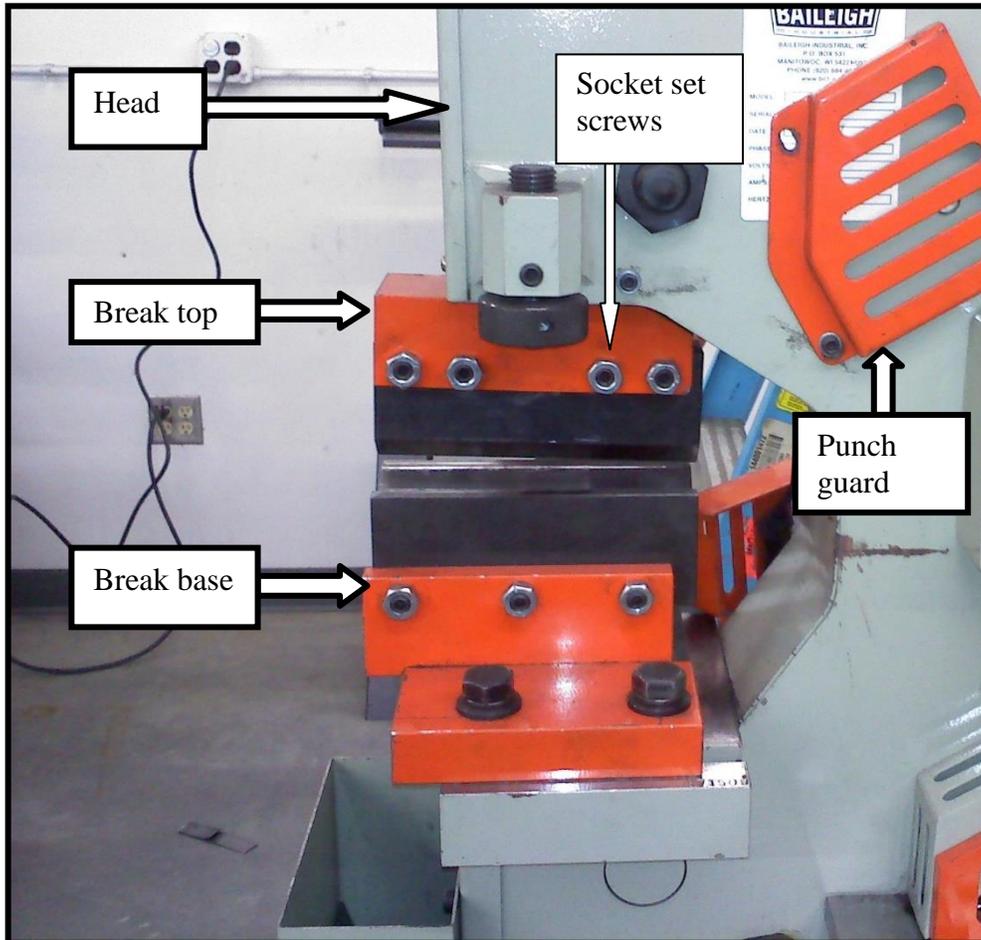


15. Position upper bracket with angle toward the back and insert and tighten all four SHCS. Tighten!! If they get loose, they can bend/break and be hard to remove.
16. Place Lower base and die piece on the Tee slot table.
17. Align four large bolts and Tee slot nuts.
18. Thread in loosely so the base can move for positioning.
19. Place punch into upper bracket and tighten the socket set screws.
20. Set Normal/Jog switch to Jog and release the shut off to turn the machine On.
21. Press foot switch until the punch lowers and fits into the die.
22. They should NOT hit. It should have 3/16" - 1/4" on either side at the end further away from the machine.
23. Adjust lower base and die assembly until it is parallel and straight with upper bracket and punch assembly.
24. Tighten four large bolts that hold down the base.
25. Switch back to Normal and try a scrap piece.





- Socket set screw will have to be loosened to remove upper male and break top assembly. This must be done to "change over" to the punch.





BREAK TO PUNCH CHANGE

1. Disconnect the machine from the power supply.
2. Remove the male (Black Wedge shape) from the orange upper bracket by loosening the four socket set screws.
3. Remove the upper bracket by loosening and removing the four SHCSs.
4. Reassemble male and upper bracket loosely with SHCSs held in with male.
5. Set off to side.
6. Loosen and remove four bolts holding lower bracket.
7. Remove lower bracket.
8. Install threaded base on head with four SHCSs.



Note: Remember the alignment Key that fits above threaded base.

9. If the Swing-a-way stripper was removed, Reinstall it.
10. LOOSELY install the die table with the four large bolts
 - a. You may need to move the Tee nuts for this.
 - b. This must be able to move the table for later adjustment
11. Loosely spin on the quick release nut.
12. Insert and twist the punch.
13. Tighten the quick release nut with the spanner wrench.

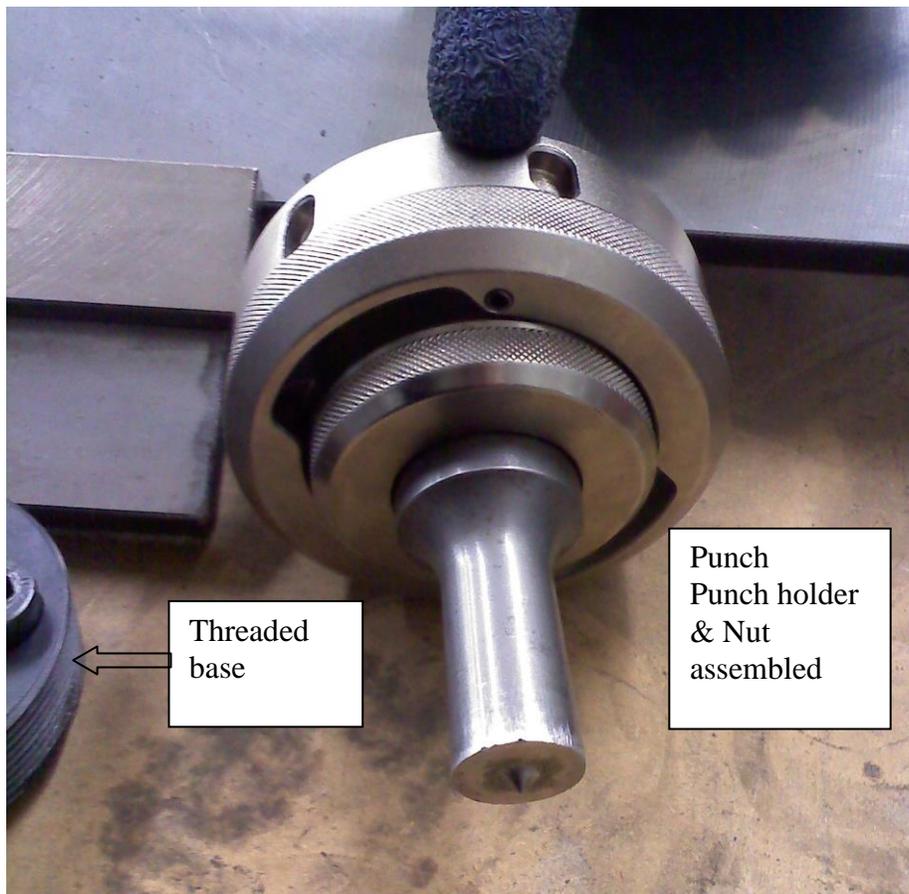


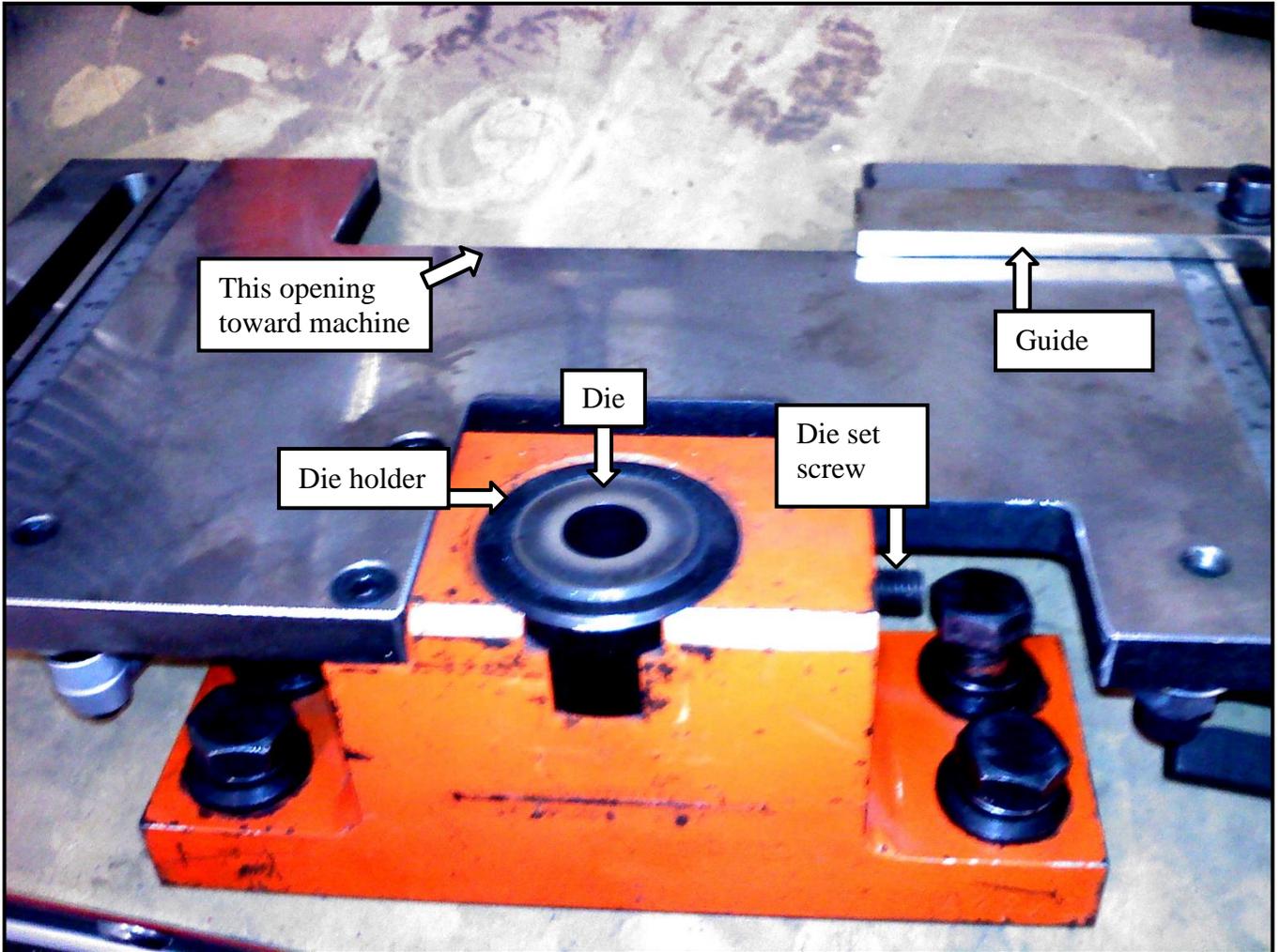
Note: Punch should be tight and straight.

14. At this time, Eyeball the Alignment of the punch and die! You may have to open the Swing-a-way stripper to see clearly.
15. Switch Normal/ Jog to Jog
16. Turn on the machine.
17. Close the Swing-a-way stripper
18. GENTLY Lower the Punch using the foot peddle until it is JUST ABOVE (around an 1/8 inch) the Die.
19. At this time, Eyeball the Alignment of the punch and die again! You may have to open the Swing-a-way stripper to see clearly.
20. GENTLY/ SLOWLY Lower the Punch using the foot peddle until it is JUST INSIDE the Die.



21. Readjust base until the gap in-between the punch and die is the same all the way around.
 22. Tighten the 4 large bolts holding the Die table.
 23. You may have to adjust the alignment once again because the base may move slightly after tightening.
 24. Turn the Normal/ Jog back to Normal, close the Swing-a-way stripper and test on a scrap piece of material.
- Punch holder slides into nut and is rotated to hold punch in place. This allows fast swap out of punch.







NOTES



NOTES



NOTES



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