OPERATOR'S MANUAL

5 STATION IRONWORKER

Model: SW-95

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THANK YOU & WARRANTY

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

2. **Inspection & Acceptance.** Buyer shall inspect all Goods within a reasonable period of time after delivery, not to exceed ten (10) days. If Buyer rejects any Goods, Buyer must first obtain a Return Authorization Number ("RAN") before returning any goods to Seller. Goods returned without a RAN 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 RAN. 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 unsaleable 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.

3. **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.

4. **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 RAN 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 RAN. 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. 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.

5. **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.

6. **LIMITATION OF LIABILITY.** IN NO EVENT SHALL SELLER BE LIABLE TO BUYER OR ANY OTHER PARTY FOR ANY INCIDENTIAL, 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.

7. **Force Majuere.** 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.

8. **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.

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

10. **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.

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

12. **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.

INTRODUCTION

Baileigh Industrial offers the highest quality Ironworkers on the market today.The 95 ton dual operator machine is designed and built to incorporate an all-welded frame with true vertical movement on all five stations. This allows for extremely quiet, smooth operation at maximum capacity without any distortion or wasted material, saving you time and money. All Baileigh Ironworkers include our industry-leading quick release and two-piece punch holder for fast and easy punch changes. Add to this the metered oversized tables with adjustable stops, 7 sets of punches and dies, and the ability to turn the shear blades for longer life and increased productivity. The SW-95 Ironworker is capable of shearing flat bar, angle iron, round and square bar. Many optional accessories that will further increase the versatility of the machine are available. They include a press brake, a channel shear, sectional bar shear, and pipe notching and punching capabilities. Baileigh Industrial also carries a vast amount of tooling in stock and can special order just about anything your job would call for.

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

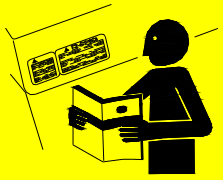
Our technical staff will do their best to help you get your machine back in working order.

In this manual you will find:

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

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.



WARNING:

Baileigh Industrial 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 prior to energizing the machine.

SAFETY INSTRUCTIONS

LEARN TO RECOGNIZE SAFETY INFORMATION

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

Follow recommended precautions and safe operating practices.

UNDERSTAND SIGNAL WORDS

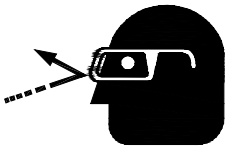
A signal word – **DANGER**, **WARNING**, or **CAUTION** is used with the safety alert symbol. **DANGER** identifies a hazard or unsafe practice that will result in severe **Injury or Death**.

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

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

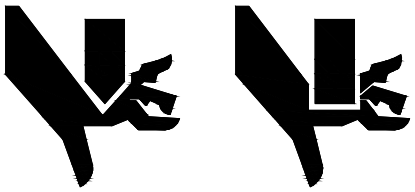
PROTECT EYES

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



BEWARE OF SHEAR AND PINCH POINTS

Keep hands and fingers away from the shear blade and the punching and notching dies when the machine is in operation.



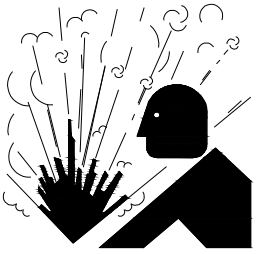
HIGH VOLTAGE

USE CAUTION IN HIGH VOLTAGE AREAS.
DO NOT assume the power to be off.

(MAKE SURE PROPER LOCKOUT PROCEDURES ARE FOLLOWED)

HYDRAULIC HOSE FAILURE

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



PROTECT AGAINST NOISE

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

Safety Precautions

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 Baileigh SW-95 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 work stations. **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 safe guards, this equipment if not operated or maintained properly, has the potential to cause **serious injury or death.**

All operations are controlled by the footswitch in Manual mode and the electric back stop in Auto mode. The operator should be familiar with all controls, especially the Emergency Stop button.

Additional Safety Precautions

- The SW-95 Ironworker allows two workers to operate simultaneously at both ends of the machine. During machine operation **there is always the potential for SERIOUS BODILY INJURY.** Make sure that **NO** personnel or any material is near any of the other stations not in use. **When using the shearing station, turn the selector switch to SHEAR mode and make sure that the notching cover is closed.**

- The **SHEAR / 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 regards to the SHEAR / NOTCH switch and the notch station interlock switch.

- **Turn off** main power to the machine when changing tooling or performing any maintenance work.

- **Do not** store combustible materials near or around machine.

Safety Precautions (cont.)

- **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.**
- When the machine is **not** in use, the power should be **off**. Use of a safety interlock is recommended.
- 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.
- **Never** wear loose fitting garments or jewelry when operating machine.
- 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.
- **Never** exceed the rated capacity of the machine. Refer to the specification chart for details.
- Steel toe shoes should be worn when using this machine.
- Make sure it is possible to move freely around the machine and associated equipment. The floor should be kept clean and dry, and the surrounding area well illuminated, so that work can be performed safely.
- Check safety equipment, such as safety covers, emergency stop buttons, safety mats, railings, light booms, ramps, and warning signs.
- Make sure the machine is properly grounded.

Safety Precautions (cont.)

- Make sure electrical cables are well protected from damage. Check insulation periodically for wear.
- Maintain proper footing and balance at all times.
- Safety is a combination of common sense and awareness at all times when using the Ironworker.

GENERAL NOTES

- After receiving your equipment remove the protective crating. Do a complete visual inspection, and if damage is noted, **photograph it for insurance claims** and contact your carrier at once, requesting inspection. Also contact Baileigh Industrial and inform them of the unexpected occurrence. Temporarily suspend installation.
- Take necessary precautions while loading / unloading or moving the machine to avoid any injuries. Refer to the related chapter of this Manual for the best way of handling the machine.
- Always check that the work piece is securely clamped and that long pieces are properly supported.

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

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.

For specific application needs or future machine purchases contact the Sales Department. at: sales@bii1.com or phone: 920.684.4990

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

UNPACKING AND CHECKING CONTENTS

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

WARNING: If any parts are missing, do not try to assemble the Ironworker, plug in the power cable, or turn the power switch on until the missing parts are obtained and installed correctly.

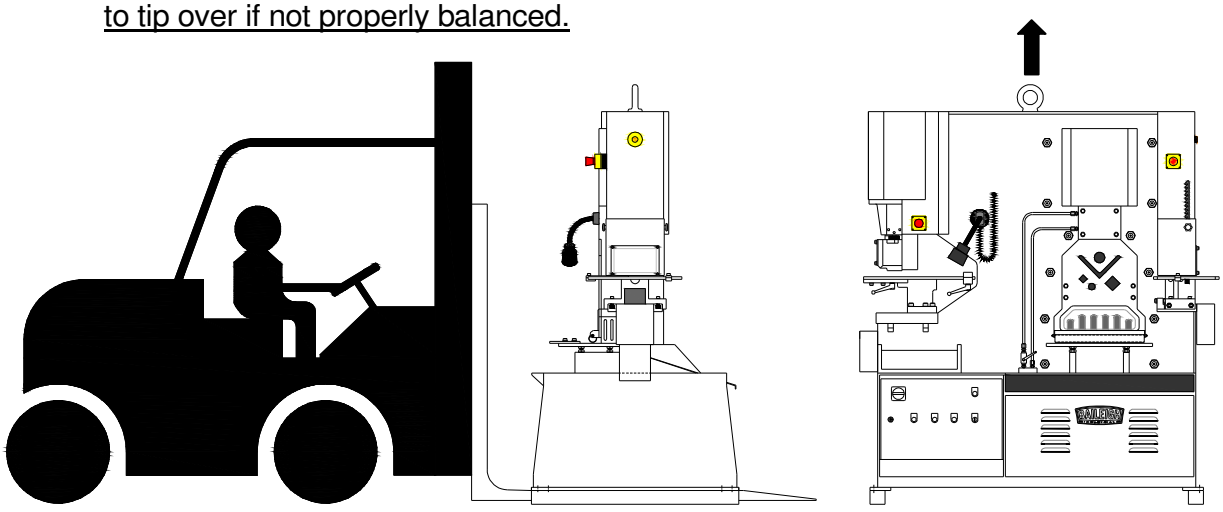
TRANSPORTING AND LIFTING

Caution: Lifting and carrying operations should be carried out by skilled workers, such as truck operator, crane operator, etc. Also, it is necessary to keep in mind that having a large clearance area around the machine is important for efficient and safe working conditions.

- When transporting the machine by a crane, attach the hook to the eye bolt on top of the machine. **Do not use slings under the machine.**

- Pay special care if lifting / transporting the machine with forklifts. The forks should extend fully to cover the width of the machine. **Do not fork from either end**.

NOTE: As the top of the machine is heavy, the high center of gravity can cause the machine to tip over if not properly balanced.



INSTALLATION

Mounting the machine

The machine only requires a normal industrial concrete foundation. If the floor is uneven and the machine vibrates during operation, use foundation bolts to tighten the machine firmly to the floor. Anti-vibration pads can also be used to correct vibration.

IMPORTANT:

- Maintain an adequate working area around the machine for safety.
- Have the work area well illuminated with proper lighting.
- Remove scrap and waste materials regularly, and make sure the work area is free from obstructing objects.
- Keep the floor free of oil and make sure it is not slippery.
- If long lengths of material are to be fed into the machine, make sure that they will not extend into any aisles.

Electrical

ATTENTION: HAVE ELECTRICAL UTILITIES CONNECTED TO MACHINE BY A CERTIFIED ELECTRICIAN !

Check if the available power supply is the same as required by the Ironworker (consult nameplate on machine)

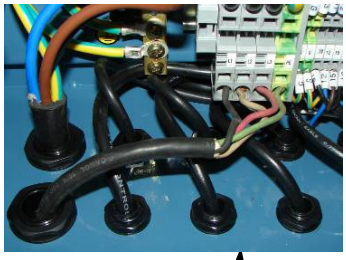
WARNING

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.

Electrical (cont.)

Power cord connection:

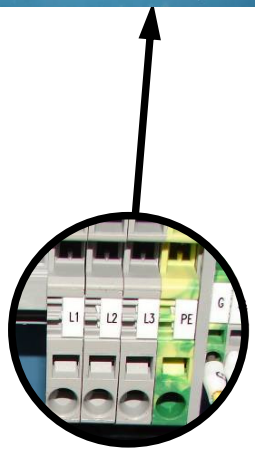
- Open the hinged electrical box cover using the supplied key. (Disconnect switch must be turned **OFF**.)
- Remove the panel located below the electrical enclosure.
- Insert the required power cord (supplied by customer) through the grommet located at the lower right hand side of the machine base.
- 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.
- 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.



- Check that the power cord has not been damaged during installation.
- Reinstall the panel and close the electrical box.

To check the correct rotation of the motor: (3 phase)

- Make sure guards are down and in position, and that **hands and fingers are clear**.
- 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.**



TECHNICAL SPECIFICATIONS (Capacity Chart)

SPECIFICATIONS	IMPERIAL	METRIC
Punching		
Punching Pressure	95 Tons	85 Tons
Punch Capacity	1.062" x .875	27mm x 22mm
(Diameter x Thickness)	2" x .5"	50mm x 12mm
Throat Depth	16"	406mm
Max. Stroke Length	3.93"	100mm
Cycles / Min.	38@ 15mm	
Working Height Up to Die	41.3"	1050mm
Flat Shearing		
Flat Bar Shearing	16" x .75"	406mm x 20mm
Blade Length	16.125"	410mm
Angle Flange Trim	4"	100mm
Working Height	28.5"	726mm
Angle Shearing		
At 90° Shearing	5.125" x 5.125" x .5"	130mm x 130mm x 12mm
Working Height	40.9	1040mm
Bar Shearing		
Round Bar Shear	1.75"	45mm
Square Bar Shear	1.75" x 1.75"	45mm x 45mm
Working Height	-	-
Notching		
Rect. Notcher (W x D x T)	2" x 3.5" x .5"	50mm x 90mm x 12mm
Working Height	41.3"	1050mm
Special Tooling		
Large V-Notcher (Side x Side x T)*	5.75" x 5.75" x .375"*	145mm x 145mm x 10mm*
Vee-Notcher (Side x Side x T)*	4.1" x 4.1" x .5"*	105mm x 105mm x 12mm*
Single Vee Press Brake (L x T)*	9.875" x .625"*	250mm x 15mm*
Multi-Vee Press Brake (L x T)*	19.625" x .187"*	500mm x 5mm*
Angle Bending*	4" x .312"*	102mm x 8mm*
Pipe Notching*	4.4"*	114mm*

Other		
Motor	10 HP - 220V - 3PH - 60HZ	
Net Weight (Apr.)	6050 Lbs	2750 kg

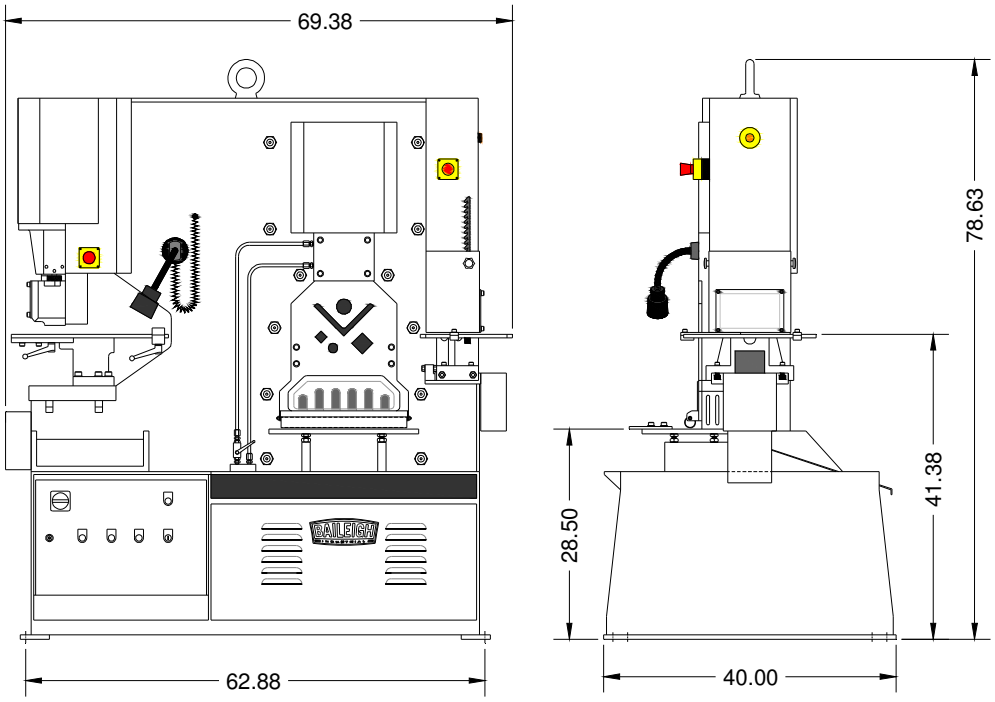
* Optional Tooling - Call your Baileigh Rep. !
Based on material tensile strength of 65,000 PSI.
Specifications subject to change without notice.

MACHINE FEATURES – (All Standard on SW-95)

- True vertical movement on all stations.
- 2 piece quick release punching table with adjustable stops.
- CE approved cover interlock system for maximum safety.
- Dual remote, three position foot switches.
- 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.
- Two 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.

OVERALL DIMENSIONS

Note: Material Backstop not shown.



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

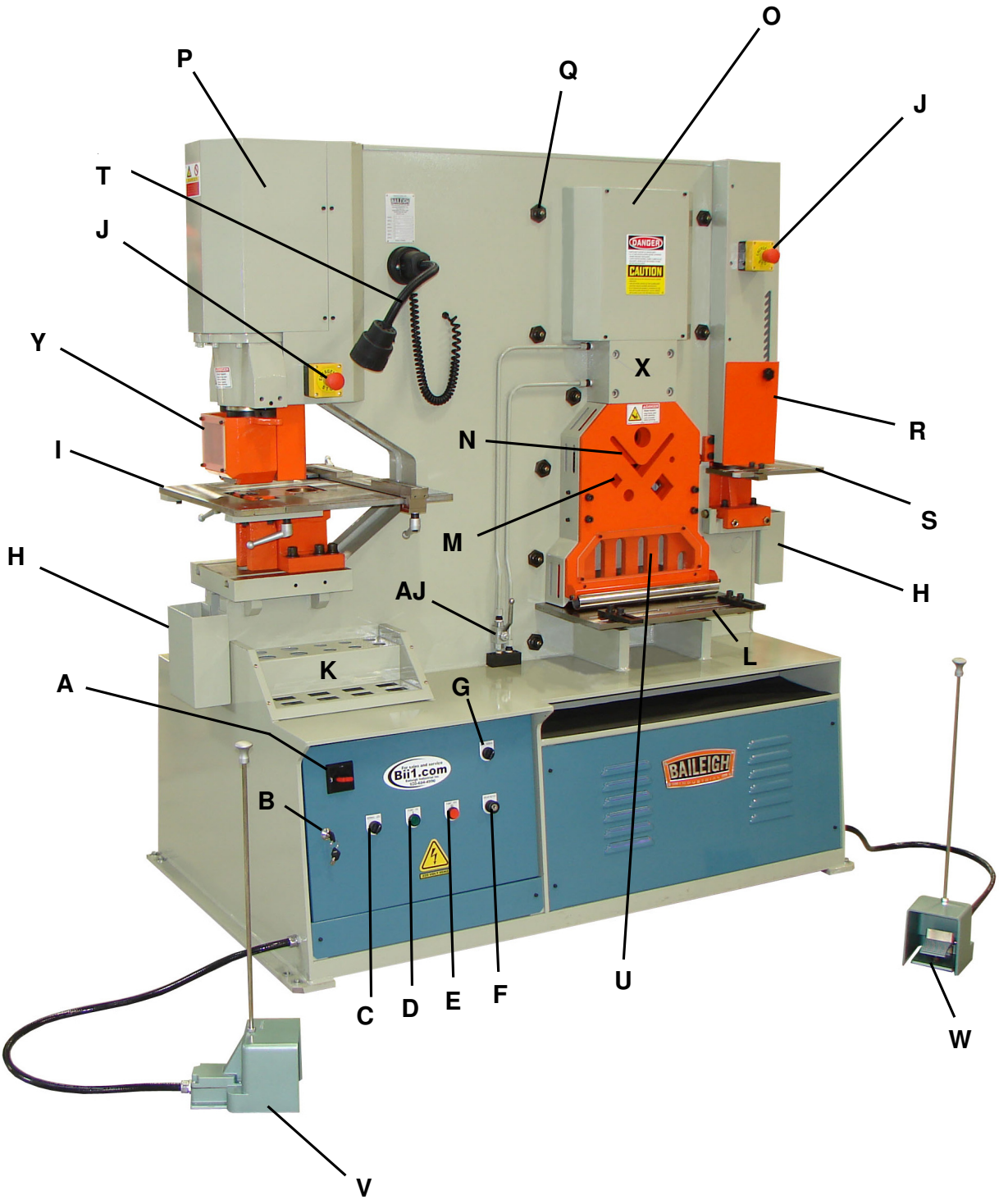
STANDARD EQUIPMENT SUPPLIED WITH SW-95 IRONWORKER
(including items pre-installed on the machine)

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 Electric Backgauge - (in. / mm)	1 pc
Work Station Safety Guards	1 set
Lifting Eye Bolt	1 pc
Magnetic Work Light	1pc

TOOL BOX

Grease Gun	1 pc
Adjustable Wrench (300mm)	1 pc
Screw Driver (+)	1 pc
Screw Driver (-)	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	2 pc
Punch Stripper Unit	2 pc
Key for electrical enclosure (Not shown)	2 pc
Fuses – 2A, 10A (Taped to cover)	1 ea
4mm x 45mm key (when using square or oblong punches) (Taped to cover)	1 pc

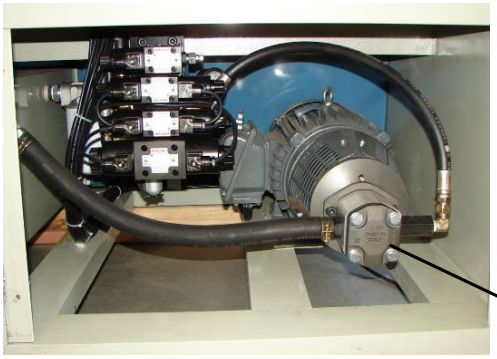
GETTING TO KNOW YOUR MACHINE

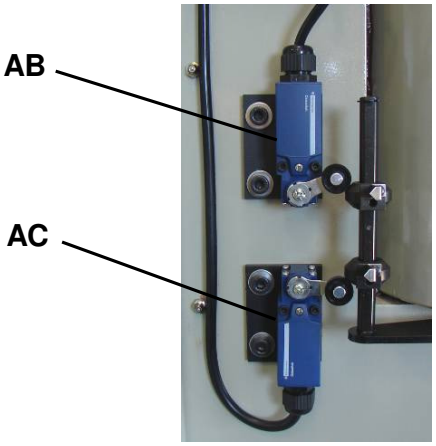


GETTING TO KNOW YOUR MACHINE (cont.)

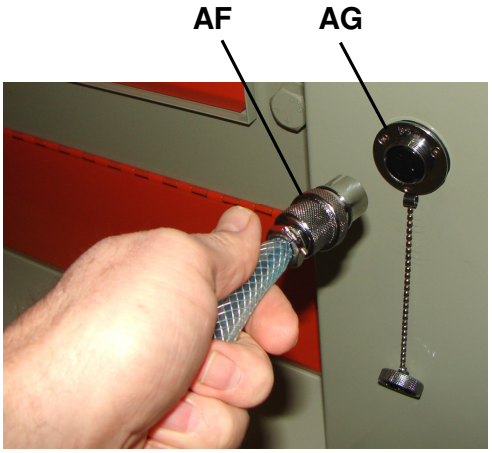
A	Disconnect switch	Controls main power ON / OFF
B	Electrical enclosure lock	Prevents unauthorized access (requires key)
C	Normal / Jog switch	Normal (auto return) - Jog (inching, non return)
D	Pump "ON" switch	Starts hydraulic pump / motor
E	Pump "OFF" switch	Stops hydraulic pump / motor
F	Shear / Notch switch	Selects between shear / notch (requires key)
G	Auto / Manual switch	Auto - Use back gauge, Manual - Use foot switch
H	Scrap box	Collects scrap from the punch and notch stations
I	Punch station	Does punching and more with easy tool changes
J	Emergency stop switches	Shuts down machine in an emergency situation
K	Tool holder	Place to store often used tooling (Both sides)
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 notching
P	Hydraulic cylinder	Supplies the tonnage for punching
Q	Grease fittings (multiple)	Directs grease to the blade slides
R	Notching guard	Microswitch activated slide guard for safety
S	Notch station	Notches edges and corners of various materials
T	Magnetic work light	Provides portable lighting where needed
U	Hold down plate	Used for clamping various sized shapes
V	Foot switch	Controls up / down motion at the punching station
W	Foot switch	Up / down motion at the punching / shear stations
X	Hold down cylinder	Used to raise or lower the hold down plate
Y	Punch stripper	Holds material down when punch retracts
Z	Hydraulic tank	Holds hydraulic oil to supply cylinders
AA	Hydraulic pump & motor	Supplies hydraulic oil to the three cylinders
AB	Upper limit switch	Controls shear / notch cylinder stroke upper limit
AC	Lower limit switch	Controls cylinder stroke lower limit
AD	Upper limit switch	Controls punch cylinder stroke upper limit
AE	Lower limit switch	Controls cylinder stroke lower limit
AF	Sensor plug	Plugs into receptacle (power to backgauge)
AG	Sensor receptacle	Supplies power to sensor
AH	Back gauge sensor	Starts blade down stroke when actuated
AI	Adjustment nut	Adjusts zero position on scale when required
AJ	Hold down valve	Turns hold down cylinder ON or OFF

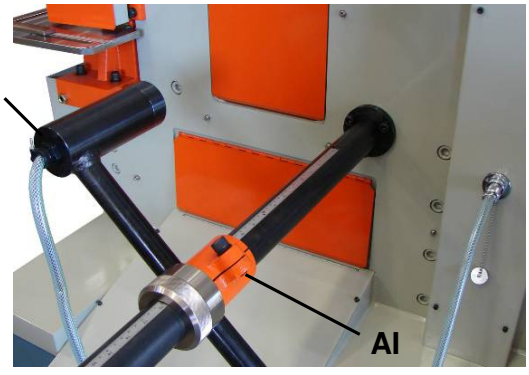
GETTING TO KNOW YOUR MACHINE (cont.)





Both shown with covers removed.





GETTING TO KNOW YOUR MACHINE (cont.)

WARNING: The shear blade and notch station blade move simultaneously. This means that in notch mode, with the safety guard up, the shearing station is a potential risk for bodily injury! The key for the shear / notch switch is intended ONLY for the supervisor of the Baileigh SW-95 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. The punching station on the SW-95 operates independent of the shear / notch stations. ALL stations will shut down when either E-STOP is pushed in an emergency situation.

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.

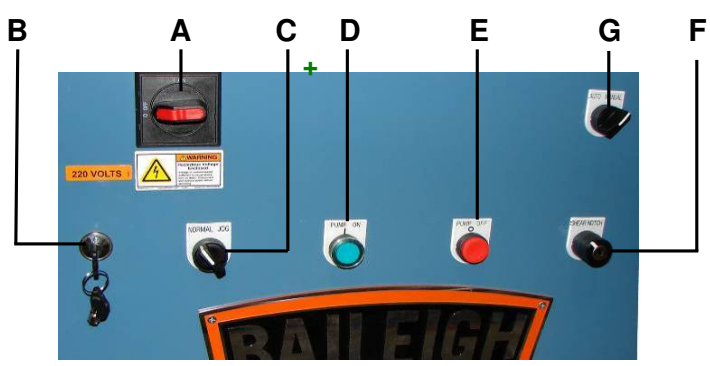
C – Normal / Jog switch – This switch allows selection between the normal (automatic return) mode and the jog (inching, non-return) mode. Use the normal mode to operate the machine. Use the jog mode to align the punch/die, to set blade clearance, and to set the strokes. In **NORMAL** mode, the ram /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

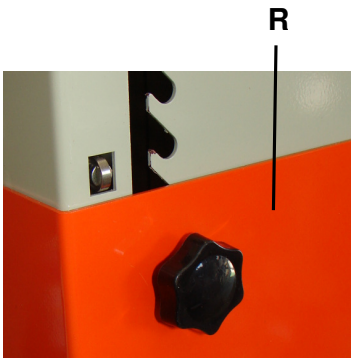
D – Pump **"ON"** switch- Push this button to power up the hydraulic system. The green light will be lit. (The emergency stop button must be in the reset position.)

E – Pump **"OFF"** switch – Push this button to power down the hydraulic system.

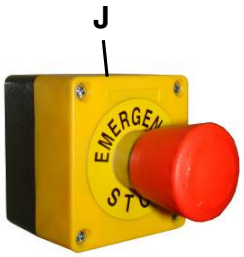
F –Shear/Notch key switch – Use this switch to select between shearing or notching operations. This switch is electrically interlocked with the notch safety guard (**R**). A key is required to switch between shear and notch mode. When in shear mode, if the safety notch guard is lifted, the shear / notch stations will be **IMMOBILIZED.** The punching station will still operate.

G - Auto / Manual switch – Turn to **AUTO** to use the backgauge, or turn to **MANUAL** to use the foot switch. (Also refer to the section on the electric backgauge.)





GETTING TO KNOW YOUR MACHINE (cont.)



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 counterclockwise (**ccw**) till it pops out.

Foot switch

The SW-95 has dual foot switches 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!**

Each foot switch has three positions: **UP**, **HALFWAY**, and **DOWN**. When not pressed, an internal spring keeps the pedal to 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.**

When the shear / notch stations are in **NORMAL** mode, the punch station will be in **NORMAL** mode.

When the shear / notch stations are in **JOG** mode the punching station will be in **JOG** mode.

PUNCHING STATION

The SW-95 Ironworker has a separate cylinder and foot switch for the punching station. This allows the punching station to be used independent of the shear / notch stations. The machines large stroke and smooth vertical motion make possible such options as bending, channel or angle punching, as well as pipe and tube notching.

Standard Equipment

The Baileigh SW-95 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 the 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

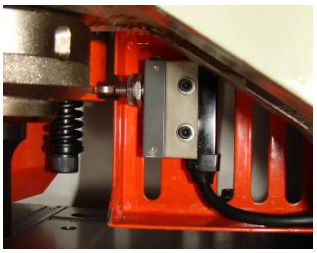


figure 2

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, 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.

Alignment of Punch and Die (cont.)

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 page 40 for stroke adjustment)

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 tool box) 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.

Adjusting the Stripper (cont.)

The stripper has interchangable 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.

Max. Capacity = circumference x thickness x tensile strength

The capacity chart on page 17 of this manual is based on a material tensile strength of 65,000 PSI

DO NOT attempt a punching operation that requires force greater than the maximum capacity of the Baileigh SW-95 Ironworker.

Punching Precautions

1) **ALWAYS** use a 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.
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.

PUNCHING STATION (cont.)

Punch Operation

For punching flat plates: (**NORMAL** mode)

1) 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.
2) Set the gauging stoppers to the desired position.
3) Position the plate on the working table against the stoppers.
4) Press the foot pedal to the **DOWN** position to execute the punch.
5) 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: (**NORMAL** mode)

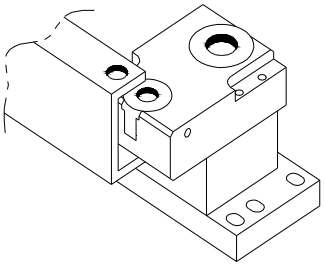
1) Check again that the stripper, punch / die alignment is properly adjusted,and the height of the stripper is adjusted from .078" to .118" above the piece part.
2) Remove the front section of the two-piece table.
3) Set the gauging stoppers to the desired position.
4) Position the angle against the die holder with one flange facing downward. **DO NOT POSITION THE ANGLE WITH ONE FLANGE FACING UP!**
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 channels (optional)

1) When punching the channel web, use the single-hole die holder (optional) with the table removed. When punching the channel flange, use the overhang two-hole die holder (optional) with the lower support portion and the front piece of the 2-piece table removed. A special gooseneck die holder is also available for punching both channel web and channel flange.
2) If punching the channel web, position the channel with both flanges facing downward. If punching the channel flange, position the channel with the flange being punched on top.

PUNCHING STATION (cont.)

3) 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.
4) If punching channel web, position the channel with both flanges facing downward. If punching channel flange, position the channel with the flange being punched on top. (See figure below)
5) Press the foot switch to the **DOWN** position to execute the punch.
6) Release the foot switch for the punch to retract. During stripping, the material can 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!**



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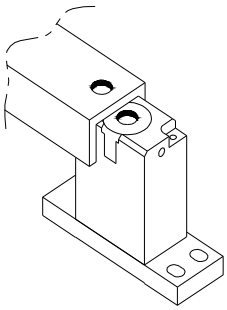

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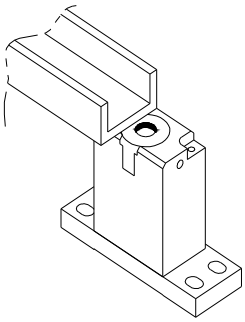

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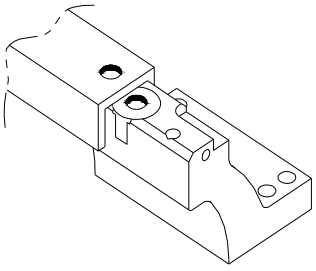

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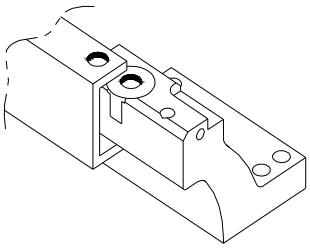

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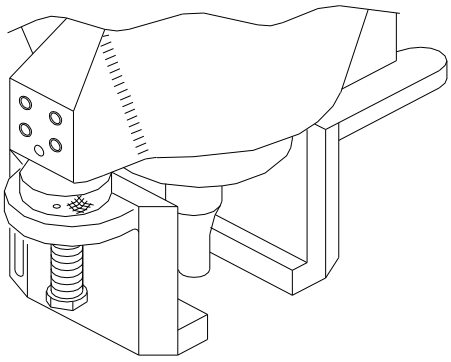
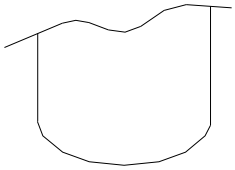
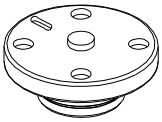
PUNCHING STATION (cont.)

Punching Station Assembly

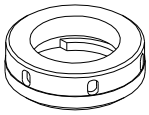




Cylinder Rod



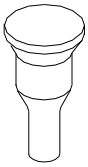
Punch Retaining Thread

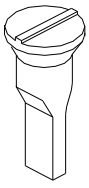


Punch Retaining Nut

Key

Round Punch





Oblong Punch

Punch Sleeve

FLAT BAR SHEAR STATION

This station is equipped with a 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 using an optional hold-down plate.

Blades

Upper blade (moves up and down on central slide.) The blade can be turned to ultilize 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 "**AK**" that "pull in" the stationary blade and the 6 adjusting screws "**AL**" that "push out" the stationary blade. (fig. 7)

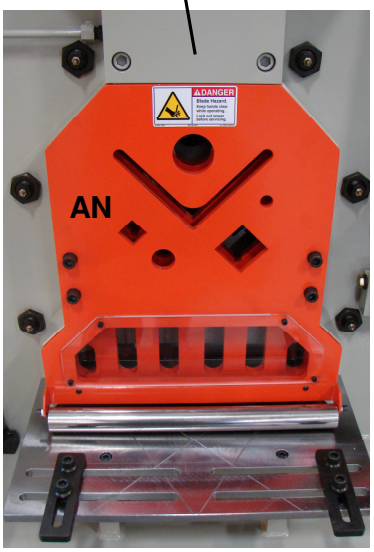


figure 5

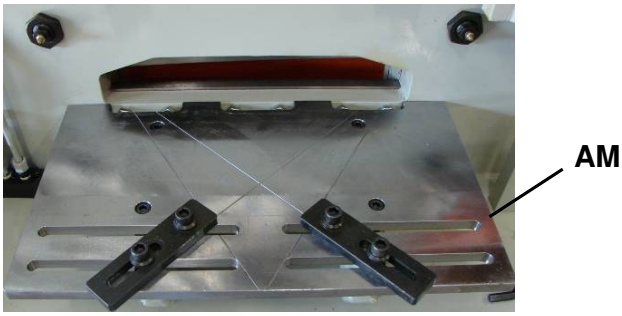


figure 6

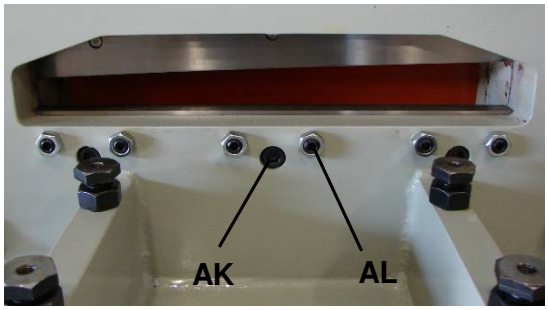


figure 7

FLAT BAR SHEAR STATION (cont.)

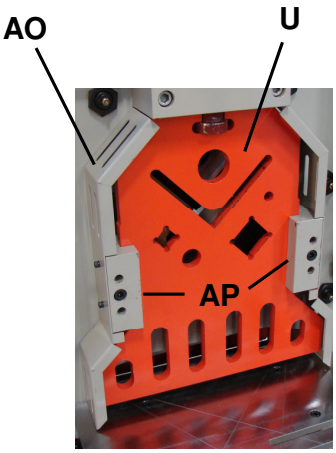


figure 8

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 roller plate (**AN**) (fig. 5), side shields (**AO**) and guide bars (**AP**) (fig. 8)
4) Remove the hold down plate (**U**) and the feed table (**AM**). (fig. 6)
5) Loosen the 3 fixing bolts (**AK**) holding the lower blade.
6) Loosen the nuts on the 6 adjusting screws (**AL**).
7) Adjust the clearance by turning the adjusting screws clockwise (**cw**), which pushes the lower blade towards the upper blade.
8) Check the clearance with a feeler gauge. **It is very important to make sure that the cutting clearance is uniform along the entire blade.**
9) Tighten the fixing bolts to secure the position of the lower blade.
10) Tighten the locking nuts of the adjusting screws (**AL**).
11) Re-check the blade clearance.
12) Reinstall the table, hold down plate, guide bars, side shields, and roller 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 (**NORMAL** mode)

1) Turn the **SHEAR** / **NOTCH** switch to **SHEAR** and be sure the notch guard is closed.
2) Turn the valve (**AJ**) for the hydraulic hold down to open position (same direction as the piping)
3) Push the material under the hold down and use the backgauge for setting the precise length.
4) 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.

WARNING: Keep hands clear of the blades.

5) Use the guide stoppers on the table to position and stabilize the material.

FLAT BAR SHEAR STATION (cont.)

6) Using **Manual** mode, press the foot pedal to make the cut and release the foot pedal to raise the blade. By switching to **Auto** mode you can use the electric backgauge. (See the section on the electric backgauge for more details.)

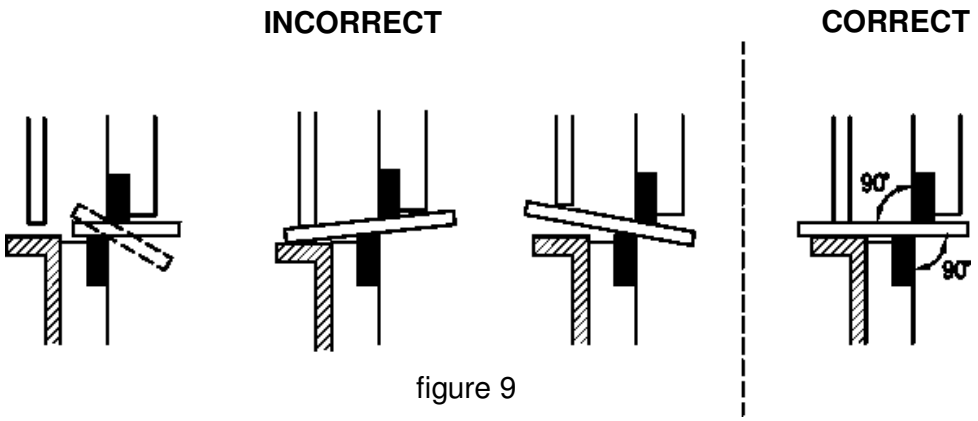


figure 9

ANGLE SHEAR and SQUARE / ROUND BAR SHEAR STATION

This station is equipped with a hydraulic 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. **Note:** Angle shear becomes unavailable when the blade is changed to shear channel.

Cutting Clearance

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

1) Turn **OFF** and lockout power to the machine.
2) Remove the roller plate (**AN**) (fig. 11), side shields (**AO**), guide bars (**AP**), and hold down plate (**U**) (fig. 12)
3) Loosen the four locking nuts.
4) Tighten the four adjusting screws (**AQ**) firmly. Then loosen each screw *one third of a turn*. Lock in position by tightening the locking nuts.
5) Reinstall the hold down plate, guide bars, side shields, and roller plate.

ANGLE SHEAR and SQUARE / ROUND BAR SHEAR STATION (cont.)

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.

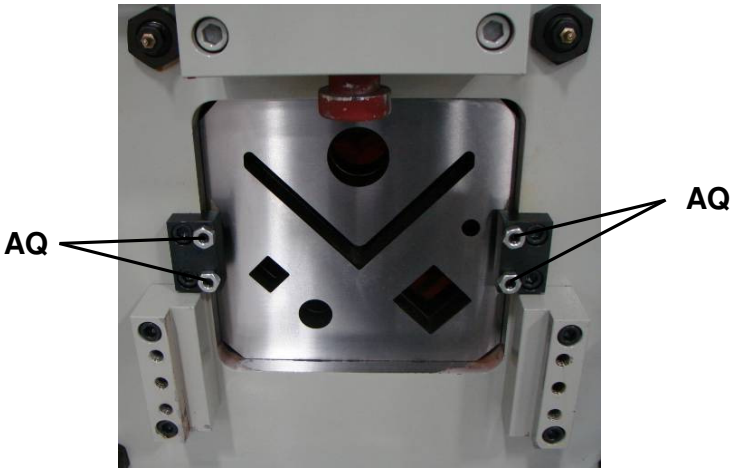


figure 10

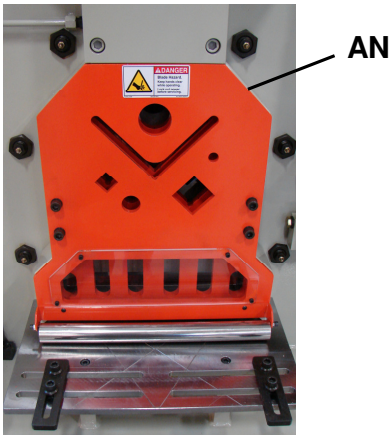


figure 11

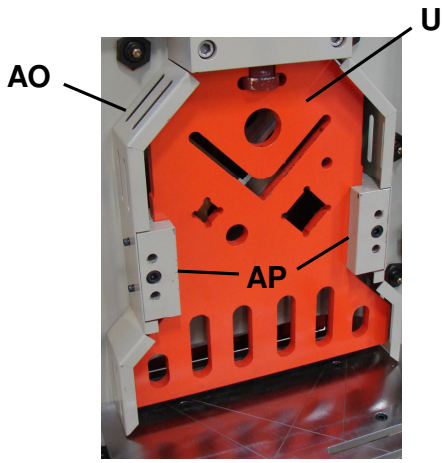


figure 12

ANGLE SHEAR and SQUARE / ROUND BAR SHEAR STATION (cont.)

Angle Square Bar / Round Bar Shearing Operation
(**NORMAL** mode)

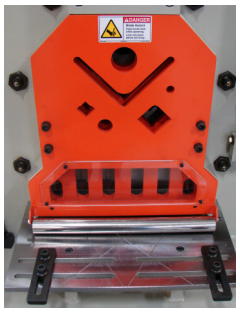


figure 13

1) Turn the **SHEAR** / **NOTCH** switch to **SHEAR** and be sure the notch guard is closed.
2) Turn the valve (**AJ**) for the hydraulic hold-down to open position (same direction as the piping)
3) Push the bar through the selected slot on the hold-down plate to the backgauge for desired length.
4) Using **Manua**l mode, press the foot pedal to make the cut and release the foot pedal to raise the blade.

⚠ **WARNING: Keep hands clear of the blades**

5) By switching to **Auto** mode you can use the electric backgauge feature. (See the section on the electric backgauge for more details.)

Hydraulic Shear Hold-down

- The hydraulic flat shear hold-down is used to clamp the material to reduce material movements during shearing. Therefore, the shear is more accurate and the material deformation is minimized. The same hold-down is used for all shearing stations: angle shear, bar shear, and plate shear. When turned on, the hold-down moves downward with hydraulic force and holds the plate in position. The hold-down moves up after the shearing operation is completed.
- If the hydraulic hold-down is not desired or when using other stations, turn off the hydraulic hold-down by turning the valve handle to close position.

- **Warning:** The hydraulic hold-down can crush fingers or cause other serious injuries. Never remove the guards on the hold-down.

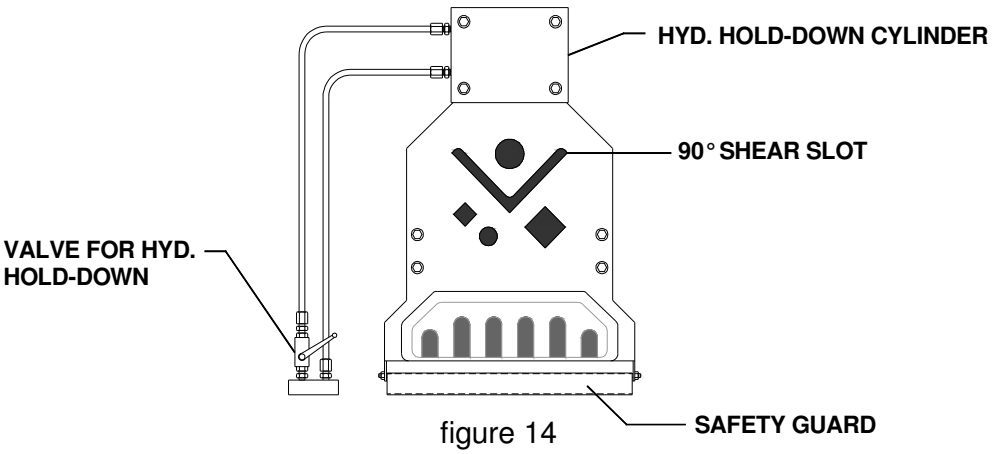


figure 14

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) Select **Notch** mode on the shear / notch switch and **Jog** mode on the Normal / Jog switch.
2) Lower the working slide until the upper blade inserts into the lower blades by about .118”-.196” below the top surface of the lower blades.

⚠ **WARNING: Keep hands clear of the blades**

3) Turn **OFF** and lockout power to the machine.
4) Lift up the notch guard.
5) Loosen the four bolster fixing bolts (**AR**).
6) Loosen the four nuts on the side adjust screws (**AS**).
7) Loosen the nut (**AU**) on the back hold-back bolt (**AT**).
8) Adjust the bolster position by turning the side adjust screws and the back hold-back bolt.
9) 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.**
10) Tighten the nuts for the side adjust screws and the back hold-back bolt.
11) Tighten the four bolster fixing bolts (**AR**) to secure the position of the bolster.
12) Check clearance again.
13) Lower the safety cover.

⚠ **With the machine powered up and the pump running:**
The flashing WARNING light indicates that the notch guard is open. With the selector switch set to notch, there is potential for SERIOUS BODILY INJURY.

Notching Operation (**NORMAL** mode)

1) Turn the **SHEAR** / **NOTCH** switch to **NOTCH.**
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 (**AV**) on the two strippers to a clearance of .039”-.078” above the material.
5) Using **Manual** mode, press the foot pedal to execute the notch and release the foot pedal so the slide 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.

WARNING: Protect your fingers as the material movement is a potential hazard.

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

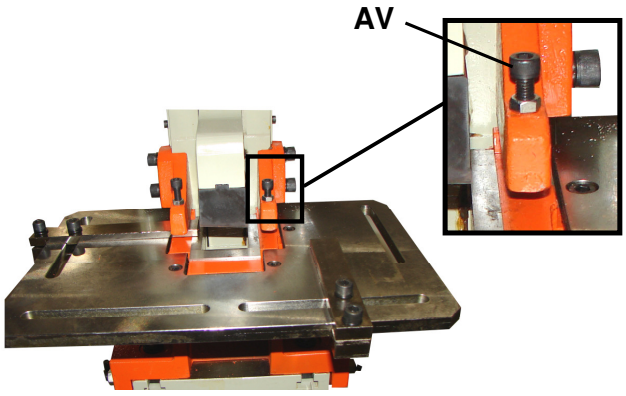


figure 15 (guard not shown)

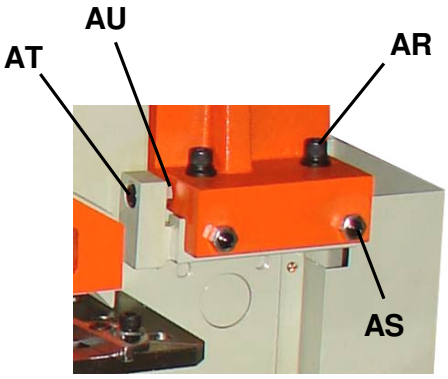


figure 16

WARNING

DO NOT remove the Notch station safety guard. When not using the notching station, the guard should cover the blade completely. During the notching operation, because the blades are exposed, there is a HIGH POTENTIAL FOR BODILY INJURY Keep fingers and other body parts CLEAR of blades. In notch mode the shear and notch blades will move while the safety guard is raised.

NOTCHING STATION (cont.)

OPTIONAL TOOLING

I. PRESS BRAKE

Three kinds of press brakes are available to be installed on the Punch station to perform bending work. The single-vee press brake is for bending thick materials. The multi-vee press brake is for bending thin materials. The angle bending tool is for bending angles after a Vee notch operation. Always bend the material at the center position of the tooling (directly under the cylinder ram). **DO NOT** bend the material at the side of the tool as that will create side-load force on the tool and cylinder.

WARNING

As the press brake tool is not covered by guards, pay special attention to safety when using this tool. **Always make sure no fingers or other body parts are in between the upper tool and lower die before executing the bending operation.**

Note:

While using the press brake, the pump is not unloaded by the limit switch when the upper tool reaches the lowest position onto the lower die. While at this position the oil pressure stays at the maximum pressure set by the relief valve, causing the oil temperature to rise quickly, shortening the life of the pump and other hydraulic parts. Release the foot pedal immediately when bending is complete. The press brake is optional tooling intended for occasional operation only. Continuous production work is not recommended. Allow intermittent break periods for the oil to cool down. Lower the pressure setting by adjusting the relief valve to just enough capacity to perform the bending operation.

II. HYDRAULIC PUNCHING STRIPPER

The hydraulic punching stripper moves down with hydraulic force and holds the material in position, thereby increasing the accuracy of the punching and reducing deformation. The hydraulic stripper moves down before the punching takes place and moves up after the punch is stripped out of the hole. The hydraulic stripper is highly recommended when using the duplicating table to ensure accuracy and performance.

II. HYDRAULIC PUNCHING STRIPPER (cont.)

To use the hydraulic stripper, turn the Hydraulic Stripper Auto/Manual switch on the control panel to **AUTO**. Position the material as in a normal punching operation. The hydraulic stripper will function automatically for each punching operation. To adjust the height of the stripper, turn the screws in the rod on each side of the stripper up or down. The stripper height should be adjusted so that when activated it will hold the material firmly and evenly. **Make sure to have the same height on both sides so that the stripping force will be balanced.** Unbalanced stripping may break the punch and cause a hazardous situation.

DO NOT proceed with the punching operation If the material cannot have adequate contact with the stripper, such as asymmetrical material, material too small, or hole punched too close to the edge of material. If the hydraulic stripping is not desired, switch the Hydraulic Striper Auto/Manual switch to **MANUAL**.

Warning:
The hydraulic stripper can break fingers and cause serious injuries. **Never remove the guards around the stripper.** Before each punch, always make sure that nothing is under the stripper other than the material being punched.

ADJUSTING THE MACHINE

Stroke Adjustment

Certain working operations do not require a full working stroke. For large quantities of the same operation, change the 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 panels of the machine. There are two limit switches for each cylinder. One for the upper limit and one for the lower limit. Adjust the length of stroke by shifting the position of the actuator mount on the drive bar. (See figures 17 and 18)

figure 17

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.

figure 18
(cover removed)

ADJUSTING THE MACHINE (cont.)

Adjusting the Main Central Slide

The main central slide is the large middle plate that holds the moving shear blades and the notching top blade. 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 (12) locking nuts (**AW**) for the Pressure Pad Screws (**AX**), 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 (**AX**) 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 (**AW**).

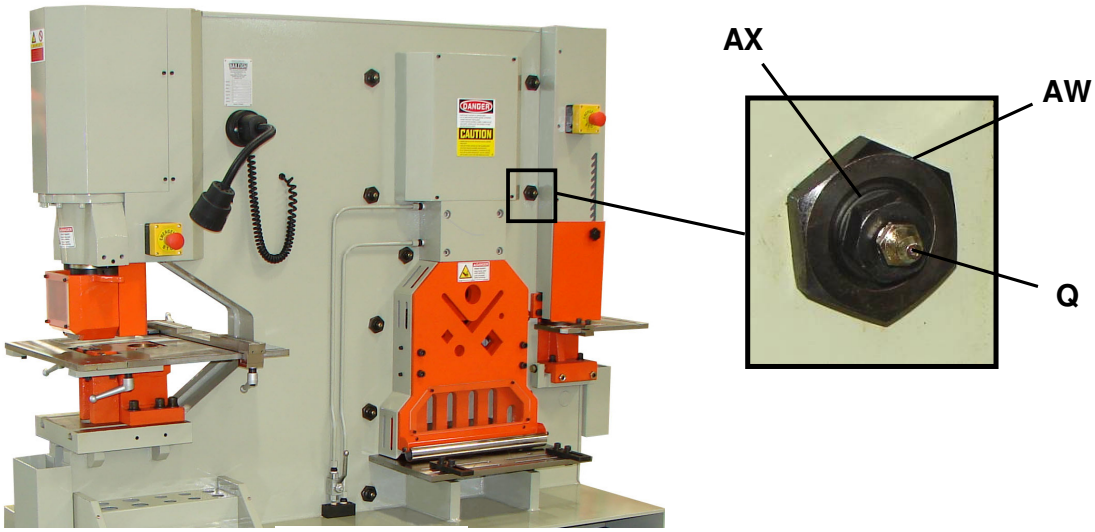


figure 19

Adjusting the Main Central Slide (cont.)

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:

1) Loosen the four large locking nuts on the back of the machine with special wrench (not supplied).
2) The adjustment pin is eccentric inside (cannot see from outside). Turn the adjustment pin counter clockwise 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.

WARNING: Incorrect adjustment can seriously damage the machine.

3) Tighten the nuts in the back to fix the pins in position.

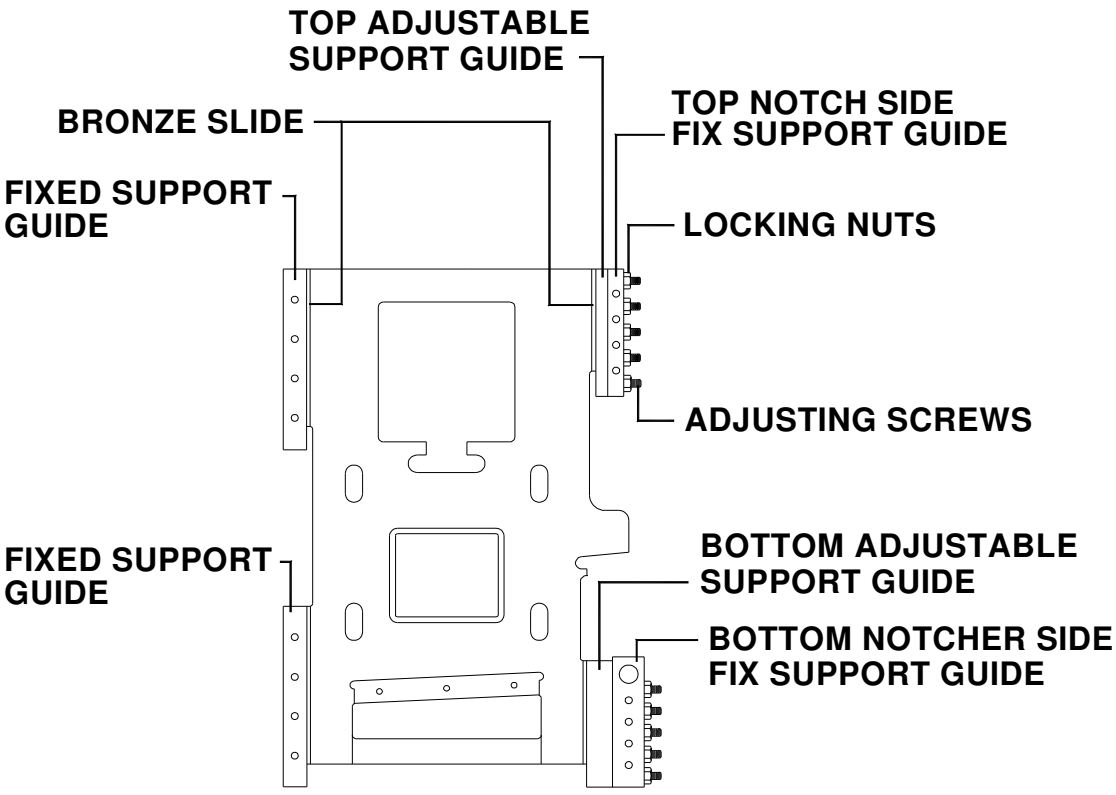


figure 20

ADJUSTING THE MACHINE (cont.)

Electric Backgauge

The Baileigh SW-95 Ironworker comes standard with an electric backgauge. When in **Auto** mode, the backgauge will start the shear cycle. When in **Manual** mode the foot switch will start the shearing cycle.

To use the electric back gauge:

1) Bolt the longer pipe to the back center of the Ironworker. (scale facing up)
2) Slip the sensor pipe into the fitting. (shown in fig. 21)
3) Place sensor plug (**AF**) into the receptacle (**AG**) (see fig. 22)
4) Turn the control panel switch to **AUTO**.
5) Set the back gauge to the desired piece part length.
6) Position the sensor of the back gauge so that the piece part will touch the sensor pad during operation. (In **AUTO** mode, when setting the hold down, leave just enough clearance for the piece part to slide through the opening.)
7) To start cut sequence, push in the piece part. When the sensor pad is activated by the part, the blade will start moving down after a preset delay from timer (**AY**). (The timer can be set from 0-1 second.) After the shear is complete, the cut piece falls out and the blade returns to the up position for the next shear.
8) If the length of the sheared piece is not the same as the reading on the back gauge, set the adjustment nut (**AZ**) to read the correct measurement on the scale. The adjustment nut can now be locked in position with a small setscrew .

CAUTION: Once the sensor pad is depressed and the shearing operation has started, the machine will complete the whole shearing cycle. The cycle cannot be interrupted unless the **E-STOP** button is pressed. Although using the electric back gauge increases the working efficiency of the machine, **there is always the potential for operator Injury!**

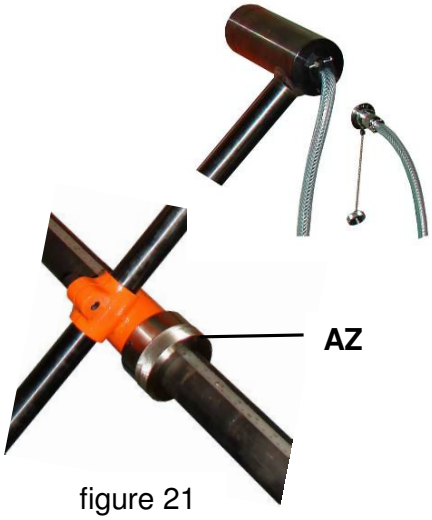


figure 21

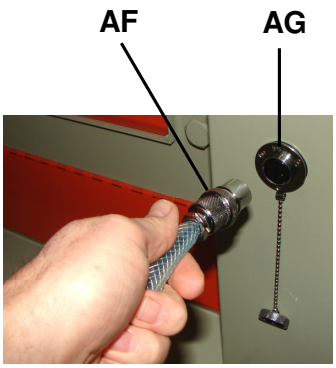


figure 22

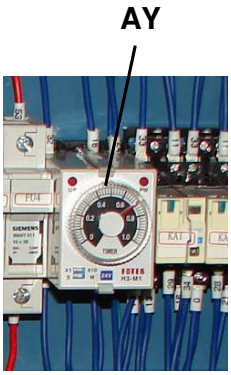


figure 23

ADJUSTING THE MACHINE (cont.)

Adjust the Punch Cylinder Ram

The alignment of the punch cylinder ram is guided by a "bronze guide pad" inside the cylinder casting. When the ram is loose and starts to swivel or when the ram is misaligned (not square with the die base), the punch ram should be adjusted.

To adjust the punch ram, follow these steps:

1) Remove the two locking nuts (**BA**) located on the left side of the cylinder casting.
2) Adjust the two adjusting screws (**BB**) to lightly press the guide pad onto the ram.
3) Check the adjustment by moving the ram up and down with non-round (oblong or square) punches and dies. The ram should be moving smoothly and without any gaps.
4) Retighten the lock nuts to prevent loosening.

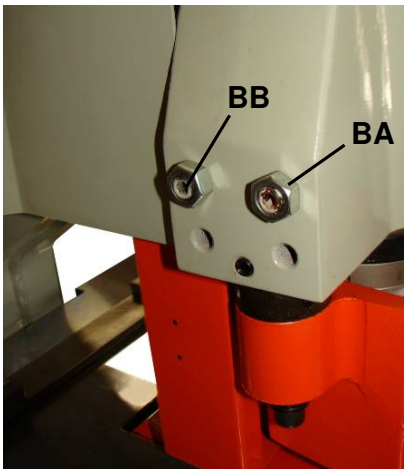


figure 24

LUBRICATION AND MAINTENANCE

MAINTENANCE SHOULD BE PERFORMED ON A REGULAR BASIS BY QUALIFIED PERSONNEL

CAUTION: Always follow proper safety precautions when working around machinery

MAKE CERTAIN POWER IS DISCONNECTED TO SAW.

Lubricate the machine with recommended grease every 8 working hours using the grease gun provided. See (fig. 25) to locate the grease fittings. There are (12) grease fittings on the front and (14) grease fittings on the back.

Recommended Grease (or equivalent)
Esso Beacon 2
Shell Alvania Grease R2

LUBRICATION AND MAINTENANCE (cont.)

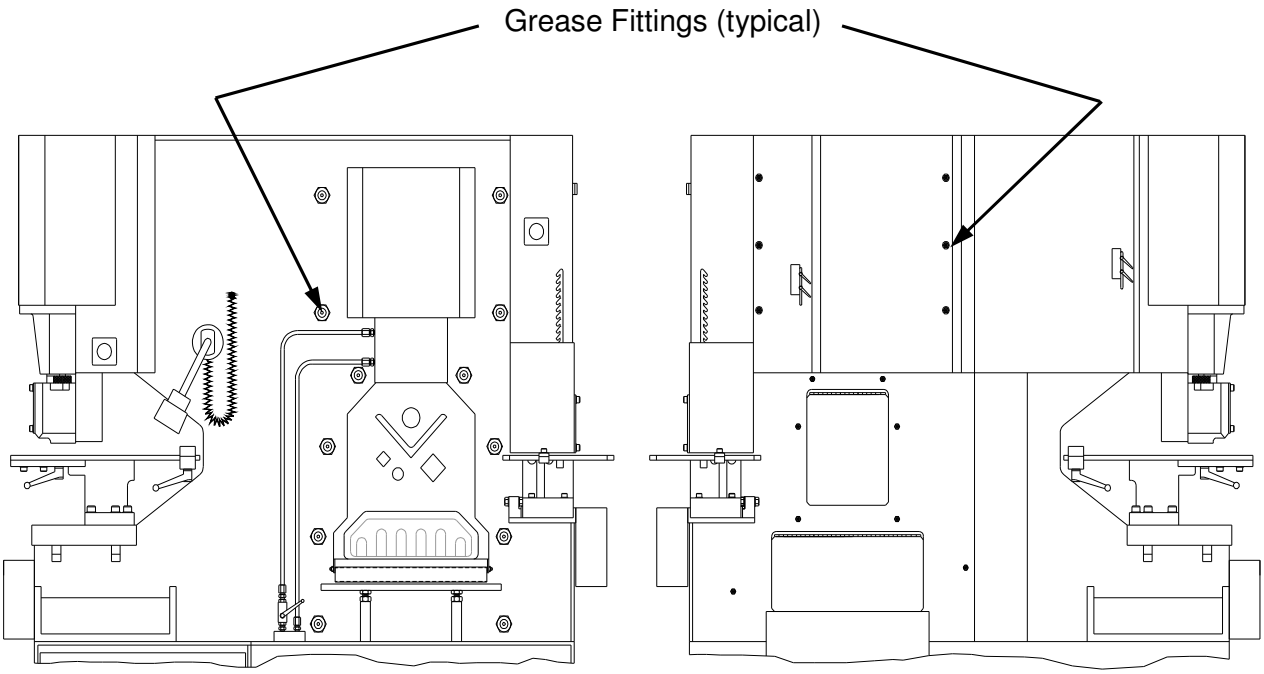


figure 25

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 work station around the machine.

Filter and Oil Change

Take off and clean the suction filter inside the hydraulic 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 (**BC**) 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 filter.

LUBRICATION AND MAINTENANCE (cont.)

Filter and Oil Change (cont.)

Hydraulic Fluid (or Equivalent) **DO NOT** mix different brands of oil.

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

Oil Level

Make sure the hydraulic oil level is in the range as indicated on the oil level sight gauge (**BD**). Keep close to the high mark. Capacity of the tank is 49.5 gal. (max.) Required oil capacity is 40 gal.

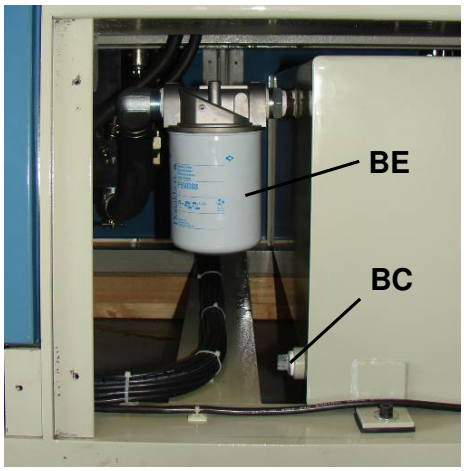


figure 26

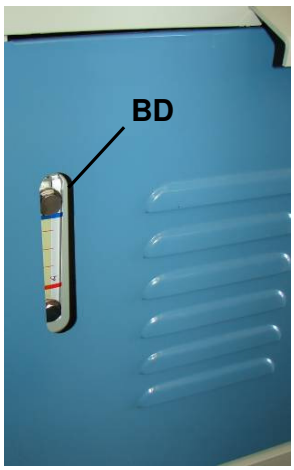


figure 27

Replace spin-on filter (**BE**) at each oil change.

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

figure 28

LUBRICATION AND MAINTENANCE (cont.)

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-95 is 250 Kg/cm² (3,555 psi).

Airborne Noise

The continuous airborne noise level of the machine under normal operating conditions is approximately 75dB ± 5dB.

Storing Machine for Extended Period of Time

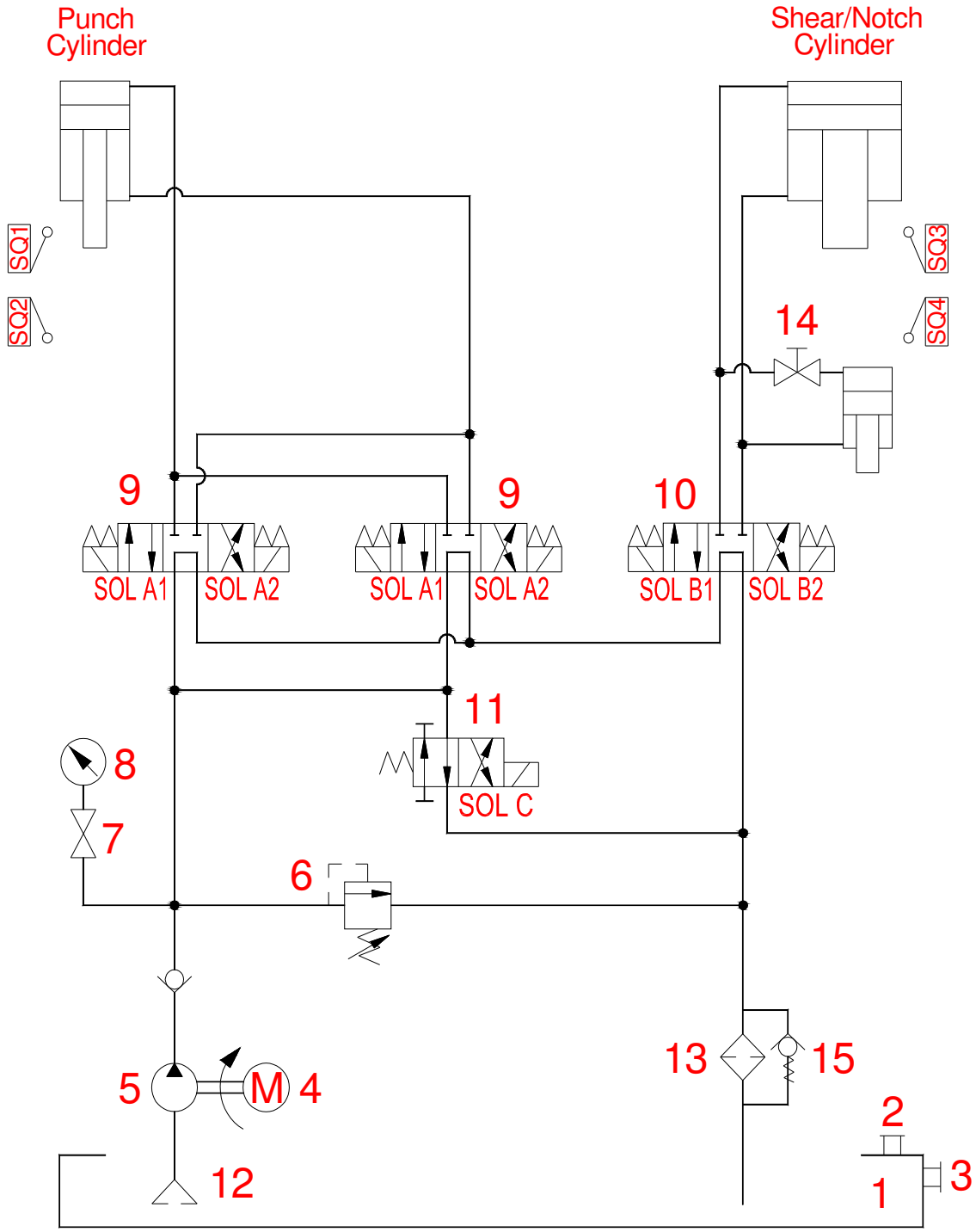
If the Baileigh SW-95 Ironworker is to be inactive for a long period of time, prepare the machine as follows:

- Detach the plug from the electrical supply panel.
- Clean and grease the machine.
- Drain the hydraulic tank
- Wipe down to prevent corrosion
- Cover the machine

HYDRAULIC CIRCUIT PARTS IDENTIFICATION

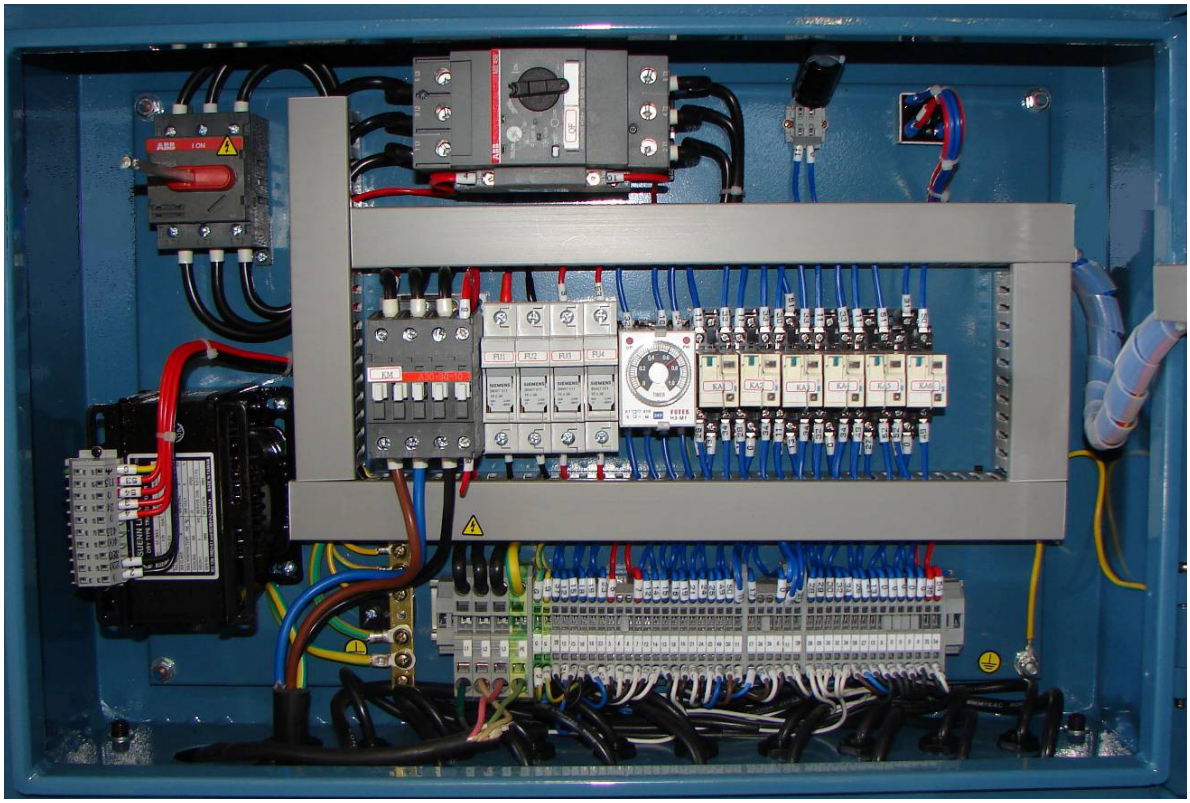
No.	Description	Qty.	Specification / Part No.
1	Oil Tank	1	8502920
2	Filler Breather Filter	1	OLHW-HY-08A
3	Oil Level Gauge	1	OLHW-LG-4"
4	Motor	1	10 HP
5	Pump	1	OLPM-SAL1-22
6	Relief Valve	1	OLOV-RPEC-FAN
7	Gauge Cock	1	OLOV-ST-02L
8	Pressure Gauge	1	OLOV-CB-LM-63-350KG
9	Solenoid Valve	2	OLSV-DFA-02-3C60
10	Solenoid Valve	1	OLSV-DFA-03-3C60
11	Solenoid Valve	1	OLSV-DFA-02-2B3
12	Suction Filter	1	OLFL-MF-106
13	Return Filter	1	OLFL-SE-10
14	Globe Valve	1	OLOV-4730061R
15	Check Valve	1	OLOV-CB-06

HYDRAULIC SCHEMATIC



HYDRAULIC SYSTEM PHOTO

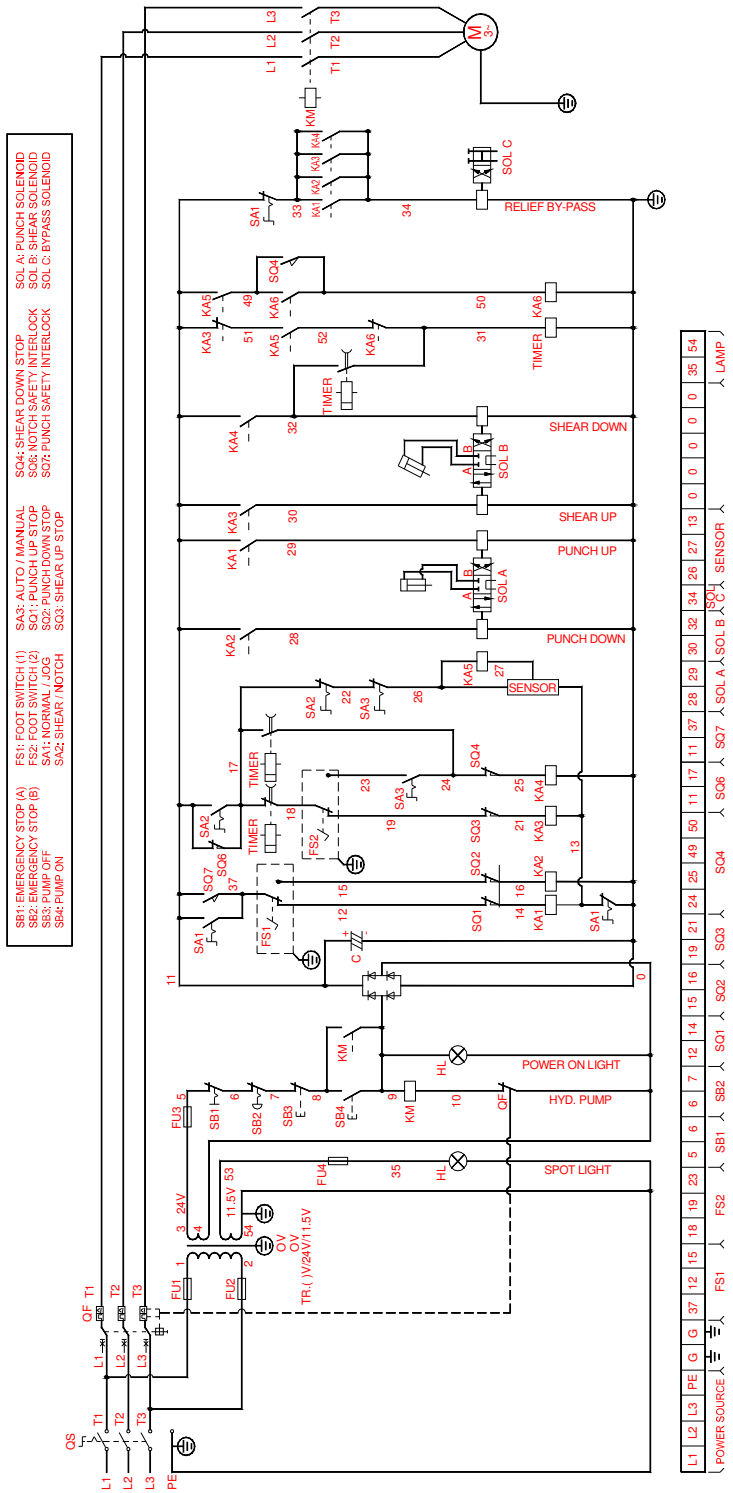
ELECTRICAL COMPONENT PHOTOS (Three Phase)



ELECTRICAL PARTS IDENTIFICATION (CE)

Code	Description	Qty.	Function
QF	Motor Circuit Breaker	1	Motor Protection
FU1, FU2, FU3	Fuse	3	Control Circuit Protection
FU4	Fuse	1	Stop Light Protection
QS	Isolator Switch	1	Circuit Interrupter
SB1, SB2	Push-Lock Push Button	2	Emergency Stop
SB3	Push Button (Red)	1	Pump Off
SB4	Push Button (Green)	1	Pump On
SA1	Selector Switch	1	Normal / Jog Switch
SA2	Selector Switch	1	Shear / Notch Switch
SA3	Selector Switch	1	Auto / Manual Switch
FS1	Foot Switch	1	Punch Control
FS2	Foot Switch	1	Shear Control
KA1, KA2	Relay	2	Punch Control
KA3, KA4	Relay	2	Shear Control
KA5	Relay	1	Sensor Control
SQ1	Limit Switch	1	Punch UP Limit Switch
SQ2	Limit Switch	1	Punch DOWN Limit Switch
SQ3	Limit Switch	1	Shear UP Limit Switch
SQ4	Limit Switch	1	Shear DOWN Limit Switch
SQ6	Limit Switch	1	Notch Safety Interlock
SQ7	Limit Switch	1	Punch Safety Interlock
TIMER	Timer	1	Sensor Timer
SENSOR	Sensor	1	Auto Shear Sensor
SOLA~SOLC	Solenoid Valves	4	
KM	Magnetic Switch	1	
	Bridge Rectifiers	1	AC ⎓ DC
TR	Transformer	1	

ELECTRICAL SCHEMATIC (Three Phase)



TROUBLESHOOTING

WARNING **Disconnect the machine from power source before troubleshooting.**

SYMPTOM	POSSIBLE CAUSE (S)	CORRECTIVE ACTION
Motor Does Not Start	1. No power.	Check the power source.
	2. Isolator switch not turned on.	Turn the switch to ON position.
	3. Emergency button not reset.	Release the emergency button by turning the knob to the right.
	4. Motor damaged.	Replace motor.
	5. Motor power cable not connected properly.	Check the cable connection and reconnect cable. Change cable if worn out.
	6. Motor circuit breaker tripped.	Reset the breaker to ON position.
	7. Fuse blown.	Check and replace fuse.
	8. Magnetic switch damaged or burned out.	Replace switch.
	9. Transformer damaged.	Replace transformer.
Motor is ON, but machine will not move.	1. Motor turning in the wrong direction.	For 3 Phase-Turn machine OFF. Change any two of the three power source wires. Recheck motor direction.
	2. Not enough hydraulic oil.	Check oil level and add oil if necessary.
	3. Solenoid valve stuck.	Clean or replace valve.
	4. Solenoid valve coil burned out.	Replace solenoid valve.
	5. Foot pedal not sending signal.	Check pedal and replace switch if necessary.
	6. Relay stuck or burned out.	Replace relay.
	7. Safety interlock covers not closed.	Close covers / stripper.
	8. Limit switch not set at correct position.	Adjust the limit switch for proper stroke travel setting.

TROUBLESHOOTING (cont.)

SYMPTOM	POSSIBLE CAUSE (S)	CORRECTIVE ACTION
Machine moves, but cannot reach capacity.	1. Relief valve not set correctly.	Check hydraulic pressure and adjust relief valve (tighten to increase pressure).
	2. Relief valve damaged.	Replace relief valve.
	3. Pump damaged.	Replace pump
	4. Internal cylinder leak.	Contact dealer for service.
	5. Pilot check valve not set correctly.	Adjust the correct pressure setting of the valve.
Excessive hydraulic noise	1. Motor turning in wrong direction.	For three phase – Turn machine OFF. Change any two of the three power source wires. Re-check motor direction.
	2. Pump worn out.	Replace pump.
	3. Filter is dirty.	Replace filter element.
	4. Not enough oil.	Check oil level and add oil if necessary.

LEAVE

BLANK

P.O. Box 531 Manitowoc WI 54221-0531
Phone: 920.684.4990 Fax: 920.684.3944
Web: bii1.com

PLEASE FILL OUT AND FAX OR RETURN IN SELF ADDRESSED ENVELOPE.

COMPANY NAME:_____

ADDRESS: _____

_____

TELEPHONE: _____

CONTACT NAME: _____

MACHINE SERIAL NUMBER: _____

A COPY OF THE OPERATORS MANUAL AND WARRANTY HAS BEEN RECEIVED BY:

_____
Signature

_____
Date