OPERATOR'S MANUAL

HYDRAULIC PRESS BRAKE

MODEL: BP-3350NC

Baileigh Industrial, Inc.
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Rev. 5/2012

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THANK YOU & WARRANTY

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

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

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

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

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

Limitation of Liability. IN NO EVENT SHALL SELLER BE LIABLE TO BUYER OR ANY OTHER PARTY FOR ANY 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.

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.

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

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

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

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

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

Summary of Return Policy.

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

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

For Customer Service & Technical Support:
Please contact one of our knowledgeable Sales and Service team members at:
(920) 684-4990 or e-mail us at sales@baileighindustrial.com

INTRODUCTION

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

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

In this manual you will find: (when applicable)

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

GENERAL NOTES

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

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

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

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

IMPORTANT

PLEASE READ THIS OPERATORS MANUAL CAREFULLY

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

SAFETY INSTRUCTIONS

LEARN TO RECOGNIZE SAFETY INFORMATION

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

Follow recommended precautions and safe operating practices.

UNDERSTAND SIGNAL WORDS

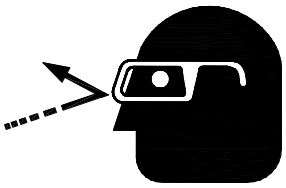
A signal word – **DANGER**, **WARNING**, or **CAUTION** is used with the safety alert symbol. **DANGER** identifies a hazard or unsafe practice that will result in severe **Injury or Death**.

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

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

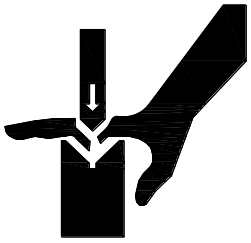
PROTECT EYES

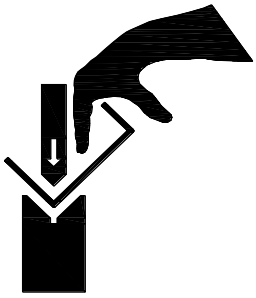
Wear safety glasses or suitable eye protection when working on or around machinery.



BEWARE OF CRUSH HAZARD

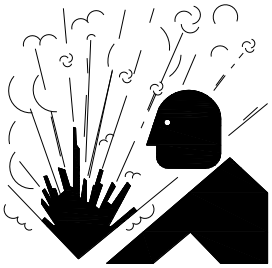
NEVER place your hands, fingers, or any part of your body in the die area of this machine.





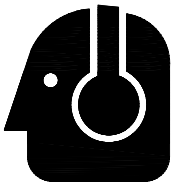
HYDRAULIC HOSE FAILURE

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

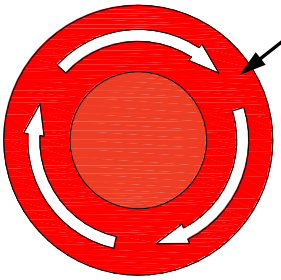
1. **Only trained and qualified personnel can operate this machine.**
2. **Make sure guards and light curtains are in place and in proper working order before operating machinery.**
3. **NEVER** put your hands or other parts of your body into the die area at any time. **DO NOT** reach through the die area from the front of the machine. Go around to the back of the machine to make these adjustments.
4. Keep your body away from the piece part to avoid injury from material deflection while the machine is running.
5. When the machine is not in use, the ram must stay at the bottom dead point of the stroke.
6. Remove any adjusting tools. Before operating the machine, make sure any adjusting tools have been removed.
7. Keep work area clean. Cluttered areas invite injuries.
8. Overloading Brake. By overloading the brake you may cause injury from flying parts. **DO NOT** exceed the specified machine capacities.
9. Machine usage. **DO NOT** use the brake as a press or crushing tool.
10. Dressing material edges. Before bending sheet metal, always chamfer and deburr all sharp edges.
11. **DO NOT** force tool. Your machine will do a better and safer job if used as intended. **DO NOT** use inappropriate attachments in an attempt to exceed the machines rated capacity.
12. 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.
13. Dress appropriate. **DO NOT** wear loose fitting clothing or jewelry as they can be caught in moving machine parts. Protective clothing and steel toe shoes are recommended when using machinery. Wear a restrictive hair covering to contain long hair.
14. Use eye and ear protection. Always wear ISO approved impact safety goggles. Wear a full-face shield if you are producing metal filings.
15. **DO NOT** over reach. Maintain proper footing and balance at all times. **DO NOT** reach over or across a running machine.
16. Stay alert. Watch what you are doing and use common sense. **DO NOT** operate any tool or machine when you are tired.

SAFETY PRECAUTIONS (cont.)

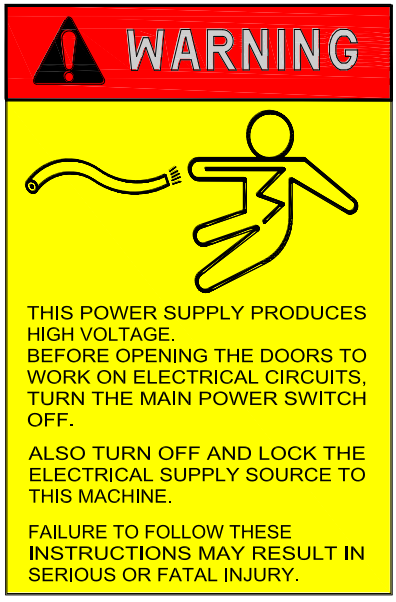
17. Check for damaged parts. Before using any tool or machine, carefully check any part that appears damaged. Check for alignment and binding of moving parts that may affect proper machine operation.
18. Observe work area conditions. **DO NOT** use machines or power tools in damp or wet locations. **DO NOT** expose to rain. Keep work area well lighted. **DO NOT** use electrically powered tools in the presence of flammable gases or liquids.
19. Blade adjustments and maintenance. Always keep blades sharp and properly adjusted for optimum performance.
20. Keep children away. Children must never be allowed in the work area. **DO NOT** let them handle machines, tools, or extension cords.
21. 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.
22. **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.

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.



MACHINE SAFETY LABELS



MACHINE DESCRIPTION

The Baileigh Industrial's BP-3350NC hydraulic brake press has a very heavy electro welded frame of solid plate steel making this a very rigid machine that runs so smoothly in production. To aid with rigidity the beam is stabilized by 3 axis bearings sliding on several extremely hardened stabilization tracks and is further stabilized by a unique parallel mechanism. All of this assures high accuracy between both dies at any position of the stroke.

This precise sheet metal bender is a two axis NC machine where positioning of the upper beam and back gauge can be fine tuned and whose position is via encoder controls.

The top beam uses two precise hydraulic cylinders that are coupled to an encoder to measure their exact position. The position of the downward stroke is illuminated on the DRO (digital readout). This means you can accurately fine tune a sheet metal bend and make it perfect every time.

The motorized back gauge rides on a solid ball screw trolley mechanism and its position is being read by an encoder whose displaying its whereabouts on a separate DRO. Fine tuning of both the beam and back gauge are by separate hand wheels. This means is that this is an extremely accurate hydraulic brake press across the entire width of the beam.

This machine can be run in three modes. The first is the jog mode which is exclusively meant for set up. The second is manual where the operator may wish to have more control over the decent and return of the beam in production. The final is automatic which is for full production.

Standard on all Baileigh Industrial brake presses are, foot pedal controls, front material rests, safety guards with a 6 light safety curtain, and a set of hardened single-Vee tooling.

TECHNICAL SPECIFICATIONS

Maximum Pressure	33 Tons
Bending Capacity (maximum lenght @ maximum thickness)	50” / .098” (1270mm / 2.5mm)
Distance Between Housings	38.18” (970mm)
Distance From Table to Ram	9.84” (250mm)
Table Width	6.29” (160mm)
Throat Depth (to housing)	7.87” (200mm)
Stroke Distance	5.9" (150mm)
Approach Speed	3.14” / sec. (80mmm / sec.)
Bending Speed	.275” / sec. (7mm / sec.)
Return Speed	2.36” / sec. (60mm / sec.)
Power Back Gauge Length	23.62” (600mm)
NC Control Type	Digital Counter
Main Motor	3hp (2.24kw)
Back Gauge Motor	1/2 hp (.37kw)
Voltage	220 volt / 3 phase
Oil Capacity	40 gal (150L)
Shipping Dimensions (L/W/H)	77” x 57” x 92” (1956 x 1448 x 2337mm)
Shipping Weight	2640 lbs (1200kg)

TECHNICAL SUPPORT

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

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

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 BP-3350NC Press Brake is shipped complete on one pallet. 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: If any parts are missing, do not plug in the power cable, or turn the power switch on until the missing parts are obtained and installed correctly.

Contents of Tool Box:

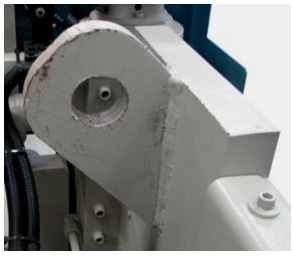
Lever Type Grease Gun	1 pc
300mm Adjustable Wrench	1 pc
6 x 100mm Phillips Screwdriver	1 pc
Touchup Paint	3 cans
10 pc Hex Wrenches (1.5 - 2.0 - 2.5 - 3 - 4 - 5 - 5.5 - 6 - 8 -10mm)	1 set
Round Leveling Pads	4 pcs

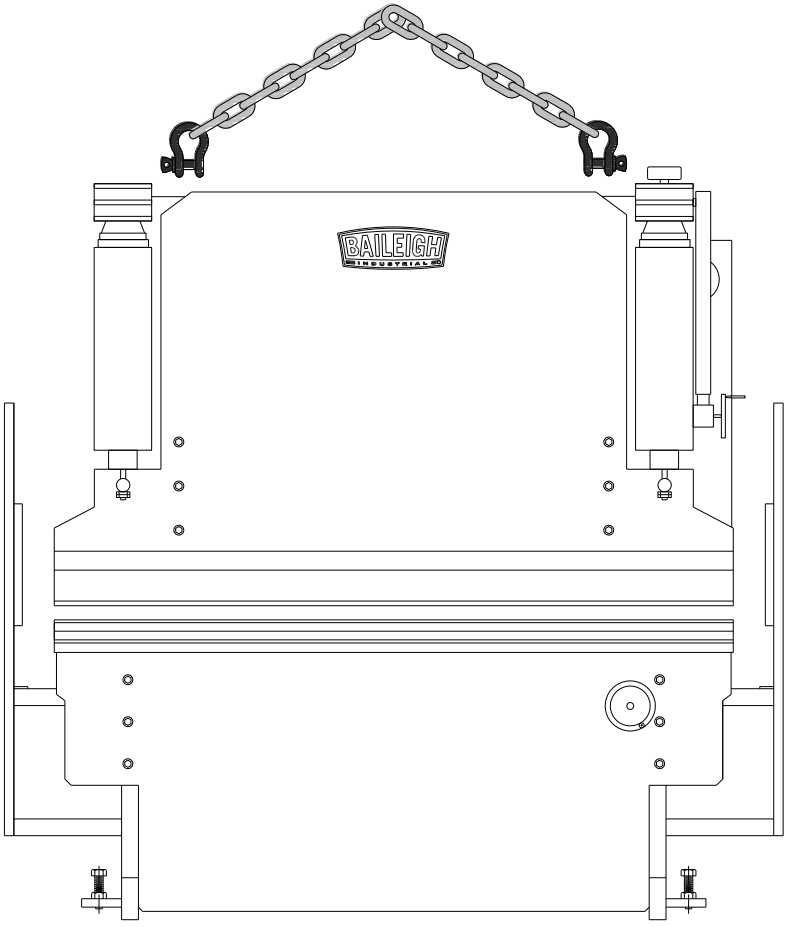
TRANSPORTING AND LIFTING

⚠ CAUTION: Lifting and carrying operations should be carried out by skilled workers, such as a crane operator, etc. Use a crane to lift the machine, attaching the lifting chain carefully, making sure the machine is well balanced. Choose a location that will keep the brake free from vibration and dust from other machinery. Keep in mind that having a large clearance area around the machine is important for safe and efficient working conditions.

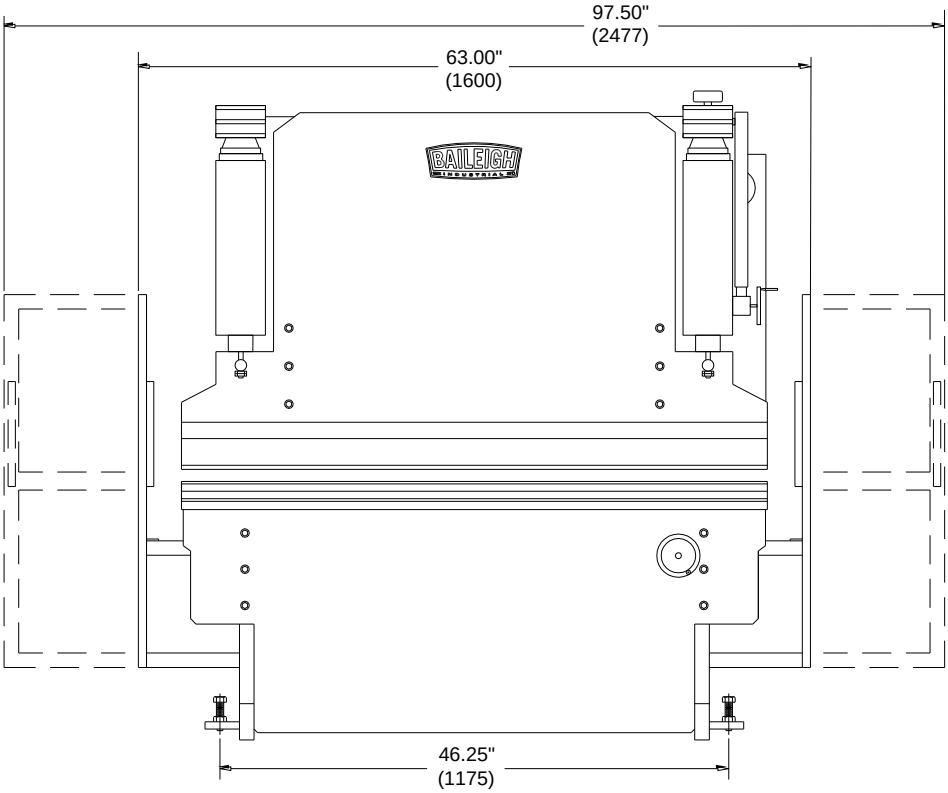
Follow these guidelines when lifting:

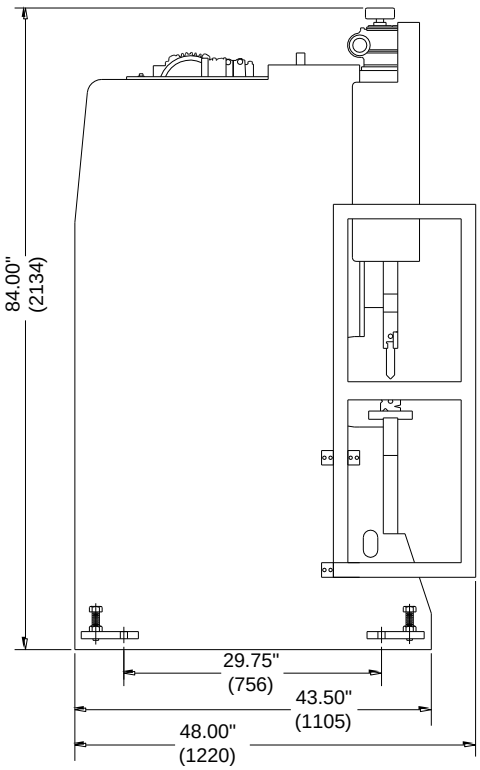
- The machine is top and front heavy. Always lift and carry the machine with the lifting holes provided at the top of the machine. **DO NOT** use a Forklift.
- Use a steel chain capable of lifting 5,000 lbs. (2268kg) minimum
- Take proper precautions for handling and lifting.
- Check if the load is properly 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, and lower slowly until it touches the floor.

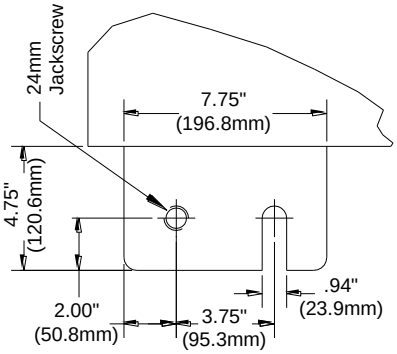




OVERALL DIMENSIONS







INSTALLATION

Levelling

The machine should be sited on a level, concrete floor, suitable to support the entire weight of the press and work material and in accordance with local building codes. 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.
Level the table to within .003”/ft. (.25mm / meter) front to back and left to right.

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.

Cleaning

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

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

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

Electrical

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.

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 cord connection:

1. Open the electrical enclosure door by pushing the button indicated by the arrow in (fig. 1). When the handle pops up, twist it 90°. (**ccw**) counter clockwise. The disconnect switch must be **OFF** before the door will open.
2. Insert a fitting into an open hole to grip the power cord (supplied by customer).
3. Remove the (**E, R, S, T**) plate which covers the terminals (fig. 2). For three phase, connect the three power wires as shown in (fig. 3) to terminals **R, S & T**. Connect the ground wire (typically green) to the **E** (Safety Ground) terminal.
4. Check that the power cord has not been damaged during installation.
5. Reinstall the (**E, R, S, T**) plate.

figure 1

figure 2

Check for correct rotation of the motor (3 phase)

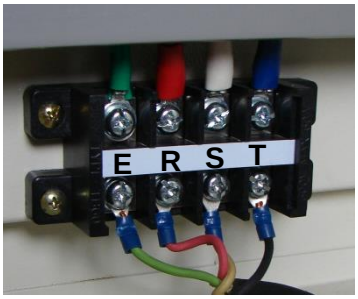


figure 3

1. Close the electrical enclosure door.
2. With power connected and disconnect turned on, the white power light on the control panel will be lit.
3. Push the green button to start the pump. The green light will be lit.
4. Press the left “DOWN” footswitch (fig. 4) and the upper die beam “I” should come down. If not, disconnect power to the machine, and switch the **R** and **T** wires**. DO NOT** move the ground wire **E.**

Improper rotation can severely damage the hydraulic pump.

figure 4

TURNING ON/OFF THE PRESS BRAKE

Turning On This Machine

Please review the attention notice at electrical cabinet when starting to use the machine.

Don't touch/use the Handle Wheel (For adjust back gauge position) before turn On the machine power. **IT IS VERY IMPORTANT!**

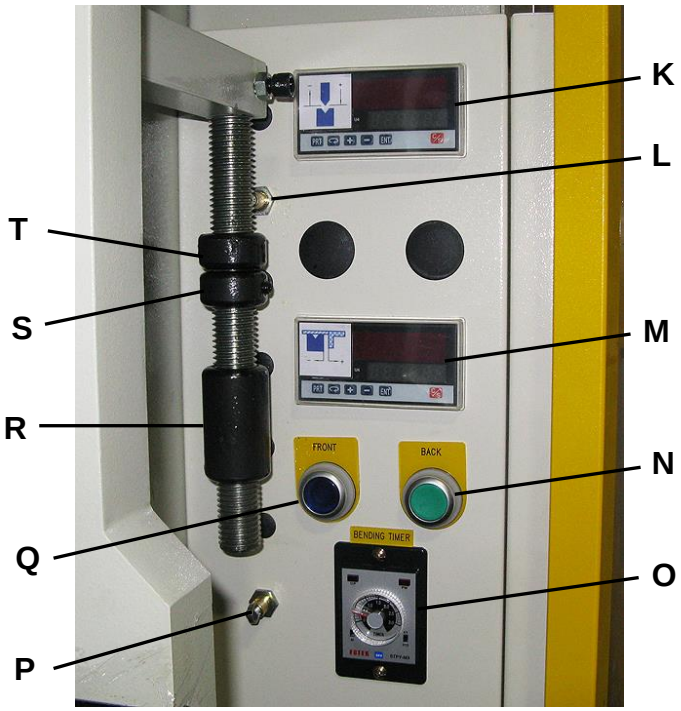
If you touch or adjust the Handle Wheel before the machine connect power, the back gauge "Actual Values" will be different with "Demand Values"

When turning on press brake, switch to "auto" or "manual" mode and upper blade will raise to the up position limit.

Turning Off This Machine

Before turning off press brake, use "jog" mode to lower the upper blade onto the bottom die.

GETTING TO KNOW YOUR MACHINE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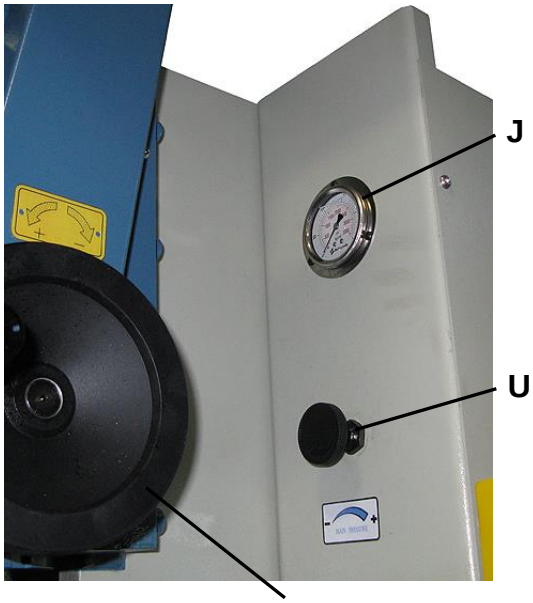
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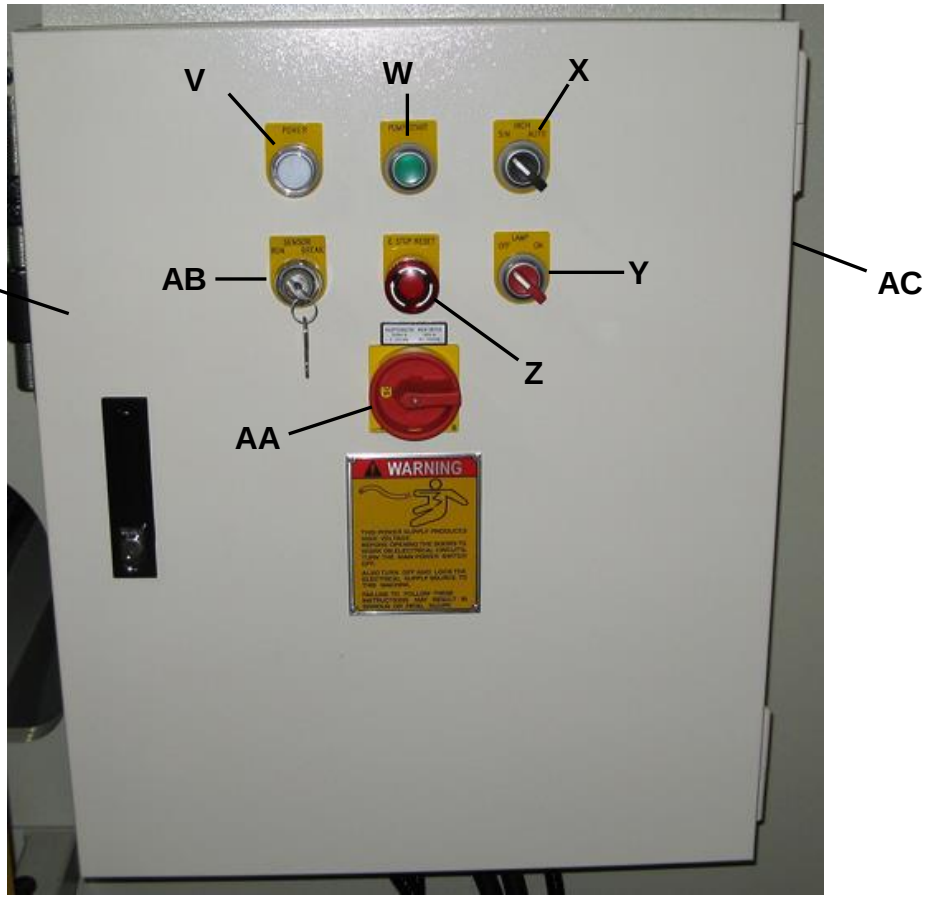
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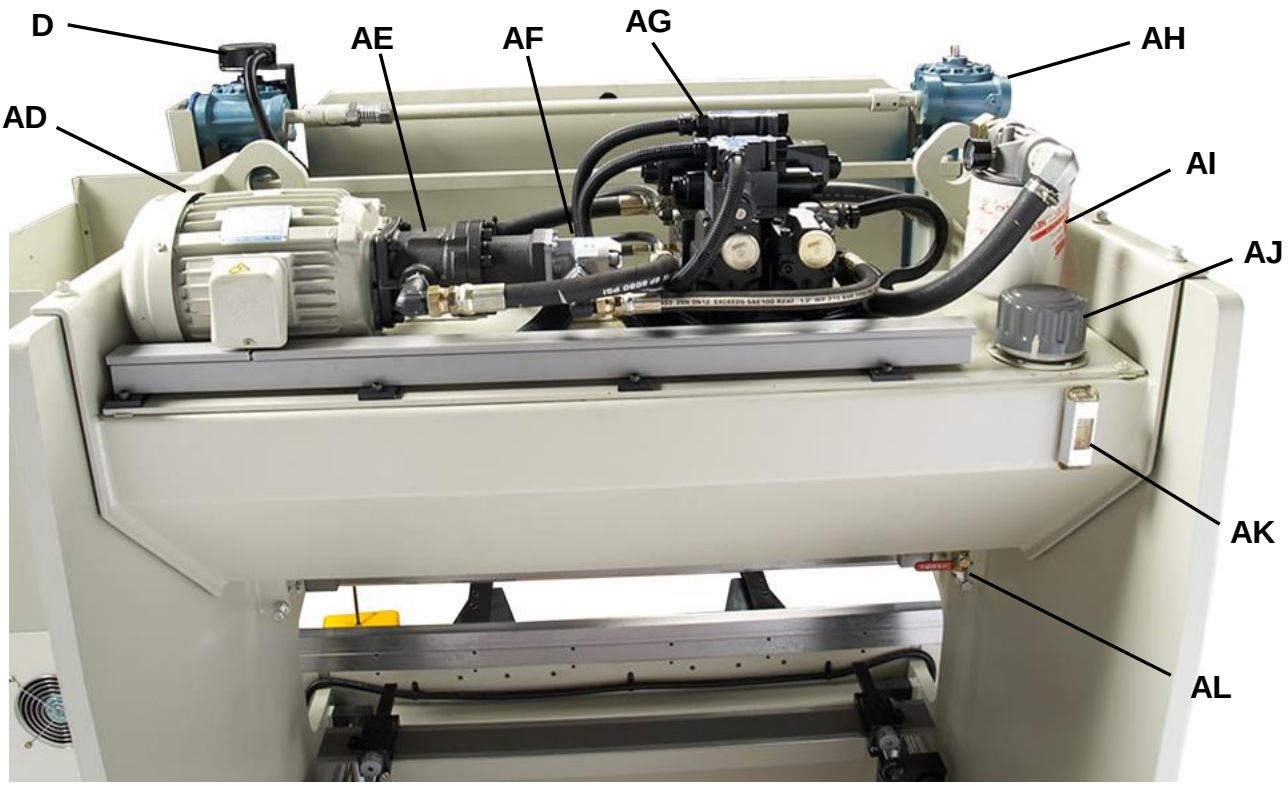
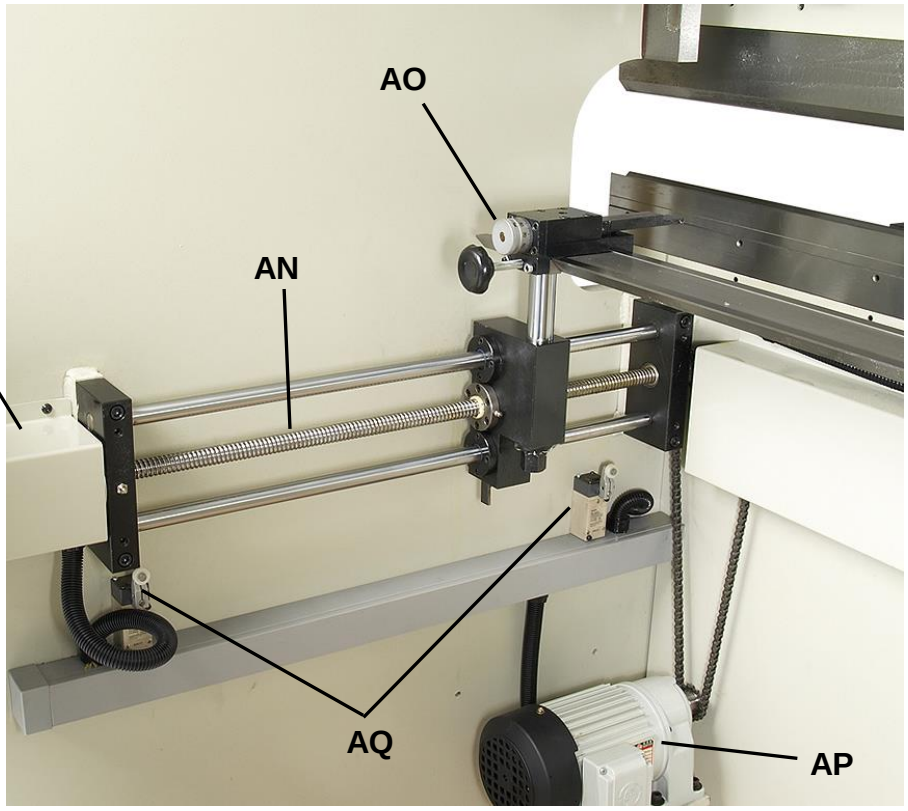
WARNING

Item	Description
A	Light Curtain Emitter
B	Light Curtain Receiver
C	Up / Down Foot Pedal
D	Encoder
E	Depth of Bend Control Wheel
F	Electrical Enclosure / Control Console
G	Back Gauge Control Wheel
H	Adjustable Support Arms
I	Upper Die
J	Main Pressure Gauge
K	Depth of Bend Counter
L	Up Travel Limit Switch
M	Back Gauge Distance Counter
N	Back Push Button (Increase back gauge distance)
O	Bending Timer
P	Down Travel Limit Switch
Q	Front Push Button (Decrease back gauge distance)
R	Lower Actuating Ring
S	Locking Ring
T	Upper Actuating Ring
U	Pressure Control Valve
V	Power ON Indicator Lamp
W	Pump Start Push Button
X	Bending Mode Select Switch
Y	Lamp On / Off Switch
Z	Emergency Stop Button
AA	Main Power Disconnect Switch
AB	Sensor Run / Break Switch
AC	Cooling Fan, Electrical Enclosure

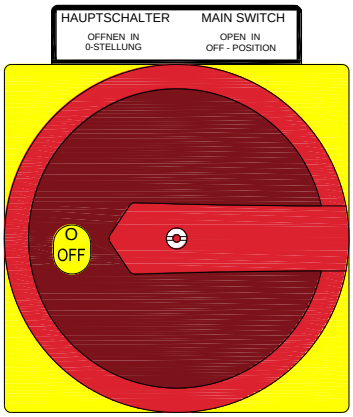

D
AE
AF
AG
AH
AD
AI
AJ
AK
AL


AO
AM
(Under guard)
AN
AQ
AP

Item	Description
D	Encoder
AD	Hydraulic Pump Motor 3hp (2.24kw)
AE	Main Hydraulic Pump
AF	Secondary Hydraulic Pump
AG	Hydraulic Manifold and Valve Assembly
AH	Right Angle Drive
AI	Oil Filter
AJ	Oil Fill Cap
AK	Hydraulic Tank Oil Level Gauge
AL	Drain Valve
AM	Back Gauge Encoder
AN	Power Back Gauge Ball screw
AO	Back Gauge Micro-Adjuster
AP	Back Gauge Drive Motor
AQ	Limit Switches, Back Gauge Travel Limits

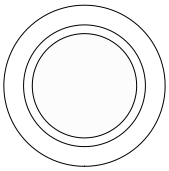
Electrical Enclosure Switch and Button Functions

⚠ WARNING: Before opening the door to work on electrical circuits, turn the main disconnect switch "OFF". Also turn off and Lock Out the electrical supply source to this machine. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN FATAL OR SERIOUS INJURY.



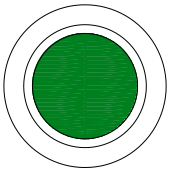
The safety disconnect switch turns power on to the machine when in the "**ON**" position. If the door handle is turned while the switch is "**ON**", a safety catch will prevent the door from opening.

POWER



POWER INDICATOR LIGHT – When the disconnect switch is turned on, the white light will be lit. Make sure machine is plugged into correct power source and that the E-Stop button has been reset.

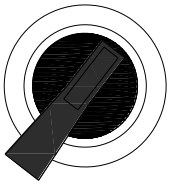
PUMP START



PUMP START PUSHBUTTON – When depressed, the green light on the pump start button will be lit and the pump motor will start. Press the footswitch "Down" pedal and the upper die should go down.

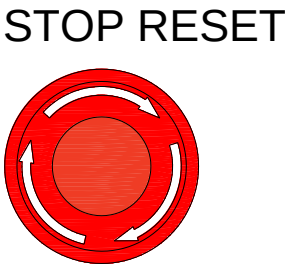
INCH

SIN AUTO

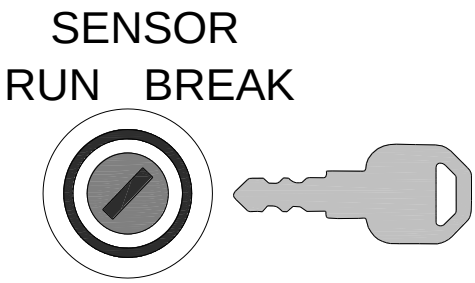


CYCLE MODE SELECTOR SWITCH – This is a 3-position switch which allows you to pick one of three bend modes. In the left "**SIN**" mode, the die will come down when the "Down" footswitch is pressed and will return as soon as it is released. In the center "**INCH**" mode the die will go down or up as you step on the "Down" or "Up" footswitch. In the right "**AUTO**" mode, stepping on the "Down" switch sends the die through the bend cycle and returns to the start position.

E-STOP BUTTON – When pressed, the red **E-STOP** button will be illuminated and all machine functions will stop. Turn button clockwise (**cw)** to reset.

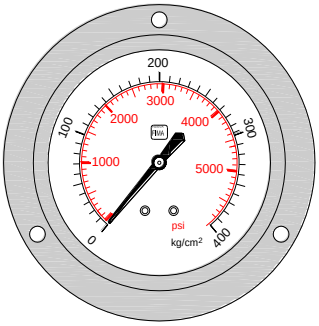


SAFETY LIGHT CURTAIN SWITCH – With the key inserted and switched to the "**RUN**" position the light emitter and receiver will detect objects in the sensing field. When switched to the "**BREAK**" position the curtain is de-energized.

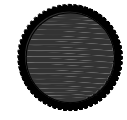


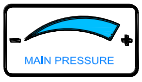
Hydraulic Control Functions

MAIN PRESSURE GAUGE – The main pressure gauge shows the pressure that the die will be applying at the bend. Start the pressure low, and gradually increase to the point where the bend can be made successfully. The pressure can be read in either (psi) or (kg/cm²).

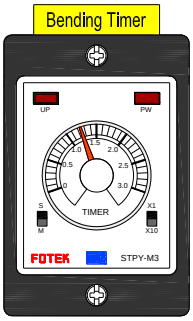


PRESSURE REGULATOR – The pressure regulator controls the main system pressure as read on the pressure gauge. Turning the regulator counterclockwise (**ccw**) decreases the pressure and turning the regulator clockwise (**cw**) increases the pressure.

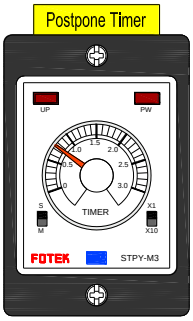




BENDING TIMER – The bending timer controls how long the upper die remains at the bottom of the bending stroke. The timer can be set from (0-3) seconds.



POSTPONE TIMER - The postpone timer controls the time between the fast approach and the slower bending stroke of the top die. The timer can be set from (0-3) seconds and is located inside the main electrical enclosure.



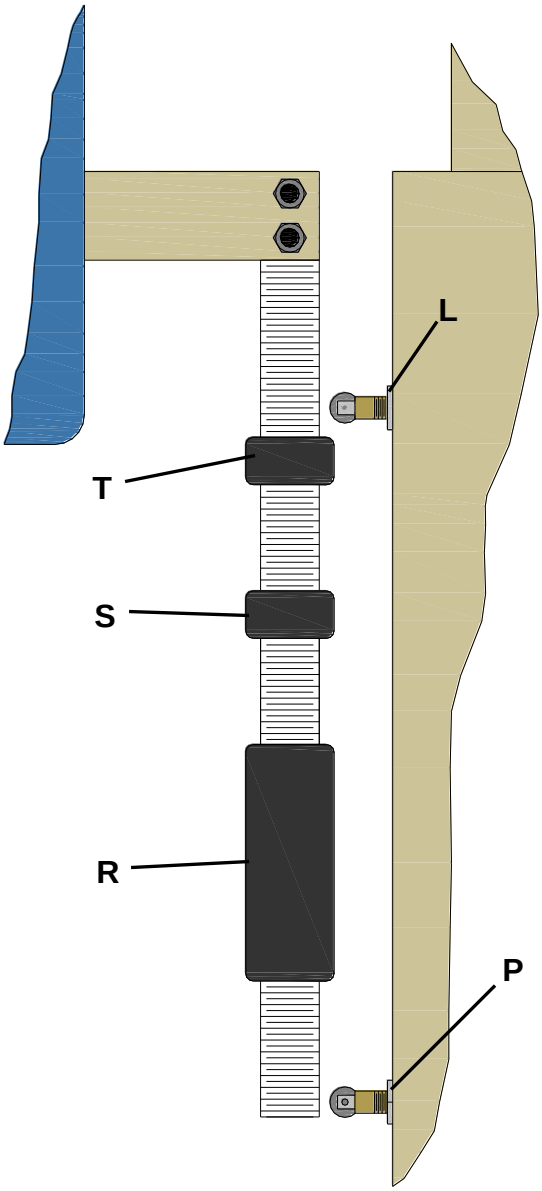
PRESSURE SWITCH – <u>DO NOT ADJUST</u> This pressure switch has been set at the factory and needs no further adjustment. Contact: Baileigh Industrial at (920.684.4990) if you need assistance.

TRAVEL LIMIT GUIDE ROD ADJUSTMENT

The travel limit switches (**L**) and (**P**) are actuated by the adjustable dogs (**T**) and (**R**). When the upper limit switch (**L**) is actuated it will stop the **UP** stroke of the ram. Lowering the dog (**T**) allows the ram to travel higher. Raising dog (**T**) lowers the **UP** travel of the ram. This is helpful when doing production work where you want to keep the overall cycle time down.

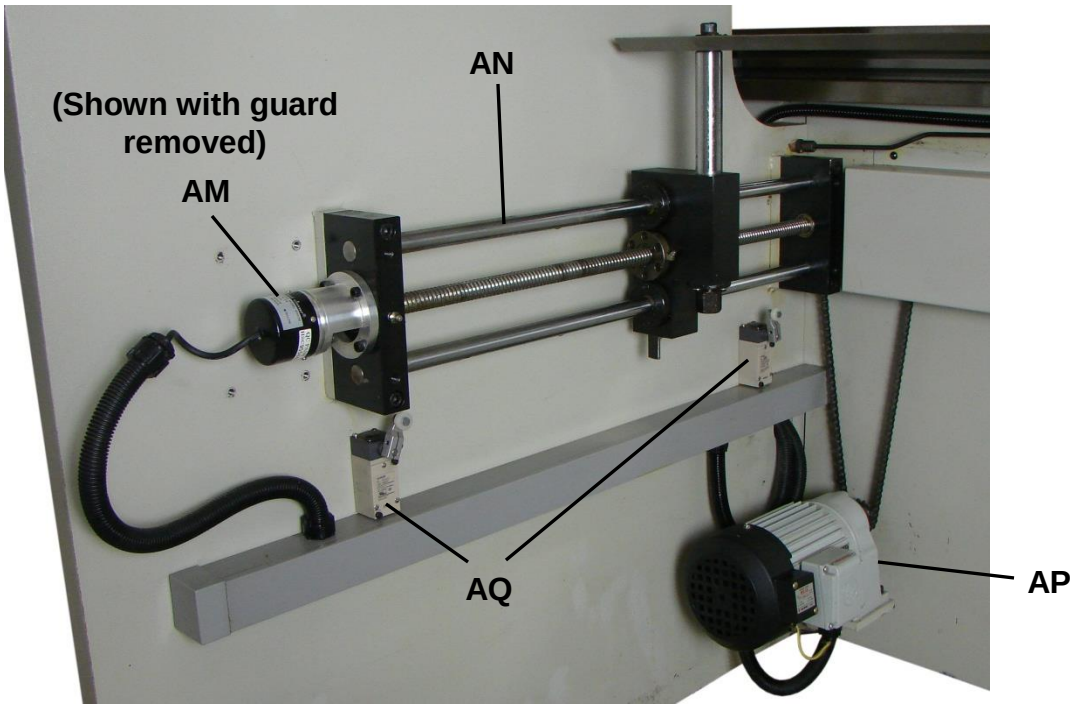
When limit switch (**P**) is actuated it signals the ram to switch from the fast approach to the slower bending **DOWN** stroke. The closer dog (**R**) is located to limit switch (**P**) the quicker it actuates. The postpone timer is used to set the delay from 0 to 3 seconds for this change of speed to take place.

Collar (**S**) has a setscrew so it can be used similar to a lock nut to keep either dog (**T**) or (**R**) in place.



NC Controlled Back Gauge

The back gauge is connected to a servo motor (**AP**) with an encoder (**AM**) and operated from the controller for accurate positioning. There are two limit switches (**AQ**) on the "**X**" axis of the slide to stop motion at the end of travel.



Micro-Adjuster

The two micro-adjusters are mounted to a **V-slide rail**. By loosening the **threaded knob** they can be positioned along the slide rail. Each micro-adjuster has a **micro adjustment knob** for fine tuning. Loosen the center **setscrew**, make the adjustment, and re-tighten the setscrew. (One full revolution = 1mm (.039") of linear travel.) The entire V-rail assembly can be raised or lowered by turning the **adjustment bolts** as shown in (fig. 5). After adjusting, use a level to make the V-rail parallel to the die.

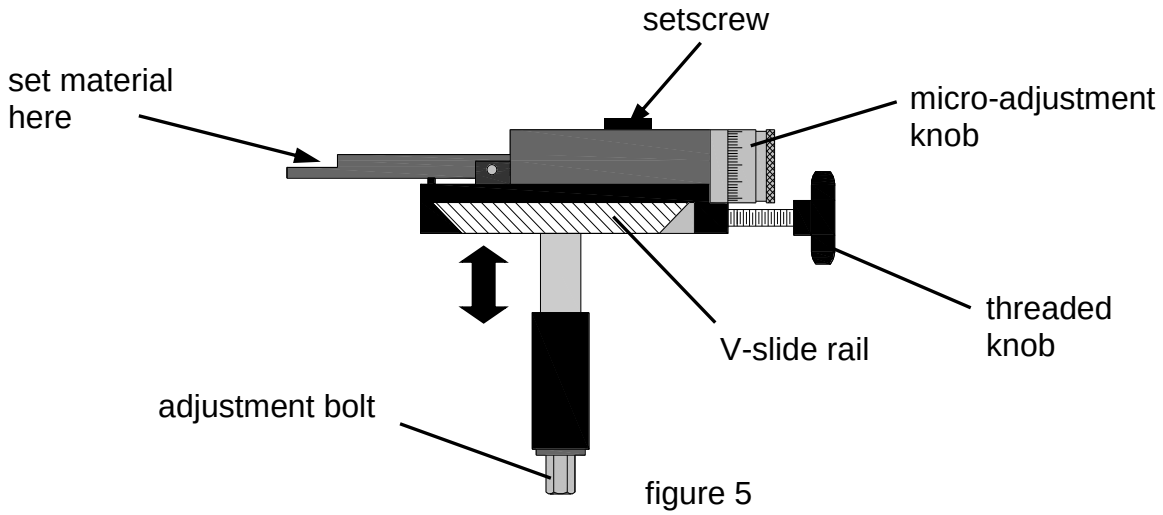
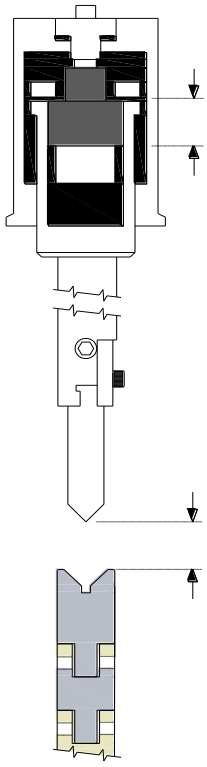


figure 5

Depth of Bending

The hydraulic cylinders are controlled by mechanical stops inside the cylinders, assuring accurate angle of bend at all times. The encoder system indicates the exact position of the top beam and adjustments are made on the controller to a servo motor. When doing multiple bends, the delay and clicking sounds you hear are the encoder responding to the cylinders movement.



OPERATION

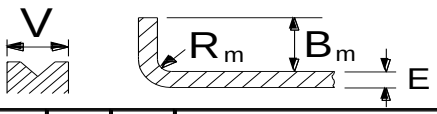
Mode Selection

SIN Mode
Step on the "Down" pedal to move the punch downward. Step on the "Up" pedal to raise the punch.
INCH Mode
Step on the "Down" pedal to move the punch downward, release your foot to raise the punch.
AUTO Mode
Step on the "Down" pedal once and the punch will go downward automatically. The punch will raise automatically when it reaches the set time.

Bending Pressure Setting

1. Install and adjust the **Punch** and **Die.**
2. Turn the Pressure Adjusting Knob (**U**) counterclockwise (**ccw**) to 0 kg.
3. Put the material on the die.
4. Step on the "Down" pedal on the foot switch.
5. Turn the "Pressure Adjust Knob, clockwise (**cw**).
6. Observe the pressure gauge (**J**) while the punch and die touch, and adjust the pressure to the proper value.
7. The pressure reference chart for the proper value.

PRESSURE REFERENCE CHART



U.S.

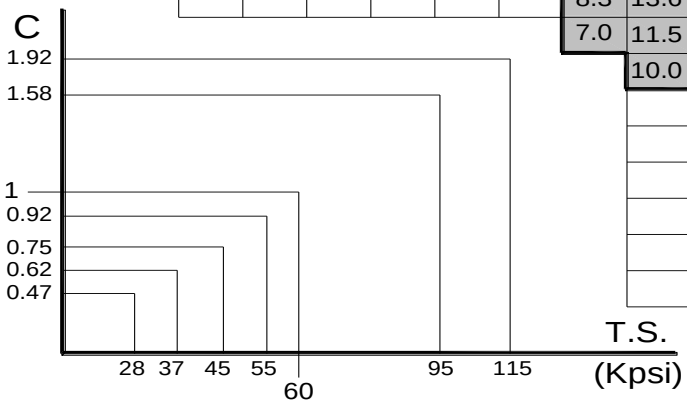
(in)

(U.S.G.)

T.S. =60,000 psi

V	R_m	B_m	.036	.048	.06	.075	.105	.12	.135	.15	.188	.25	.312	.375	.437	.5	.625	.75	.875	1
in.	in.	in.	20	18	16	14	12	11	10	9	7	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
1/4	.039	.163	2.9	5.9																
5/16	.049	.203	2.2	4.3	7.4															
3/8	.059	.244	1.7	3.4	5.7	9.8														
1/2	.078	.325	1.2	2.3	3.8	6.5	14.7													
5/8	.098	.406	0.9	1.7	2.9	4.8	10.7	14.7												
3/4	.117	.488		1.4	2.2	3.8	8.3	11.4	15.1											
7/8	.137	.569			1.9	3.1	6.7	9.2	12.2	15.6										
1	.156	.650				2.6	5.7	7.7	10.1	13.0										
1 1/8	.176	.732				2.2	4.9	6.6	8.6	11.0	18.9									
1 1/4	.195	.813					4.2	5.7	7.5	9.6	16.3	32.4								
1 1/2	.234	.975					3.4	4.6	6.0	7.6	12.8	25.8	42.8							
2	.313	1.30						3.2	4.1	5.3	8.8	16.9	28.5	44.3						
2 1/2	.391	1.63								4.0	6.7	12.6	21.0	32.4	46.7					
3	.469	1.95									5.3	10.0	16.6	25.4	36.3	50.0				
3 1/2	.547	2.28										8.3	13.6	28.7	29.5	40.4				
4	.625	2.60										7.0	11.5	17.1	24.7	33.8	57.1			
4 1/2	.703	2.93											10.0	15.0	21.2	28.9	48.6	75.0		
5	.781	3.25												13.2	18.6	25.2	42.2	64.8	93.7	
5 1/2	.859	3.58													16.5	22.3	37.2	56.9	82.0	
6	.938	3.90													14.8	20.0	33.2	50.7	72.7	100
6 1/2	1.02	4.23														18.1	30.0	45.5	65.2	89.5
7	1.09	4.55														16.5	27.3	41.3	59.1	80.9
7 1/2	1.17	4.88														15.2	25.0	37.8	53.9	73.6
8	1.25	5.20															23.0	34.8	49.5	67.5
8 1/2	1.33	5.53															21.4	32.2	45.8	62.3
9	1.41	5.85																30.0	42.5	57.8

U.S. Ton/ft



BENDING ANGLE SETTING

1. The punch presses downward, pushing the work piece into the die; the distance of the punch going into the die (**Y**) decides the angle of the work piece.
2. The gap between punch and die will be set at **0** as the original setting.
3. Measure the precise thickness (**E**) of the work piece, select the proper size for the bottom die (**V**).

   6E≤W≤10E
4. Use the formula: **Y = 1/2V x e - E** to calculate the value of **Y.**
5. Set the "BENDING DEPTH CONTROL" on the CONTROL PANEL' to make the value of **Y** be displayed on the screen.

Example
Thickness: 2.0mm
Die Width: 20.0mm
Pre-bend angle: 135 degree
Y = 1/2 x 20 x 0.4142 – 2
Y = 2.142

Parameter "**e**"		
170°	=	0.0875
160°	=	0.1763
150°	=	0.2679
140°	=	0.3640
135°	=	0.4142
130°	=	0.4663
120°	=	0.5774
110°	=	0.7002
100°	=	0.8391
90°	=	1.0000

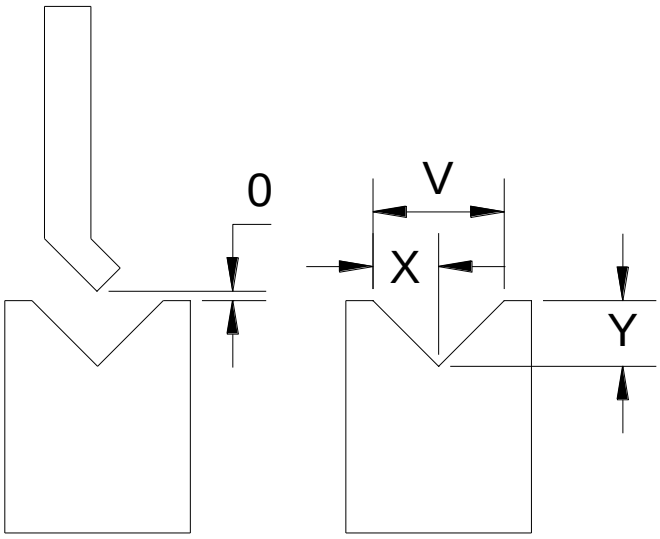
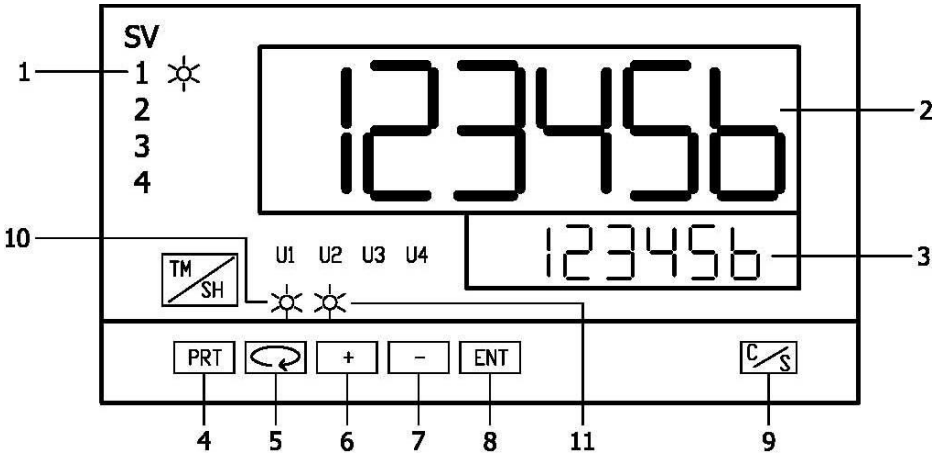


figure 6

G-B DIGITAL LIMITED MOVING CONTROLLER

Panel Description:



1. Setting lamp.
2. Actual position.
3. Demand position.
4. Setting button.
5. Moving button.
6. Increase value button.
7. Decrease value button.
8. Enter button.
9. Cancels existing value button.
10. Output lamp 1.
11. Output lamp 2.

Setting Way and Description

- Press [PRT] button into actual position setting mode and when setting lamp (SV1) is bright, you could set the actual position.
- Press [↻] button to make the figure flash and change the position of the flash figure from left to right.
- Press [+] button to make the figure flash to increase figure.
- Press [−] button to make the figure flash to decrease figure.
- Press [ENT] button to finish input and out of setting mode.
- Press [ENT] & [PRT] button into parameter setting mode. Please refer to Ill parameter description and the setting way is referred the above description.
- Press [C/S] button to cancel existing value.
- P.S. If change the setting value and don't Press [ENT] button in 5 seconds, system will input it automatically.

Parameter Description:

PARAMETER	FUNCTION	DESCRIPTION	FACTORY VALUE	X AXIS (Back Gauge)	Y AXIS (Depth & Angle)
1.	Upper limited value	-99999-999999	1000	100.000	001.000
2.	Bottom limited value	-99999-999999	500	000.100	000.100
3.	Decimal	0-5	0	3	3
4.	Ratio value	0.0001-9.9999	1.0000	0.3936	0.3936
5.	Outside message select	0 : RETURN 0. 1 : RETURN VALUE	0	0	0
6.	Outside return time	0 : 0.28 1: 2ms	0	0	0
7.	Panel lock	0 : OPEN 1 : LOCK **PRT** BUTTON 2 : LOCK **C/S** BUTTON 3 : ALL LOCK	0	0	0

P.S.1. Press ENT & PRT button to into parameter setting mode and press to change PRT parameter number from 1 to 7.

P.S.2. When setting lock function all parameter is locked.

Bending Operation

1. Determine the size of material you will be processing and setup the support arms accordingly. The arms can also be adjusted up and down or in and out. Each arm has an adjustable dog to keep the piece part from backing up.
2. Set up the dies for the type of bending you will be doing. See Changing Dies if necessary.
3. Close and latch the safety light curtain panels.
4. Turn on the main disconnect. (The white power light will be lit)
5. Insert the key in the light curtain switch and turn to **RUN** position. You should notice the red scanning lights are on for the emitter and a yellow for the receiver. Also look for a green light at the bottom (**B**) of the receiver module indicating that the curtain is working properly. If you wave an object through the beam the green light will turn red.
6. Press the green pushbutton to start the hydraulic pump.
7. Place the cycle mode selector switch to the center jog position, and tap on the **DOWN** footswitch. The ram should come down.
8. On the controller enter the **X** and **Y** axis values. Verify the bottom die you are using and also the material thickness you will be bending.
9. Press the green start button on the controller.
10. Turn the cycle mode selector switch to either the “SIN” (single) mode or the “AUTO” (continuous) mode.

11. If in **“SIN”** mode, press and hold the **DOWN** pedal. If in **“AUTO”** mode, press and release the **DOWN** pedal.

⚠ WARNING: IF A HAND OR OBJECT BREAKS THE SAFETY BEAM AFTER THE CYCLE HAS BEEN STARTED THE RAM WILL STOP AND RETURN TO THE UPPER LIMIT.

12. With the light curtain switch set to “**RUN**” and an operators hand or object breaks the safety beam, the ram will not come down when the footswitch is stepped on.
13. Adjust the dog on the travel limit guide rod so that the distance between the upper die and lower die is only slightly more than the thickness of the material being run.
    This does two things: Less chance of a foreign object getting between the dies and a faster cycle time when doing production work.

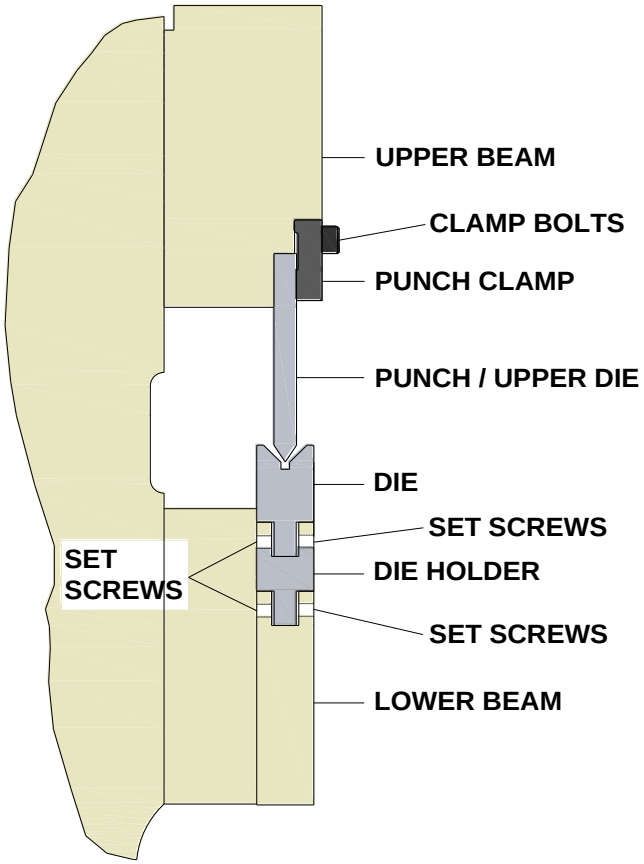
CHANGING THE DIES

The Baileigh BP-3350NC uses American style press brake tooling. Tooling can be found readily available to handle an array of sizes for various materials and in many die configurations.

WARNING: Before removing the die, TURN OFF and LOCKOUT power to the machine.
Always keep hands and fingers from between the dies.
The die supplied with the press weighs approximately 125 lbs. (57kg). Have an assistant and a suitable lifting device available. DO NOT try and remove by yourself.

Lower Die

1. Make sure there is adequate clearance around the machine to safely remove and replace the die.
2. Loosen the inner and outer set screws securing the die to the die holder.
3. Slide the die out of the holder.
4. Carefully slide in the new die. Do not tighten the set screws at this time.
5. Power up the machine and energize the hydraulic system.
6. Set the cycle mode selector switch to "**INCH**".
7. Turn the Pressure Adjusting Knob counterclockwise (**ccw**) to not more than 100 psi (50 kg).
8. Press the "**Down**" foot switch lowering the top die gently into the selected V-groove of the bottom die to position it.
9. Start on one end and tighten the inner and outer set screws evenly to secure the die in position.



Upper Punch

1. With the machine powered up and the hydraulic system energized, set the cycle mode selector switch to "**INCH**".
2. Press the "**Down**" foot switch until the ram is approximately 1/32" (1mm) from bottoming in the lower die.
3. Loosen the socket head hold down screws enough to slide the die (**I**) out (fig.7).
4. Carefully slide in the new die (or die segments). When located as needed, tighten the socket head hold down screws.
5. Now lower the top die gently into the selected V-groove of the bottom die to position it. Adjust clamps accordingly and then tighten securely.

Note: *Never install dies that are cracked, chipped, or otherwise damaged. Make sure dies are the correct size and type to reduce the risk of overloading the brake press.*

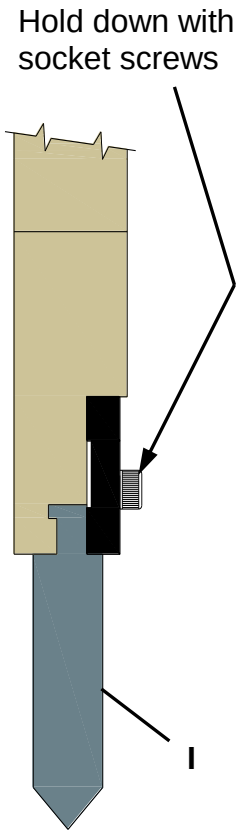


figure 7

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 overbend the metal a little and allow it to spring back to the desired angle. All metals exhibit a certain amount of springback. By using the air bending method you can program the controller to overbend enough so that you end up with the correct degree of bend.

MATERIAL SELECTION

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

When selecting materials keep these instructions in mind:

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

MACHINE ADJUSTMENTS

Bending Angle Variation

When bending a wide piece of material, if you notice a difference in the bending angle due to a difference in dim "**Y**" from left to right, (fig. 8) make the following adjustment:

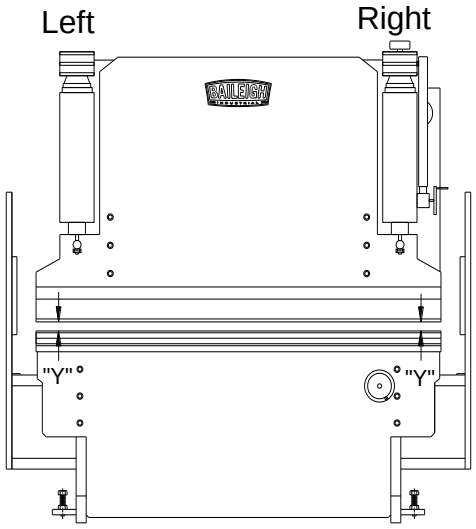


figure 8

1. Disconnect Power to the Machine.
2. Disengage the two halves of the coupling link "**a**" by first turning nut "**b**" clockwise (**cw**) to compress spring "**c**" (fig. 9).
3. When you have separation of the halves, you can rotate the shaft "**d**" to raise or lower the travel of the limit switch in the cylinder on the right side of the ram. Note: It takes many rotations to see a change in dimension "**Y**".
4. With the dimension change made, reconnect the coupling link.
5. Power up the machine and move the ram to a different position. The change in travel of the limit switch has affected the right side ram "**Y**" dimension.
6. **Disconnect power to the machine.**
7. Recheck and compare the "**Y**" dimensions. If they are still not the same, repeat the above sequence.

There are certain bending situations where you might require a single bend with 90° on one end and 100° on the other (as an example).

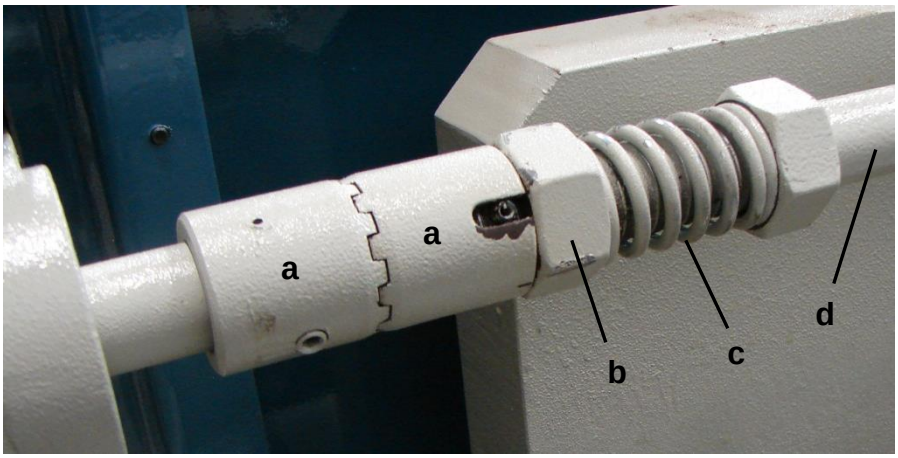


figure 9

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.

Daily Maintenance

- Inspect the power plug and cord.
- Check the foot switch cable for any loosening or damage.
- Check hydraulic hoses and fittings for leakage.
- Keep area around machine clear of debris.
- Check daily for any unsafe conditions and fix immediately.
- Check that all nuts and bolts are properly tightened.

Weekly Maintenance

- Lubricate threaded components and sliding devices.
- Check fluid level of hydraulic tank.
- Make sure Light curtains are working properly.
- Check that all limit switches are secure and adjusted properly.
- Apply rust inhibitive lubricant to all non-painted surfaces.
- On a weekly basis clean the machine and the area around it.

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

Lubrication

Lubricate the machine with recommended grease every 8 working hours using the grease gun provided. See (fig. 10 & fig. 11) to locate the grease fittings

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

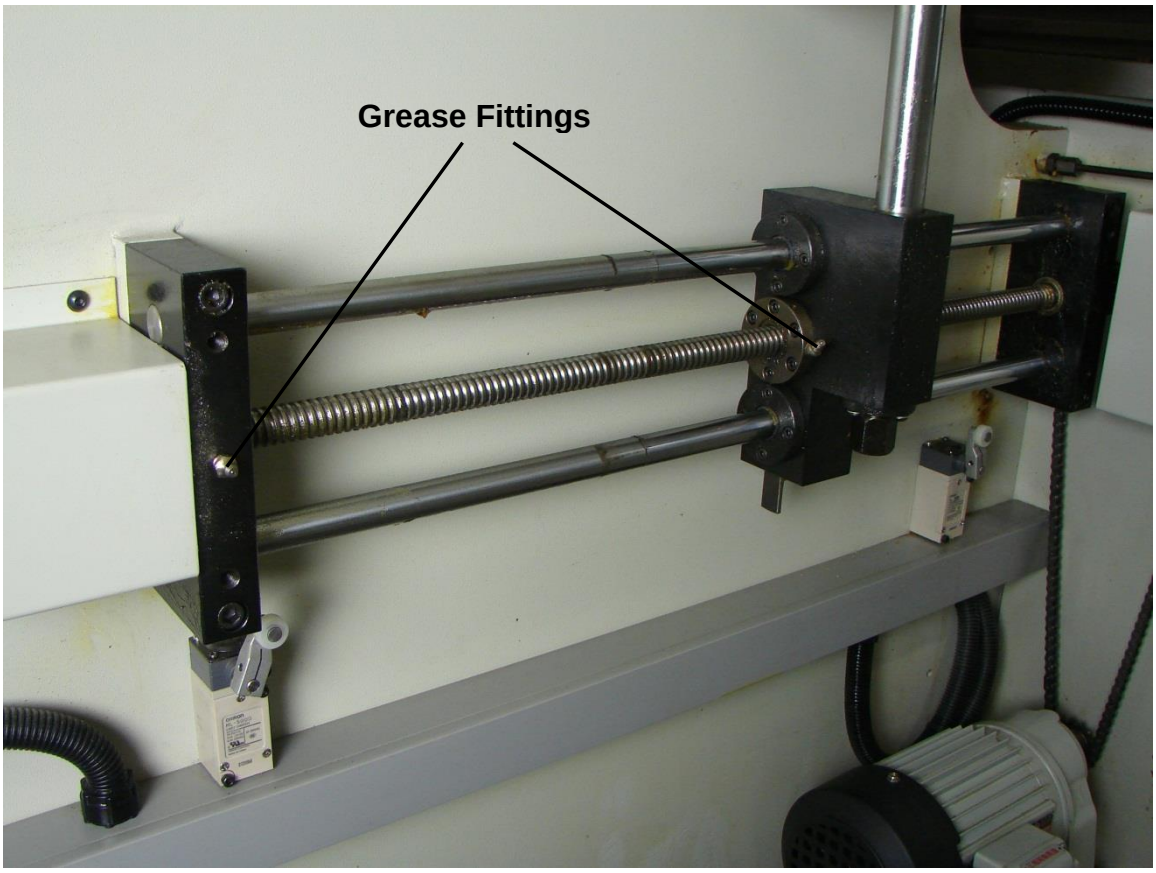


figure 10

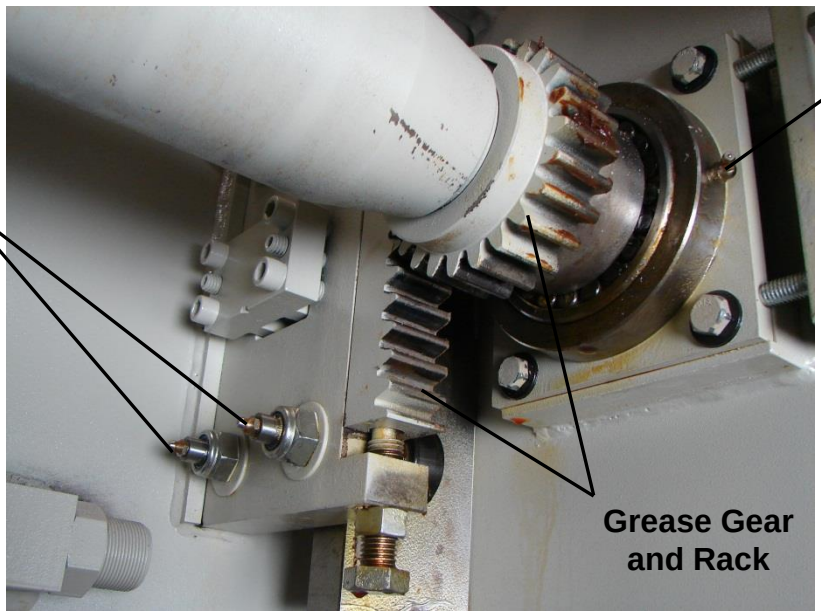


figure 11

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 over heating.**

- Use hydraulic oil SHELL BRAND 32AW or an equivalent with similar specifications.
- Keep hydraulic reservoir filled to 90% of capacity.
- **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.
- A shortage of hydraulic oil will cause hydraulic system breakdown to major mechanical components due to overheating.
- Change the hydraulic oil every 6 months along with the oil filter.

Check the oil filter gauge periodically and replace the filter when the needle is in the red zone indicating a dirty filter.

To drain the hydraulic tank, first make sure the valve is closed as shown above. Remove the plug and connect a drain hose. Open the valve to drain the tank. Capacity of the oil tank is approximately 40 gallons (150 liters) max. Required oil capacity is 32 gallons (120 liters.) **Used oil products must be disposed of in a proper manner following your local regulations**.

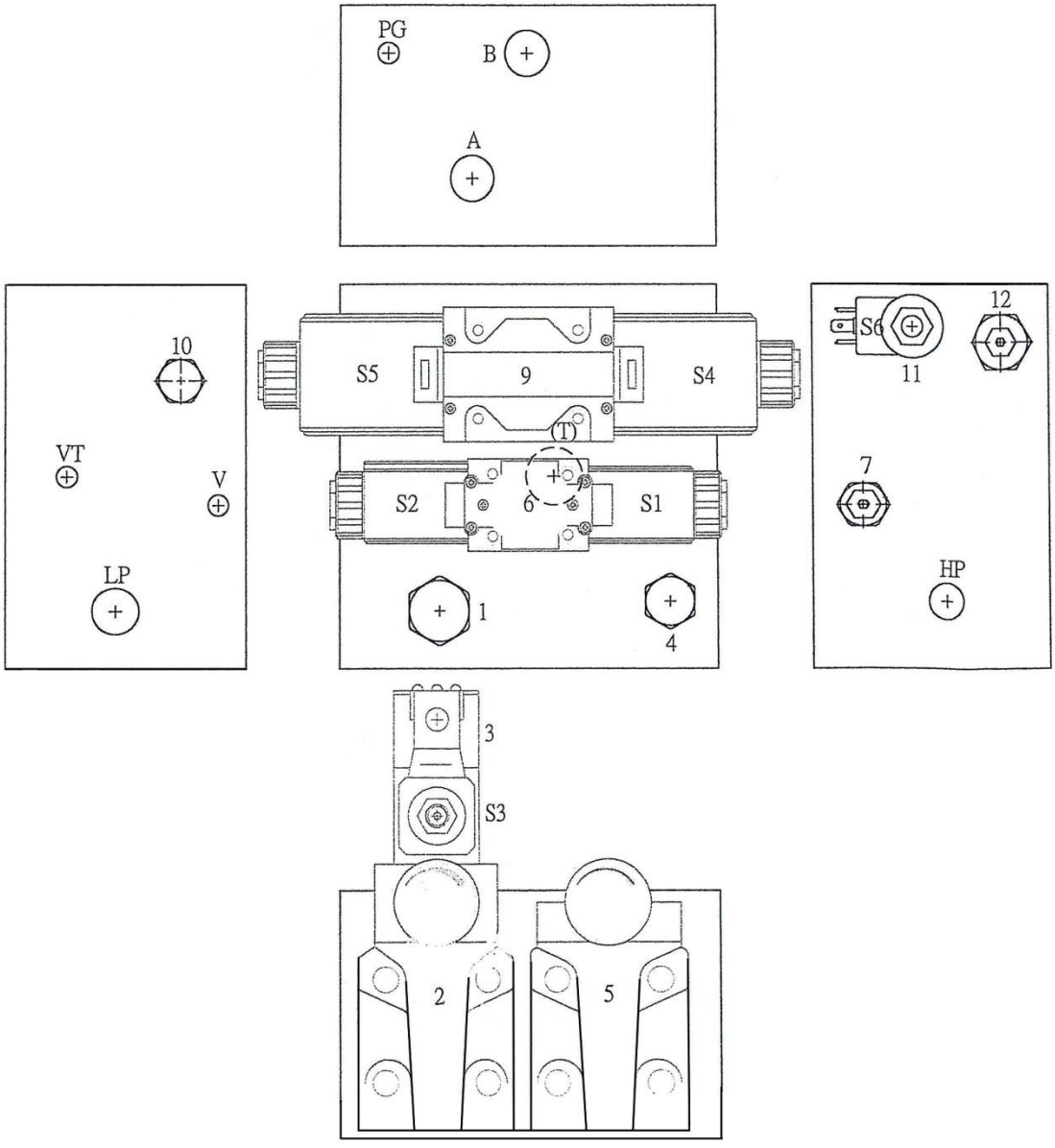
The hydraulic oil tank filler has a filtering screen that can be vacuumed out before refilling the tank with fresh oil.

Fluorescent Bulb Replacement

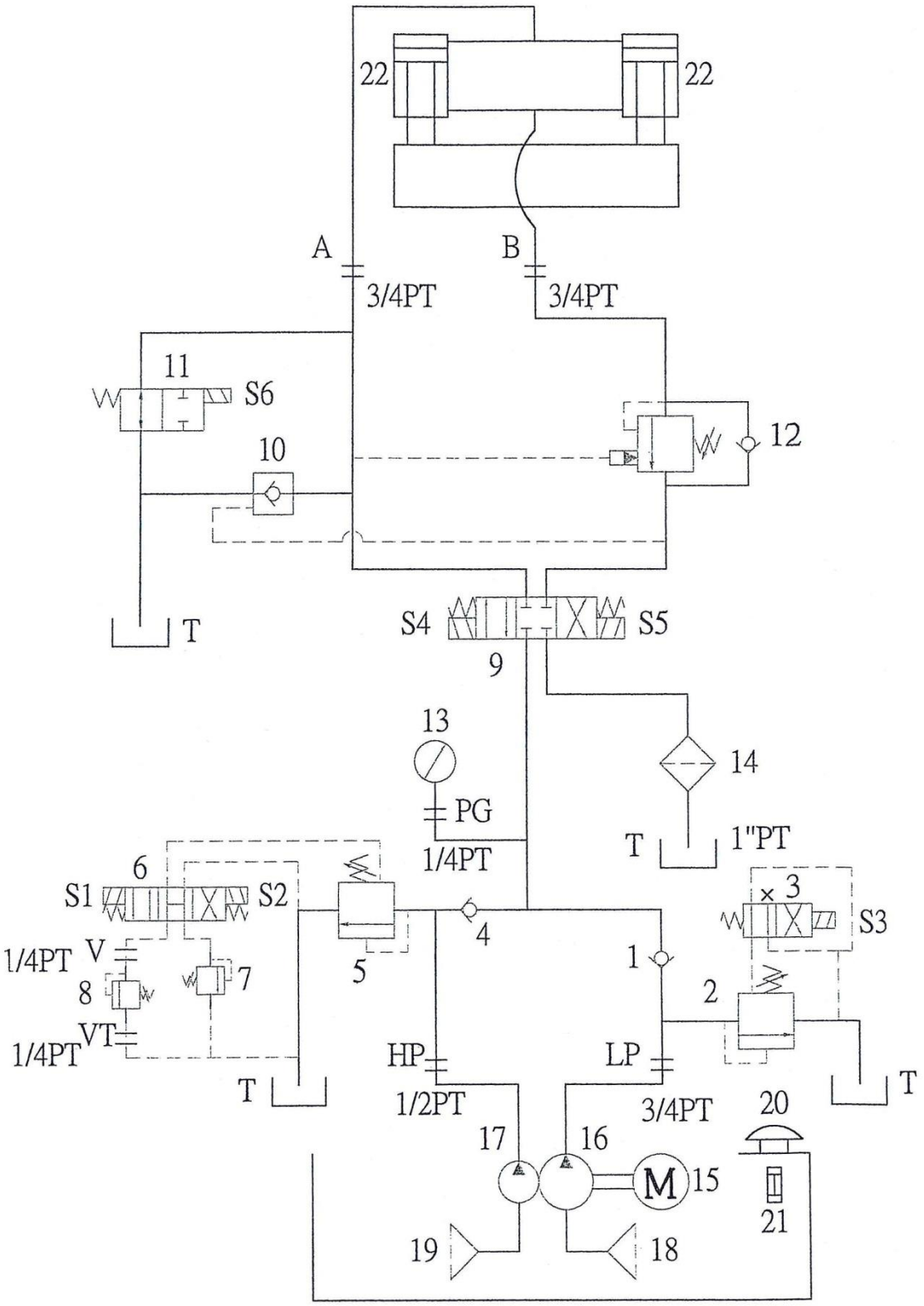
The fluorescent bulb should light up when the disconnect switch is turned on. To replace the bulb, **Disconnect Power** to the machine. Access to the bulb is from the back of the press. Carefully rotate and remove the bulb from the fixture. Replace with bulb of the same size and wattage.

MANIFOLD BLOCK

M \ S	S1	S2	S3	S4	S5	S6
H. DOWN			▲	▲		▲
L. DOWN	▲			▲		▲
TIMER						▲
DELAY						
UPPER		▲			▲	



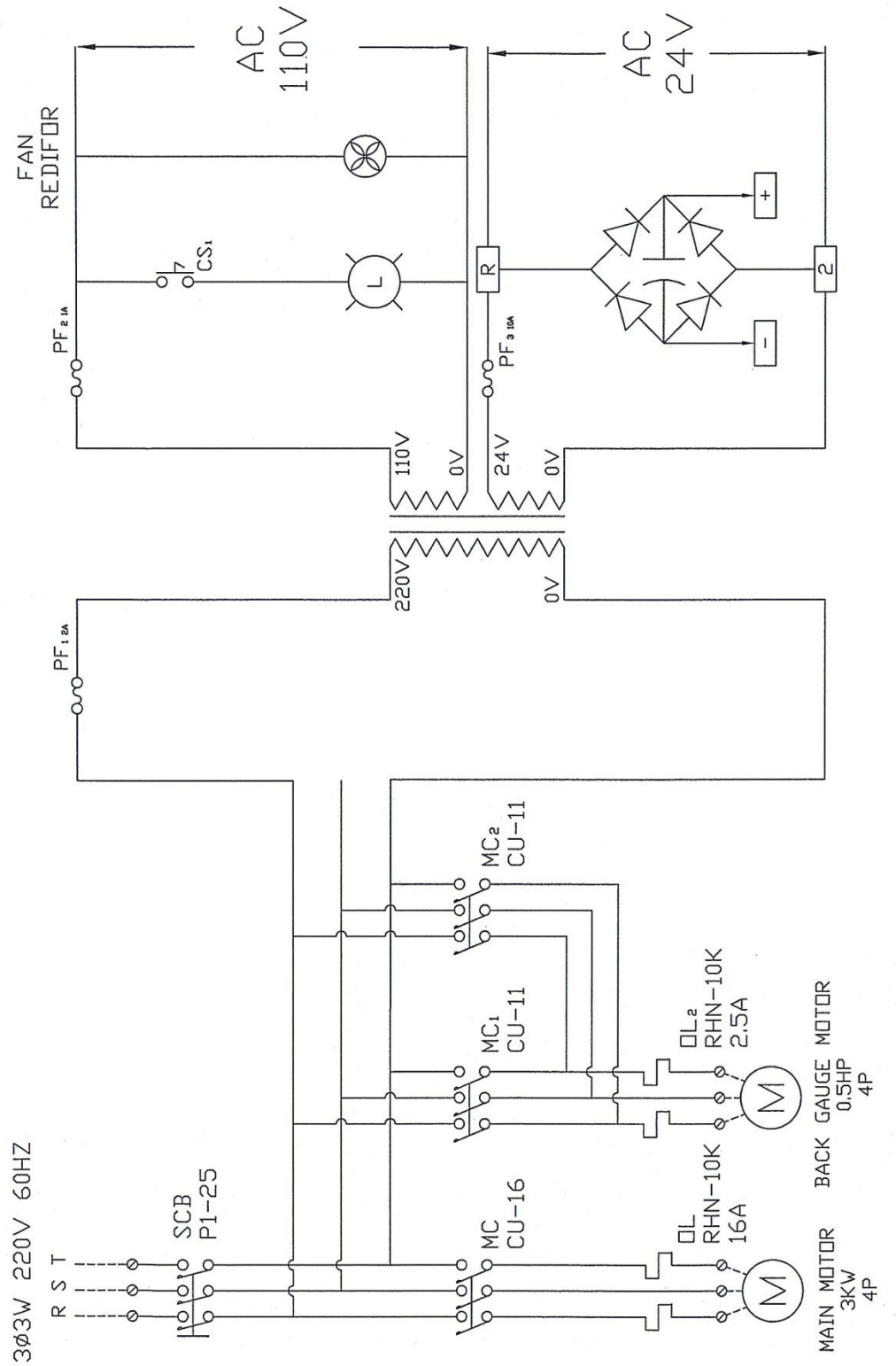
HYDRAULIC SCHEMATIC



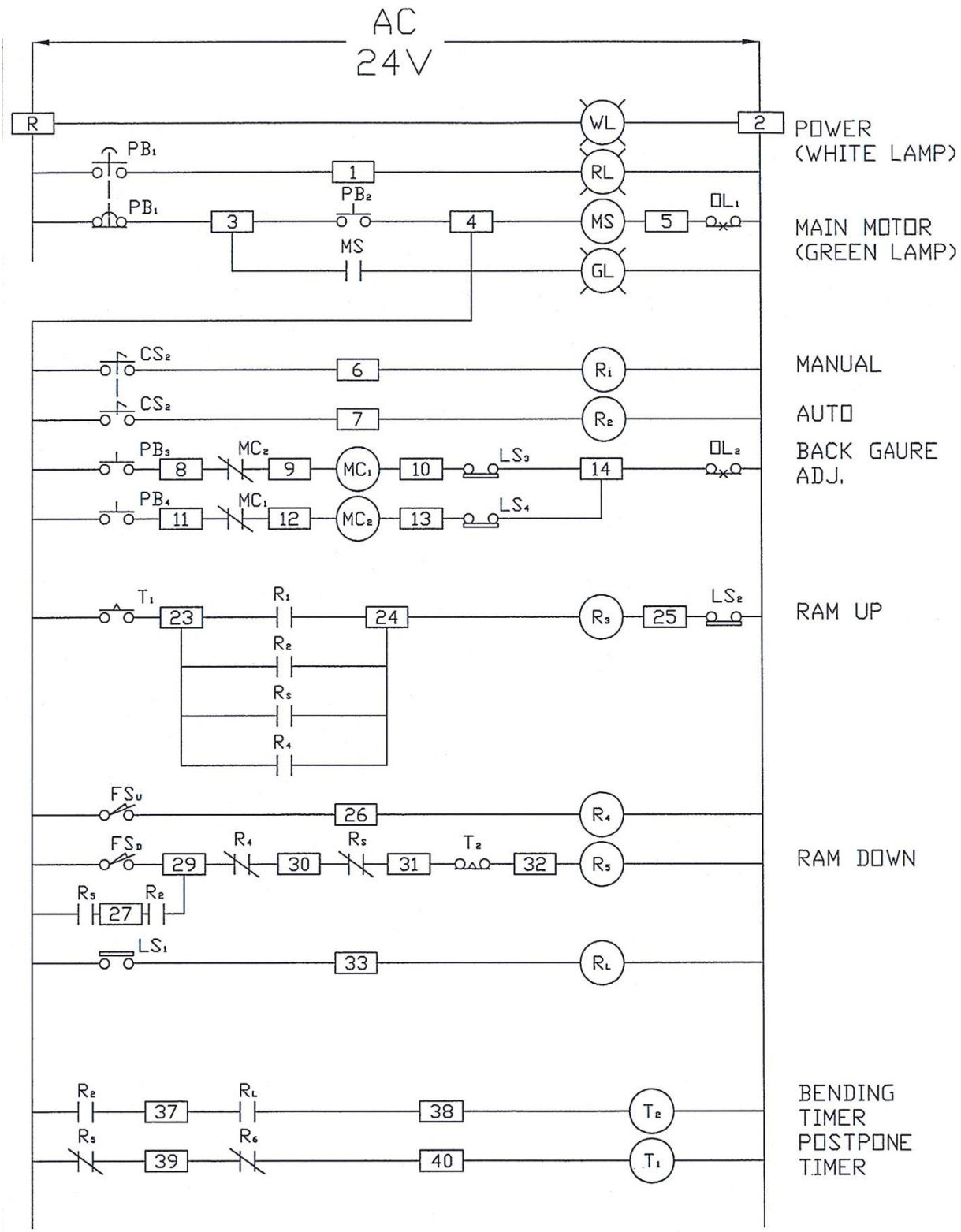
HYDRAULIC PARTS IDENTIFICATION

Item	Description	Part Information
1	Check Valve	CCV-122-X2.0N
2	Relief Valve	BSG-03
3	Solenoid Valve	DG4V-3-2A
4	Check Valve	CCV-102-X2.0N
5	Relief Valve	BG-03
6	Solenoid Valve	DG4V-3-0C
7	Relief Valve	CMR-08
8	Relief Valve	DT-01
9	Solenoid Valve	DG4V-5-2C
10	Check Valve	CKCB-XCN
11	Solenoid Valve	SV08-25
12	Counter Balance Valve	CBEA-LBN
13	Pressure Gauge	DT-100 *400Kg
14	Strainer	MPS100
15	Motor	3hp (2.24kw)
16	Pump	50T-26-F-R-GPAN
17	Pump	K1P-4R
18	Strainer	MF-10
19	Strainer	MF-06
20	Air Breather	HY-24
21	Oil Level With Thermometer	LG-3A
22	Hydraulic Cylinder	100 *180st

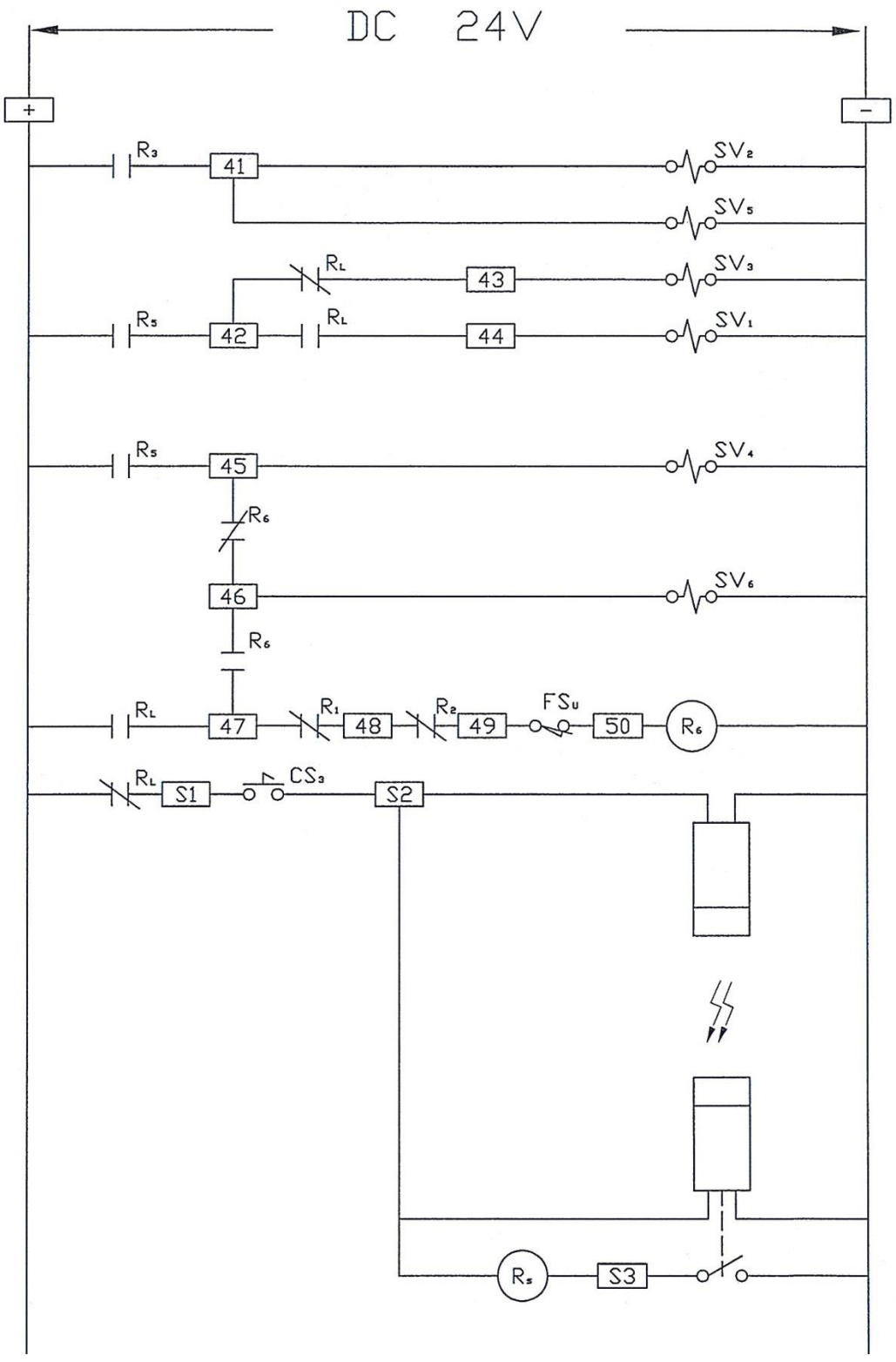
ELECTRICAL SCHEMATIC



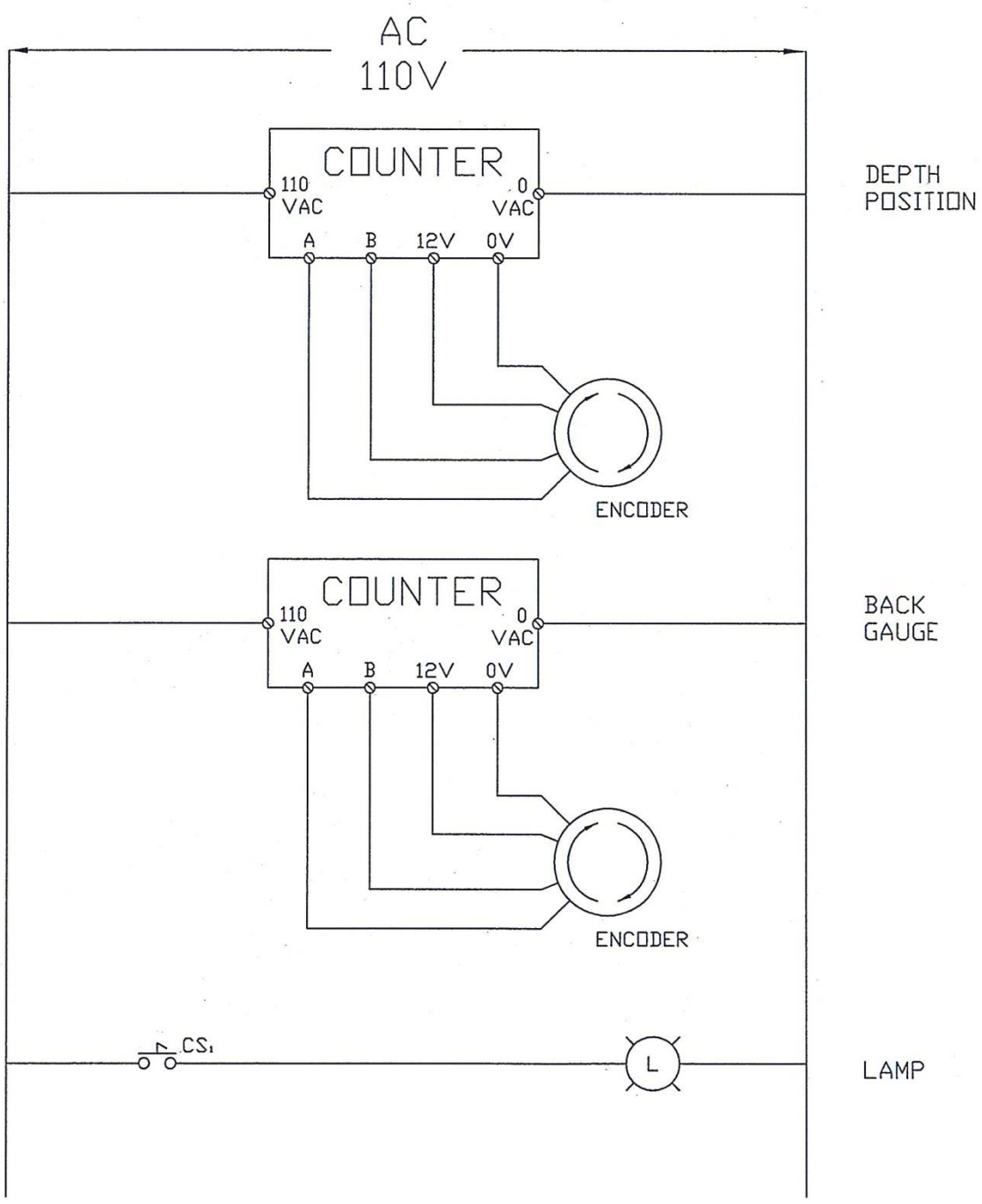
ELECTRICAL SCHEMATIC 24VAC



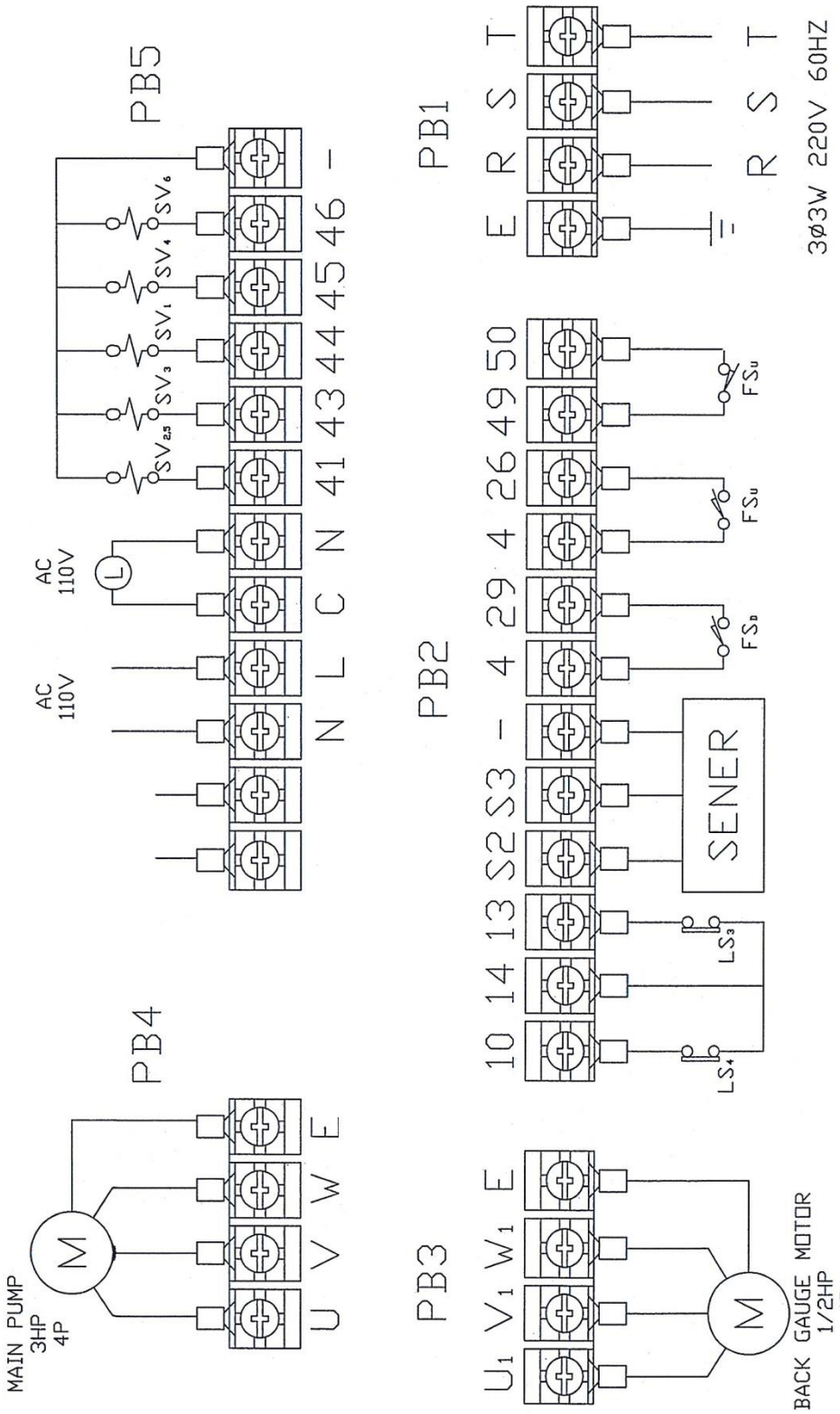
ELECTRICAL SCHEMATIC 24VDC



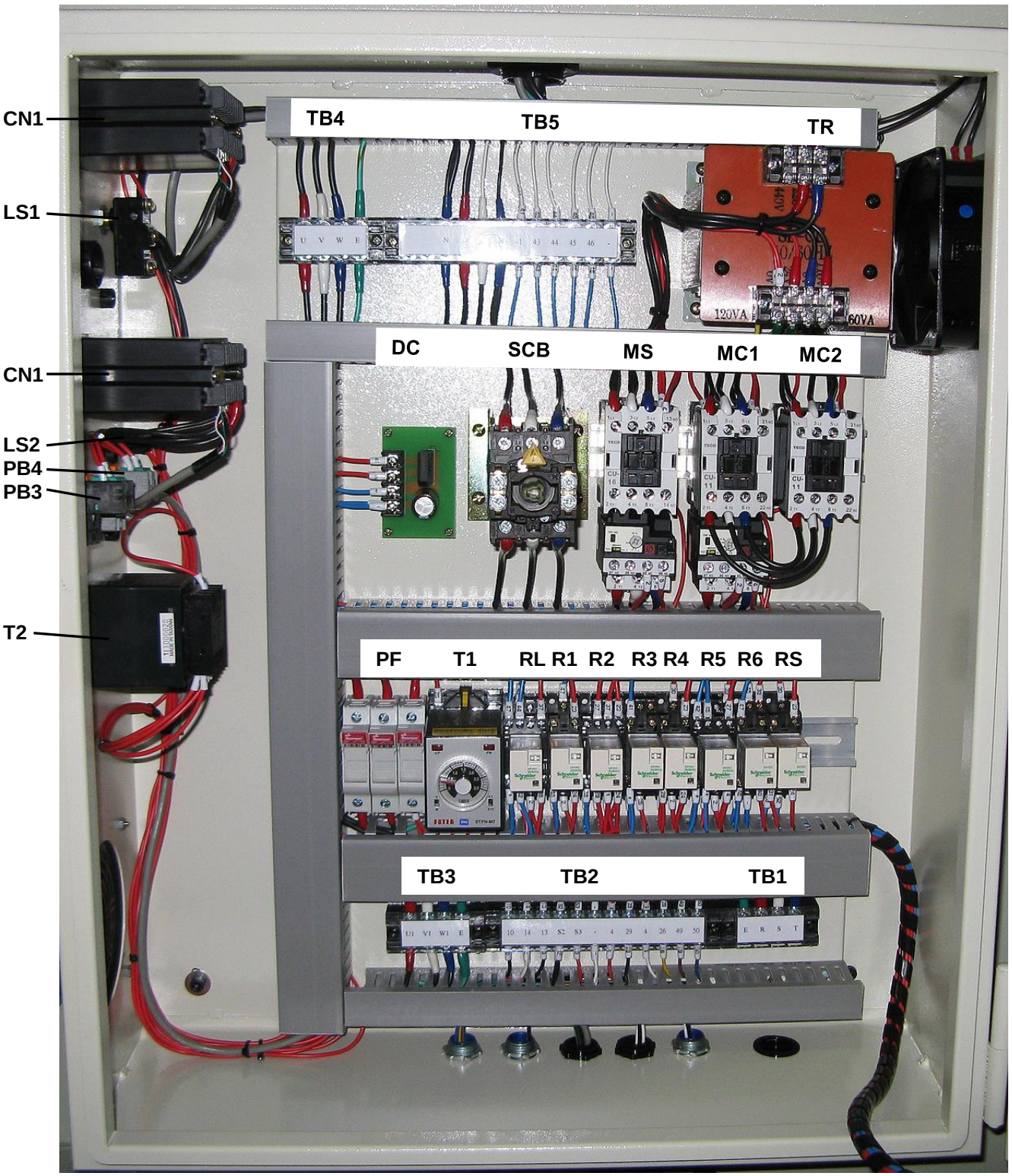
MOTOR INVERTER SCHEMATICS

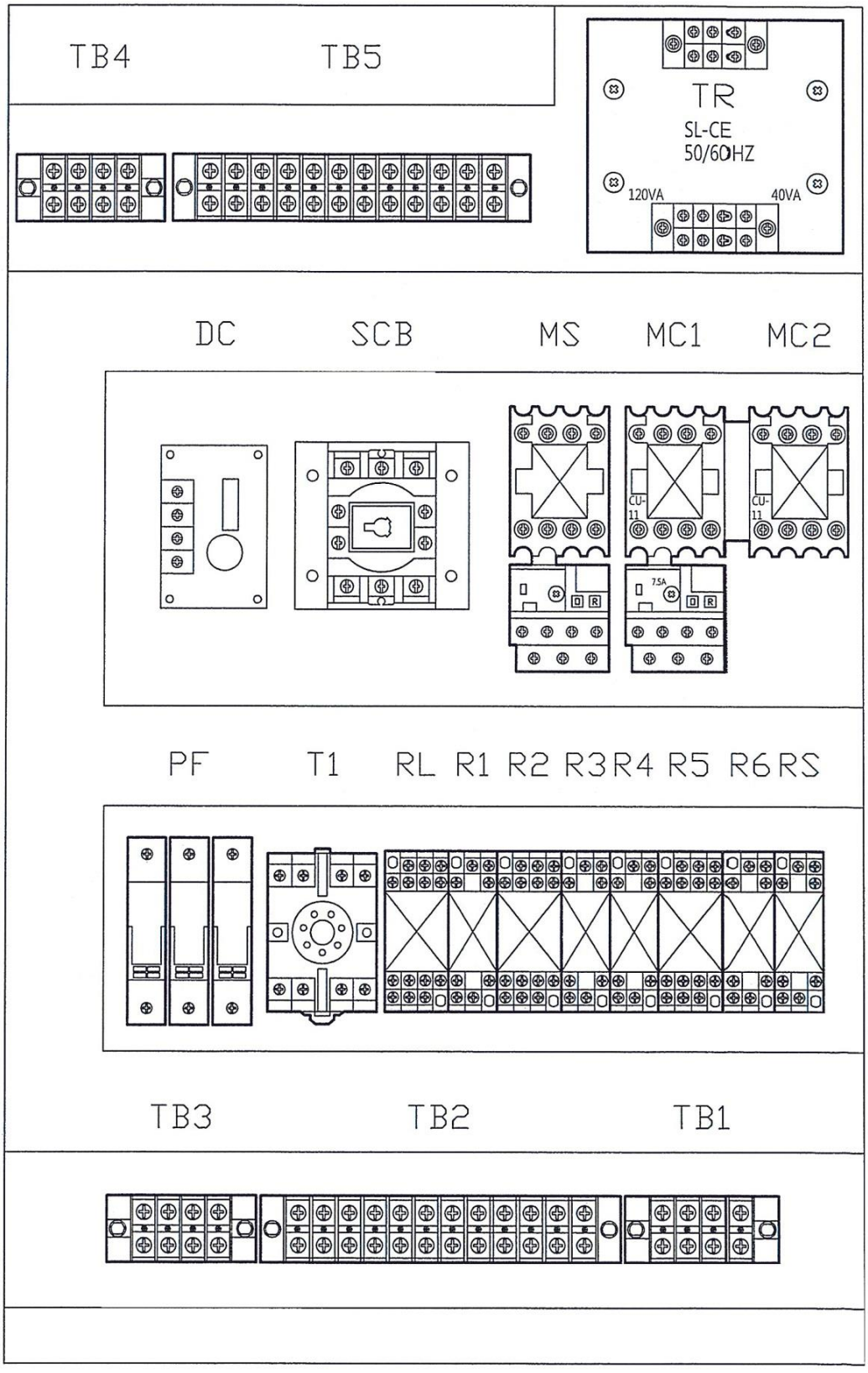


ELECTRICAL WIRE TERMINALS (T1 – T5)

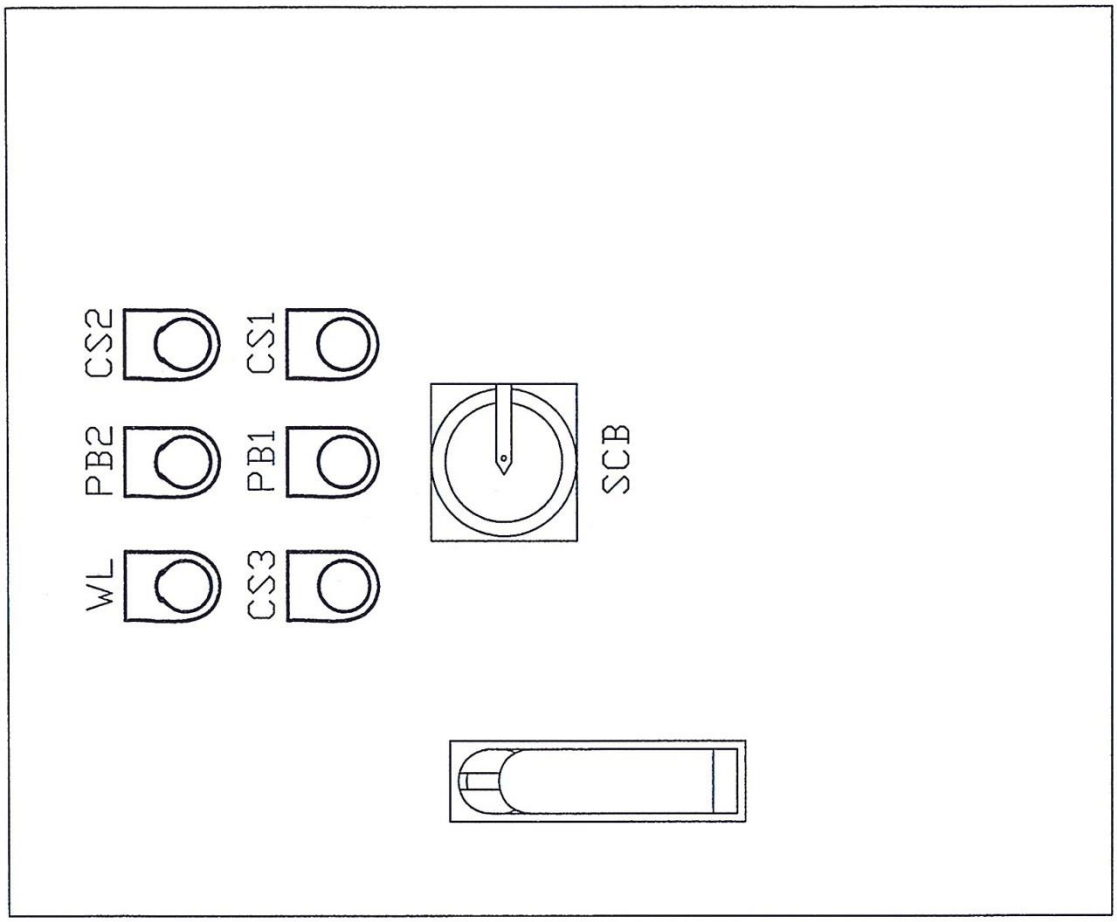


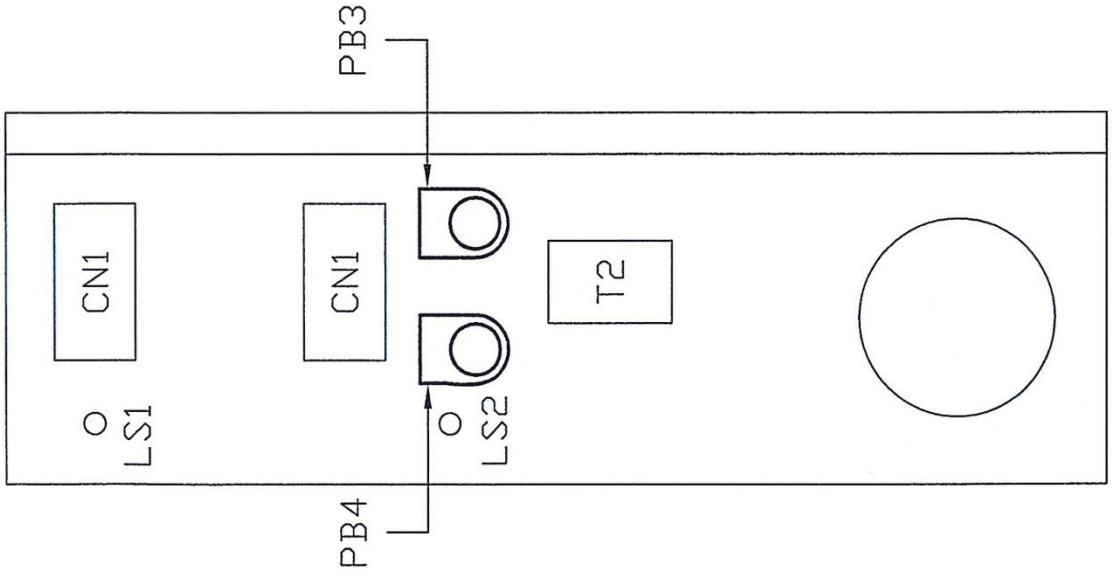
ELECTRICAL ENCLOSURE COMPONENTS




TB4
TB5
TR
SL-CE
50/60HZ
120VA
40VA
DC
SCB
MS
MC1
MC2
CU-11
CU-11
7.5A
PF
T1
RL R1 R2 R3 R4 R5 R6 RS
TB3
TB2
TB1

ELECTRICAL ENCLOSURES

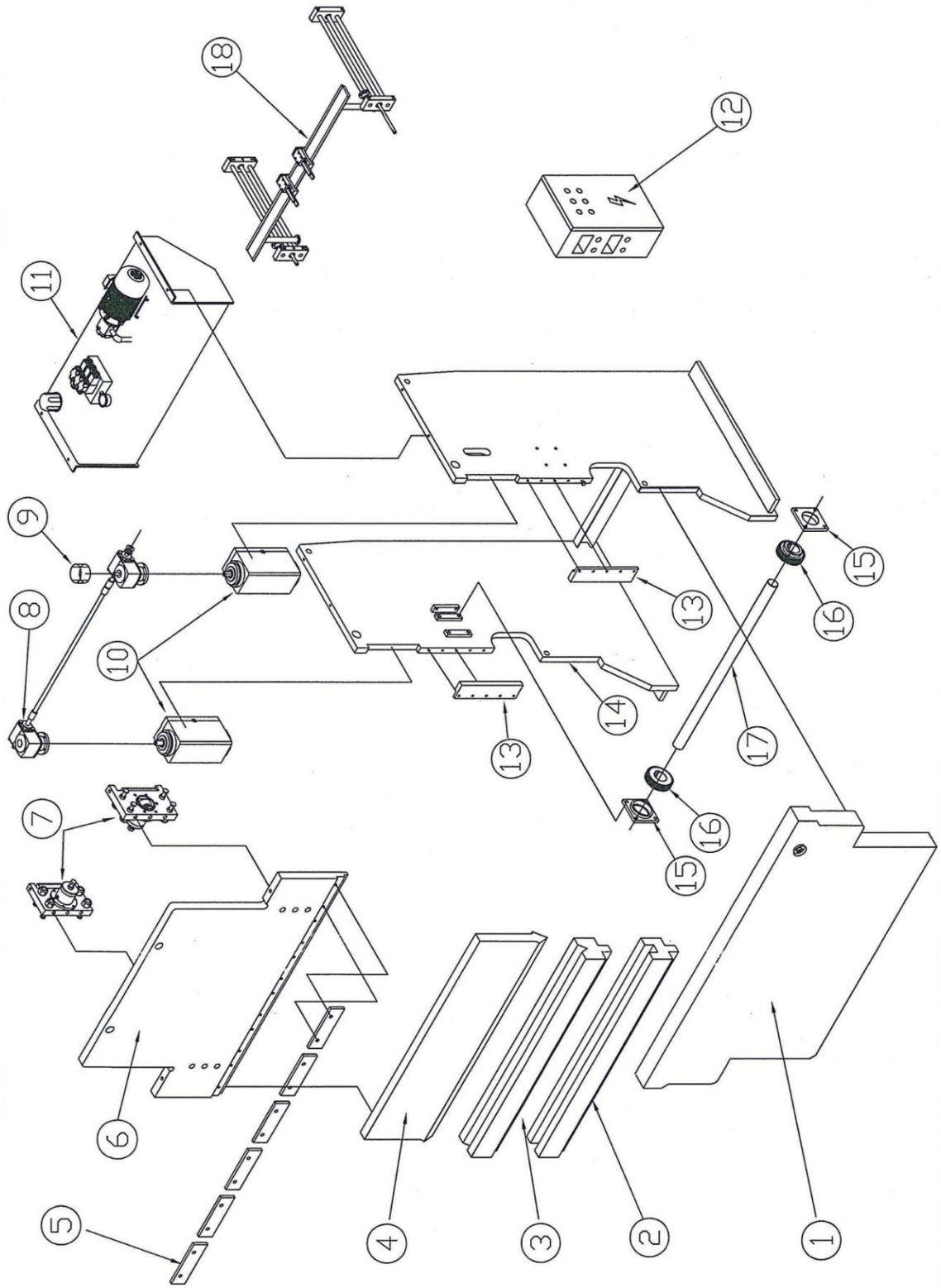




ELECTRICAL ENCLOSURES

Item	Parts	Size
SCB	Main Switch	P1-25
MS (MC)	Magnetic Switch	CU-16 24VAC 16A
MC1, MC2	Magnetic Switch	CU-11 24VAC 2.5A
OL	Overload Switch	RHN-10K 16A
OL2	Overload Switch	RHN-10K 2.5A
TR	Transformers	1Ø 220-440/24-110V 180VA 50Hz
PF1 - PF3	Fuses	10x38mm - 2A, 1A, 6A
DC24V	Power Supply	DC 24V 8A 2000uf
R1, R3, R4	Power Relay	MY-2 AC 24V
RL, R2, R5	Power Relay	MY-4 AC 24V
R6, RS	Power Relay	MY-2 DC 24V
T1	Timer	STPN-M3 24VAC
T2	Timer	STPY-M3 24VAC
TB1, TB3, TB4	Trans Bus	4P 30A
TB2, TB5	Trans Bus	12P 30A
WL	Pilot Light	30Ø 24V White
PB1	Push Button	30Ø 1A1B Red (Lock)
PB2	Push Button	30Ø 1A1B 24V Green
PB3, PB4	Push Button	30Ø 1A1B
CS2	Select Switch	30Ø 2A1B
CS3	Key Switch	30Ø 1A1B
LS1, LS2	Limit Switch	TM-1308
LS3, LS4	Limit Switch	HL-5000
CS1	Select Switch	30Ø 1A1B
CN1	Counter	DKS-C26P-1

PRESS BRAKE STANDARD ACCESSORY



Item	Description
1	Bottom Beam
2	Bottom Blade Table
3	Bottom Blade/Die
4	Upper Blade
5	Upper Blade Clamping Holder
6	Top Beam
7	Rack Assembly
8	Reduction Motor
9	Depth Encoder
10	Hydraulic Cylinder
11	Hydraulic Oil Tank
12	Electrical Enclosure
13	Slide-Way
14	Side Frame
15	Bearing Housing
16	Gear
17	Balance Rod
18	Back Gauge Assembly with Finger Stops
19	Right Side Safety Guard
20	Motor, Power Back Gauge
21	Left Side Safety Guard
22	Depth Adjustment Set

TROUBLESHOOTING

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

SYMPTOM	POSSIBLE CAUSE (S)	CORRECTIVE ACTION
Ram Does Not Move	Low working pressure.	Increase the working pressure. Insufficient hydraulic oil. Broken pipe or loose connection.
	Problem with motor.	No power, fuse burned out Motor burned out Incorrect motor rotation.
	Switch.	Foot switch disconnected. Button disconnected. Loose connection.
	Directional valve malfunction.	Check direction of valve per hydraulic oil diagram.
	Coil of electro-magnetic valve burned out.	Replace with qualified parts
	Overflow spring of valve broken.	Replace with qualified parts.

SYMPTOM	POSSIBLE CAUSE (S)	CORRECTIVE ACTION
Ram Moves Slowly.	Insufficient hydraulic oil.	Fill oil reservoir to 80%-90% full
	Oil Filter.	Take out and replace.
	Ambient temperature too low / hydraulic oil too thick.	Replace with qualified hydraulic oil.
	Hydraulic valve defect.	Take valve out for cleaning if blocked by obstruction.

SYMPTOM	POSSIBLE CAUSE (S)	CORRECTIVE ACTION
Ram Reacts Abnormally	Dirty oil filter	Replace the oil filter
	Hydraulic pump cannot suck oil from the tank.	Make sure oil tank has enough oil. Check hose and pipe connections for leaks.

SYMPTOM	POSSIBLE CAUSE (S)	CORRECTIVE ACTION
Working Pressure Not Sufficient	Break in automatic circuit breaker Break in motors overload protection switch Fuse burned out.	Fix short circuit on power wires. Check the power setting on the motor overload protection switch. Wires have short circuit. Footswitch wires broken. Electrical parts in enclosure burned out.

SYMPTOM	POSSIBLE CAUSE (S)	CORRECTIVE ACTION
Motor Can Not Run or Breaks Down While Running.	Abnormal pressure gauge reading. Loose pump connection Relief and logic valves do not close completely. Temperature too high, hydraulic oil too diluted. Pump seal worn. Pump worn. Valve spindle worn.	Defective pressure gauge. Tighten connection. Clean obstruction from the valve stem. Replace with qualified hydraulic oil. Replace with qualified parts. Replace pump. Replace valve spindle.

SYMPTOM	POSSIBLE CAUSE (S)	CORRECTIVE ACTION
Abnormal Noise	No slow ram speed. Abnormal directional valve. Stroke switch connection or defect.	Re-set the upper dogs position for slow speed. Broken wires on limit switch. Defective limit switch. Check directional valve to hydraulic oil diagram. Replace with qualified parts.

NOTES

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