



# OPERATOR'S MANUAL

Metal Working



## HYDRAULIC POWERED ROLL BENDER MODEL: R-H45

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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, (e) defects or damage to the Goods resulting from improper or unauthorized alterations, modifications, or changes; and (f) any Goods that has not been installed and/or maintained in accordance with the instruction manual or technical guidelines provided by Seller.

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

**Limitation of Liability.** IN NO EVENT SHALL SELLER BE LIABLE TO BUYER OR ANY OTHER PARTY FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES (INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR DOWN TIME) ARISING FROM OR IN MANNER CONNECTED WITH THE GOODS, ANY BREACH BY SELLER OR ITS AGENTS OF THIS AGREEMENT, OR ANY OTHER CAUSE WHATSOEVER, WHETHER BASED ON CONTRACT, TORT OR ANY OTHER THEORY OF LIABILITY. BUYER'S REMEDY WITH RESPECT TO ANY CLAIM ARISING UNDER THIS AGREEMENT IS STRICTLY LIMITED TO NO MORE THAN THE AMOUNT PAID BY THE BUYER FOR THE GOODS.



**Force Majeure.** Seller shall not be responsible for any delay in the delivery of, or failure to deliver, Goods due to causes beyond Seller's reasonable control including, without limitation, acts of God, acts of war or terrorism, enemy actions, hostilities, strikes, labor difficulties, embargoes, non-delivery or late delivery of materials, parts and equipment or transportation delays not caused by the fault of Seller, delays caused by civil authorities, governmental regulations or orders, fire, lightening, natural disasters or any other cause beyond Seller's reasonable control. In the event of any such delay, performance will be postponed by such length of time as may be reasonably necessary to compensate for the delay.

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

**Work By Others; Safety Devices.** Unless agreed to in writing by Seller, Seller has no responsibility for labor or work performed by Buyer or others, of any nature, relating to design, manufacture, fabrication, use, installation or provision of Goods. Buyer is solely responsible for furnishing, and requiring its employees and customers to use all safety devices, guards and safe operating procedures required by law and/or as set forth in manuals and instruction sheets furnished by Seller. Buyer is responsible for consulting all operator'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@baileigh.com](mailto:sales@baileigh.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 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.



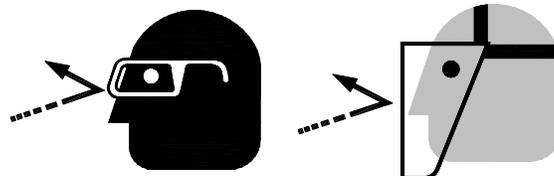


**SAVE THESE INSTRUCTIONS.**  
**Refer to them often and use them to instruct others.**



**PROTECT EYES**

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



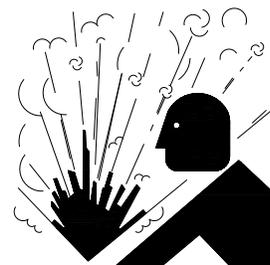
**PROTECT AGAINST NOISE**

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



**HYDRAULIC HOSE FAILURE**

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



**KEEP CLEAR OF MOVING OBJECTS**

Always be aware of the position of the material. The material will swing and move during the bending cycle possibly causing serious body or head injuries.

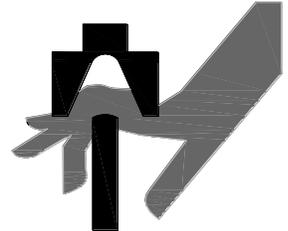
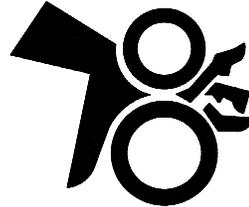




### **BEWARE OF PINCH POINTS AND CRUSH HAZARD**

Keep hands and fingers from between the roller and die when bending materials to avoid possible injury.

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



### **HIGH VOLTAGE**

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

**FOLLOW PROPER LOCKOUT PROCEDURES.**



### **EMERGENCY STOP BUTTON**

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





## **SAFETY PRECAUTIONS**



Metal working can be dangerous if safe and proper operating procedures are not followed. As with all machinery, there are certain hazards involved with the operation of the product. Using the machine with respect and caution will considerably lessen the possibility of personal injury. However, if normal safety precautions are overlooked or ignored, personal injury to the operator may result.

Safety equipment such as guards, hold-downs, safety glasses, dust masks and hearing protection can reduce your potential for injury. But even the best guard won't make up for poor judgment, carelessness or inattention. **Always use common sense** and exercise **caution** in the workshop. If a procedure feels dangerous, don't try it.

**REMEMBER: Your personal safety is your responsibility.**



**WARNING: FAILURE TO FOLLOW THESE RULES MAY RESULT IN SERIOUS PERSONAL INJURY**

### **Dear Valued Customer:**

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

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

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



7. **Dressing material edges.** Always chamfer and deburr all sharp edges.
8. **Do not force tool.** Your machine will do a better and safer job if used as intended. **DO NOT** use inappropriate attachments in an attempt to exceed the machines rated capacity.
9. **Use the right tool for the job. DO NOT** attempt to force a small tool or attachment to do the work of a large industrial tool. **DO NOT** use a tool for a purpose for which it was not intended.
10. **Dress 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.
11. **Use eye and ear protection.** Always wear ISO approved impact safety goggles. Wear a full-face shield if you are producing metal filings.
12. **Do not overreach.** Maintain proper footing and balance at all times. **DO NOT** reach over or across a running machine.
13. **Stay alert.** Watch what you are doing and use common sense. **DO NOT** operate any tool or machine when you are tired.
14. **Check for damaged parts.** Before using any tool or machine, carefully check any part that appears damaged. Check for alignment and binding of moving parts that may affect proper machine operation.
15. **Observe work area conditions. DO NOT** use machines or power tools in damp or wet locations. Do not expose to rain. Keep work area well lighted. **DO NOT** use electrically powered tools in the presence of flammable gases or liquids.
16. **Keep children away.** Children must never be allowed in the work area. **DO NOT** let them handle machines, tools, or extension cords.
17. **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.
18. **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.
19. **Turn off** power before checking, cleaning, or replacing any parts.
20. Be sure **all** equipment is properly installed and grounded according to national, state, and local codes.
21. Keep **all** cords dry, free from grease and oil, and protected from sparks and hot metal.
22. Inspect power and control cables periodically. Replace if damaged or bare wires are exposed. **Bare wiring can kill! DO NOT** touch live electrical components or parts.
23. **DO NOT** bypass or defeat any safety interlock systems.
24. Keep visitors a safe distance from the work area.



## **TECHNICAL SUPPORT**

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

For specific application needs or future machine purchases contact the Sales Department at: [sales@baileigh.com](mailto:sales@baileigh.com), Phone: 920.684.4990, or Fax: 920.684.3944.



**Note:** *The photos and illustrations used in this manual are representative only and may not depict the actual color, labeling or accessories and may be intended to illustrate technique only.*



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

## **TECHNICAL SPECIFICATIONS**

Roll Adjustment	Hydraulic
Pipe Capacity	Size: 2" (sch. 40) / Min. Dia.: 48"
Round Tube Capacity	Size: 2.75" (.083") / Min. Dia.: 60"
Square Tube Capacity	Size: 2" (.120") / Min. Dia.: 51"
Solid Round Capacity	Size: 1.5" / Min. Dia. 28"
Flat Bar Easy Way	Size: 3.94" (.78") / Min. Dia. 27.5"
Flat Bar Hard Way	Size: 3.25" (.375") / Min. Dia.: 32"
Angle Iron Capacity	Size: 2" (.250") / Min. Dia.: 36"
Shaft Diameter	1.772" (45mm)
Shaft Center Distance Lower Rolls	9.562" (242.8mm)
Roll Diameter	5.827" (148mm)
Pinch	Single
Rolling RPM	12
Power	220VAC, 1Ph, 60hz, 30A
Main Motor	3.5hp (2.6kw) 220VAC, 1Ph, 60hz, 10A
Hydraulic Motor	2hp (1.5kw) 220VAC, 1Ph, 60hz, 8A
Hydraulic Pressure	2900psi (200Bar)
Hydraulic Capacity	2.65Gal (10L)
Shipping Dimensions	60" x 44" x 68" (1524 x 1118 x 1727mm)
Shipping Weight	1,191 lbs. (540g)
All Specs based on 60,000 PSI (42 Kg/mm <sup>2</sup> ) Tensile Strength – Mild Steel.	



## Capacity Chart

			Profile dim. (max.)	Bend Ø (min.)
● 1			3.149" x .393"	27.56"Ø
● 2			3.937" x .787"	27.56"Ø
● 3			1.574" x 1.574"	27.56"Ø
● 4			1.574"Ø	27.56"Ø
● 5			2.756"Ø x .078"	47.24"Ø
● 6			2.374" x .125"	47.24"Ø
● 7			2.755" x 1.181" x .078"	59.05"Ø
● 8			1.968" x 1.968" x .098"	51.18"Ø
● 9			1.771" x 1.771" x .196"	27.55"Ø
● 10			1.771" x 1.771" x .197"	27.55"Ø
● 11			2.362" x 2.362" x .275"	23.62"Ø
● 12			2.362" x 2.362" x .275"	23.62"Ø
● 13			2.362" x 2.362" x .275"	23.62"Ø
● 14			MC4 x 13.8#	31.49"Ø
● 15			MC4 x 13.8#	31.49"Ø

- Standard rolls 1, 2, 3, 4, 7, 8, 11, 12, 13, 14, 15
- One set of rolls is req'd. for each tube dia. 5, 6
- Special rolls for thin wall profiles 7, 8
- Special rolls 9, 10



## UNPACKING AND CHECKING CONTENTS

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

**⚠ WARNING: SUFFOCATION HAZARD!** Immediately discard any plastic bags and packing materials to eliminate choking and suffocation hazards to children and animals.  
If any parts are missing, **DO NOT** place the machine into service until the missing parts are obtained and installed correctly.

### Cleaning

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

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

Your machine may be shipped with a rustproof waxy coating and/or grease on the exposed unpainted metal surfaces. Fully and completely remove this protective coating using a degreaser or solvent cleaner. Moving items will need to be moved along their travel path to allow for cleaning the entire surface. For a more thorough cleaning, some parts will occasionally have to be removed. **DO NOT USE** acetone or brake cleaner as they may damage painted surfaces.

Follow manufacturer's label instructions when using any type of cleaning product. After cleaning, wipe unpainted metal surfaces with a light coating of quality oil or grease for protection.



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





## TRANSPORTING AND LIFTING

**⚠ CAUTION:** Lifting and carrying operations should be carried out by skilled workers, such as a truck operator, crane operator, etc. If a crane is used to lift the machine, attach the lifting chain carefully, making sure the machine is well balanced. Choose a location that will keep the machine 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.

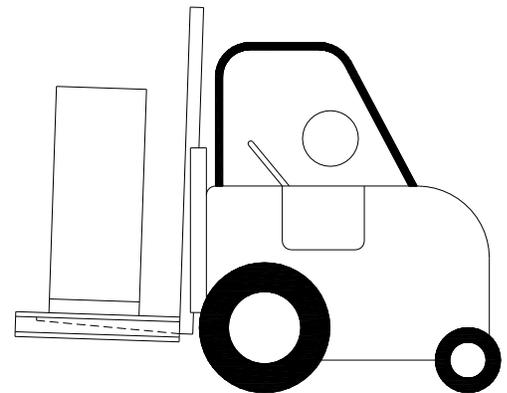
### Follow these guidelines when lifting with crane or hoist:

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



### Follow these guidelines when lifting with truck or trolley:

- The lift truck must be able to lift at least 1.5 – 2 times the machines gross weight.
- Make sure the machine is balanced. While transporting, avoid rough or jerky motion, and maintain a safe clearance zone around the transport area.
- Use a fork lift with sufficient lifting capacity and forks that are long enough to reach the complete width of the machine.
- Remove the securing bolts that attach the machine to the pallet.
- Approaching the machine from the side, lift the machine on the frame taking care that there are no cables or pipes in the area of the forks.
- Move the machine to the required position and lower gently to the floor.





- Level the machine so that all the supporting feet are taking the weight of the machine and no rocking is taking place.

## **INSTALLATION**

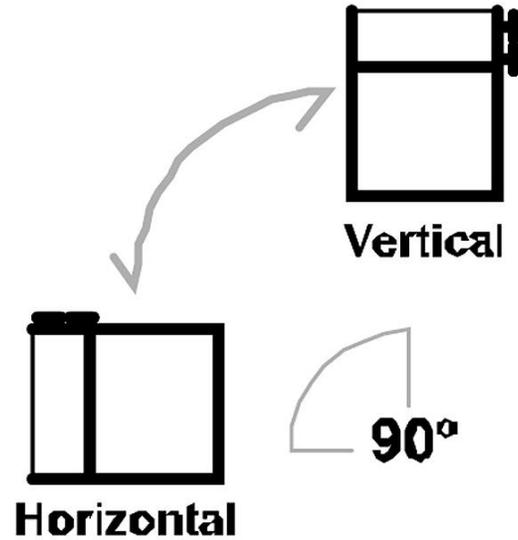
### **IMPORTANT:**

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

- Overall weight of the machine.
- Weight of material being processed.
- Sizes of material to be processed through the machine.
- Space needed for auxiliary stands, work tables, or other machinery.
- Clearance from walls and other obstacles.
- Maintain an adequate working area around the machine for safety.
- Have the work area well illuminated with proper lighting.
- Keep the floor free of oil and make sure it is not slippery.
- Remove scrap and waste materials regularly, and make sure the work area is free from obstructing objects.
- If long lengths of material are to be fed into the machine, make sure that they will not extend into any aisles.
- **LEVELING:** The machine should be sited on a level, concrete floor. Provisions for securing it should be in position prior to placing the machine. The accuracy of any machine depends on the precise placement of it to the mounting surface.
- **FLOOR:** This tool distributes a large amount of weight over a small area. Make certain that the floor is capable of supporting the weight of the machine, work stock, and the operator. The floor should also be a level surface. If the unit wobbles or rocks once in place, be sure to eliminate by using shims.
- **WORKING CLEARANCES:** Take into consideration the size of the material to be processed. Make sure that you allow enough space for you to operate the machine freely.
- **POWER SUPPLY PLACEMENT:** The power supply should be located close enough to the machine so that the power cord is not in an area where it would cause a tripping hazard. Be sure to observe all electrical codes if installing new circuits and/or outlets.

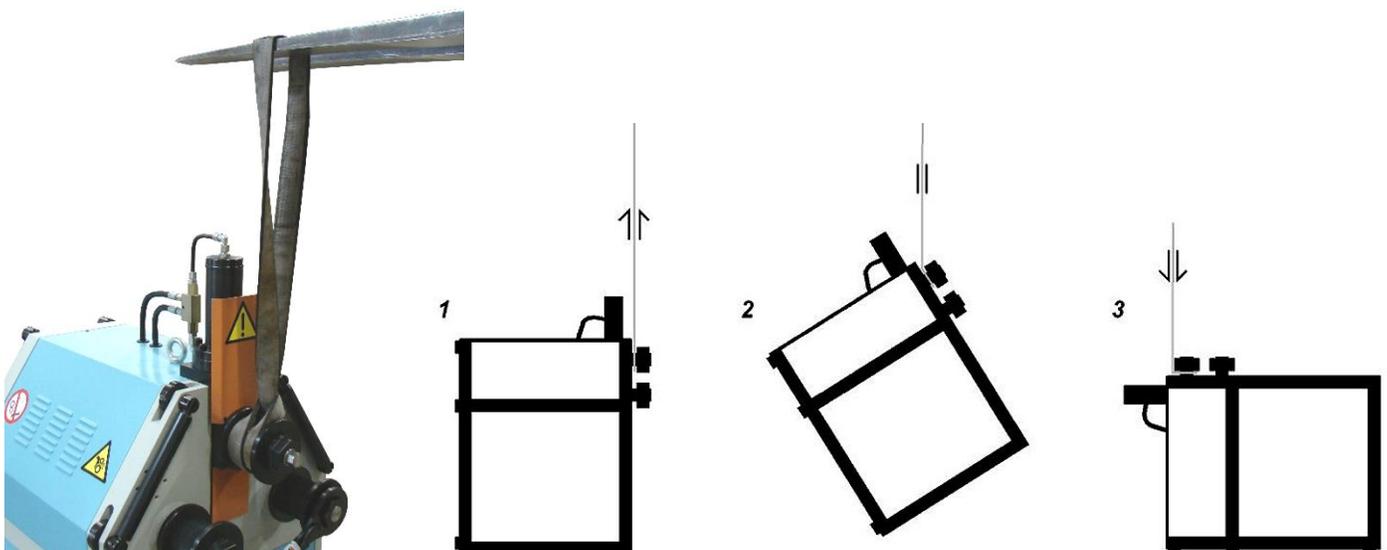


- All models of the R-H series are designed to operate either in the horizontal or vertical position.



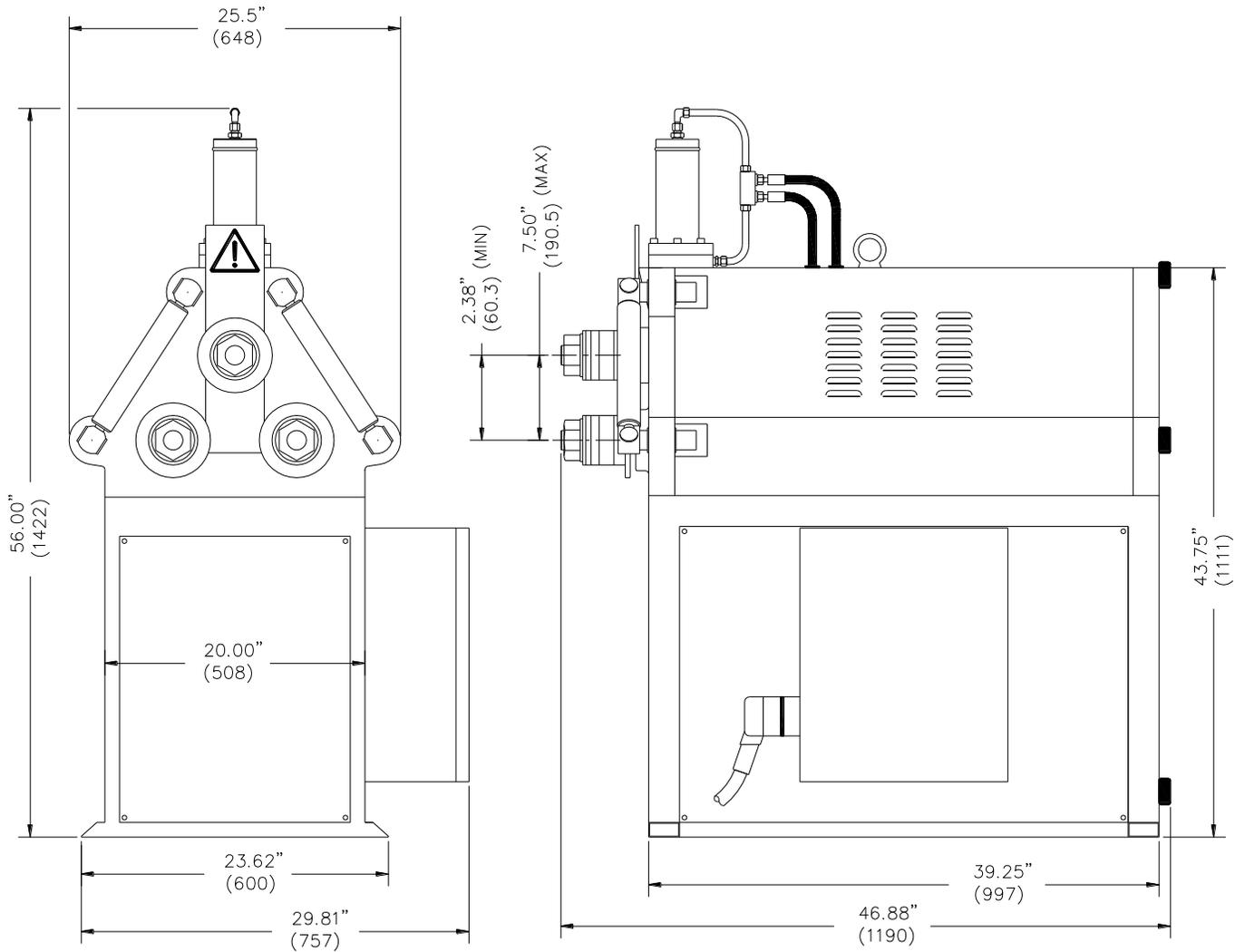
**To set the R-H45 in a horizontal position:**

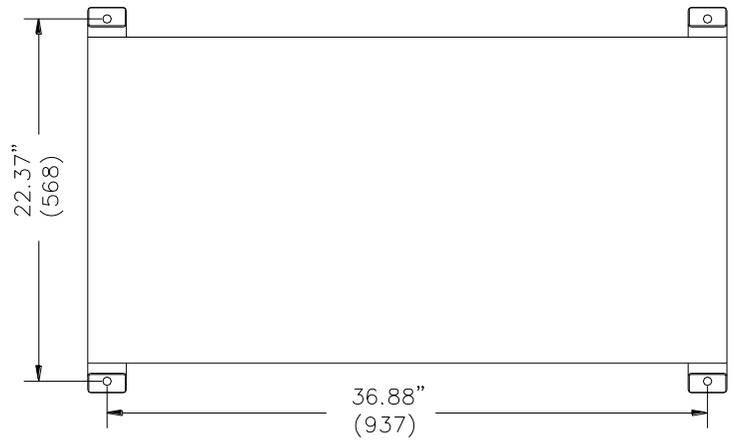
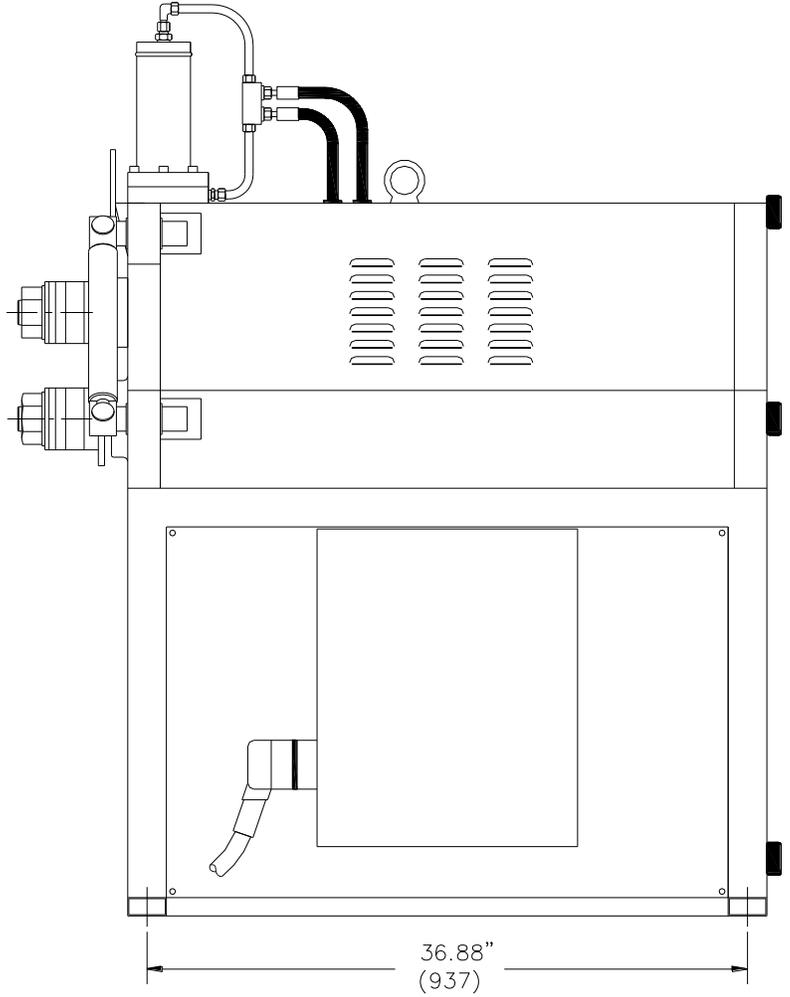
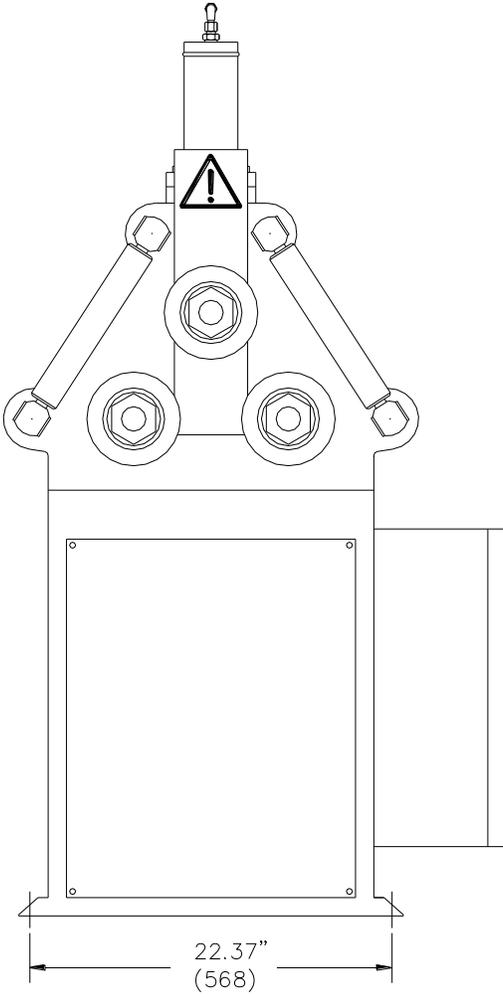
1. Secure a sling capable of lifting 1.5 to 2 times the weight of the machine onto the top roller using a choke arrangement as shown.
2. Loop the other end around the fork or crane hook.
3. Slowly raise the machine using care to prevent the machine from swinging when lifted.
4. Lower until machine base contacts the floor. Then carefully lay it on its back.





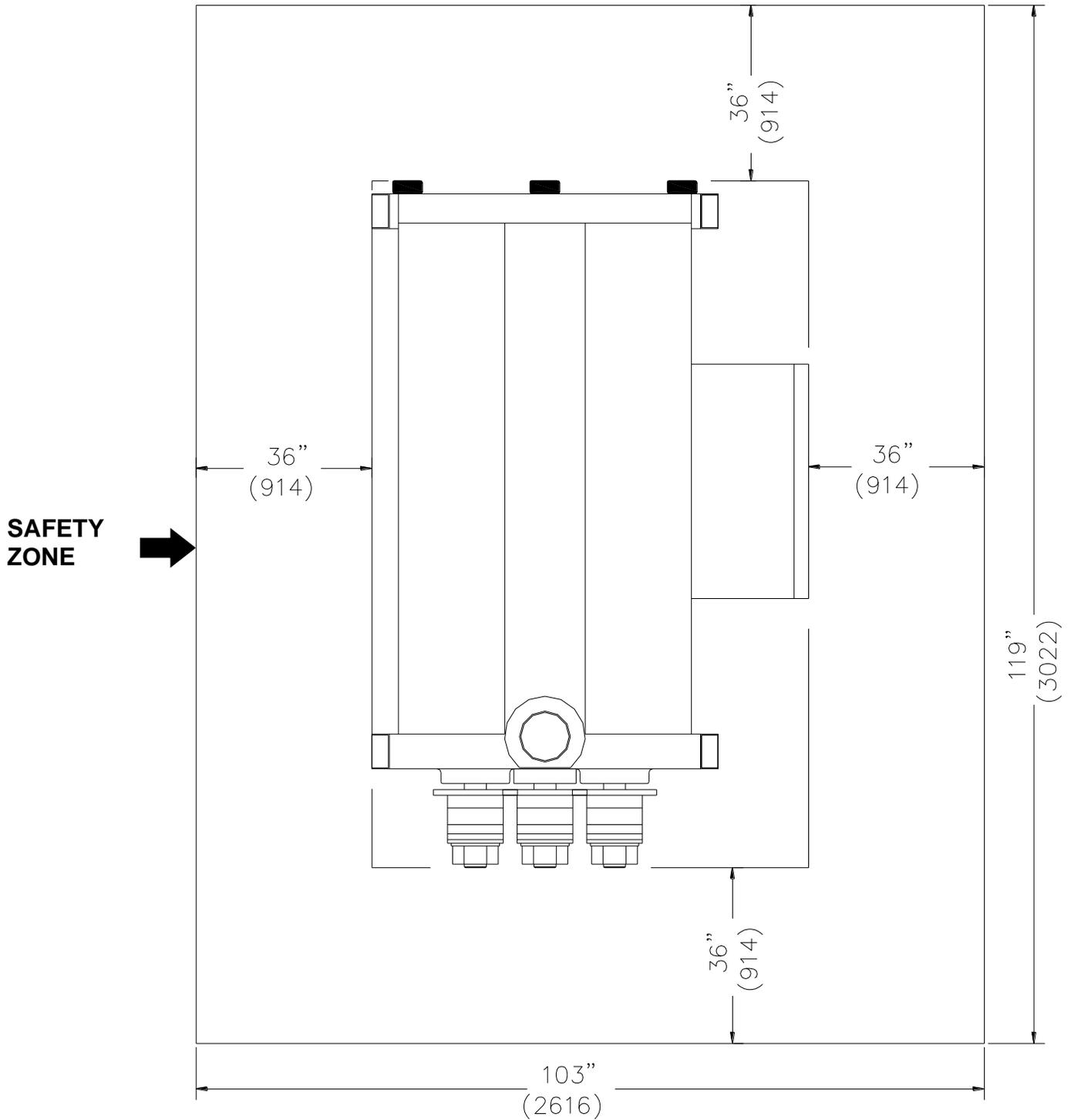
## FOUNDATION AND MAIN DIMENSIONS FOR THE R-H45





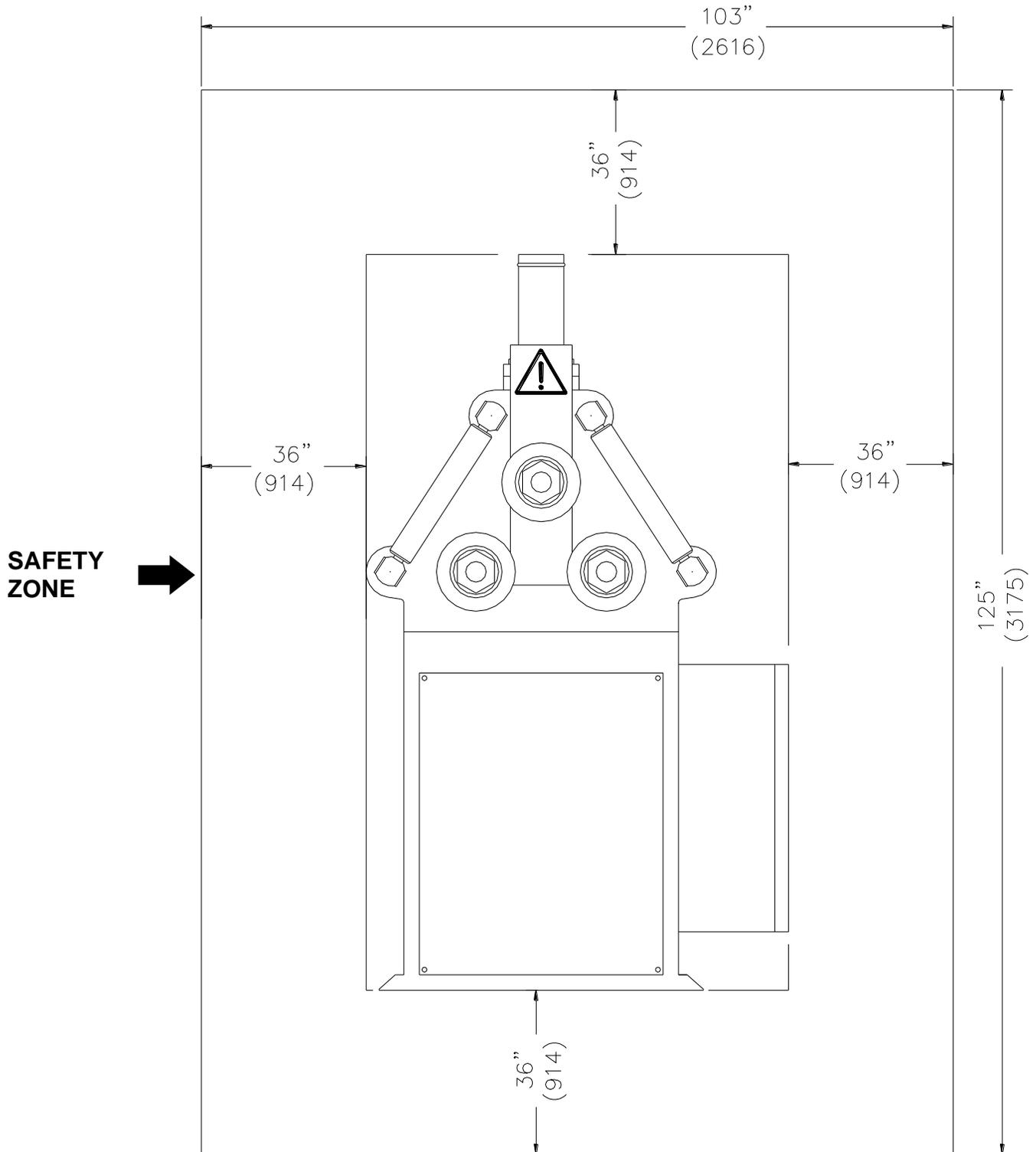


**VERTICAL POSITION SAFE CLEARANCE ZONE**





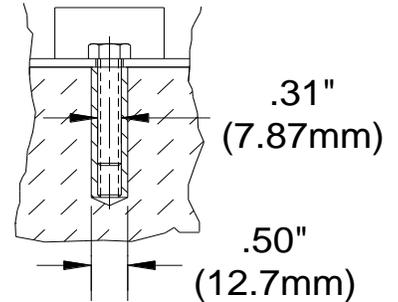
**HORIZONTAL POSITION SAFE CLEARANCE ZONE**





### **Anchoring the Machine**

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



### **Tank Filling**

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

After installation of the machine and before machine startup, bring the oil level up to 90% of capacity. Verify that any cylinder rams are in the retracted position to prevent overfilling of the tank. Recheck the oil level after the first few hours of operation and again after the first full week of operation.

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



## ELECTRICAL

**⚠ CAUTION:** HAVE ELECTRICAL UTILITIES CONNECTED TO MACHINE BY A CERTIFIED ELECTRICIAN!  
Check if the available power supply is the same as listed on the machine nameplate.

**⚠ WARNING:** Make sure the grounding wire (green) is properly connected to avoid electric shock. DO NOT switch the position of the green grounding wire if any electrical plug wires are switched during hookup.

### Power Specifications

Your tool is wired for 220 volts, 60Hz alternating current. Before connecting the tool to the power source, make sure the machine is cut off from power source.

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

### Considerations

- Observe local electrical codes when connecting the machine.
- The circuit should be protected with a time delay fuse or circuit breaker with a amperage rating slightly higher than the full load current of machine.
- A separate electrical circuit should be used for your tools. Before connecting the motor to the power line, make sure the switch is in the "OFF" position and be sure that the electric current is of the same characteristics as indicated on the tool.
- All line connections should make good contact. Running on low voltage will damage the motor.
- In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This tool is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances.

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



- Improper connection of the equipment-grounding conductor can result in risk of electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal.
- Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the tool is properly grounded.
- Repair or replace damaged or worn cord immediately.

**Extension Cord Safety**

Extension cord should be in good condition and meet the minimum wire gauge requirements listed below:

AMP RATING	LENGTH		
	25ft	50ft	100ft
1-12	16	16	14
13-16	14	12	12
17-20	12	12	10
21-30	10	10	No
WIRE GAUGE			

An undersized cord decreases line voltage, causing loss of power and overheating. All cords should use a ground wire and plug pin. Replace any damaged cords immediately.

**Power cord connection:**

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



## 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.



**Note:** Thorough cleaning of the rolls is necessary to avoid possible sliding of the profile through the rolls.

When bending pipe or tube (round, square, or rectangular) the outer part of the bend is stretched and the inner section compressed. The result of these opposite and unequal stresses is that the pipe or tube tends to flatten or collapse. To prevent such distortion, the common practice is to support the wall of the pipe or tube in some manner during the bending operation. One such method is to fill the piece with sand and plug the ends. Other methods can be found to achieve favorable results.

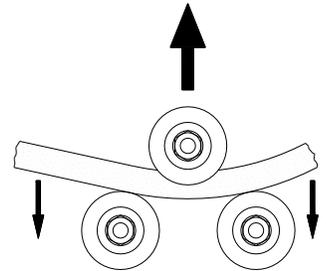
Listed below are some of the factors that control or influence the success of a bending operation.

- Mechanical properties of the material being bent
- Thickness of the material to be bent
- Size of the inside bend radius
- Speed at which the bend occurs
- Grain direction of the steel to be bent
- Coefficient of friction
- Roller design
- Consistency of the material. Specifically, the outside dimensions.



## UNDERSTANDING SPRINGBACK

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



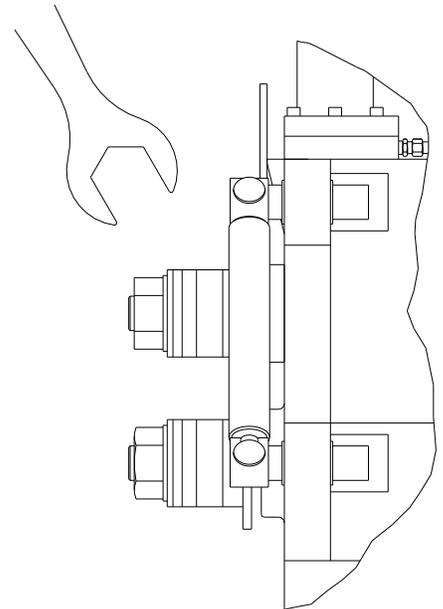
## MOUNTING THE ROLLS



**CAUTION:** The rolls are heavy and usually lubricated from use and may be slippery. Use care to prevent dropping the rolls as this may not only cause damage to the rolls and but cause crushing injury to hands, feet, or ankles.

Rolls must be mounted correctly, depending on the type of profile to be bent. This will save the machine from undue stress and limit defects in the profile.

1. To change roll configurations, use the (supplied) wrench to remove the shaft nuts. All three shafts are connected to the drive so they will not spin.
2. When using the standard rolls, position the roll segments onto the shafts to create the type of profile needed to hold and form the material profile to be used. See the examples to follow.
3. After changing rolls, replace and tighten nut to shaft.

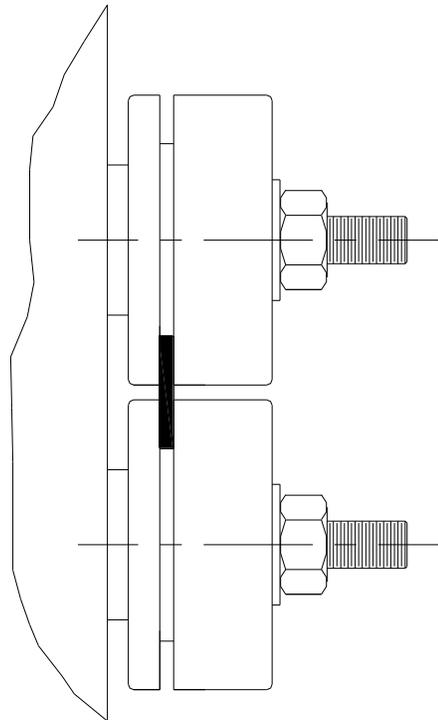
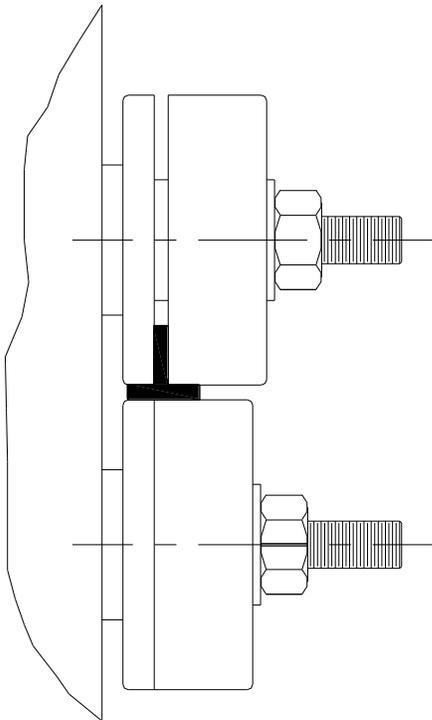
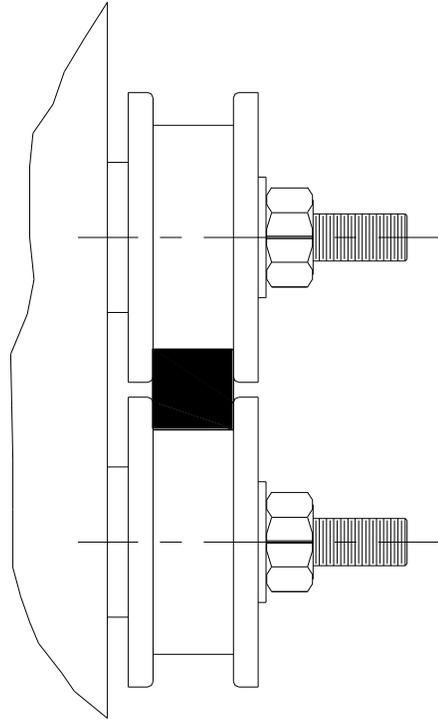
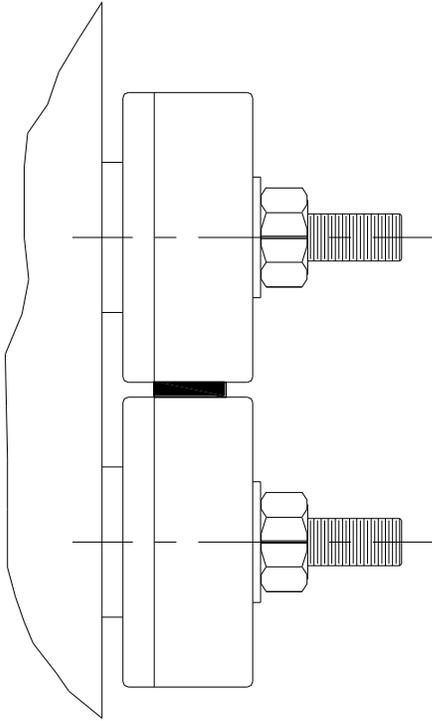


To find the distance needed between the top and bottom rolls, place a sample of the material to be bent in between the rolls. The groove of the upper roll should be 2-4 mm (.078"-.156") larger than the thickness of the material. Make a test bend with a sample of your material. This allows you to find the material spring back, and to determine the number of passes needed to achieve the desired radius.

Rolls are keyed to the shaft. If vibrations are felt during the bending process, remove the key from the lower right roller shaft to make the rolls freewheeling.

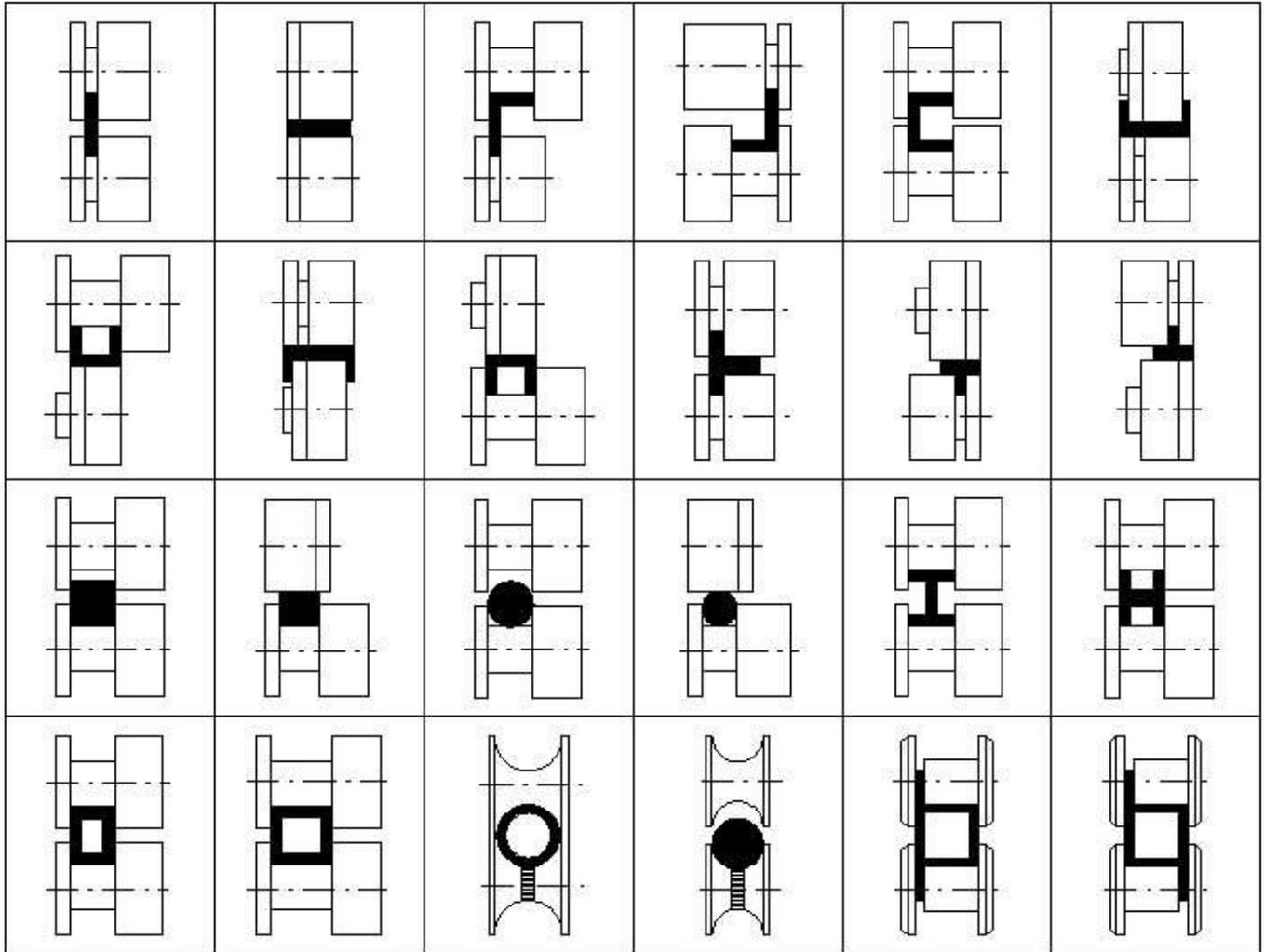


## STANDARD ROLL CONFIGURATIONS





- Using specials rolls, many material profile configurations are possible.

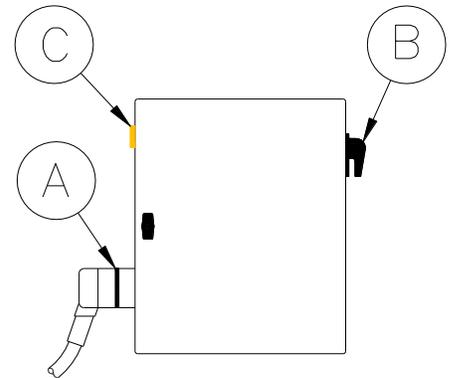




## START – UP INSTRUCTIONS

**⚠ CAUTION: MAKE SURE area around rolls is free from any obstructions.**

1. Plug foot pedal module into receptacle “A”.
2. Turn selector switch “B” clockwise (cw) to energize 24V control circuit. The amber light “C” will come on.
3. Step on the left foot pedal and confirm that the bottom rolls rotate to the left, counterclockwise (ccw).
4. Step on the right foot pedal and confirm bottom rolls rotate to the right, clockwise (cw).



5. Pressing the “Green” up button (located on the operator pedestal) starts the hydraulic motor and raises the top bending roll.



6. Pressing the “Red” down button (located on the operator pedestal) starts the hydraulic motor and lowers the top bending roll.



7. With either foot pedal depressed, pressing the EMERGENCY STOP switch will stop the rolls from turning.
8. Likewise with either Up / Down pushbutton depressed, pressing the emergency stop button will stop the top roll from moving.
9. Pull up on the emergency stop button to reset.





10. After setting the OP-LP1-2 (see Setting St1 and St2) with the desired value, insert a sample piece of material between the rolls and make a test bend.
11. Press the “RED” down arrow button until the top roll is in position according to the set value. When this value is reached, the light on the down button will illuminate.
12. Now press the foot pedal in the direction needed to pull the material through the rolls for a bend. Stop the rolls before the material losses contact with any of the three rolls.
13. When the bend is done, press the up arrow button to release the material.



**CALIBRATION OF OPKON® OP- LP1  
2 Position Measurement and Control Device**



**Saves the Values**



**Enters Calibration Mode**



**Changes the Values on  
PV & SV Down**



**Changes the Values on  
PV & SV Up**



**Turns on While Device is  
Running**



**Turns on When Programming**



**Turns on When Calibrating  
the Device**



**Turns on When Relay 1  
Is Activated**



**Turns on When Relay 2  
Is Activated**



## CALIBRATION



figure a



figure b

figure c

1. Remove the top rolls and move the shaft to the middle of its travel range before starting the calibration procedure.
2. Press the CAL button.
3. The screen will change to figure a.
4. Press the UP arrow on the display until the display reads 1.2
5. Once 1.2 is displayed press the PRG button.
6. The screen will change to figure b. The Zero position is set.
7. Now move the top roll all the way up, until it cannot go up any more.
8. Press the PRG button.
9. The display will change to figure c. (The number value may be different than shown.)
10. Move the top roll all the way down, until it cannot go down any more.
11. Verify that the number value in the PV line is at 125.0. Use the up or down arrow as needed to change the value to 125.0.
12. Press the PRG button and the display should read 125.0 and run.
13. Calibration complete.



## SETTING STOP POSITIONS

St1 and St2 are stop reference set points. The value displayed during the final roll pass of the part can be used for the St2 value on the next part to achieve comparable results. St1 and St2 are for repeatability, not for CNC.

St1 is the Upper stop point and can be used when opening the rolls for loading and unloading of material.

St2 is the lower stop point used to set the depth of the bend to provide for repeatability.

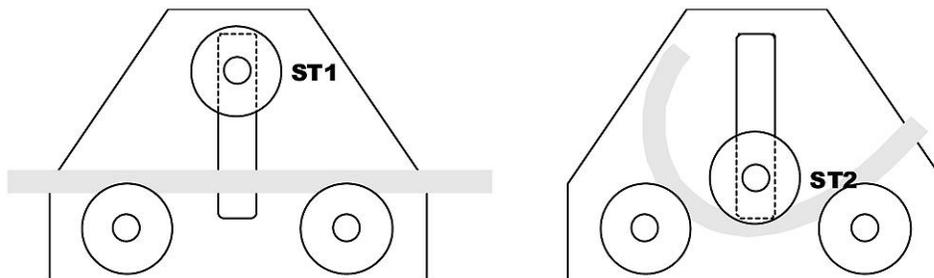


**Note:** Variation of material from lot to lot and other items such as cleanliness, or weld seams will affect the final result and cause setups to change slightly.

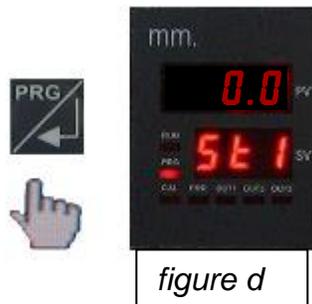
During setup, the test bend will start to establish the lower travel distance needed to obtain the desired results. When the test/setup piece part is finished, the display may show 35.6 as an example. Use this value to enter into St2 and your top roll will stop there every time.



**Note:** THERE WILL BE SOME OVERTRAVEL AS THERE IS NO LOAD ON THE SHAFT.



### Setting St1 and St2



1. Press the PRG button and the display will change to St1 as in figure d. This value is typically set at 0.0.
2. Press the PRG button and the display will change to St2 as in figure e. This is set by Baileigh Industrial at 95.0, so with the standard roll configuration, the top and bottom rolls will not hit each other.



3. Press the  (up arrow) until the display reads your desired Value.
4. Press the PRG button twice so that the word RUN is displayed. The setting is finished.



**Note:** The ST3 parameter is not used. There is a limit time (about 4 sec.) to set the values in the digital control. If you go over this time the digital control returns automatically to RUN mode without accept the values that you have being introduced.



**Note:** When you finished work with this value, you should setup again the value ST2, otherwise it will assume and stop always in the programmed value.



**Important:** When programming ST2, don't allow the upper roll to collide with the lower rolls.

## OPERATION

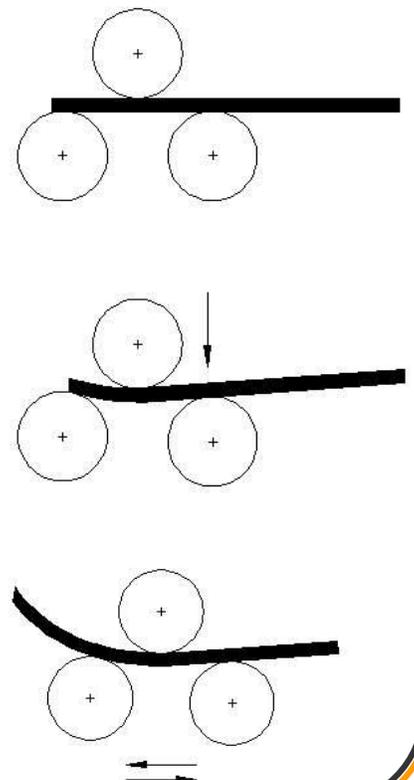


**CAUTION:** Always wear proper eye protection with side shields, safety footwear, and leather gloves to protect from burrs and sharp edges. When handling large heavy materials make sure they are properly supported.

1. Place the material flat on the rolls as shown in top image. Make sure that material is placed parallel to the floor and touching all three rolls at the same time. This condition is called "zero position".
2. Push the RED down arrow button to move the upper roll down, and position it to apply enough force to bend the material slightly. To avoid deforming the piece, DO NOT apply more force than necessary.
3. To get desired radius, make consecutive passes through the rolls using left and right foot pedals and gradually lower the upper roll after each pass. If the radius is larger than needed, move the upper roll down to apply more force. Keep track of your up/down position using the OPKON® Position Measurement and Control Device as a guide. This will help ensure consistency of parts.



**Important:** Most bends will require multiple passes through the rolls.





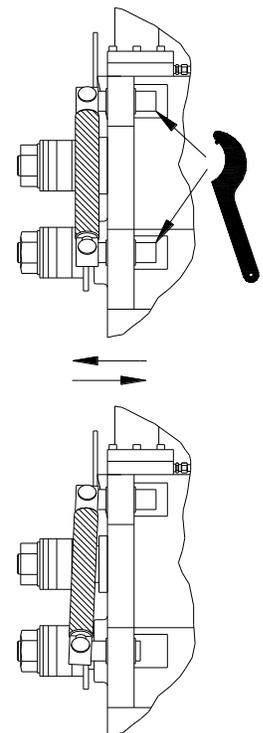
4. When the desired radius is formed, Note the position value (PV number). Use the PV number to create the second test/setup piece part.
5. For the second test/setup part, repeat steps 1 thru 3 stopping when the desired radius formed or when the PV number is met whichever comes first.
6. If the desired radius is achieved when the PV number is matched for both piece part 1 and piece part 2, use that PV number to program the St2 number into the controller. This will set the stop point to give a repeatable bend.
7. If the desired is achieved with a is different PV number, recheck the material for similarity and consistency. Items like cleanliness and the position of the weld seam will cause different results. Repeat the test/setup procedure on additional material being as consistent as possible until the desired radius is achieved on a regular basis.
8. Once the St2 value is programmed, lower the upper roll with each pass through the rolls. When the programmed value (St2) is achieved, the roll will stop moving downward. The light on the red down push button will illuminate to indicate that the St2 value is achieved.
9. When the bend is complete, press the green up button to raise the upper roll and allow for the material to be unloaded and if desired, load the next piece of material.

### Lateral Guide Rolls

1. To prevent material from bending left or right you must adjust the guide rolls.
2. As the guides are adjustable on top and bottom, you can arrange them to the opposite direction that the material is inclined to go.

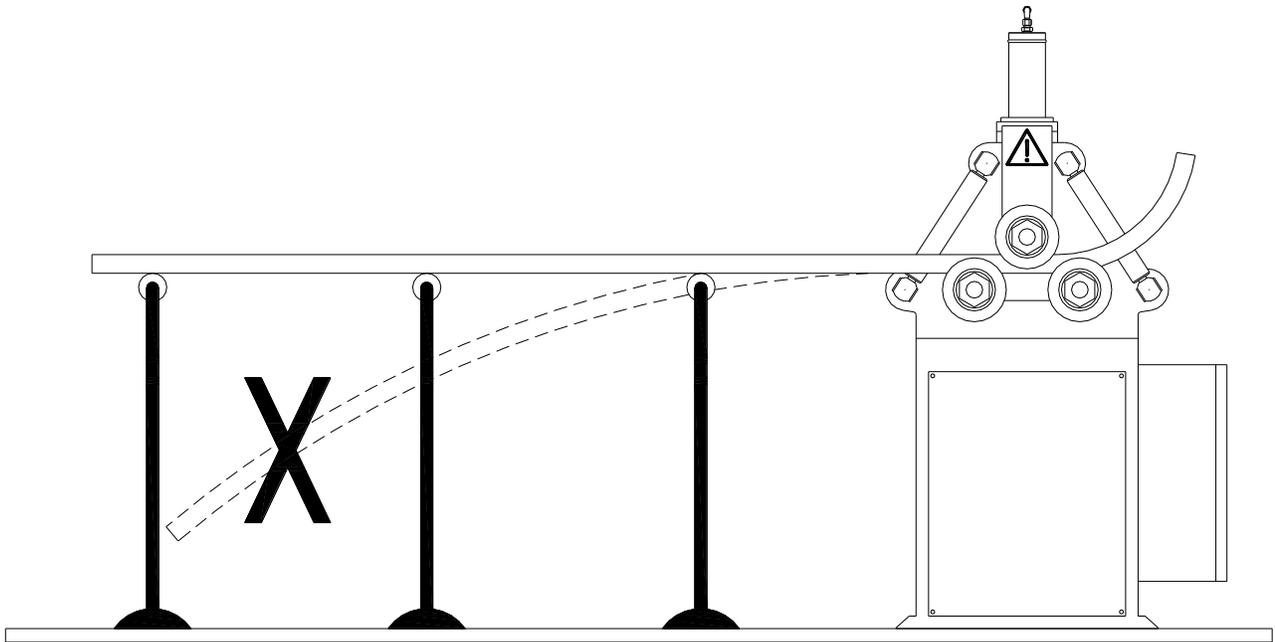


**Note:** To get a circular profile, side guide joints must be parallel to the machine face. Otherwise you get spiral profiles.





When bending long materials, an adjustable conveyor is recommended to keep work piece parallel to floor, allowing for easier loading of Roll Bender. If necessary, the machine can be laid on its back to operate in a horizontal position. See the installation information at the front of this manual.



**⚠ CAUTION:** DO NOT feed profiles having a thickness greater than specified for the capacity of the machine. DO NOT feed more than one piece at a time. DO NOT use machine for purposes other than designed for.



## LUBRICATION AND MAINTENANCE



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

Maintenance should be performed on a regular basis by qualified personnel.

Always follow proper safety precautions when working on or around any machinery.

- Check daily for any unsafe conditions and fix immediately.
- Check that all nuts and bolts are properly tightened.
- On a weekly basis clean the machine and the area around it.
- Lubricate threaded components and sliding devices.
- Apply rust inhibitive lubricant to all non-painted surfaces.



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

### Hydraulic Oil / System

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

The hydraulic system should be inspected monthly for fluid leaks and correct fluid level. Correct any leaks and or oil levels immediately. Change the hydraulic fluid annually.

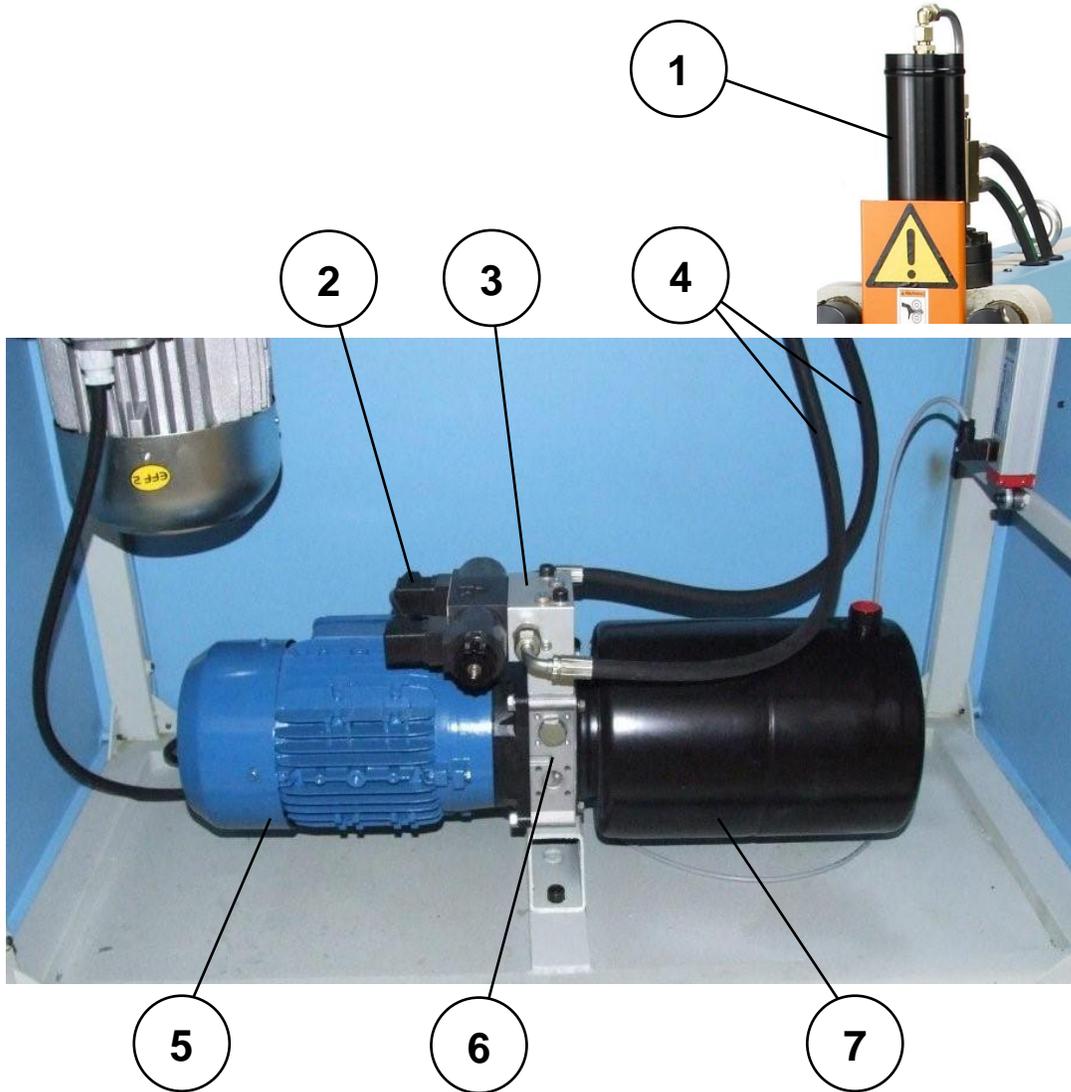
3. Use hydraulic oil #68 SHELL BRAND or an equivalent with similar specifications.
4. Keep hydraulic reservoir filled to 90% of capacity.
5. DO NOT rely totally on the oil gauge as they can sometimes indicate an incorrect level reading. Do a visual inspection with the oil fill cap removed as well.
6. A shortage of hydraulic oil will cause hydraulic system breakdown to major mechanical components due to overheating.
7. Change the hydraulic oil every 12 months.

### Oil Disposal

Used oil products must be disposed of in a proper manner following your local regulations.



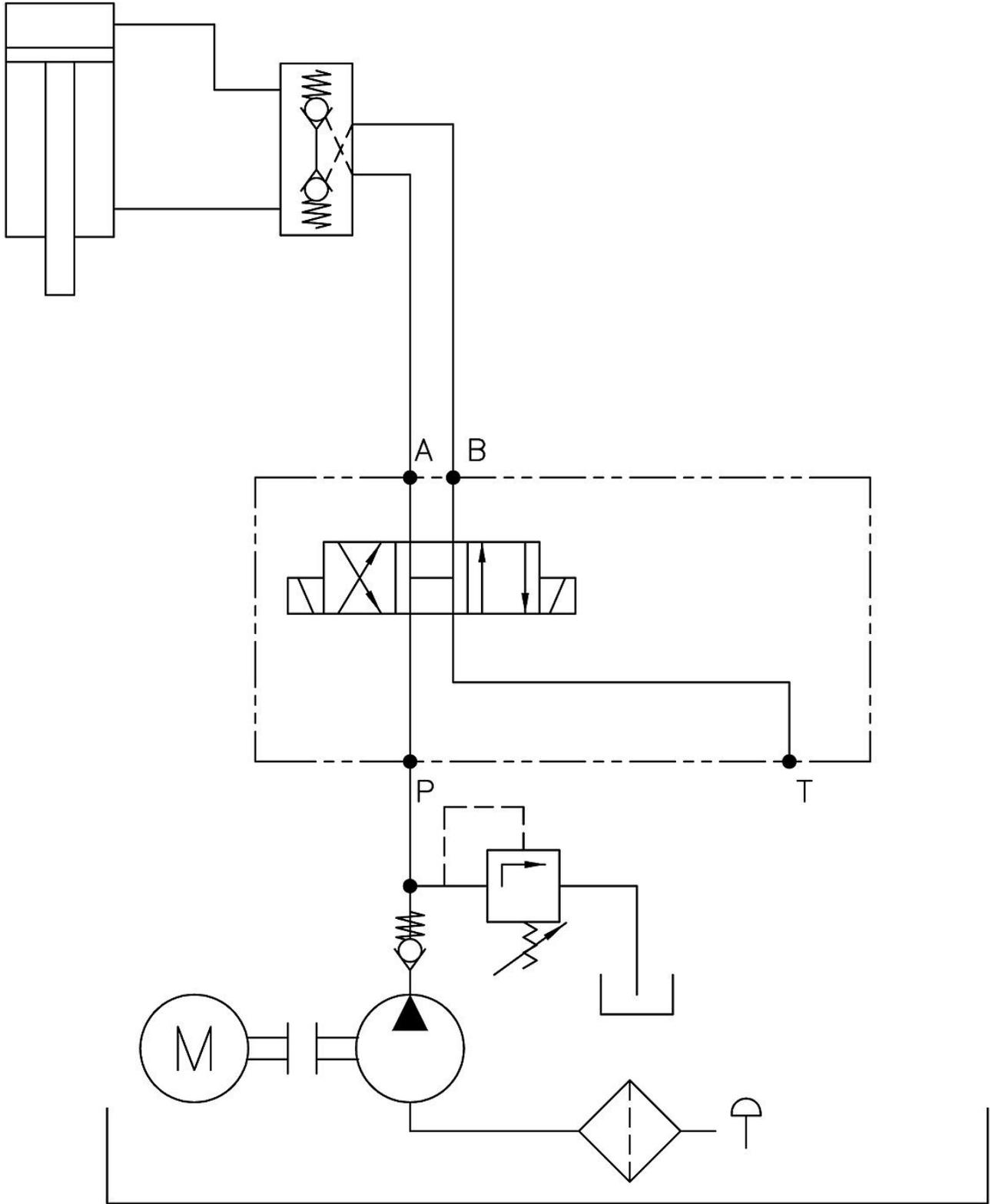
## HYDRAULIC SYSTEM PARTS IDENTIFICATION



ITEM	DESCRIPTION
1	Hydraulic Cylinder
2	Solenoid Valve
3	Directional Valve
4	Hose w / Fittings
5	2Hp Motor 220v, 1 Ph.
6	Hydraulic Pump
7	Oil Reservoir

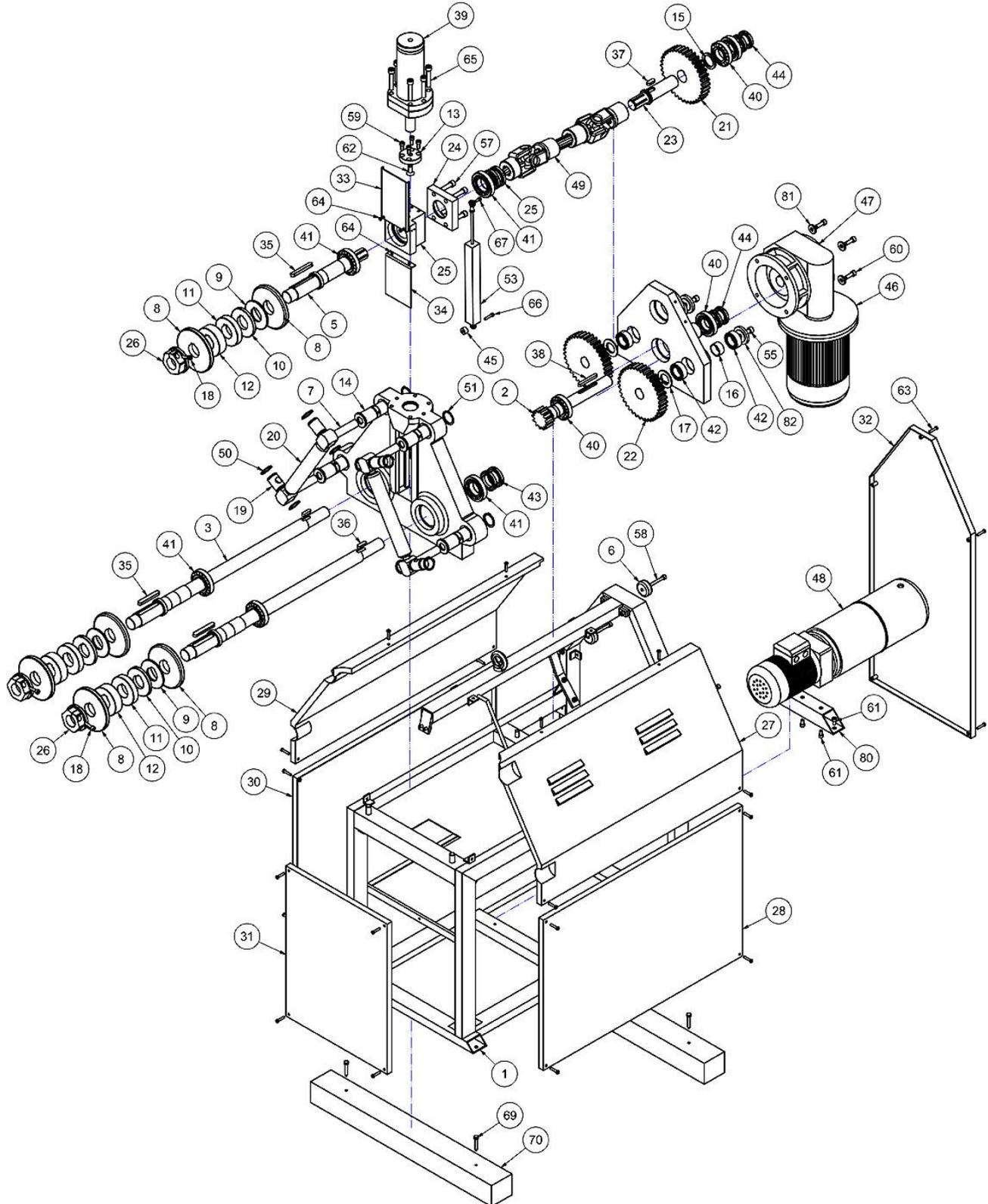


## HYDRAULIC SYSTEM DIAGRAM





# PARTS IDENTIFICATION DRAWING





**Parts List Drawing**

Item	Description	Qty.
1	Structure	1
2	Pinion	1
3	Bottom Shaft	2
4		
5	Top Shaft	1
6	Horizontal Foot	5
7	Lateral Roll Spindle	4
8	Standard Tool (Exterior)	6
9	Standard Tool (5mm)	3
10	Standard Tool (10mm)	3
11	Standard Tool (20mm)	3
12	Standard Tool (30mm)	3
13	Main Cylinder Ring	1
14	Lateral Guide Roll Spindle Nut	4
15	Spacer Ring	1
16	Spacer Bushing	2
17	Spacer Ring	2
18	Cylindric Int. Hex. Scr. M8x30	3
19	Lateral Guide Roll Shaft Dowel	4
20	Lateral Guide Roll	2
21	Upper Cog Wheel	1
22	Lower Cog Wheel	2
23	Cog Wheel Shaft	1
24	Upper Cube Cover	1
25	Upper Cube	1
26	Shaft Nut	3
27	Upper Right Cover	1
28	Lower Right Cover	1
29	Upper Left Cover	1
30	Lower Left Corner	1
31	Back Cover	1
32	Front Cover	1
33	Upper Cube Cover	1



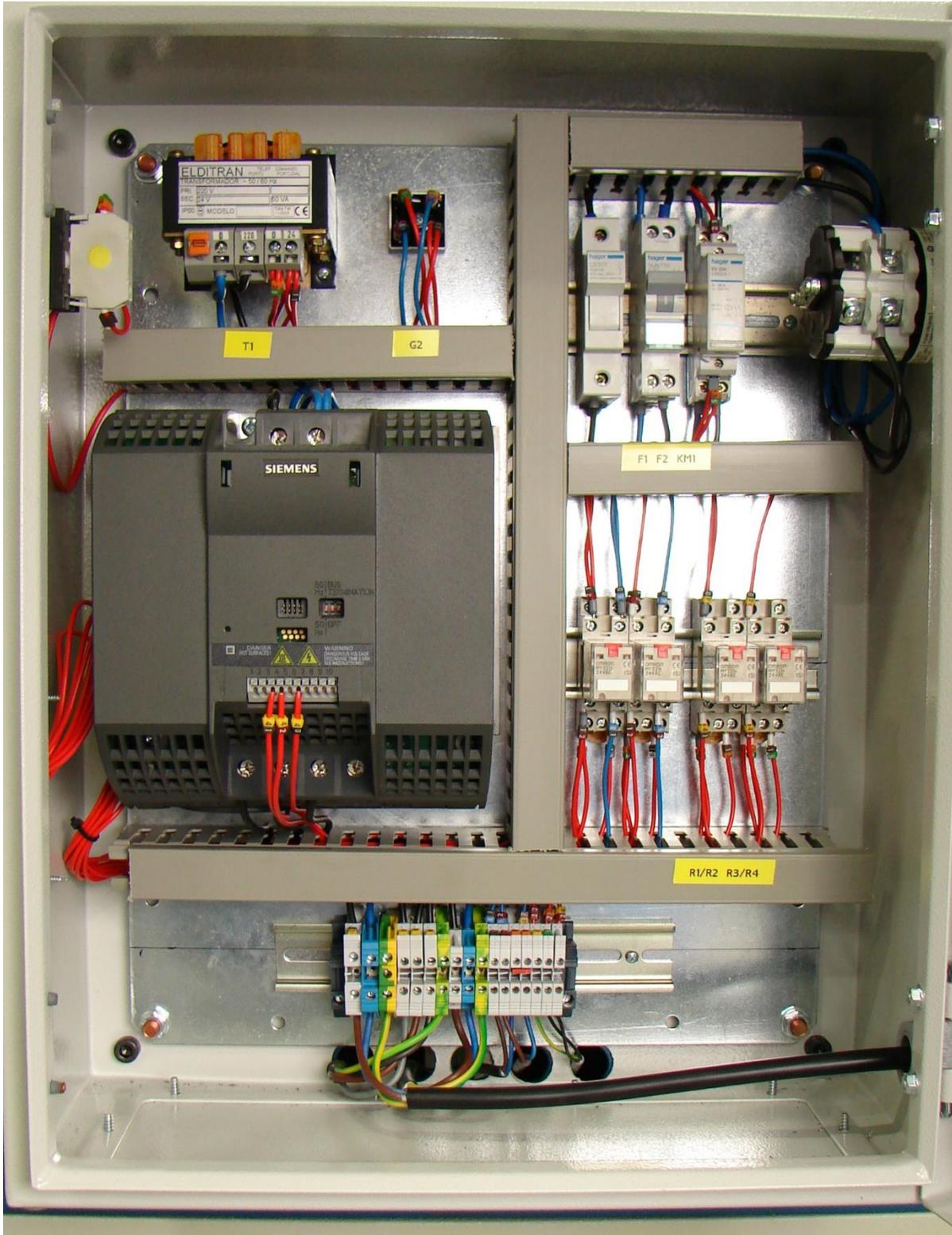
Item	Description	Qty.
34	Lower Cube Cover	1
35	Key	1
36	Key	2
37	Key	1
38	Key	1
39	Main Cylinder	1
40	Bearing 30208	4
41	Bearing 30209	6
42	Bearing NA Bearing Nut 4907	4
43	Bearing Nut KM-9	6
44	Bearing Nut KM-8	4
45	Spacer Bushing	1
46	Motor 3cv-1500 Rpm-B5	1
47	Reducer SITI MU90	1
48	Centerline PPC-E	3
49	Cardan 21270-21270.E.436	8
50	Brake 1.37Ø	4
51	Brake 1.57Ø	1
52		
53	Digital Linear Measure	1
54		
55	Cylindric Hex Screw M12x30	4
56		
57	Cylindric Hex Screw M12x45	4
58	Cylindric Hex Screw M8x80	5
59	Cylindric Hex Screw M8x20	7
60	Cylindric Hex Screw M10x30	4
61	Cylindric Hex Screw M8x16	4
62	Interior Hex Screw M12x30	1
63	Oval Interior Screw M6x30	25
64	Oval Interior Screw M5x10	4
65	Cylindric Inter. Screw M12x65	6
66	Cylindric Inter. Screw M6x30	1
67	Cylindric Inter. Screw M6x16	1
68		



Item	Description	Qty.
69	Lag Screw M8x50	4
70	Shipping Block Wooden 31.5"X3.54"X3.14"	2
71	Hose 1/4" X 63"	1
72	Hose 1/4" X 59"	1
73	Retention Valve KOHV 1/4"	1
74	Union GE 3/8" 10L	4
75	Knee EVW 10L	2
76	Union EVGE 10L	1
77	Union GE 1/4" 10L	3
78	Spacer	1
79	Hex Key	1
80	Centerline Support	1
81	Reducer Ring	1
82	Ring	1
102	Cylindric Inter. Scr. M8x3.75	2
103	Ring M8	2
104	Pressure Ring M8	2
120	Pump	1
122	Foot Pedal Cover	1

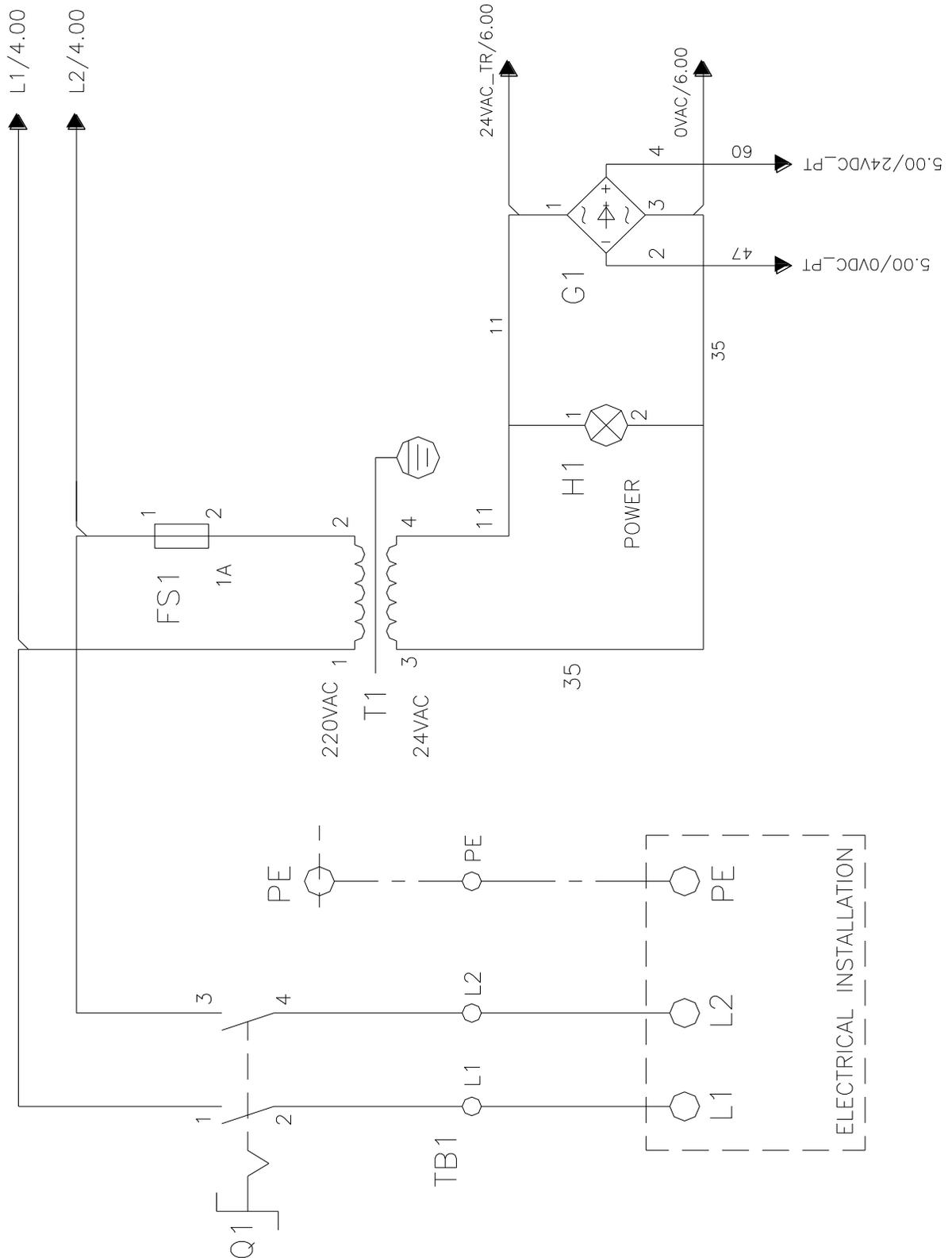


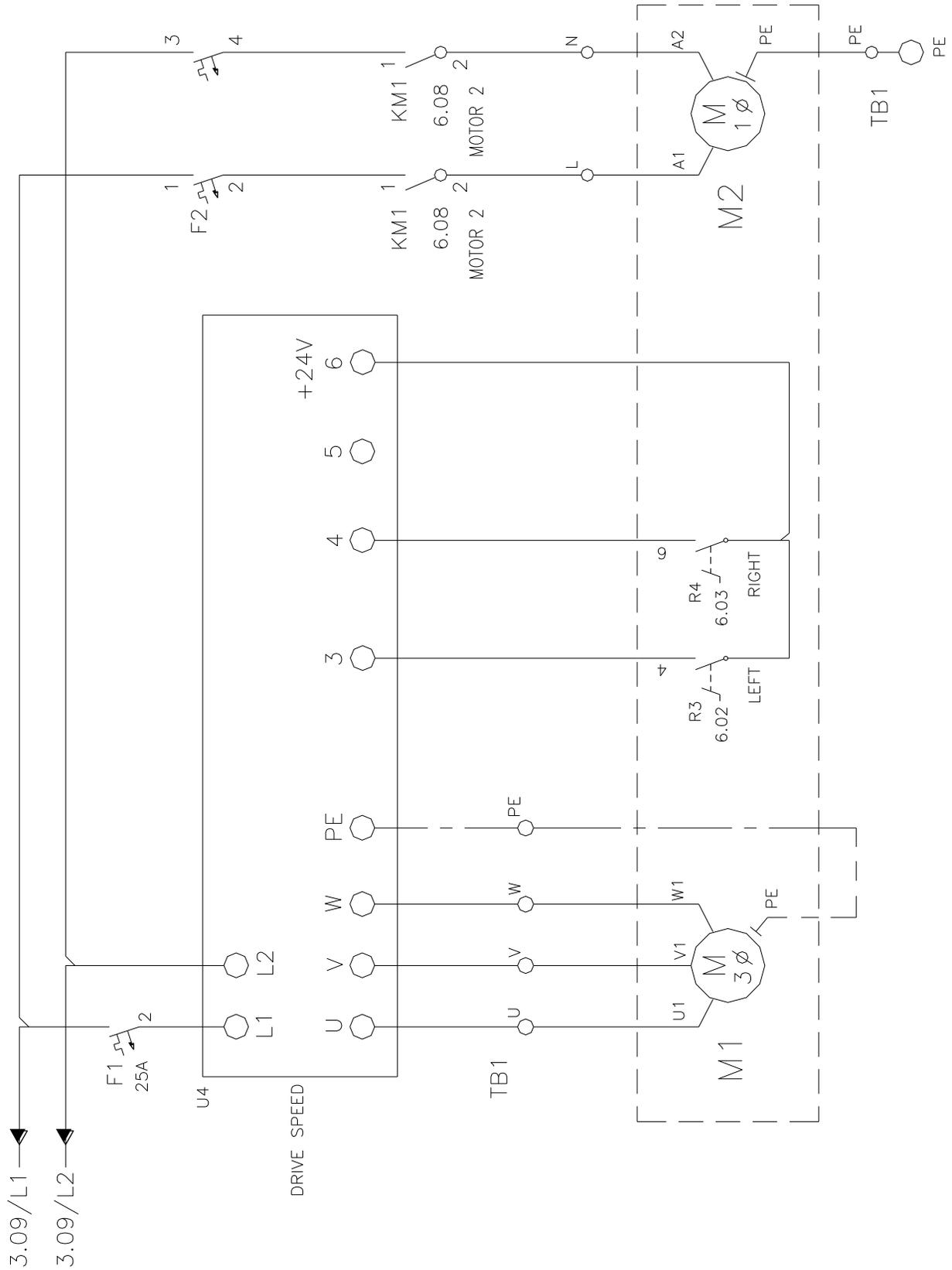
## ELECTRICAL ENCLOSURE

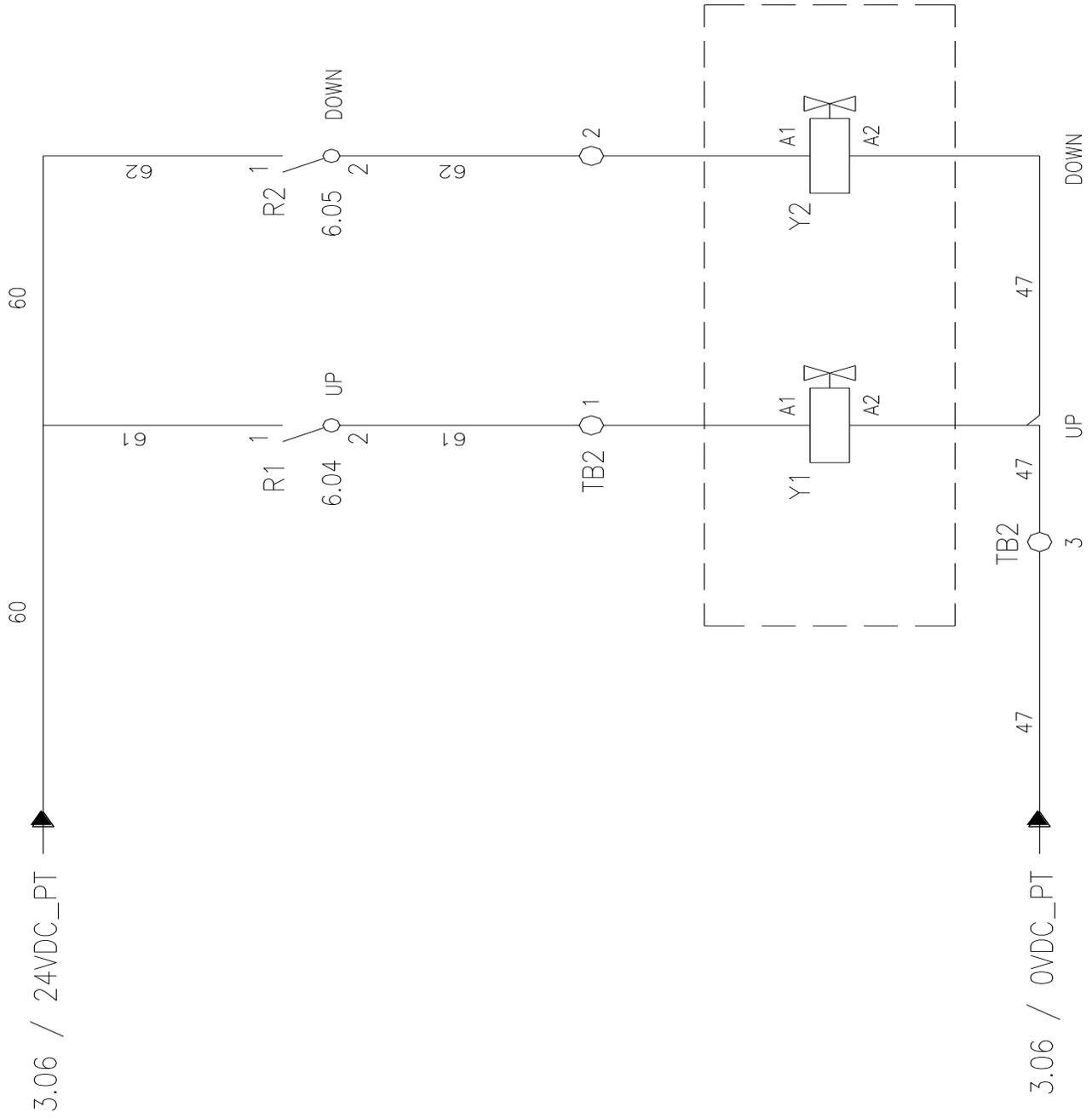




# ELECTRICAL SCHEMATIC











NOTES



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