



OPERATOR'S MANUAL



HYDRAULIC PLATE ROLL MODEL: PR-409

Baileigh Industrial, Inc.
P.O. Box 531
Manitowoc, WI 54221-0531
Phone: 920.684.4990
Fax: 920.684.3944
sales@baileighindustrial.com

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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



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.



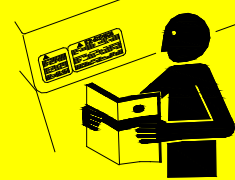
Note: *This symbol refers to useful information throughout the manual.*



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.



DANGER



WARNING



CAUTION

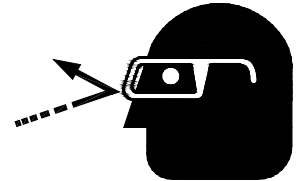


SAVE THESE INSTRUCTIONS.
Refer to them often and use them to instruct others.



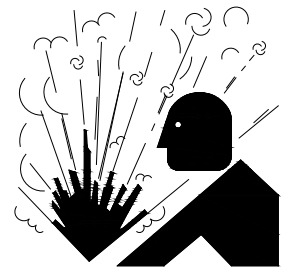
PROTECT EYES

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



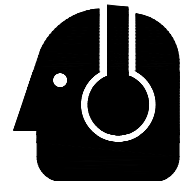
HYDRAULIC HOSE FAILURE

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



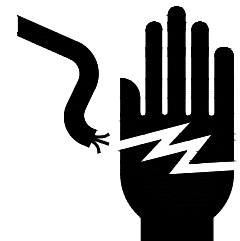
PROTECT AGAINST NOISE

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.



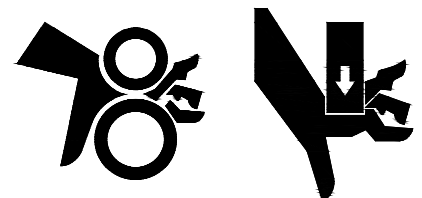
HIGH VOLTAGE

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



BEWARE OF PINCH POINTS

Keep hands and fingers away from the rolls and roll drive components when the machine is in operation or when doing maintenance.





Dual Emergency Stop Cables

The Plate Roller has a safety stop cable located at both the front and the rear of the machine. Pulling on the cable actuates the limit switch which immediately stops the hydraulic pump and all movement of the rolls. Press the flashing orange Reset button to reset the circuit.



Note: Pressing the **RESET** button will not start 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.





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

1. **Only trained and qualified personnel can operate this machine.**
2. **Make sure guards are in place and in proper working order before operating machinery.**
3. **Remove any adjusting tools.** Before operating the machine, make sure any adjusting tools have been removed.
4. **Keep work area clean.** Cluttered areas invite injuries.
5. **Overloading machine.** By overloading the machine you may cause injury from flying parts. **DO NOT** exceed the specified machine capacities.
6. **Dressing material edges.** Before bending sheet metal, always chamfer and deburr all sharp edges.
7. **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.
8. **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.
9. **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.
10. **Use eye and ear protection.** Always wear ISO approved impact safety goggles. Wear a full-face shield if you are producing metal filings.



11. **Do not overreach.** Maintain proper footing and balance at all times. **DO NOT** reach over or across a running machine.
12. **Stay alert.** Watch what you are doing and use common sense. **DO NOT** operate any tool or machine when you are tired.
13. **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.
14. **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.
15. **Keep children away.** Children must never be allowed in the work area. **DO NOT** let them handle machines, tools, or extension cords.
16. **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.
17. **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.
18. Be sure all equipment is properly installed and grounded according to national, state, and local codes.
19. **DO NOT** bypass or defeat any safety interlock systems.
20. Keep visitors a safe distance from the work area.



TECHNICAL SPECIFICATIONS

Specifications	Imperial	Metric
Roll Speed	4.67 rpm.	
Upper Roll Diameter	4.75"	120mm
Roll Adjustment Back	Hydraulic	
Minimum Forming Diameter	8.86"	225mm
Motor	2hp / 60hz / 12A	1.5kw / 50hz / 6A
Capacity (Mild Steel)	9ga (0.15")	3.8mm
Digital Position Readout	Yes	
Forming Width	52"	1320mm
Power	220V / 3-phase	400V / 3-phase
Shipping Weight	4,180 lbs.	1900 kgs
Shipping Dimensions (L x W x H)	83" x 32" x 52"	2108mm x 813mm x 1321mm

TECHNICAL SUPPORT

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

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



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



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



UNPACKING AND CHECKING CONTENTS



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.

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

The plate roller is fully assembled and includes the control pedestal and the tool kit.



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.





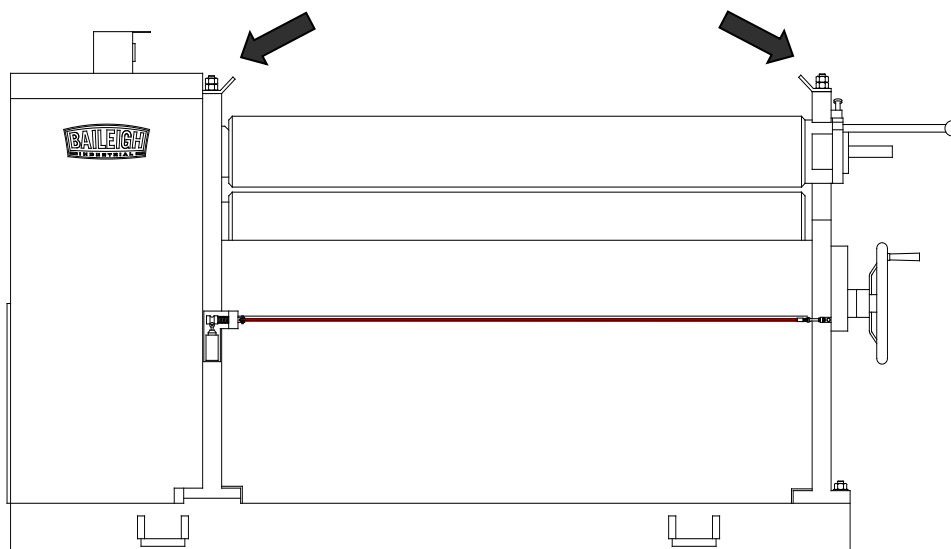
TRANSPORTING AND LIFTING



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:

- 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.
- 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. (25 – 50mm)
- 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.
- 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 precautions and suggestions when looking for a suitable location to place the machine:

LEVELING:

- The machine should be sited on a level, concrete floor, suitable to support the entire weight of the machine 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 machine to within .003"/ft. (.25mm / meter) front to back and left to right.
- The machine installation site should be clean and with little dust, the working temperature range is -5°C~40°C, relative humidity of 55-85%, and altitude lower than 3300 ft. (1000M).
- The work site must be free of flammable or explosive materials to prevent the injury and accident.

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.

- Overall weight of the machine.
- Weight of material being processed.

WORKING CLEARANCES:

- 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.
- Is the machine bolted to the pallet? Before attempting any of the assembly procedures remove all of the loose parts and hardware and unbolt the machine from the pallet.

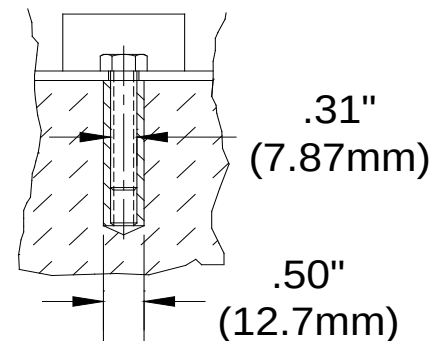


POWER SUPPLY PLACEMENT:

- The power supply should be located close enough to the machine so that the power cord does not interfere with material being processed or located in an area where it would cause a tripping or entanglement hazard. Be sure to observe all electrical codes if installing new circuits and/or outlets.

Anchoring the Machine

- Position the machine on a firm and level concrete floor.
- Maintain a safe operating distance around the machine.
- Anchor the machine to the floor, as shown in the diagram, using bolts and expansion plugs or sunken tie rods that connect through holes in the base of the stand.



Hydraulic Fluid

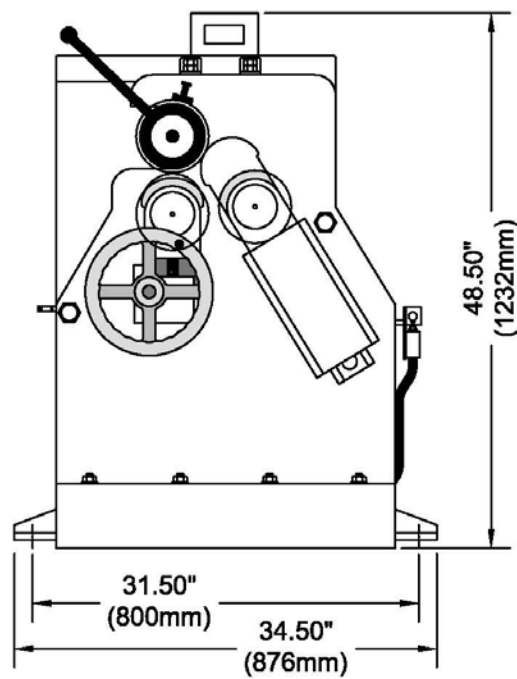
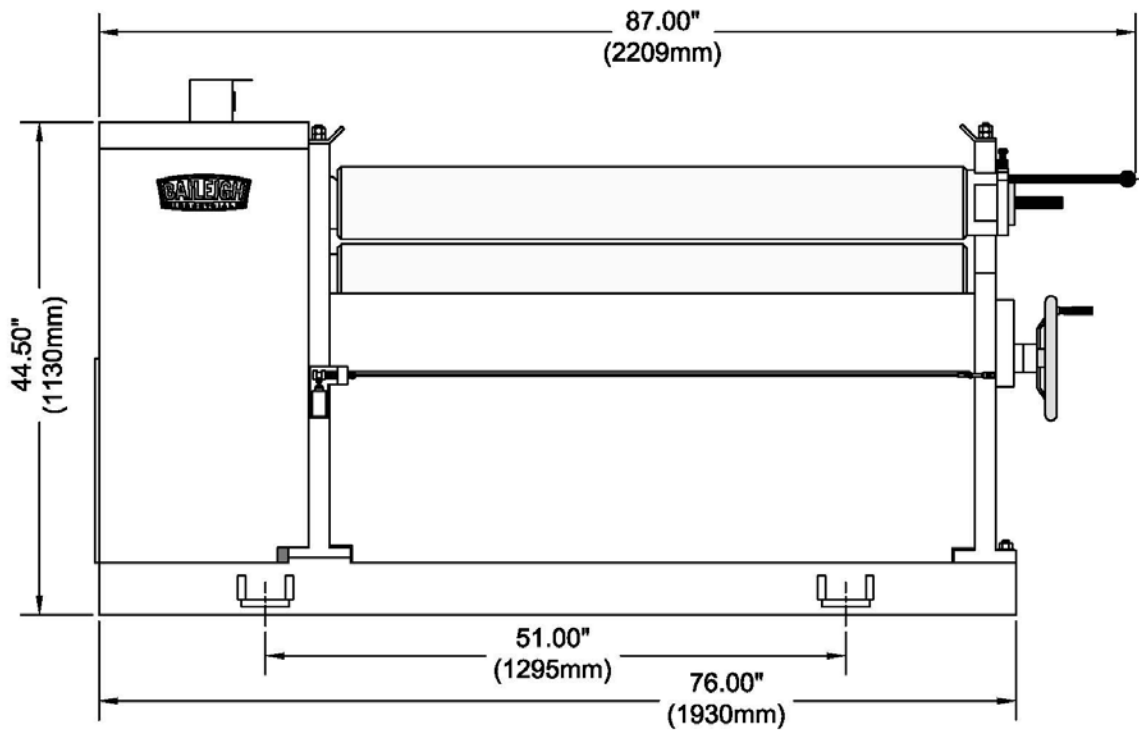
After installation of the machine and before machine startup, bring the oil level up to capacity

- Use hydraulic oil #68 SHELL BRAND or an equivalent with similar specifications.
- Keep hydraulic reservoir filled to 90% of capacity.

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



OVERALL DIMENSIONS





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.

Motor Specifications

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

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.
- 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.



- 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.
- Repair or replace damaged or worn cord immediately.

Power cord connection:

1. Disconnect and lockout power to the electrical point of connection.
2. Locate the power cord which connects to the terminal strip at locations **E, R, S, and T**.
3. Install a plug on the end of the power cord or route a power cord into the electrical cabinet.
4. Connect one power wire to each of the plug terminals or in the cabinet, connect the power wires to the terminals **R, S, & T**.
5. Connect the ground wire (typically green) to the ground terminal or **E** terminal in the cabinet.
6. Check that the power cord has not been damaged during installation.

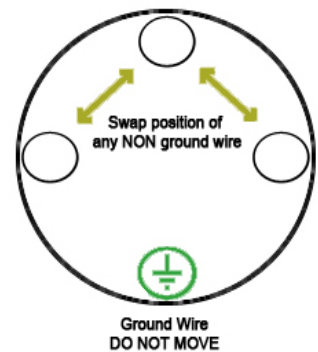


figure 6

Check for correct rotation of the motor

1. Close the electrical enclosure door.
2. Turn the Main disconnect to the "**ON**" position. The Power lamp should be illuminated.
3. Press the "**PUMP START**" button.
4. With the pump running, press the green "**UP**" pushbutton located on the operator pedestal.
 - a. The cylinders should extend, raising the roll.
 - b. If not, disconnect power to the machine and switch the position of any two of the three power wires, but **DO NOT** change the position of the green grounding wire.

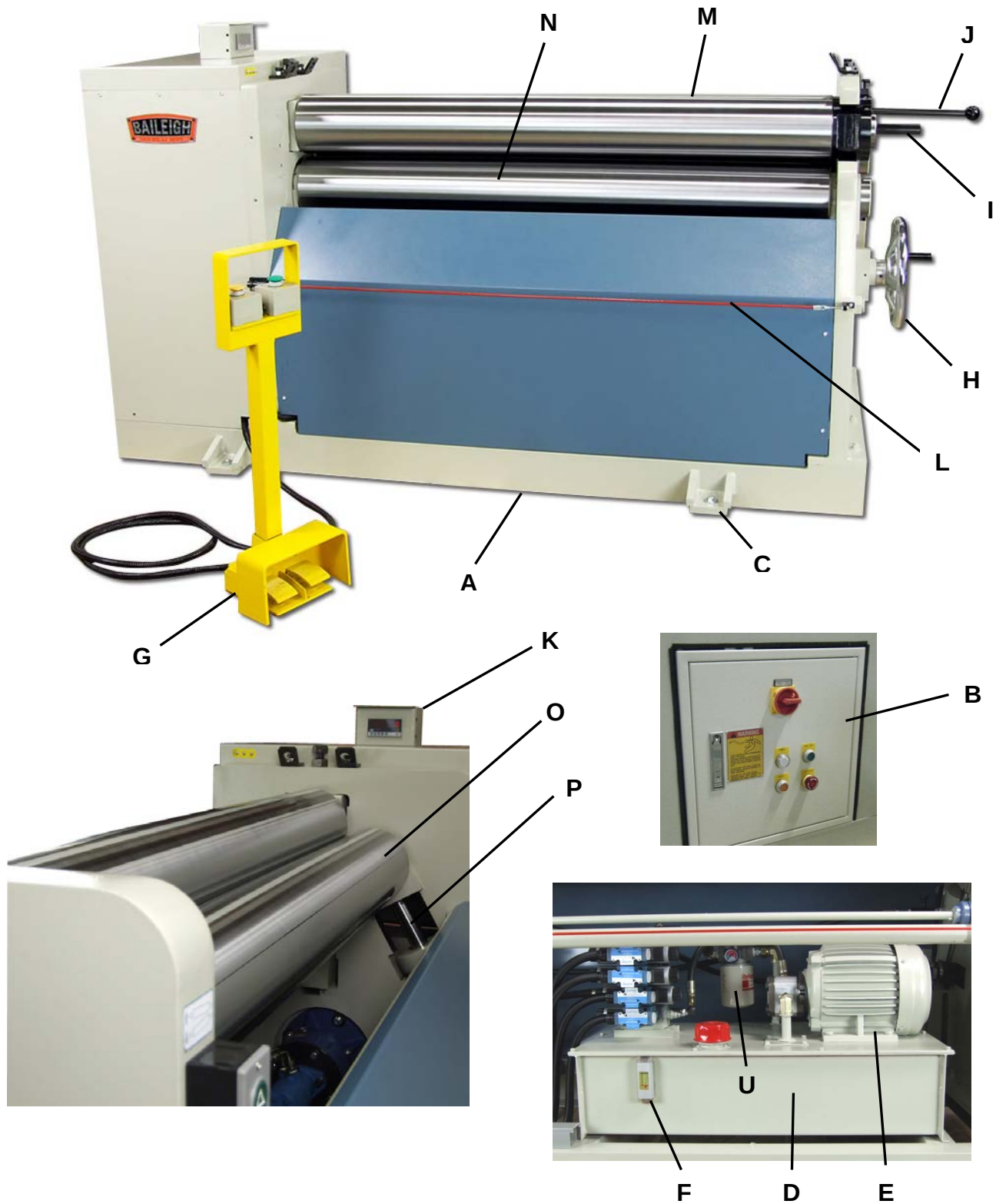
Improper rotation can severely damage the hydraulic pump.



figure 7

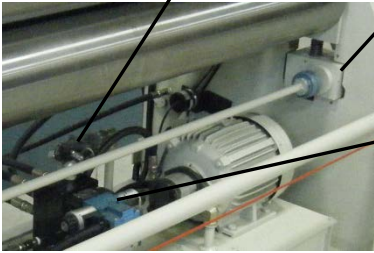


GETTING TO KNOW YOUR MACHINE





Q



V

X

W

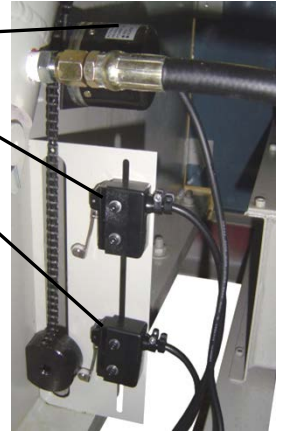


R

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T

Y





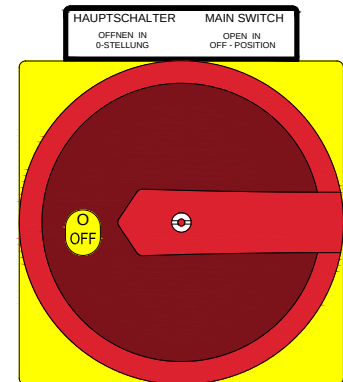
Item	Description	Function
A	Machine Base	Support for machine.
B	Electrical Enclosure	Houses electrical components.
C	Leveling Bolt Pocket	Bolt attaches for leveling machine.
D	Hydraulic Oil Reservoir	Holds hydraulic oil.
E	Electric Motor	Drives hydraulic pump.
F	Oil Sight Gauge	Shows level of hydraulic oil in tank.
G	Operator Control Pedestal	Houses buttons for movement of rolls
H	Lower Roll Adjusting Handwheel	Raises and lowers bottom roll.
I	Upper Roll Slide Handle	Used to pull out pivoting upper roll.
J	Upper Roll Lock Handle	Used to lock the upper roll in place.
K	Back Roll Position Indicator	Digital readout to show back roll position.
L	Emergency Stop Cable	Shuts down machine operation when activated.
M	Upper Roll	Drives material in or out of machine.
N	Lower Roll	Drives material in or out of machine (adjustable)
O	Back Roll	Controls diameter of finished piece part.
P	Back Roll Cylinders	Used to raise and lower the back roll.
Q	Hydraulic Gear Motor	Used to power the drive system.
R	Rotary Encoder	Senses back roll location
S	Upper Travel Limit Switch	Back roll upper limit stop (adjustable)
T	Lower Travel Limit Switch	Back roll lower limit stop (adjustable)
U	Oil Filter	Keeps hydraulic oil clean
V	Manifold Block	Directs hydraulic oil to various locations
W	Solenoid Valves	Regulate machine functions
X	Right Angle Gear Boxes (Manual)	Used to raise and lower bottom roll
Y	Back Roll Single Side-UP/Down	Used when making cone shapes.



CONTROL DESCRIPTIONS AND FUNCTIONS

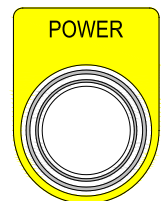
Main Power Disconnect Switch

Controls main power to the machine. When switched to the “ON” position, the door to the electrical enclosure locks as a safety precaution.



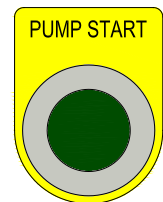
Machine Power Indicator

When machine power is on this indicator lights white.



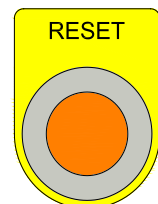
Hydraulic Pump Start Button

Press this button to start the pump motor. When the pump is “ON” the switch button illuminates green.



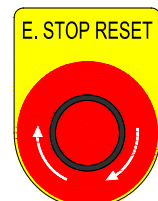
Alarm Reset Button

The machine will stop running after either stop cable is activated, causing the reset light to flash. After clearing the reason for the fault, press the “RESET” button to resume the machine to a working condition.



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.



Footswitch Control

Stepping on the left foot pedal (**L**) will rotate the rolls and pull the material into the machine. Stepping on the right foot pedal (**R**) will back the material out of the machine.



Note: *DO NOT depress both pedals at the same time.*

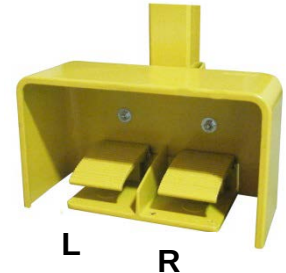


figure 8

Back Roll UP / DOWN Buttons

With power **ON** and the hydraulic unit running, the green **UP** pushbutton will extend the two cylinders raising the back roll and the yellow **DOWN** pushbutton will lower the roll.



IMPORTANT: *DO NOT bring the back roll tight against the top roll when bending or you could damage the rolls.*



figure 9

Back Roll Single Side UP / DOWN

Used to adjust the right cylinder Up or Down when forming cone shaped piece parts.



figure 10



INSTRUCTIONS FOR POWER ROLL

 **CAUTION:** Always wear proper eye protection with side shields, safety footwear, and leather gloves to protect from burrs and sharp edges.

 **CAUTION:** Keep hands and fingers clear of the clamping beam. Stand off to the side of the machine to avoid getting hit with the bending apron as it comes up to bend.
When handling large heavy sheets make sure they are properly supported.

- **DO NOT** exceed rated capacity on this plate roll. It has been tested at the factory to roll .150" (3.80mm) x 52" (1320mm) wide mild steel.
- The Baileigh **PR-409** Plate Roll has three 4.75" (120mm) diameter rolls. The two front rolls, one placed vertically above the other are clamping rolls. The bottom roll is manually adjusted for material thicknesses. The rear roll controls the diameter of the finished piece part and is adjusted with a hydraulic torque motor. An encoder and a digital readout are provided to keep the operator informed of its location.



Turn on Machine Power

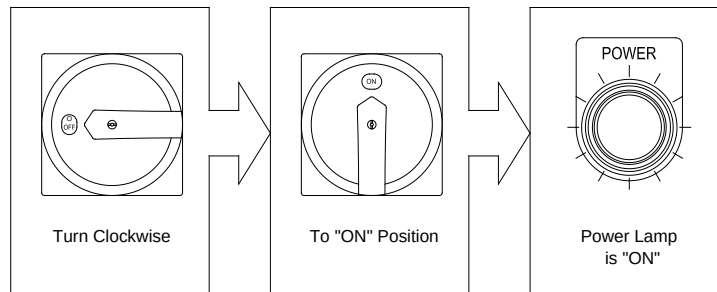


figure 11

Start Hydraulic Pump Motor

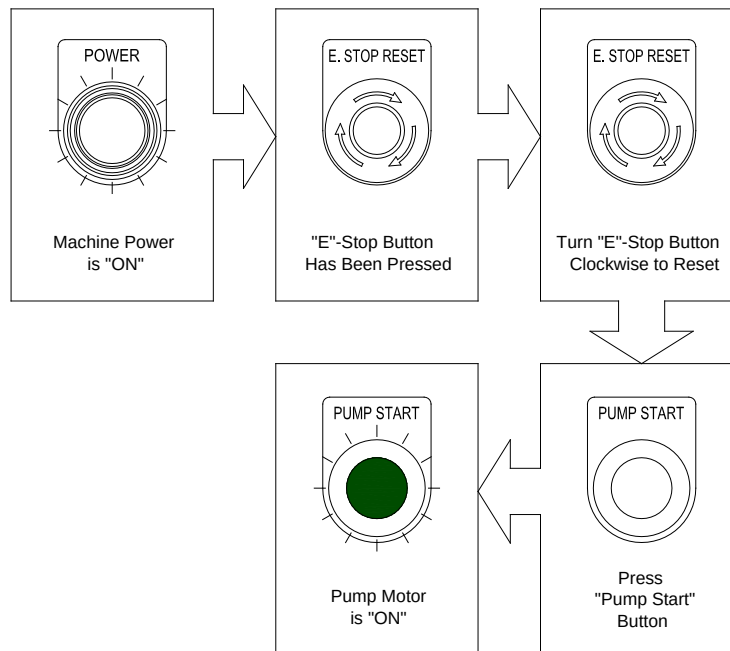


figure 12

Shut Off Machine Power

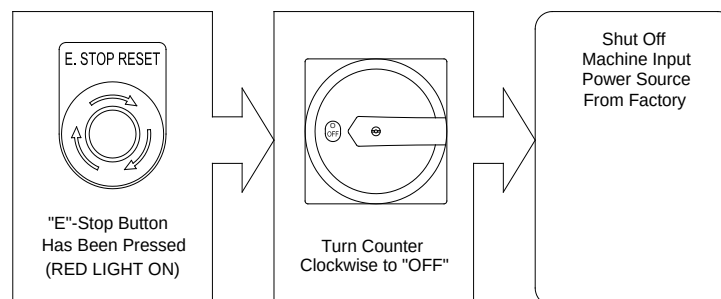


figure 13



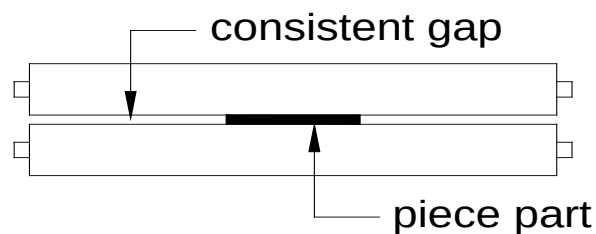
PLATE ROLLING PROCEDURE

Determining Length of Material

LENGTH OF MATERIAL necessary to form the desired size circle is the first consideration in circle forming. To determine the approximate length of material needed use the formula: $C = I \times D$, Where C is the circumference, I is the value of π or 3.1416, and D is the diameter. For example, to find the length of material (C or Circumference) to form a 12" (304.8mm) diameter circle, multiply 3.1416 x 12 (3.1416 x 304.8mm), the result is 37.70" (957.55mm) or the approximate length of material needed. Cut a few pieces of material to this length for test forming. Material may have to be lengthened or shortened depending upon results of the test forming run.

Adjusting the Bottom Front Roll

BOTTOM FRONT ROLL adjustment is necessary to secure the piece part between the top and bottom rolls. To raise or lower the bottom roll, turn the handwheel located on the right side of the machine. Clockwise (**cw**) for up and counterclockwise (**ccw**) for down. Insert the material centered between the rolls from the front of the machine and set the rolls so the material fits snugly. Make sure the gap along the full length of the rolls is consistent. Now remove the material from the rolls.





Adjusting the Back Roll

BACK ROLL adjustment is necessary to control the diameter of the circle to be formed. To raise or lower the back roll, use the **UP / DOWN** pushbuttons located on the pedestal stand. The further you go UP with the back roll, the smaller the radius will be. Lowering the back roll will allow for a larger radius. Because material springback varies with the kind of material being formed, only by test forming several pieces can the correct adjustments be made.

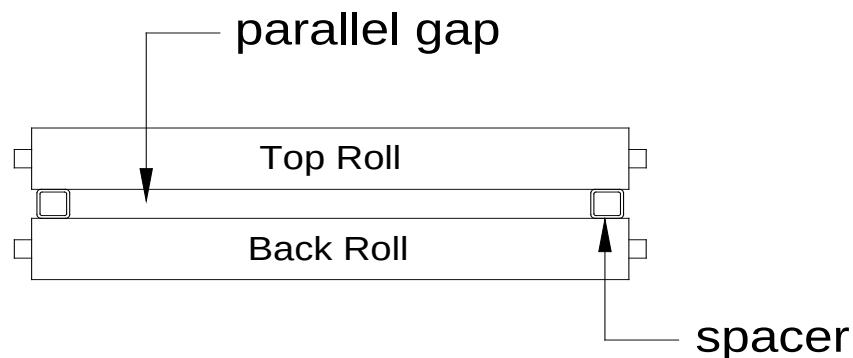


By using the digital readout you can keep track of the gap between the top roll and the back roll when doing multiple piece parts.



Note: If the rolls are not adjusted exactly parallel, the material will spiral during the rolling process.

To check if the rolls are parallel, insert a piece of spacer material between the top roll and the back roll. Inch up the back roll slowly until the piece is held. Repeat on the other end of the rolls.





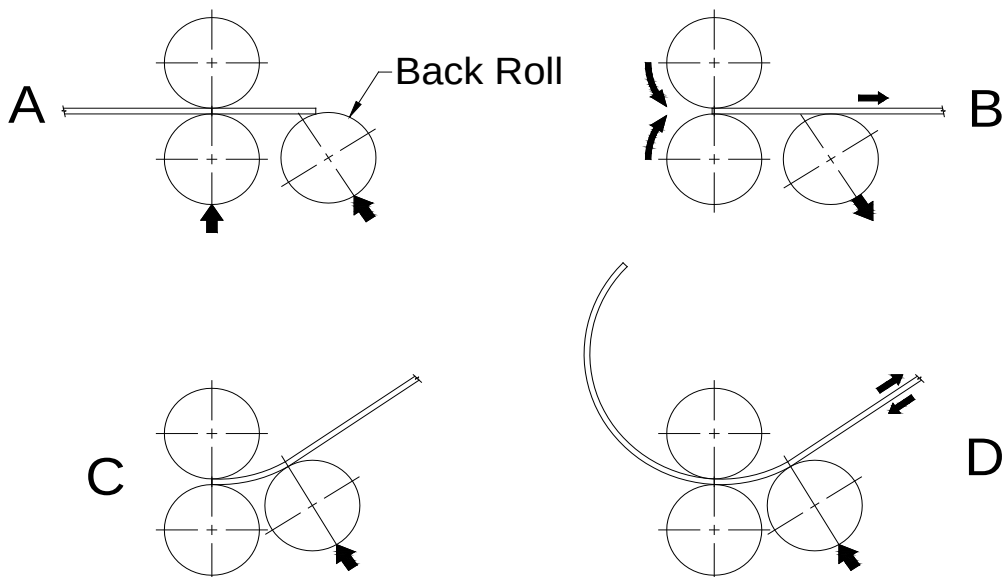
Pre-Bending and Finish Rolling

PRE-BENDING is the operation where the ends of the material are bent to the same radius as that of the finished piece. This principle is used to get the best results in full circle bending.

Before bending, do the following:

- Clean any dust or grease from the material.
- Make sure the edges of the material are free of chips and burrs.
- Check that the material is flat.
- Have a template of the finished diameter to compare with.
- Always work in the center of the rolls.

1. Move the back roll into position as in view "A".
2. Insert the piece part in between the upper roll and the bottom (pinch) roll and lying on the back roll.
3. Adjust the bottom roll up by turning the handwheel clockwise (**cw**) to firmly hold the piece part.
4. Depress the left footswitch so that the piece part travels to the other side as in (fig. B).
5. Move up the back roll a little at a time to start pre-bending the piece part. (fig. C).
6. Alternate pressing the left and right foot pedals to roll the piece part until you reach the required diameter as in (fig. D).





Removing the Rolled Piece Part



CAUTION: To avoid Operator Injury or Machine Damage **NEVER** run the machine while the roll is pivoted out.

1. Press or pull on the safety stop cable to de-energize the motor.
2. Turn the handwheel clockwise (**cw**) to lower the bottom (pinch) roll.
3. Pull up on the lock pin to release from the locking disc.
4. Pivot the lock disc handle up and use to rotate the locking disc counterclockwise (**ccw**).
5. When the flats on the disc are horizontal, grasp the roll handle (fig. 19) and pivot the top roll out.
6. While the top roll is pivoted out, the limit switch shown in (fig. 20) prevents the machine from running.
7. Grasp the formed piece part and slide off of the top roll.
8. Return the roll and lock into position.



Note: Make sure the lock pin is fully seated in the disc.



figure 18



figure 19



figure 20

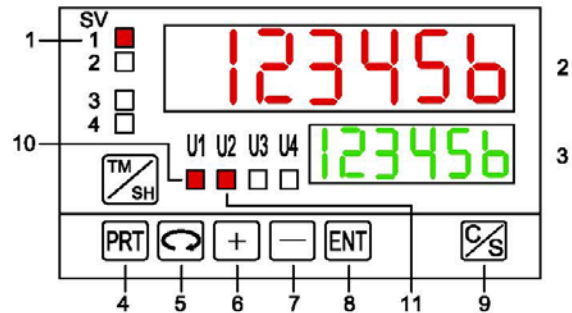


G-B DIGITAL LIMITED MOVING CONTROLLER

G-B DIGITAL LIMITED CONTROLLER MANUAL

I. 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. Input button.
9. Cancels existing value button.
10. Output lamp 1.
11. Output lamp 2.



II. Setting Way and Description:

- Press **PRT** button into position setting mode and when setting lamp(SV1) is bright you can 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 value.
- Press **-** button to make the figure flash to decrease value.
- Press **ENT** button to finish input and exit setting mode.
- Press **ENT** & **PRT** buttons into parameter setting mode. Refer to section III, parameter description and the setting values.
- Press **C/S** button to cancel existing value.
- If changing the setting value and don't press **ENT** button within 5 seconds, the system will input it automatically.)

III. Parameter Description:

PARAMETER	FUNCTION	DESCRIPTION	FACTORY VA.	REMARKS
1.	Upper limited value	-99999 ~ 999999	1000	1000
2.	Bottom limited value	-99999 ~ 999999	500	100
3.	Decimal	0 ~ 5	0	0
4.	Ratio value	0.0001 ~ 9.9999	1.0000	0.3777
5.	Outside message Select	0: RETURN 0. 1: RETURN VALUE	0	
6.	Outside return time	0: 0.2S 1:2ms	0	
7.	Panel lock	0: OPEN 1: LOCK PRT BUTTON 2: LOCK C/S BUTTON 3: ALL LOCK	0	

Note:1 Press **ENT** & **PRT** buttons to get into parameter setting mode and press to change parameter number from 1 to 7.

Note:2 When setting lock function, all parameters will be locked.



BENDING ALLOWANCE

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

UNDERSTANDING SPRINGBACK

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

MATERIAL SELECTION



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

When selecting materials keep these instructions in mind:

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



MACHINE ADJUSTMENTS

Drive Chain



CAUTION: Before removing the guards make sure that the power to the machine has been disconnected.

The drive chain on the Baileigh **PR-409** plate roll has been properly adjusted at the factory. Because of the relatively slow rpm of the drive components, there should be minimal wear on the chain.

To tighten the chain:

1. Loosen the (4) carriage bolts holding the motor assembly to the base.
1. Back off the locking nut on the adjusting bolt.
2. Turn the adjusting bolt clockwise (**cw**) to tighten the chain tension. (**DO NOT OVERTIGHTEN**).
3. Re-tighten the lock nut.

To replace the chain or a sprocket, it may be necessary to block up the motor assembly to release the chain tension. **ALWAYS** replace the drive guard before running the machine!!



figure 21



Flow Control

The flow control determines the speed at which the back roll cylinders extend when the **UP** button on the operators pedestal is pressed. Turn the knob counterclockwise (**ccw**) to speed it up, and clockwise (**cw**) to slow it down.



figure 22

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.

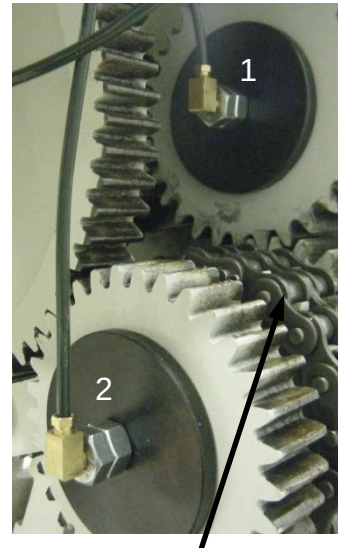
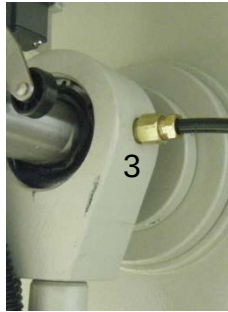
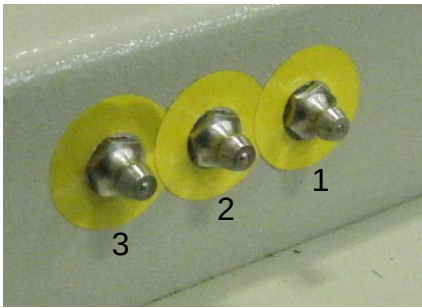
- Check daily for any unsafe conditions and fix immediately.
- Check that all nuts and bolts are properly tightened.
- On a weekly basis clean the machine and the area around it.
- Lubricate threaded components and sliding devices.
- Apply rust inhibitive lubricant to all non-painted surfaces.



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



Locations of Grease Fittings



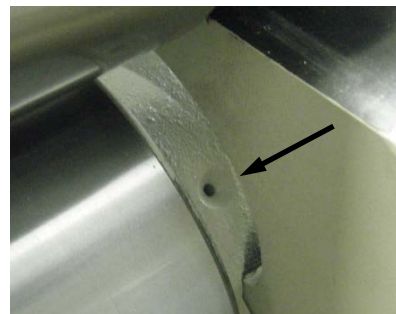
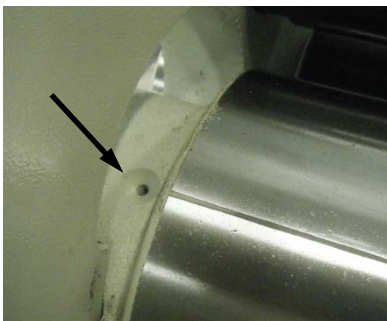
Add grease to the gear bearings without removing the drive guard.

Keep grease on gear teeth and chain.

Add grease to the two 90° Gear drives which control the UP/Down travel of the lower roll.



Apply lubricating oil to roll shafts through the indicated access holes. Oil weekly or more often depending on machine usage.





Hydraulic Oil

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

- Use hydraulic oil #68 SHELL BRAND 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.

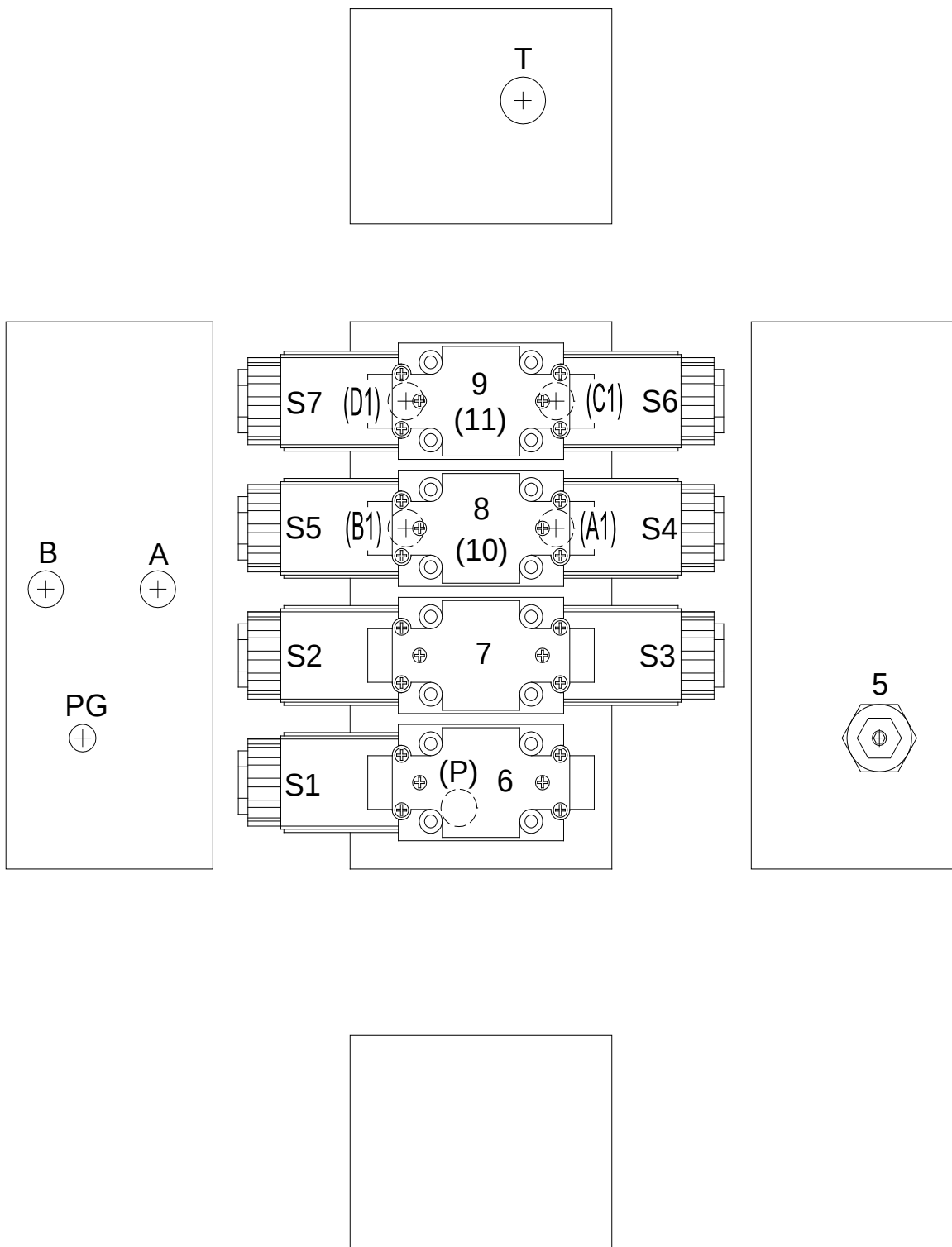
HYDRAULIC TANK



figure 23

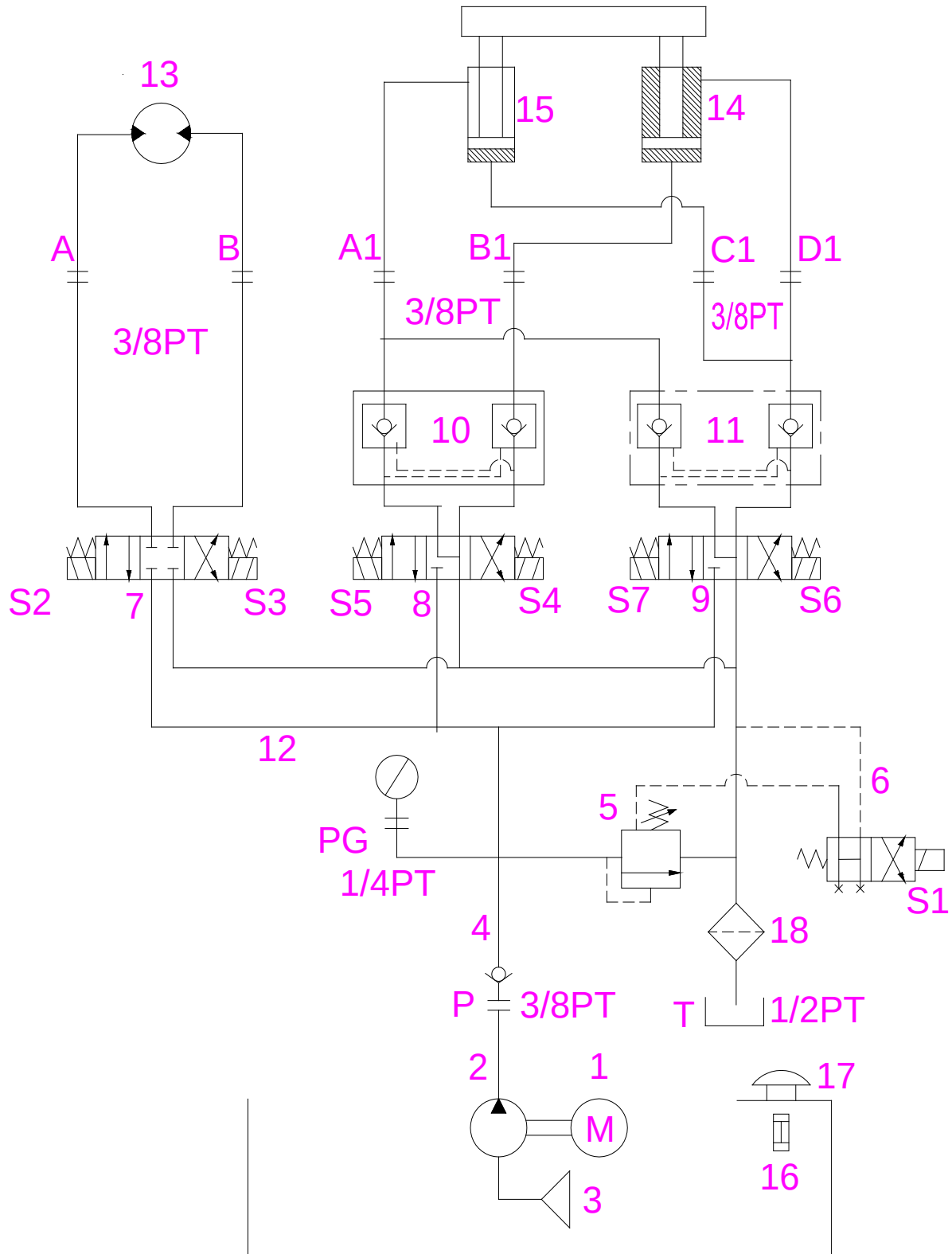


MANIFOLD BLOCK





HYDRAULIC SCHEMATIC





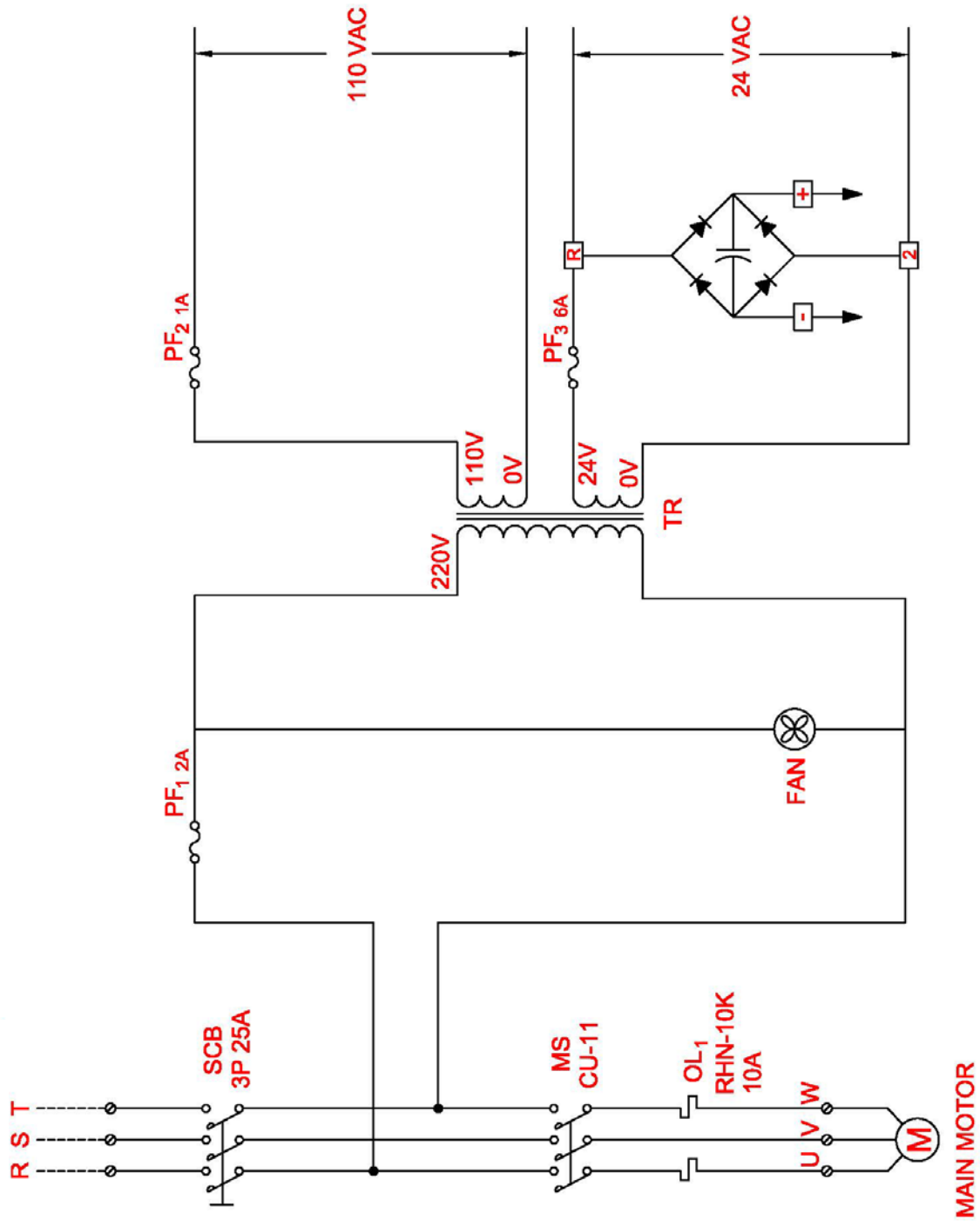
HYDRAULIC PART IDENTIFICATION

M \ S	S 1	S 2	S 3	S 4	S 5	S 6	S 7
Hydraulic Motor	▲	▲					
Hydraulic Motor	▲		▲				
Roll Upper	▲			▲			
Roll Down	▲				▲		
Slope Up	▲					▲	
Slope Down	▲						▲

No.	Description	Part No.
1	Motor (Electric)	2 HP (1.5kw)
2	Pump (Hydraulic)	P206
3	Strainers	MF-8
4	Check Valve	CV-03
5	Relief Valve	RV11A30AL
6	Solenoid Valve	4WE6HA60/EG24
7	Solenoid Valve	4WE6E60/EG24
8	Solenoid Valve	4WE6J60/EG24
9	Solenoid Valve	4WE6J60/EG24
10	Check Valve	MPC-02W
11	Check Valve	MPC-02W
12	Pressure Gauge	AT-63Ø, 250Kg
13	Hydraulic Motor	MLHP160
14	Hydraulic Cylinder	90mmØ
15	Hydraulic Cylinder	80mmØ
16	Oil Level Gauge	LG-3A
17	Air Breather	HY-08
18	Strainer	CG050-P10/70134

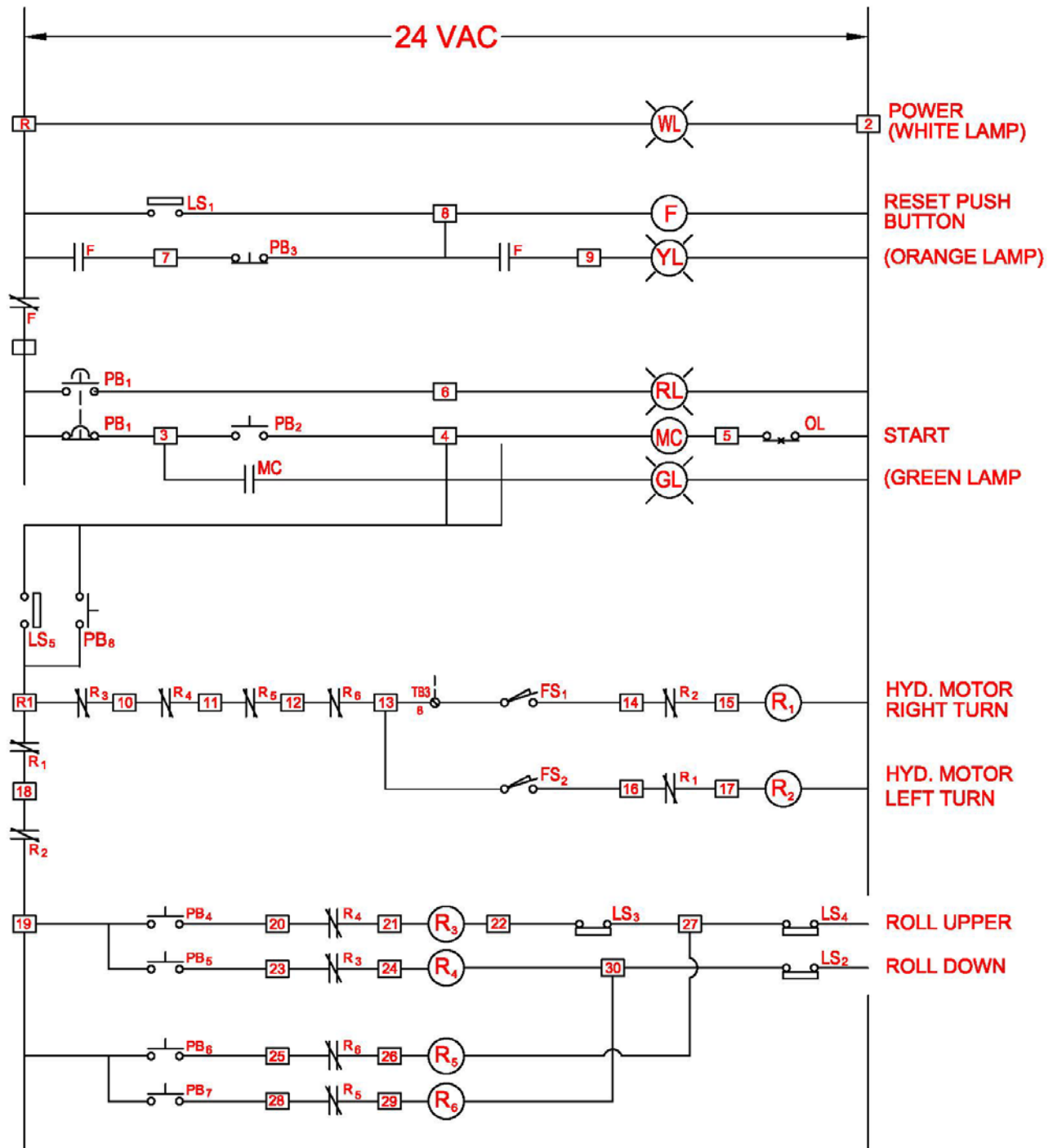


ELECTRICAL SCHEMATIC "A"



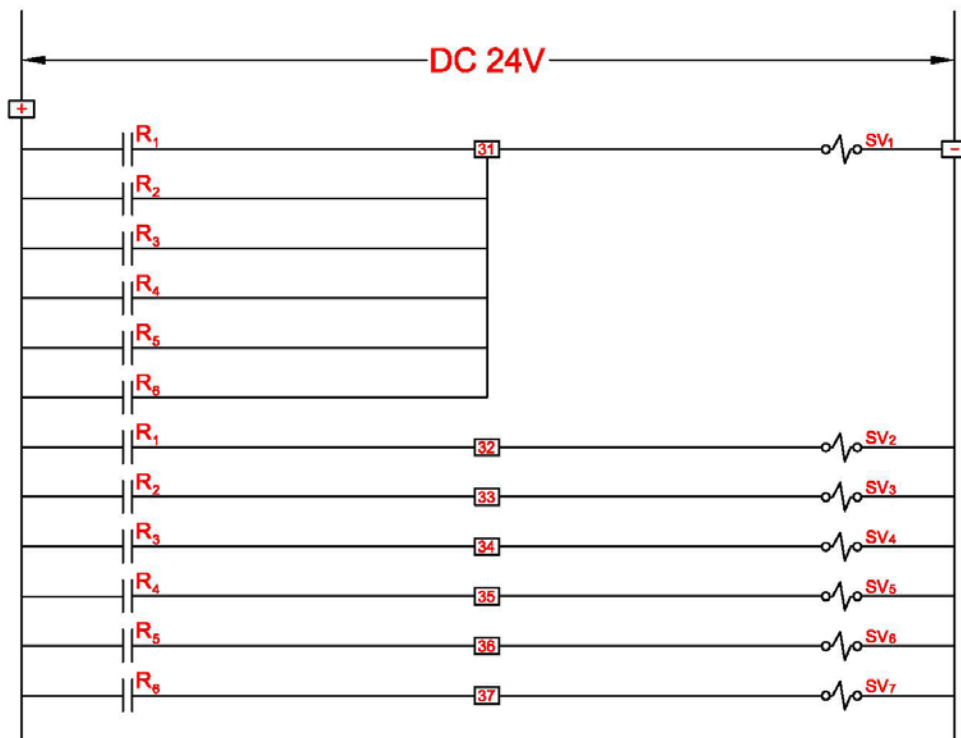
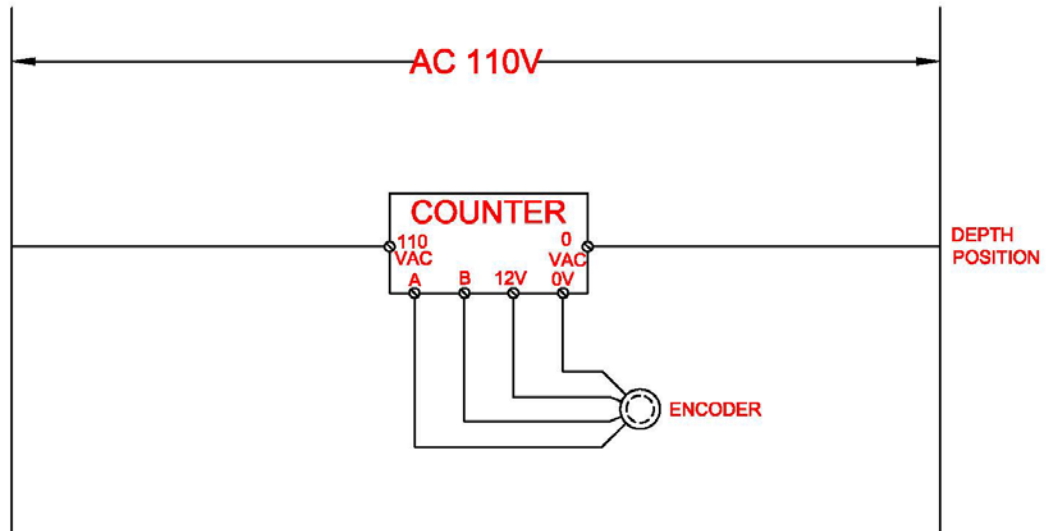


ELECTRICAL SCHEMATIC "B"



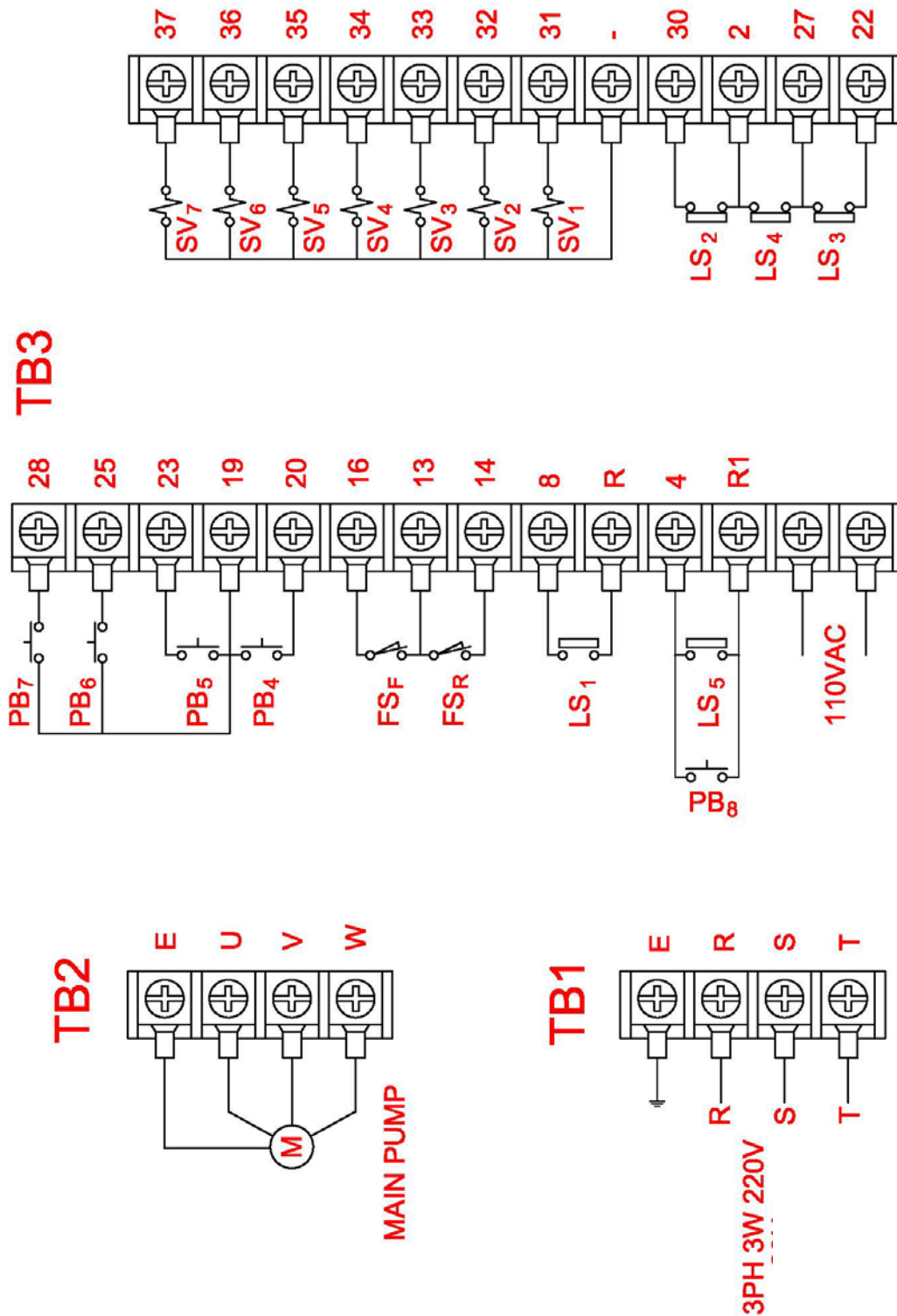


ELECTRICAL SCHEMATIC "C"



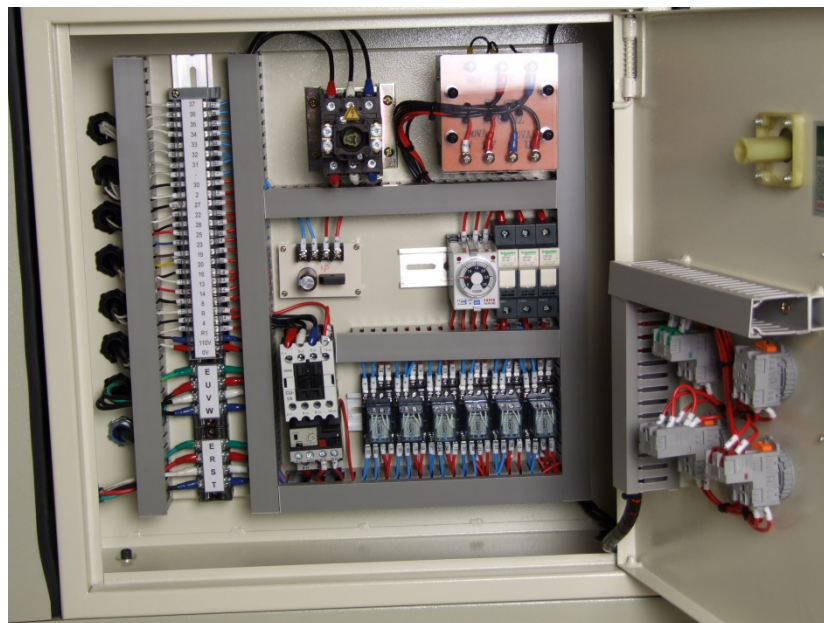
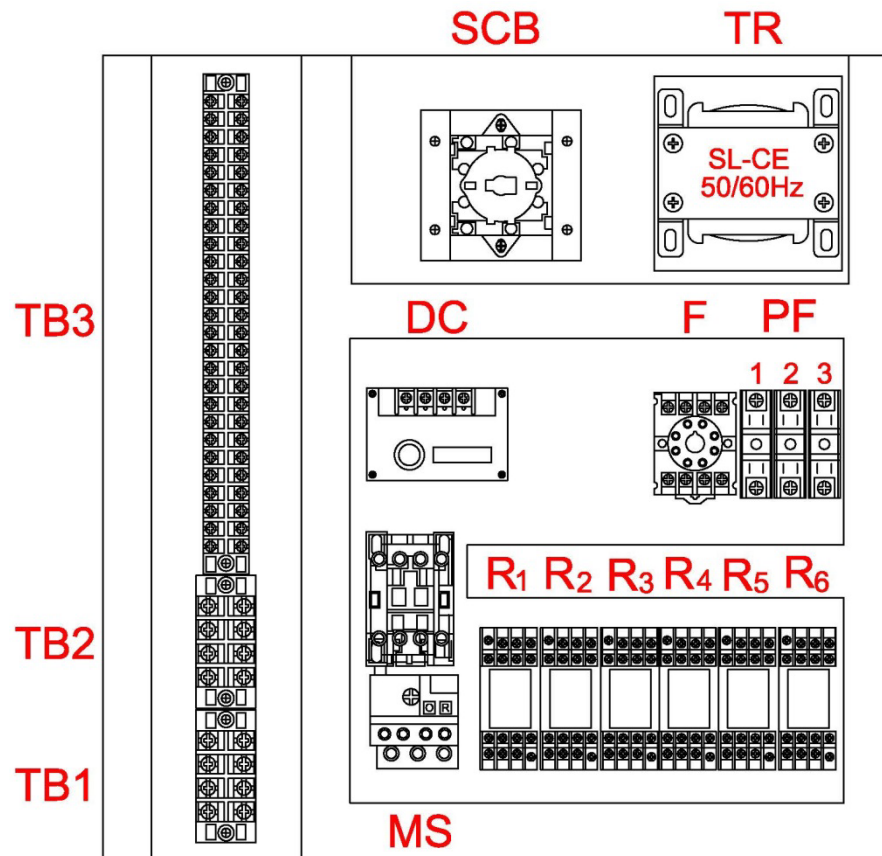


ELECTRICAL TERMINAL ENDS





ELECTRICAL CONTROL PANEL





ELECTRICAL COMPONENT LIST

Item	Identification	Description	Specification
1	SCB	Main Switch	P1-25
2	MS	Magnetic Switch	HUD-11 24VAC 10A
3	TR	Transformer	1Ph, 440-220/24V-110V 100VA
4	PF1-3	Fuses	10 x 38mm 2, 1, 6A
5	DC	Power Supply	DC 24V 8A 2000uf
6	F	Digital Delay Timer	H3-FK-M3
7	R1-R6	Power Relay	MY-4 AC 24V
8	TB1, TB2	Trans. Bus	4P 30A
9	TB3	Trans. Bus	26P 10A
10	WL	Pilot Light	30Ø 24V White
11	PB1, RL	Push Button	30Ø 1A1B Red (LOCK)
12	PB2, GL	Push Button	30Ø 1A 24V GREEN
13	PB3, YL	Push Button	30Ø 1B 24A YELLOW



PARTS LIST

No.	Part Name	Qty.
1	Machine base	1
2	Oil sight gauge	1
3	Electric motor	1
4	Manifold block	1
5	Hydraulic tank	1
6	Hex bolt M14 x 16mm	16
7	Flat washer M14	16
8	Lock washer M14	16
9	Hex nut M14	16
10	Button head socket M6 x 10mm	24
11	Star washer M6	24
12	Drive shroud	1
13	Drive cover	1
14	Rear cover	1
15	Front cover	1
16	Electrical enclosure	1
17	Upper draw bar shaft	1
18	Upper draw bar	1
19	Sleeve	1
20	Hex nut M24	2
21	Flat washer M24	1
22	Side frame – left	1
23	Side frame – right	1
24	Hand wheel	1
25	Upper roll handle	1
26	Hex socket bolt M6 x 24mm	2
27	Lock pin assembly	1
28	Right angle lube fitting	2
29	Hex nut M16	2
30	Idle gear spacer	2
31	Sliding bushing	3
32	Gear	2
33	Roller chain	1



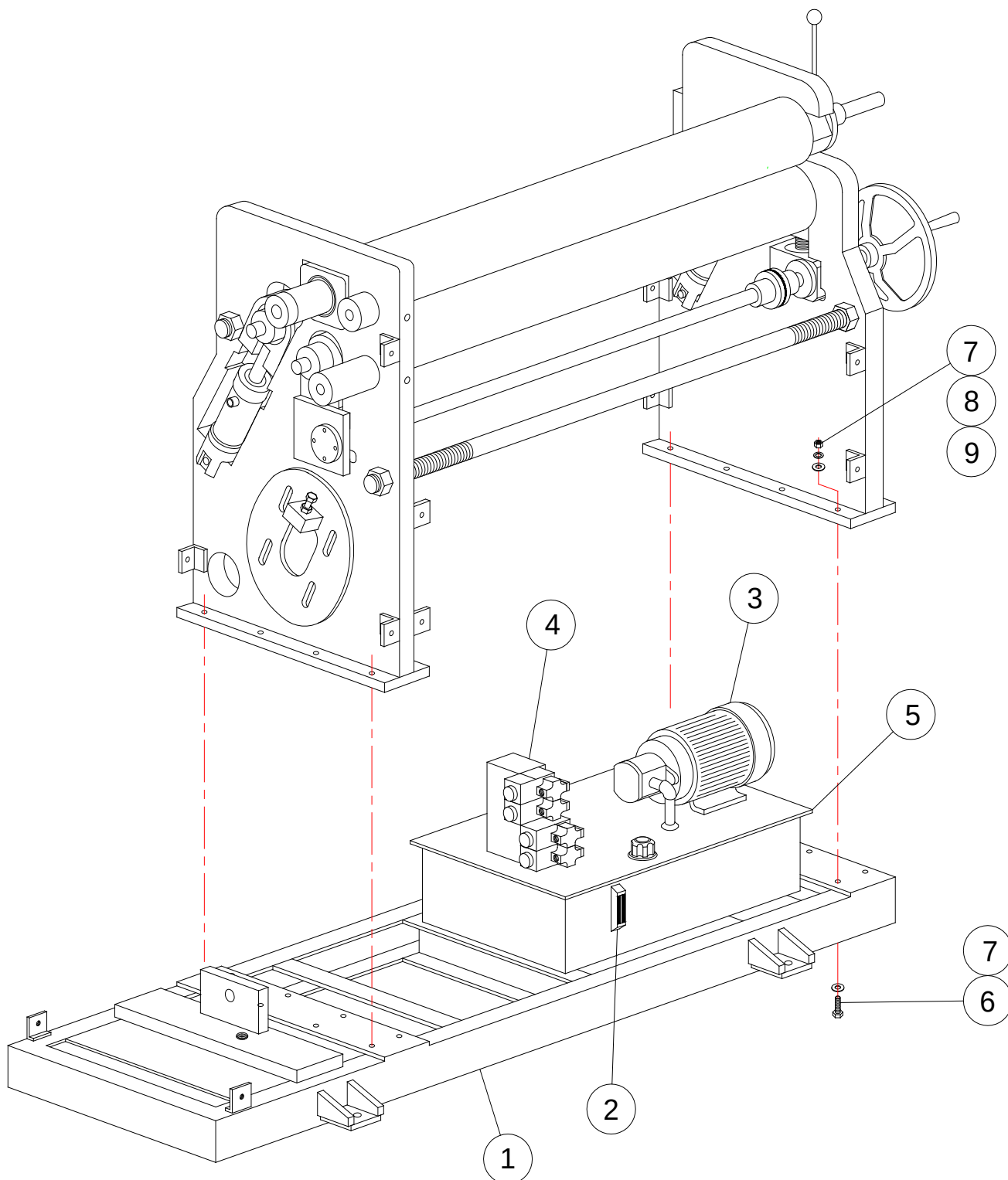
No.	Part Name	Qty.
34	Key	1
35	Sprocket	1
36	Sleeve	1
37	Hex bolt M16 x 60mm	4
38	Flat washer M16	4
39	Reducer	1
40	Hex nut M16	4
41	Flat washer M16	4
42	Hydraulic motor	1
43	Sprocket gear	1
44	Locking washer	1
45	Spacer	1
46	Gear	1
47	Hex socket bolt M10	3
48	Flat washer M10	3
49	Bearing	1
50	Gear connect block	1
51	Gear	1
52	Gear	1
53	Connect block pin	1
54	Gear connect block	1
55	Gear	1
56	Hydraulic cylinder connect pin	1
57	Hydraulic cylinder assembly	1
58	Reducer assembly	1
59	Hex nut M40 x 1.5	8
60	Balance bar	2
61	Roller rotate block	1
62	Key	1
63	Coupling sleeve	1
64	Coupling	1
65	Back roll	1
66	Upper roll	1
67	Lower (pinch) roll	1
68	Upper roll end piece	1



No.	Part Name	Qty.
69	Cylinder guard	1
70	Fitting nut M16	2
71	Hex nut M20	4
72	Hex bolt M20 x 70mm	4
73	Levelling pad	4
74	Reducer connect bar	1

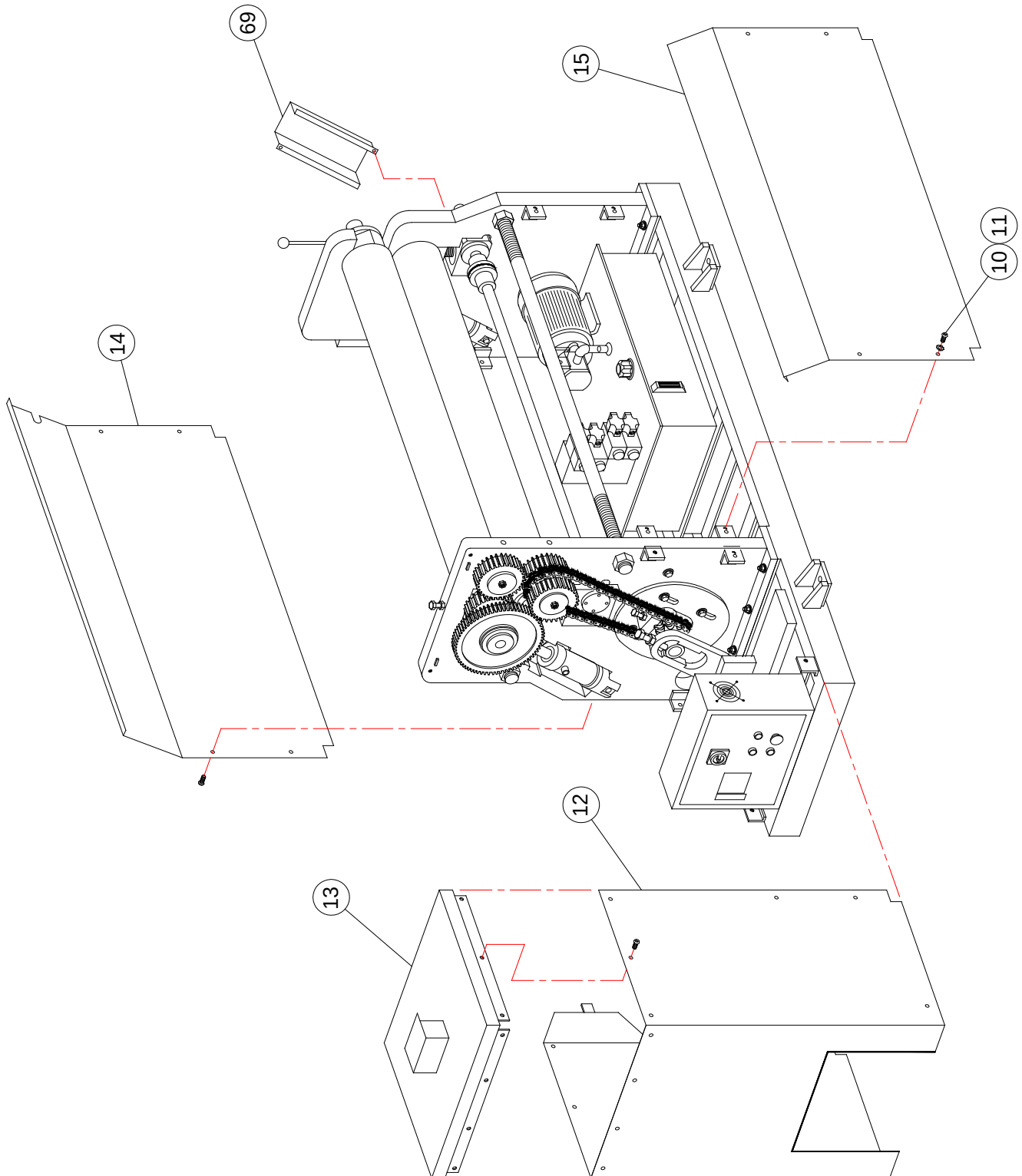


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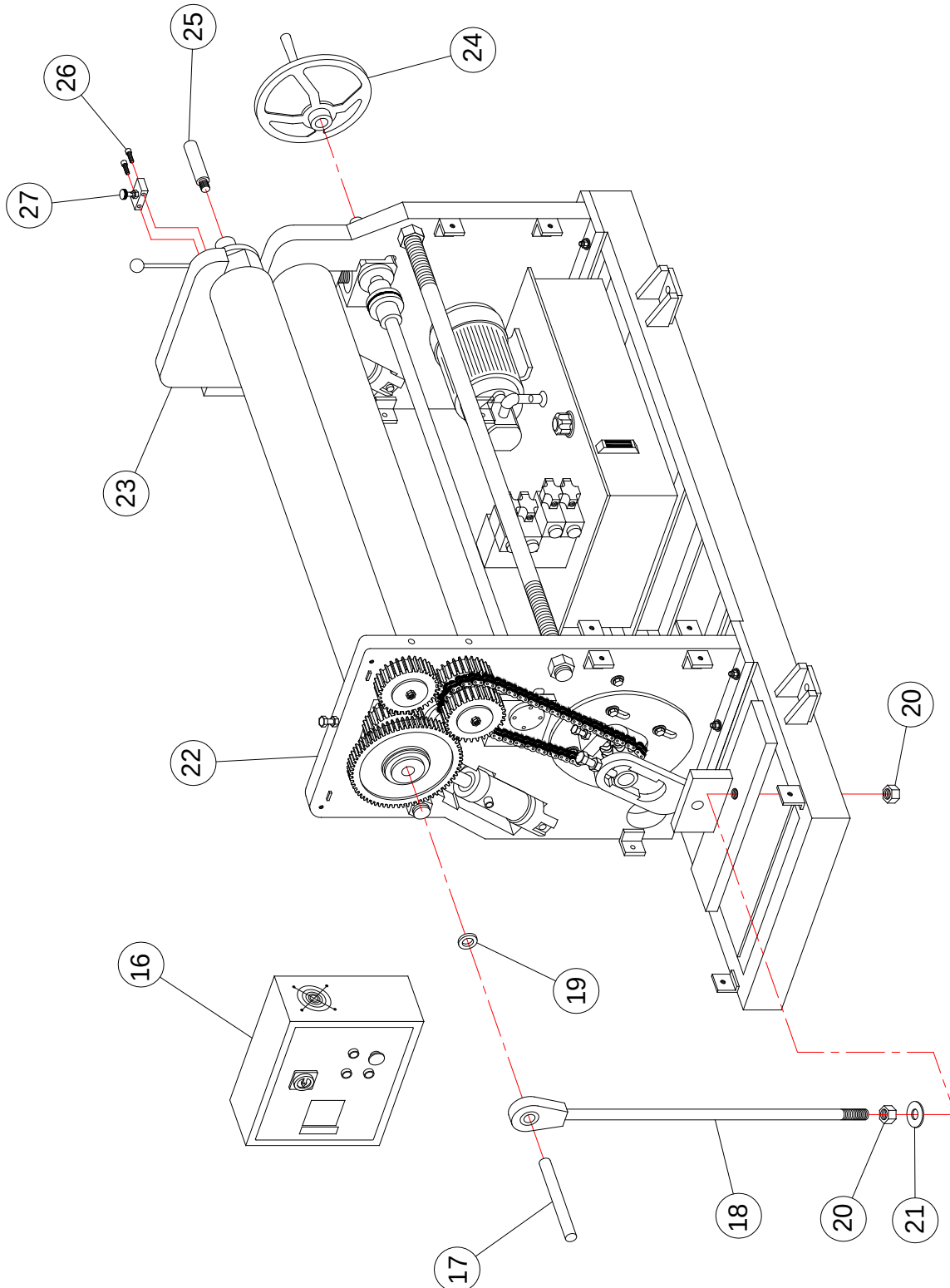


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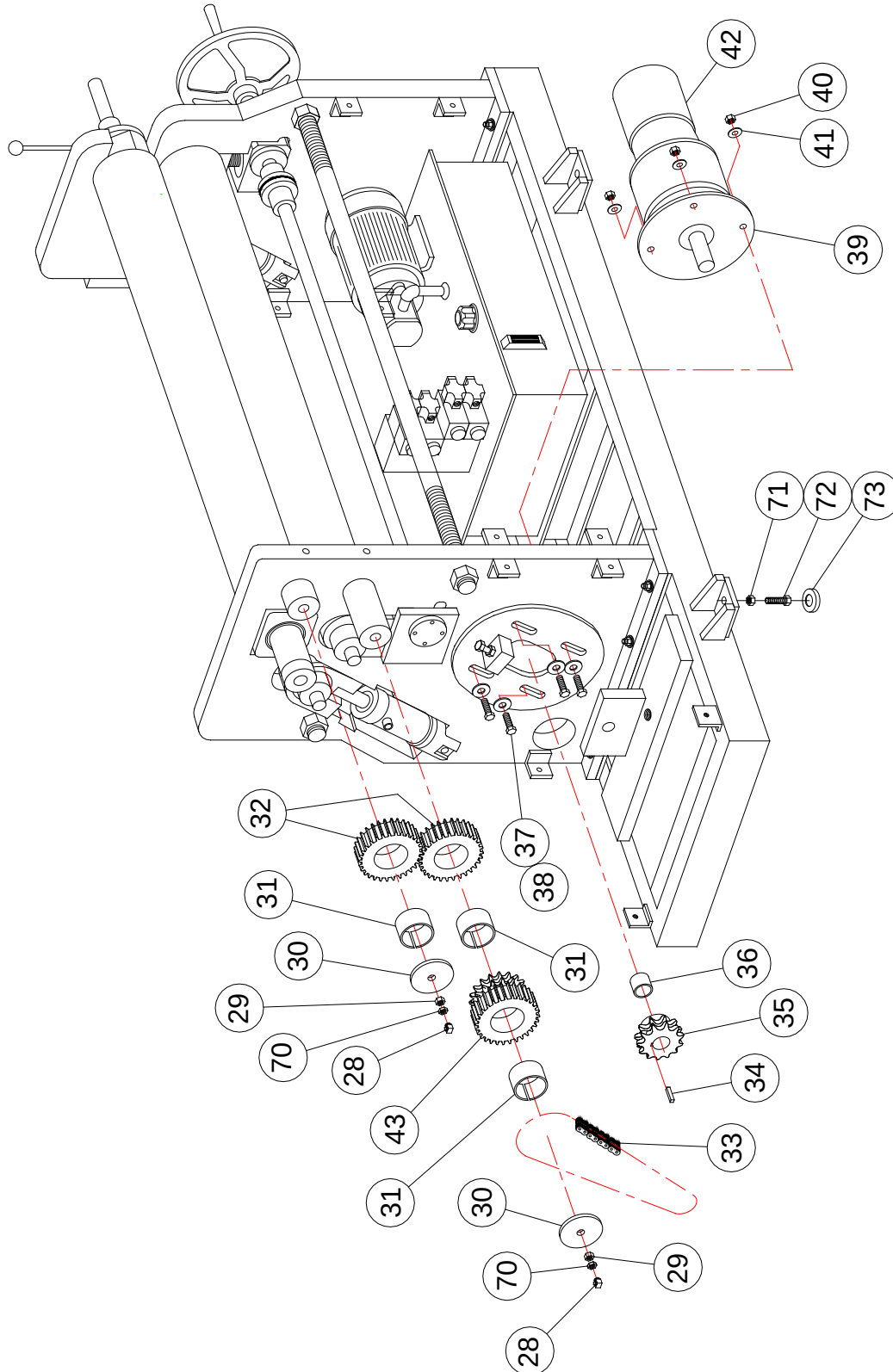


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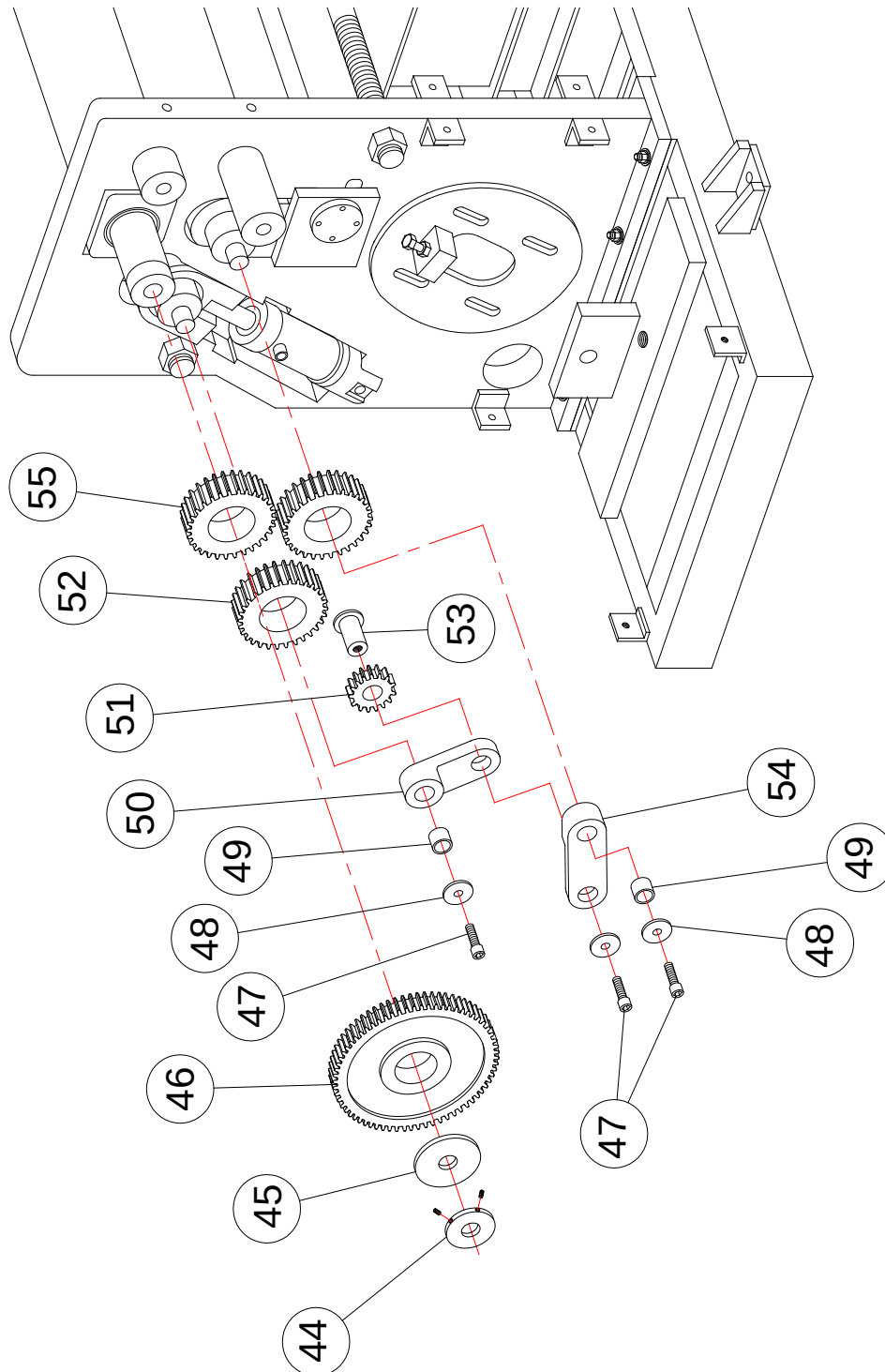


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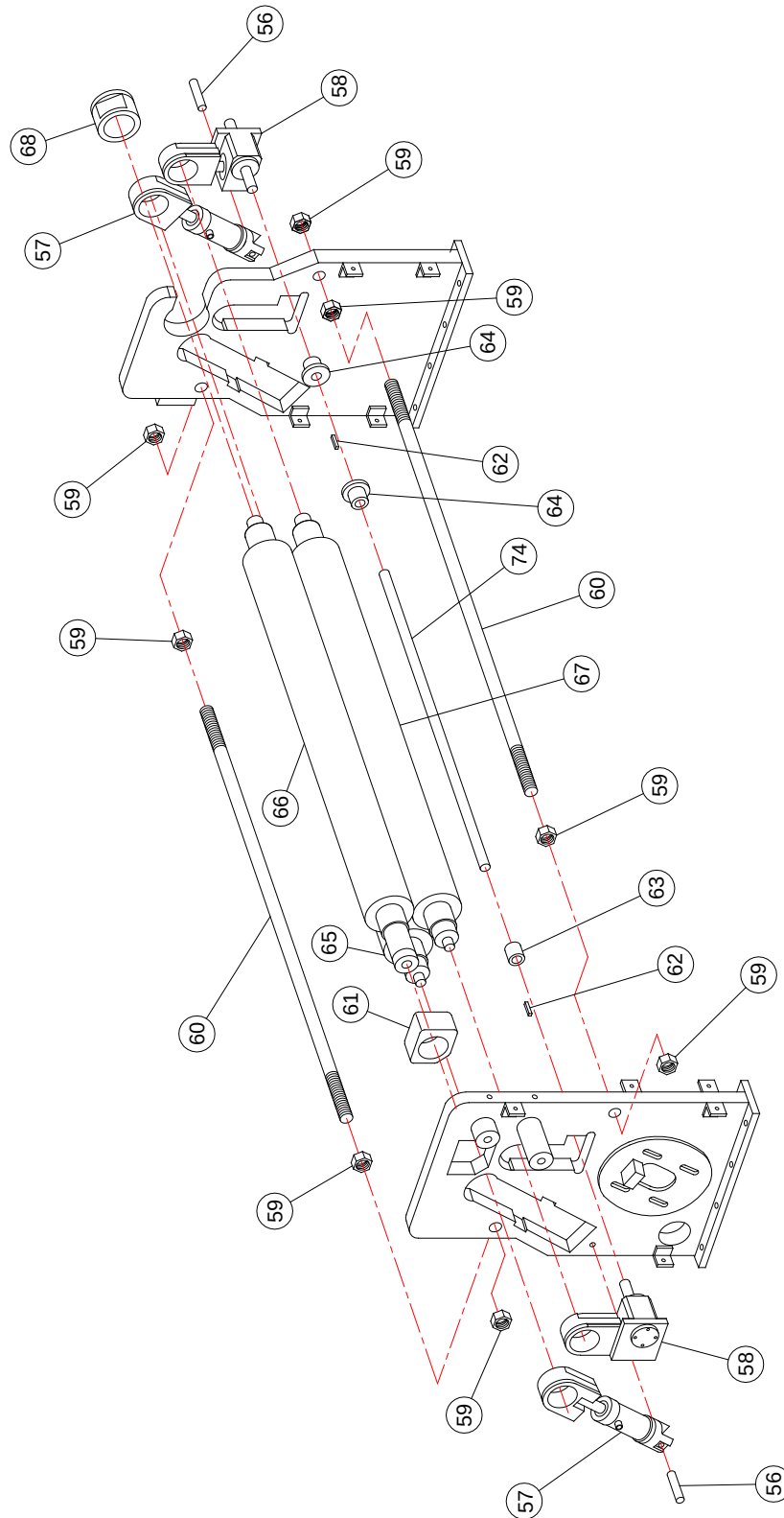


PARTS IDENTIFICATION DRAWING "E"





PARTS IDENTIFICATION DRAWING "F"





NOTES



BAILEIGH INDUSTRIAL, INC. 1625 DUFEEK DRIVE MANITOWOC, WI 54220

PHONE: 920. 684. 4990 FAX: 920. 684. 3944

www.BAILEIGH.com

BAILEIGH INDUSTRIAL, INC. 1455 S. CAMPUS AVENUE ONTARIO, CA 91761

PHONE: 920. 684. 4990 FAX: 920. 684. 3944

BAILEIGH INDUSTRIAL LTD. UNIT 1 FULLWOOD CLOSE

ALDERMANS GREEN INDUSTRIAL ESTATE

COVENTRY, CV2 2SS UNITED KINGDOM

PHONE: +44 (0)24 7661 9267 FAX: +44 (0)24 7661 9276

WWW.BAILEIGHINDUSTRIAL.CO.UK

BAILEIGH INDUSTRIAL GMBH HOFENER STRASSE 64

70736 FELLBACH

DEUTCHSLAND

WWW.BAILEIGHINDUSTRIAL.DE