OPERATOR'S MANUAL

Metal Working

HYDRAULIC POWERED ROLL BENDER

MODEL: R-H85

Baileigh Industrial Holdings LLC
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THANK YOU & WARRANTY

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

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

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

Limited Warranty. Seller warrants to the original end-user that the Goods manufactured or provided by Seller under this Agreement shall be free of defects in material or workmanship for a period of twelve (12) months from the date of purchase, provided that the Goods are installed, used, and maintained in accordance with any instruction manual or technical guidelines provided by the Seller or supplied with the Goods, if applicable. The original end-user must give written notice to Seller of any suspected defect in the Goods prior to the expiration of the warranty period. The original end-user must also obtain 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 10 days from date of receipt. The foregoing warranty is Seller's sole obligation, and the original end-user's exclusive remedy, with regard to any defective Goods. This limited warranty does not apply to: (a) die sets, tooling, and saw blades; (b) periodic or routine maintenance and setup, (c) repair or replacement of the Goods due to normal wear and tear, (d) defects or damage to the Goods resulting from misuse, abuse, neglect, or accidents, (f) defects or damage to the Goods resulting from improper or unauthorized alterations, modifications, or changes; and (f) any Goods that has not been installed and/or maintained in accordance with the instruction manual or technical guidelines provided by Seller.

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

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

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

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

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

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

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

Governing Law/Venue. This Agreement shall be construed and governed under the laws of the State of Wisconsin, without application of conflict of law principles. Each party agrees that all actions or proceedings arising out of or in connection with this Agreement shall be commenced, tried, and litigated only in the state courts sitting in Manitowoc County, Wisconsin or the U.S. Federal Court for the Eastern District of Wisconsin. Each party waives any right it may have to assert the doctrine of "forum non 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 Holdings LLC makes every effort to ensure that our posted specifications, images, pricing and product availability are as correct and timely as possible. We apologize for any discrepancies that may occur. Baileigh Industrial Holdings LLC reserves the right to make any and all changes deemed necessary in the course of business including but not limited to pricing, product specifications, quantities, and product availability.

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

INTRODUCTION

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

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

In this manual you will find: (when applicable)

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

GENERAL NOTES

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

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

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

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

IMPORTANT

PLEASE READ THIS OPERATORS MANUAL CAREFULLY

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

SAFETY INSTRUCTIONS

LEARN TO RECOGNIZE SAFETY INFORMATION

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

Follow recommended precautions and safe operating practices.

UNDERSTAND SIGNAL WORDS

A signal word – **DANGER**, **WARNING**, or **CAUTION** – is used with the safety alert symbol. **NOTICE**, which is not related to personal injury, is used without a symbol.

DANGER: Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING: Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

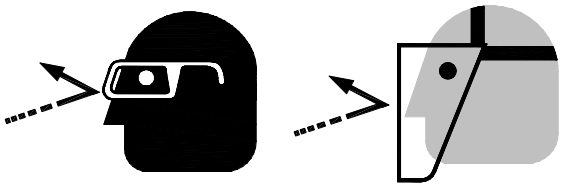
CAUTION: Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE: Indicates a situation which, if not avoided, could result in property damage.

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

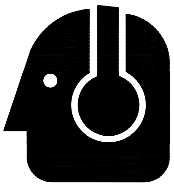
PROTECT EYES

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



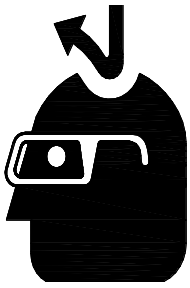
PROTECT AGAINST NOISE

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.



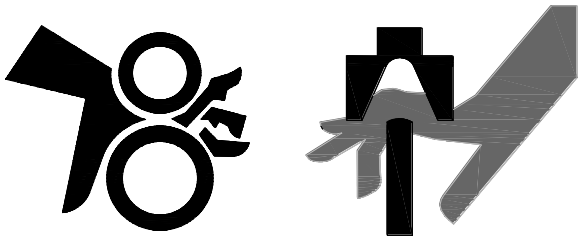
KEEP CLEAR OF MOVING OBJECTS

Always be aware of the position of the material before, during, and after the bend. The material will swing and move during the bending process which can cause serious body or head injuries.



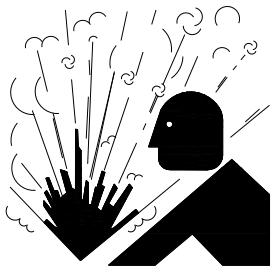
BEWARE OF PINCH POINTS AND CRUSH HAZARD

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

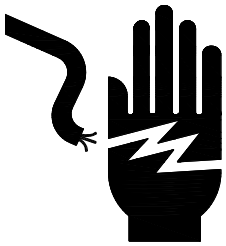


HYDRAULIC HOSE FAILURE

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



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 will not make up for poor judgment, carelessness or inattention. **Always use common sense** and exercise **caution** in the workshop. If a procedure feels dangerous, don't try it.
REMEMBER: Your personal safety is your responsibility.

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

Dear Valued Customer:

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

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

1. **FOR YOUR OWN SAFETY, READ INSTRUCTION MANUAL BEFORE OPERATING THE MACHINE.** Learn the machine's application and limitations as well as the specific hazards.
2. **Only trained and qualified personnel can operate this machine.**
3. **Make sure guards are in place and in proper working order before operating machinery.**
4. **Remove any adjusting tools.** Before operating the machine, make sure any adjusting tools have been removed.
5. **Keep work area clean.** Cluttered areas invite injuries.
6. **Overloading machine.** By overloading the machine you may cause injury from flying parts. **DO NOT** exceed the specified machine capacities.
7. **Dressing material edges.** Always chamfer and deburr all sharp edges.
8. **Do not force tool.** Your machine will do a better and safer job if used as intended. **DO NOT** use inappropriate attachments in an attempt to exceed the 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. 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.
22. **DO NOT** bypass or defeat any safety interlock systems.
23. 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, Phone: 920.684.4990, or Fax: 920.684.3944.

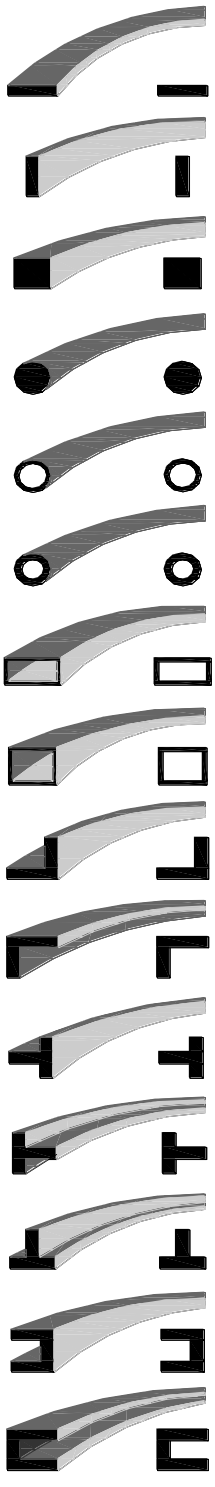
***Note**: The photos and illustrations used in this manual are representative only and may not depict the actual color, labeling or accessories and may be intended to illustrate technique only.*
***Note:** The specifications and dimensions presented here are subject to change without prior notice due to improvements of our products.*

TECHNICAL SPECIFICATIONS

Roll Adjustment	Bottom Rolls - Hydraulic
Shaft Diameter	3.15" (81mm)
Lower Roll Dia.	9.65" (245mm)
Roll Speed	Variable 0-4.2rpm
Pinch	Double
Digital Readout	Yes
Working Hydraulic Pressure	2900psi (200bar)
Oil Capacity	9.25gal (35L)
Power	220V / 3p / 60hz
Motor	10.5hp (7.8kw) 220V / 3p / 60hz / 28A
Shipping Weight	3550lbs. (1610kg)
Shipping Dimensions (L x W x H)	63" x 62" x 77" (1600 x 1575 x 1728mm)
Based on a material tensile strength of	*60000 PSI – mild steel

BENDING CAPACITIES

Material Type
All Specs based on 60,000 PSI (42 Kg/mm^2) Tensile Strength – Mild Steel.

			Profile dim. (max.)	Bend Ø (min.)
●	1		3.937" x .787"	82.67"Ø
●	2		4.724" x 1.181"	23.62"Ø
●	3		1.771" x 1.771"	39.37"Ø
●	4		2.362"Ø	39.37"Ø
●	5		3.937"Ø x .118"	118.11"Ø
●	6		3.50" x .157"	63.00"Ø
● ●	7		3.937" x 1.574" x .125"	118.11"Ø
● ●	8		2.755" x 2.755" x .157"	118.11"Ø
● ●	9		3.149" x 3.149" x .314"	63.00"Ø
● ●	10		3.149" x 3.149" x .314"	78.74"Ø
● ●	11		3.149" x 3.149" x .314"	55.11"Ø
● ●	12		3.149" x 3.149" x .314"	55.11"Ø
● ●	13		—	
● ●	14		C5 x 9.0#	47.24"Ø
● ●	15		C5 x 9.0#	47.24"Ø

● Standard rolls
● Special rolls

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.

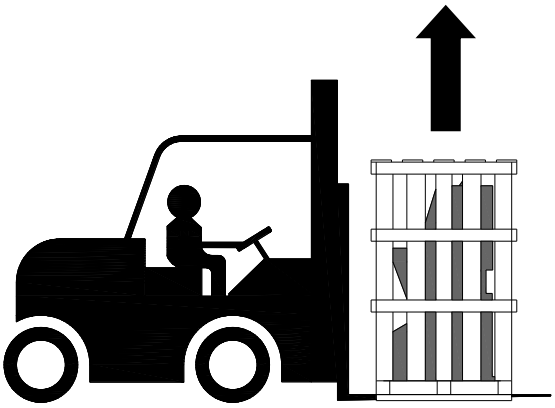
Important: *This waxy coating is **NOT** a lubricant and will cause the machine to stick and lose performance as the coating continues to dry.*

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 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.

Follow these guidelines when lifting 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.

INSTALLATION

IMPORTANT:

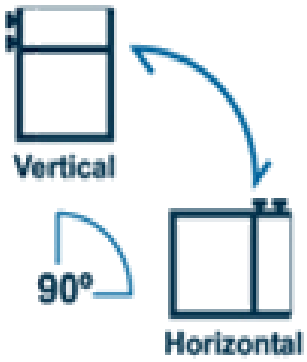
Consider the following when looking for a suitable location to place the machine:

- 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.

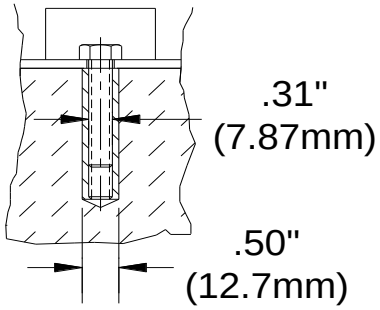
To set the machine in a horizontal position:

1. Lift the machine using the lift hook on the top of the machine.
2. Use care to prevent the machine from swinging when lifted.
3. Lower until machine base contacts floor then carefully lay it on its back.



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

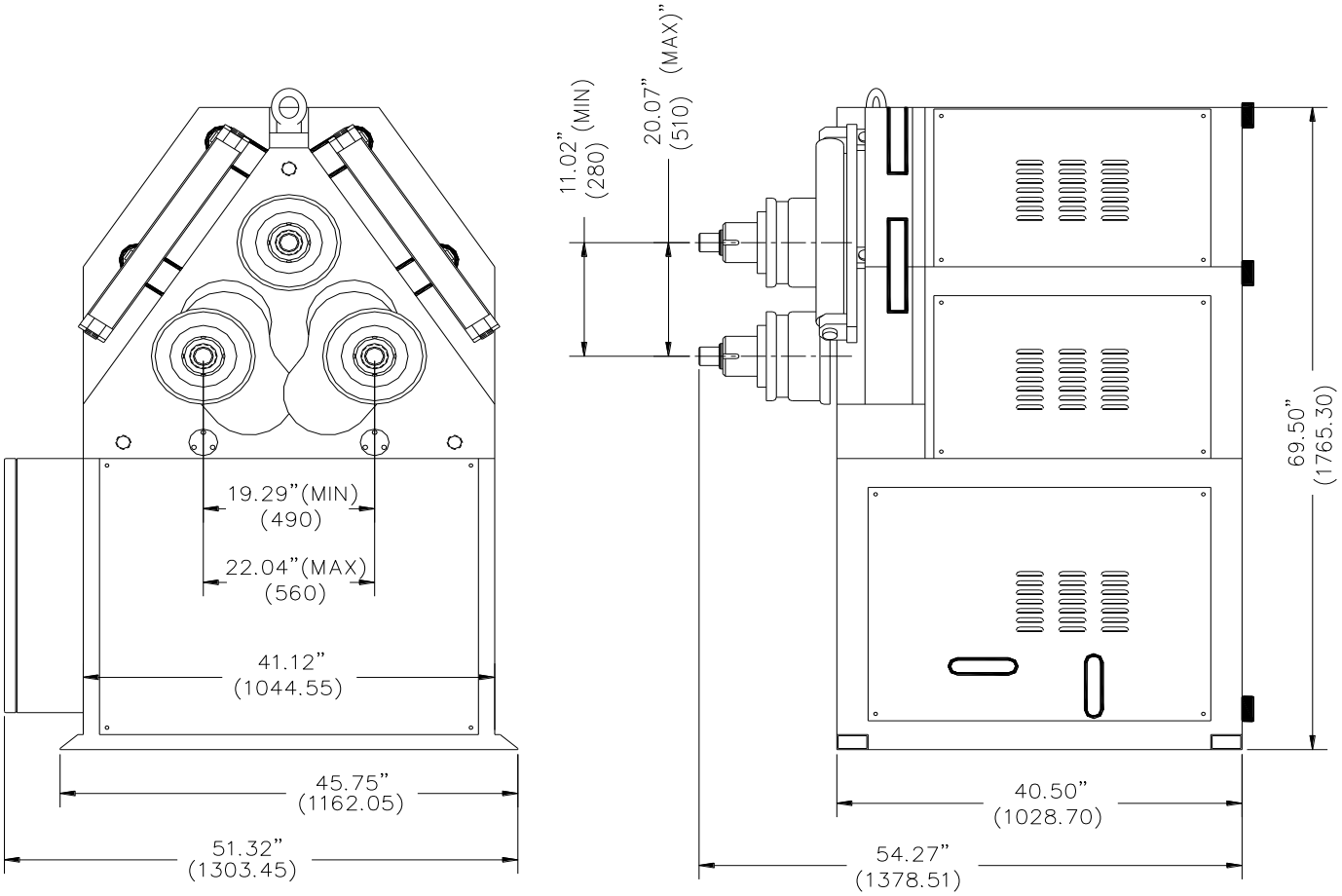
The hydraulic oil is the primary medium for transmitting pressure and also must lubricate the running parts of the pump.

After installation of the machine and before machine startup, bring the oil level up to 90% of capacity. Verify that any cylinder rams are is 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.

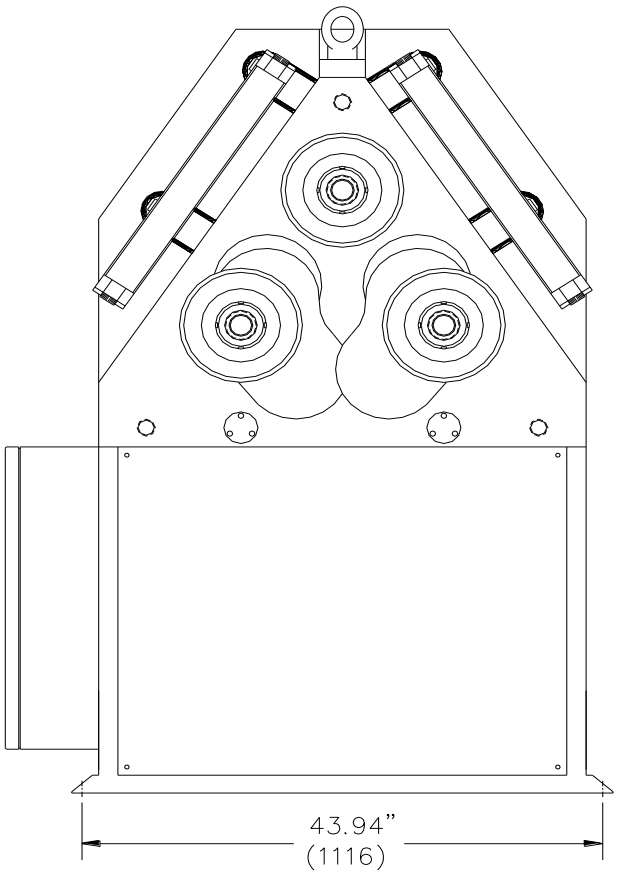
A shortage of hydraulic oil can cause hydraulic system breakdown and damage to major mechanical parts due to overheating.

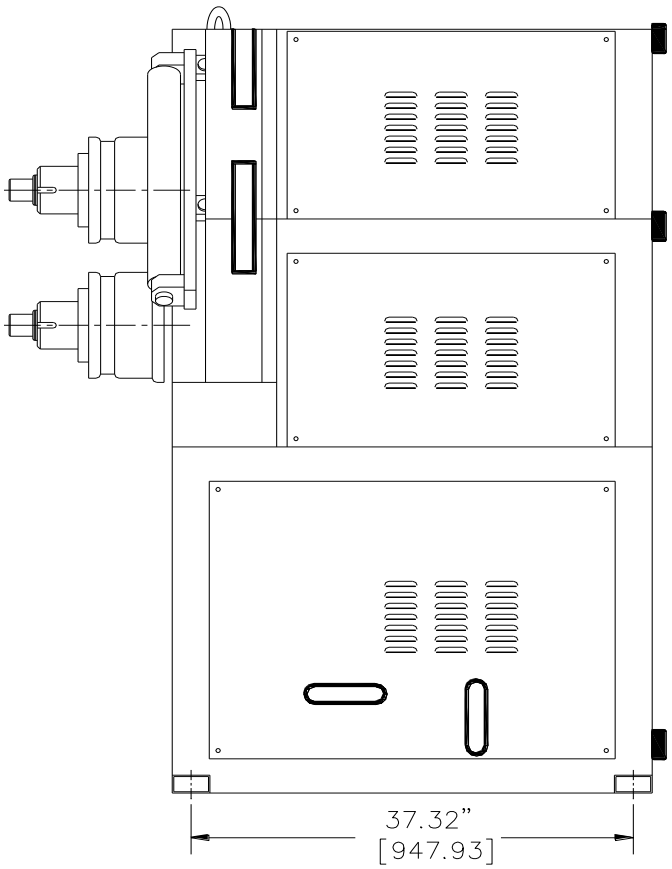
- Once the machine has been placed on its intended location, remove the right side panel and fill the hydraulic tank with oil to the full line on the sight gauge.
- Install the side panel.

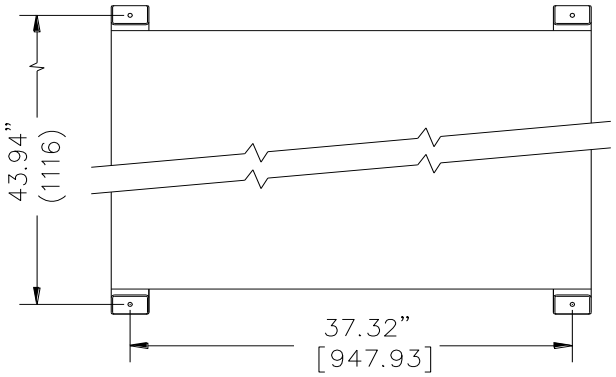
FOUNDATION AND MAIN DIMENSIONS



Note: Place machine on a flat, preferably concrete surface capable of adequately supporting its weight.


43.94”
(1116)

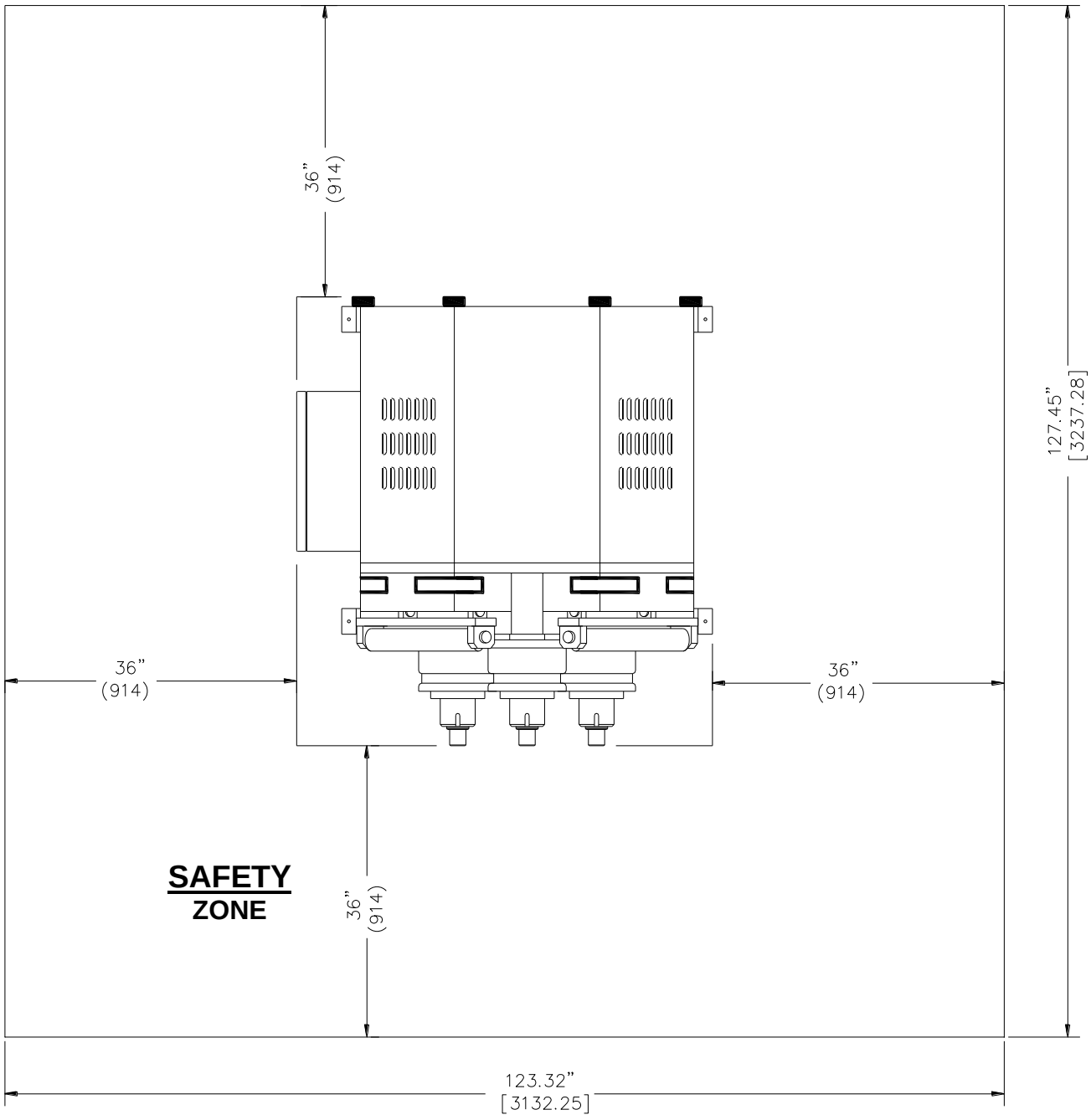

37.32”
[947.93]


43.94”
(1116)
37.32”
[947.93]

WORKING CLEARANCE

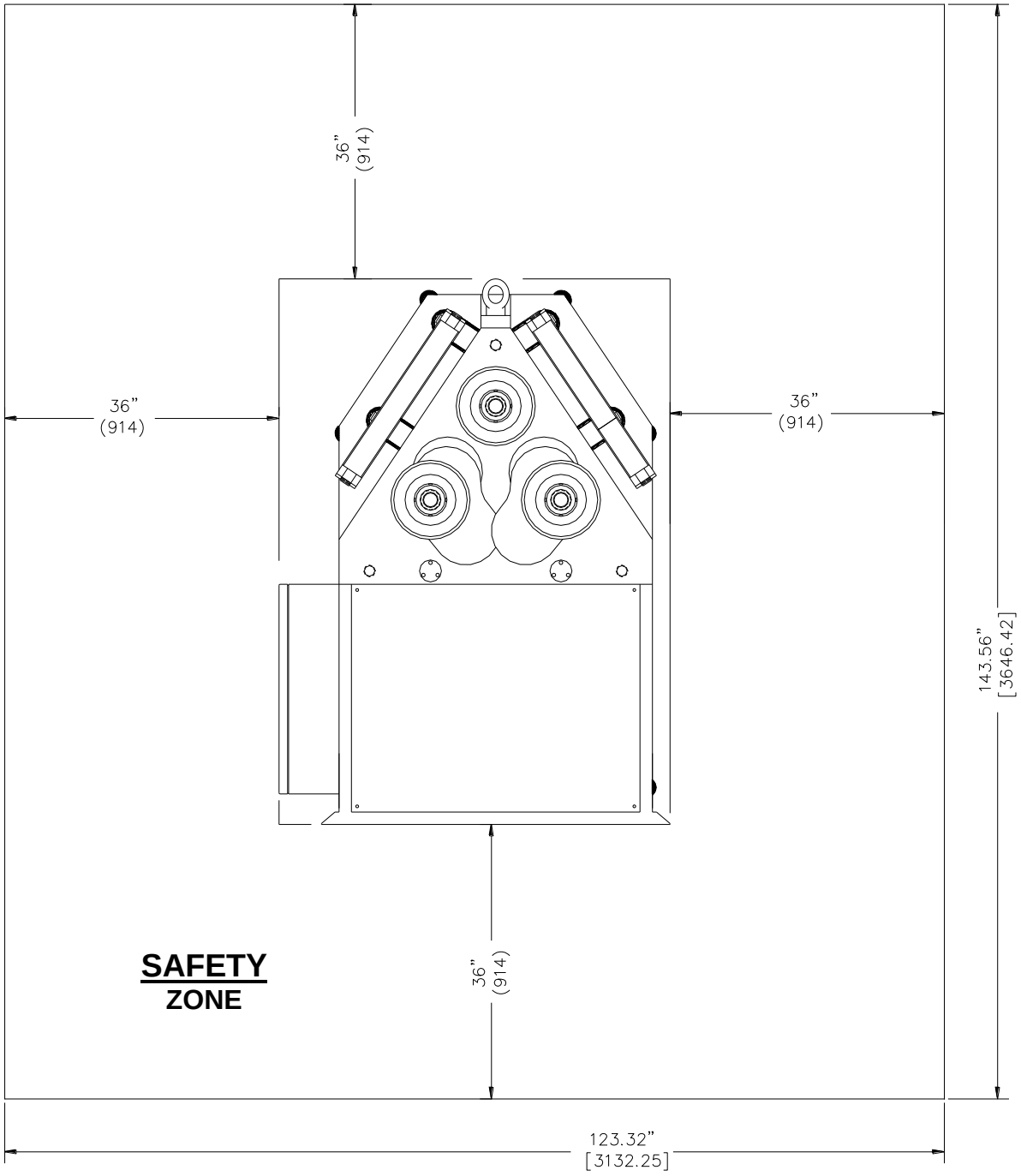
CAUTION: ALL UNAUTHORIZED PERSONNEL MUST STAY BEYOND A DESIGNATED 3-FT SAFETY ZONE.

Vertical Position



⚠ CAUTION: ALL UNAUTHORIZED PERSONNEL MUST STAY BEYOND A DESIGNATED 3-FT SAFETY ZONE.

Horizontal Position



ELECTRICAL

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

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

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

Power 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 ±5%, and for the frequency is ±1%.

Considerations

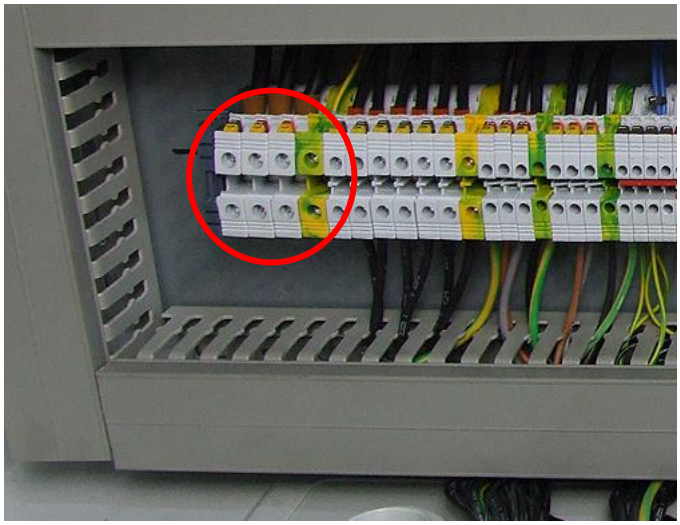
- Observe local electrical codes when connecting the machine.
- The circuit should be protected with a time delay fuse or circuit breaker with a amperage rating slightly higher than the full load current of machine.
- A separate electrical circuit should be used for your tools. Before connecting the 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.

Power Cord Connection

1. Unlock and open the electrical enclosure door.
2. Route the power cord into the electrical cabinet.
    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 is a way that does NOT create a trip hazard.
3. Locate the input terminals at the far left end of the terminal strip. They are labeled as **L1, L2, & L3**. The ground terminal is labeled as **PE**.
4. Connect the three power wires terminals **L1, L2, & L3**. Connect the ground wire (typically green) to the **PE** terminal.
5. Check that the power cord has not been damaged during installation.



Console Connection and Rotation Check

1. Close the electrical enclosure door.
2. Connect the communication cord from the console to the connector (A) located at the front of the electrical cabinet.
3. IMPORTANT: MAKE SURE area around rolls is free from any obstructions.

4. With power connected turn the main disconnect on the electrical cabinet to ON. The power light will be illuminated.
5. Verify that the emergency stop button is in the operational position.
6. Press the start button to start the pump.
7. Actuate the left roll guide lever (E) to the up position to raise the roll guide. The left roll guide should raise up.
8. Step on the left foot pedal and confirm that the bottom rolls rotate to the left, counterclockwise (ccw). Step on the right foot pedal and confirm bottom rolls rotate to the right clockwise (cw).
9. If not, disconnect power to the machine, and switch the L1 and L3 wires. **DO NOT** move the ground wire.

CONTROL FUNCTIONS

G1	Left Roll Up	The G buttons will activate the hydraulic system and cause the left lower roll to raise or lower. The linear encoder attached internally to the roller will display the roll position in the Y1 screen of the Digital Controller.
G2	Left Roll Down	
H1	Right Roll Up	The H buttons will activate the hydraulic system and cause the right lower roll to raise or lower. The linear encoder attached internally to the roller will display the roll position in the Y2 screen of the Digital Controller.
H2	Right Roll Down	
I	Emergency Stop Button (E-Stop)	Pressing the E-Stop will disconnect power to the drive motor and the hydraulic motor. The Digital Controller will display and E-Stop message.
J	Motor Overheat Indicator Light	This light will illuminate if the roll drive motor has been overloaded. The motor will stop until it has cooled.
K	Emergency Stop Indicator Light	This light will illuminate when the E-Stop is depressed.
L	Digital Control of Lower Rolls	The Digital control is a combination Touch Screen, or Arrow operated controller which has the ability to program stop points for the raised position of the lower rolls.
M1	Left Guide Roll Up	The M buttons will activate the hydraulic system and cause the left guide roll to raise or lower. This is an operator manually controlled function. This function does not have any dimensional display or travel control from the controller.
M2	Left Guide Roll Down	
N1	Left Guide Roll Out	The N buttons will activate the hydraulic system and cause the left guide roll to extend or retract. This is an operator manually controlled function. This function does not have any dimensional display or travel control from the controller.
N2	Left Guide Roll In	
O1	Right Guide Roll Out	The O buttons will activate the hydraulic system and cause the right guide roll to raise or lower. This is an operator manually controlled function. This function does not have any dimensional display or travel control from the controller.
O2	Right Guide Roll In	
P1	Right Guide Roll Up	The P buttons will activate the hydraulic system and cause the right guide roll to extend or retract. This is an operator manually controlled function. This function does not have any dimensional display or travel control from the controller.
P2	Right Guide Roll Down	

Note: Left and Right are based upon standing directly in front of the controller and the controller directly in front of the rolls.

- Pressing the “Red” E-stop button (I) (located on the operator pedestal) shuts off the motor to the hydraulic system.
- With either foot pedal depressed, pressing the EMERGENCY STOP switch (I) will shut off the motor to the hydraulic system stopping the rolls from turning.
- Twist the emergency stop button clockwise (cw) to reset. Before restarting pump motor make sure any obstructions are cleared.
- After programming the digital display with the desired value, insert a sample piece of material between the rolls to make a test bend.
- Press the foot pedal in the direction needed to pull the material through the rolls for the bend. Stop the rolls before the material loses contact with any of the three rolls. When the bend is done, press the down arrow buttons (G2) or (H2) to release the material.

DIGITAL CONTROL

Starting Screens

1. When the main disconnect switch located on the electrical cabinet is turned ON, the controller will power ON and display either the E-stop screen, or the Main operating screen.
2. If the E-stop screen is displayed, twist and reset the E-stop. The screen will switch to the main operating screen.

Screen Navigation

The full controller consists of the touch screen display and the navigation arrows.
The operator may navigate about the screen to access the menus and setting using either method at any time.

Using the left or right arrow keys move forward or backward through the screen. These are useful to become familiar with the screen and which boxes are active.

Note: *Not all active boxes have functional settings. The X axis box will open; however, it is not active and will not produce any real results.*

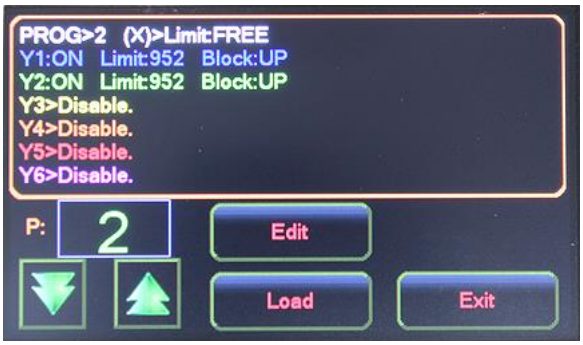
The most direct is touching the specific box on the screen that is desired to be entered.
When the box is a numeric value, pressing the box will usually open the keypad to allow for a value to be entered. When the box is and icon, pressing the box will usually move to the next screen of the menu tree.
From the submenu, the specific setting may be entered, set, or turned on or off.

Travel Limit Calibration

There is NO calibration for the X axis. Calibration is for the Left (Y1) lower and Right (Y2) lower rolls. Each of the lower rolls is calibrated separately. Calibration sets the lower most travel position for the rolls to the lowest or Min position, and the upper or Max position.
Once set, the rolls will not move farther than this setting.

1. Remove the roll tooling from each of the lower roll shafts. This will allow full travel for each of the lower shafts.
2. From the Main screen, press the Settings Icon. The icon that looks like a set of gears.
1. On the Setup screen, press the Config Y icon.
2. Press the Y1 OFF box to change it to read Y1 ON.
3. Press the Setup Y1 box to calibrate the Y1 or left roll.
4. Press the START box.
5. Press and hold the G2 button on the control console to lower the left roll until it stops. This is the lower travel limit or Min position.
6. Press the SET MIN box on the screen to set the Min position.
7. Press and hold the G1 button on the control console to raise the left roll until it stops. This is the upper travel limit or Max position.
8. Press the SET MAX box on the screen to set the Max position.
9. In the Block Type area, press the UP box to turn on the stop to stop during up travel.
10. If the settings are different, press the O15B and the O16 to turn these functions ON. The other functions should be OFF.
11. Press the SAVE box to save the calibration settings.
12. Press the STOP box.
13. Press the Exit box to return to the main screen.
14. Answer YES when the dialog box opens to warn about data changes.
15. Repeat these steps for the right roll using the Y2 setup screen and making sure that the Y2 box is turned ON.

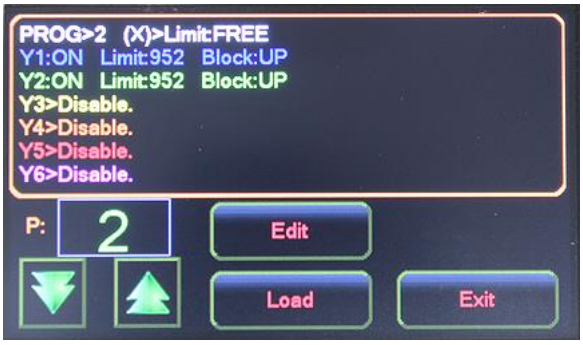
Editing and Loading a Program



Programming is about setting a stop limit for the lower rolls to travel upward. These travel limits provide a repeatable stop position for the rolls which in turn provides for repeatable bends of the same material.

1. From the Main screen, press the Menu icon. (the icon that looks like a piece of paper.)
2. From the program screen, use the up or down arrows to select the desired program number.
    a. If the program location number has never had a program saved to it, the text portion of the screen will be empty.
    b. If the program location has had a program saved to it, the text portion of the screen will show the program details. Shown.
    c. Select a program number to change or a empty location if not sure about changing an existing program.
3. Press the Edit box to change to the Programming screen.
4. If the program is an edit of an existing program (shown) press the Clear box. If this is a new program press the Enable box.
5. In the Y1 row;
    a. Press the digit box. When the keypad opens, enter the desired value to stop the left roll upward travel.
    b. Press the direction box and change the box to show “B:UP”.
    c. Press Enable box to show “ENABLE” and have the active box turned on.
6. In the Y2 row;
    a. Press the digit box. When the keypad opens, enter the desired value to stop the left roll upward travel.
    b. Press the direction box and change the box to show “B:UP”.
    c. Press Enable box to show “ENABLE” and have the active box turned on.
7. When the program screen looks similar to that shown, press the SAVE box to save the changes. The only difference will be the numeric values. All other setting should look the same.

8. With the information saved, press the exit box to return to the program screen.
9. Press the LOAD box to load the program and return to the Main operation screen.
10. Test the roll travel.
    a. Move each roll to the lowest position. When the rolls stop, the display should show 0 or 1.

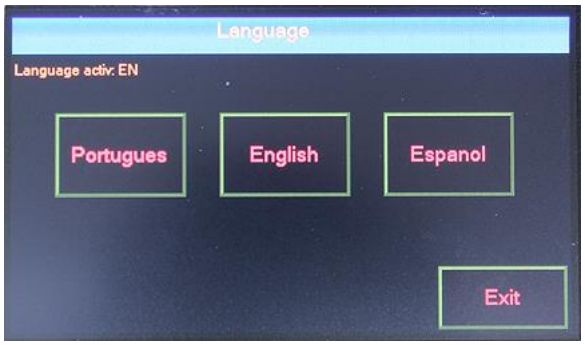


    b. Move each roll to the highest position. When the rolls stop, the display should show the value that was programmed plus as much as 50 over the programmed value. It is normal for the rolls to over travel. This is most visible when there is no material in the rolls to provide resistance.
11. Lower the rolls to a position which will allow the material to be loaded as the bender is ready for operation.

Setting Language

The language only requires setting one time.

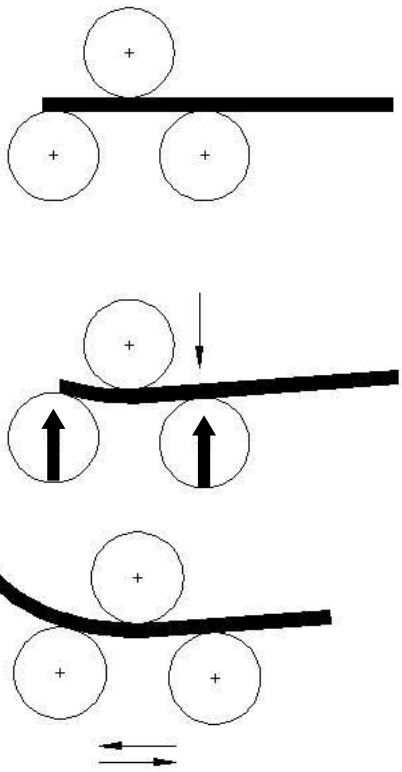
1. From the Main screen, press the Settings Icon. The icon that looks like a set of gears.
2. On the Setup screen, press the Language icon.
3. On the Language screen, press the desired language.
4. Press the exit icon to return back to the Main screen.



OPERATING THE MACHINE

Operating Instructions

1. Place the material flat on the rolls as shown in the top figure. 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 up arrow button to move either the left or right lower roller upward toward the center roller, and position it to apply enough force to start to bend the material.

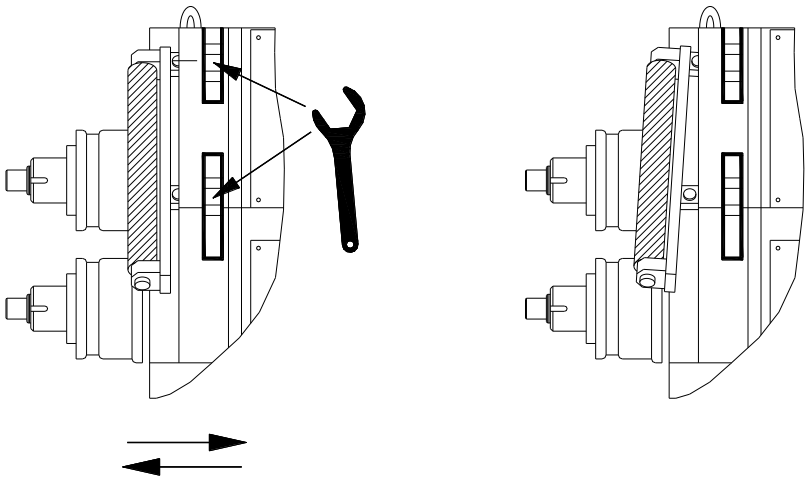


Note: To avoid deforming the piece, DO NOT apply more force than necessary.

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

3. To get desired radius, make consecutive passes through rolls using the foot pedals control to roll direction while gradually raising the lower roll(s) after each pass. If the radius is larger than needed, move the lower roll(s) up to apply more force. Keep track of your up/down position using the digital controller as a guide. This will help ensure consistency of parts.

To prevent material from bending left or right you can adjust the side guide as shown. The guides are adjustable in and out. You can arrange them to the opposite direction that the material is inclined to go.



Bending Material

Desired Diameter

Prepare three or four pieces of the material to be bent, (+/-) 100 cm. Introduce the first piece between the rolls and perform a bending test.
(for better results it can be useful to use superior lengths)

The results can be two:
a) The obtained diameter is the desired one: proceed with the work;
b) The obtained diameter is too large or else too short: correct the position of the rolls and introduce a second piece of material, repeat the procedure until the desired diameter is achieved.

On these tests use the original pieces and never the previous bent or straightened ones since the result would be different.

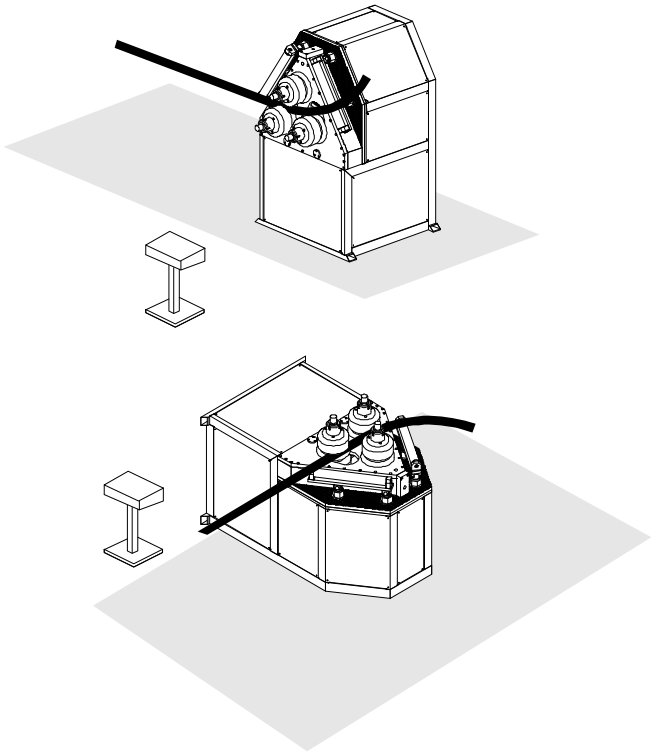
Important: Keep the lower rolls position values (Shown on the display).

Spiral

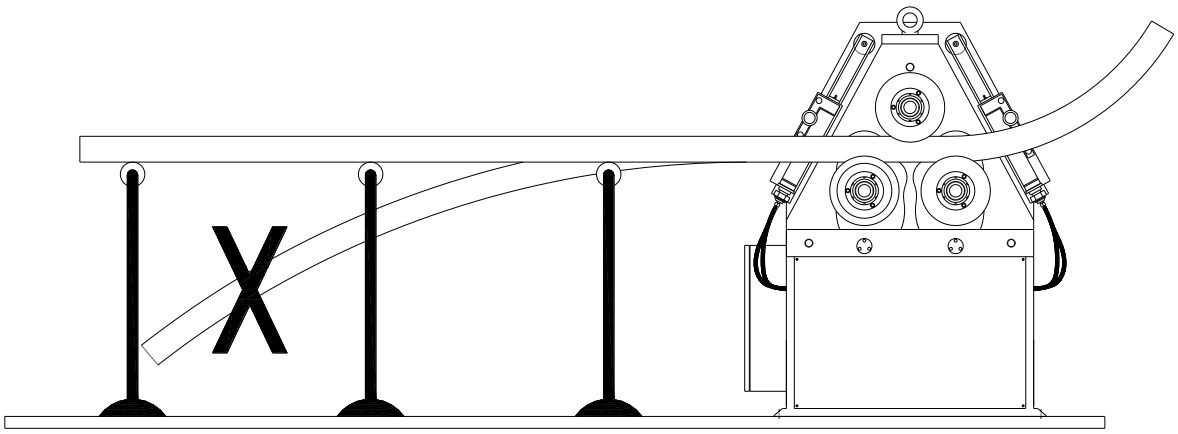
Put the profile you want to bend, move the lower rolls to the position, and start the bending, when the curve passes on the lateral guides, push them front pressuring the profile to make the spiral. (If the spiral is too long use a support on it)

Every time the profile to bend is long use a loading support.
If the diameter of the bend is very big, use the machine in the horizontal position and use a support on the exit of the material.

ATTENTION: Be careful, about the working space needed to perform the bending operations.



When bending long materials, an adjustable conveyor is recommended to keep work piece parallel to floor, allowing for easier loading of Roll Bender.



⚠ 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.

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.

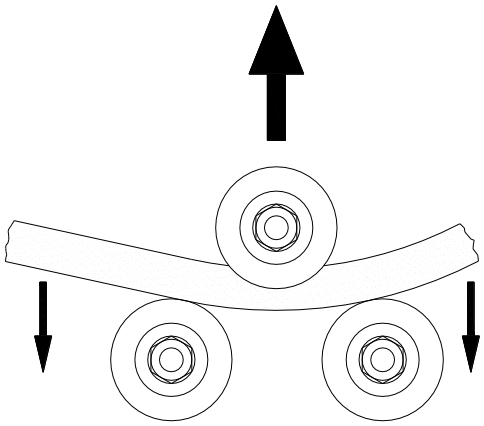
When bending pipe or tube the outer part of the bend is stretched and the inner section compressed. The result of these opposite and unequal stresses is that the pipe or tube tends to flatten or collapse. To prevent such distortion, the common practice is to support the wall of the pipe or tube in some 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

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. All metals exhibit a certain amount of spring back.
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. This is best handled through testing and record keeping.

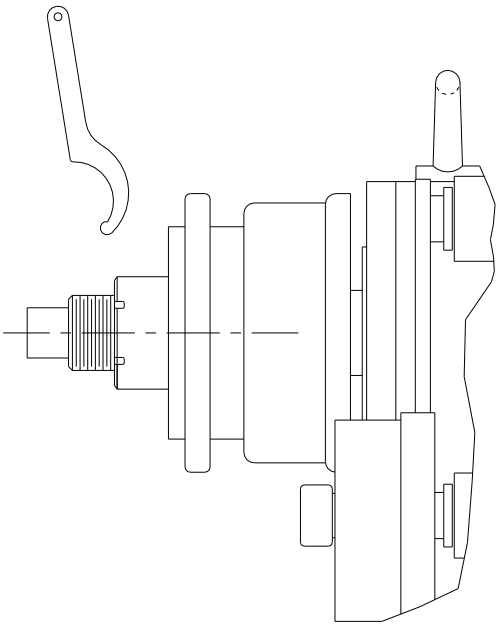


MOUNTING THE ROLLS

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.

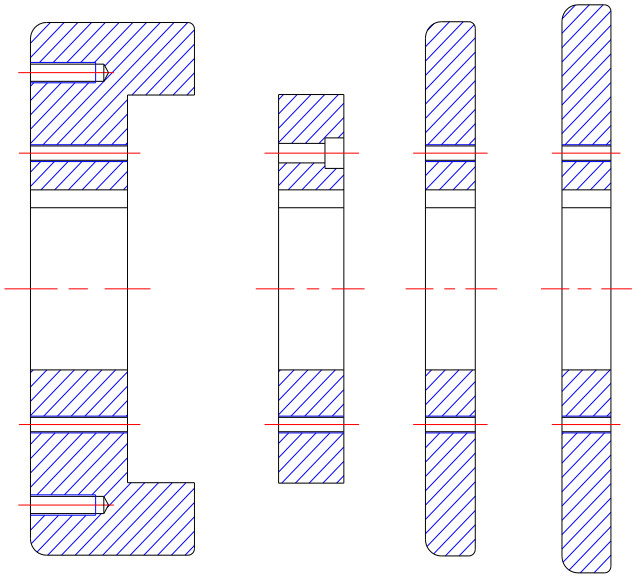
ALWAYS disengage power to machine before changing rolls.

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. After changing rolls, replace and tighten nut to shaft.

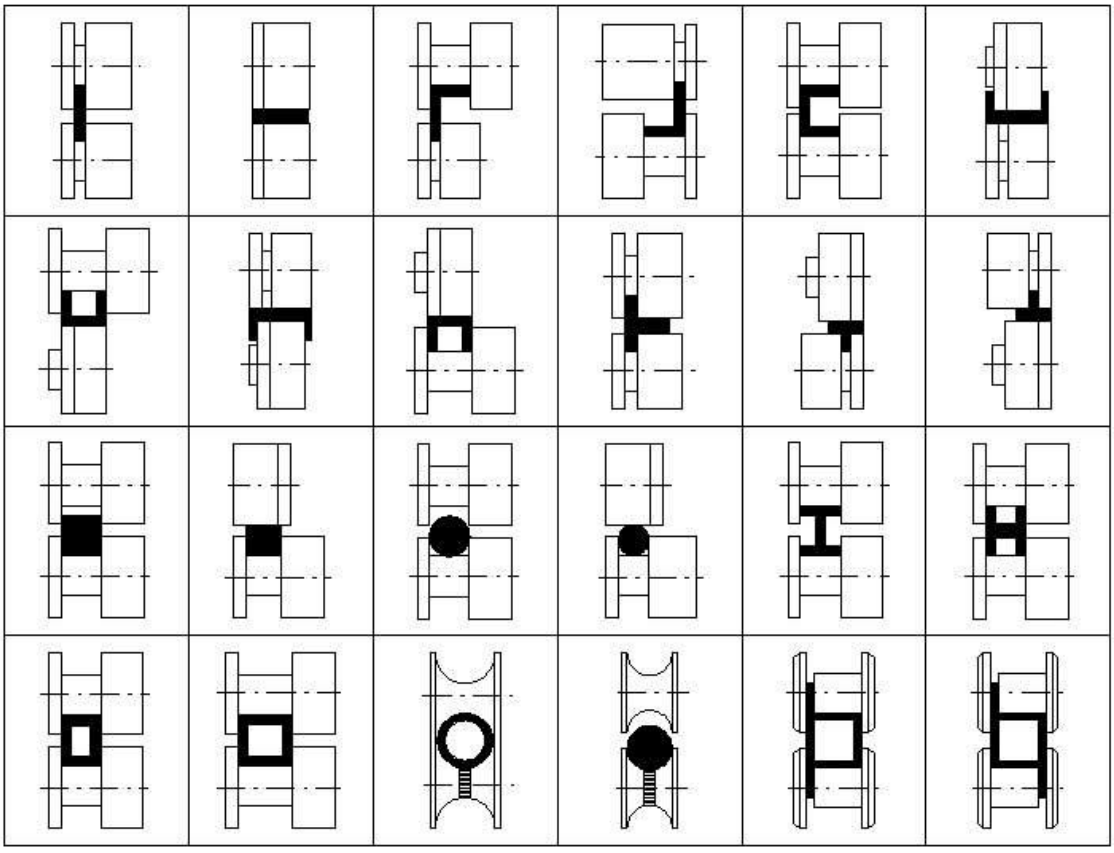


To find the distance needed between the top and bottom rolls, place a sample of the material to be bent in between the rolls. The groove of the upper roll should be 2-4 mm (.078”-.156”) larger than the thickness of the material. Make a test bend with a sample of your material. This allows you to find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

ROLL CONFIGURATIONS



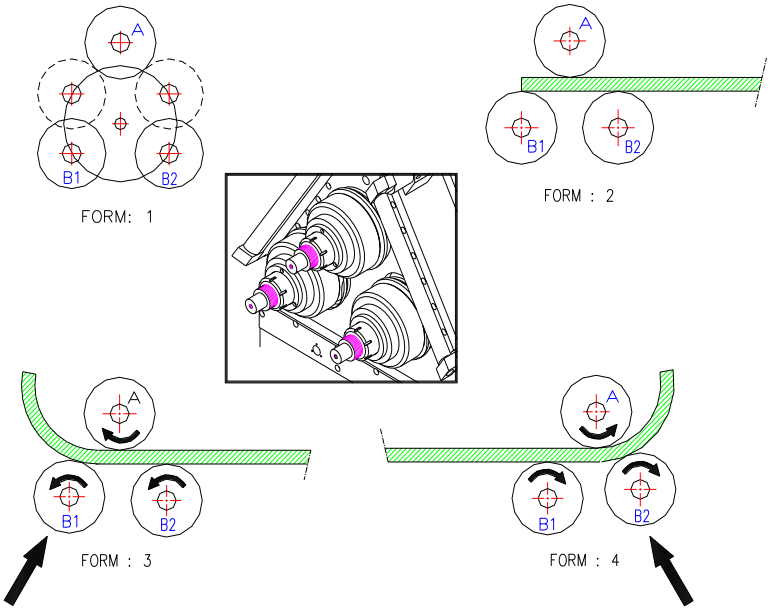
With proper placement of the different rolls, most standard profiles can be bent. For better results some profiles require special rolls. *(See below)*



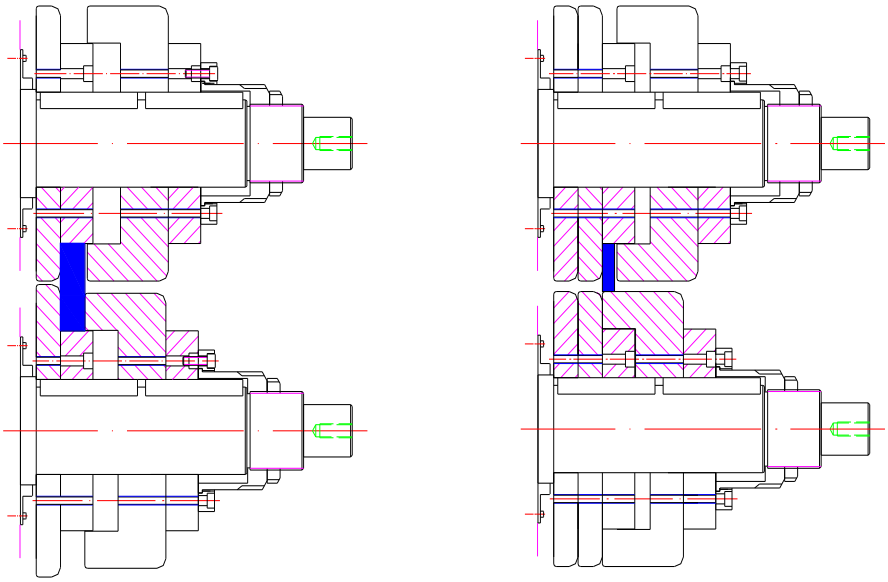
∗ *Special rollers are available from Baileigh Industrial Inc.*

HOW TO BEND MATERIAL

FORM 1: The movement of the rolls is indicated in form 1. The A rolls is assembled to the machine. The B rolls are hydraulic movable.
FORM 2: Place the material straight between the rolls. Pull to the axel B1 roll. The material is ready to bend.
FORM 3: Move the roll B1 in the control panel till you get the desired diameter.
FORM 4: Move the roll B2 in the control panel till you get the desired diameter



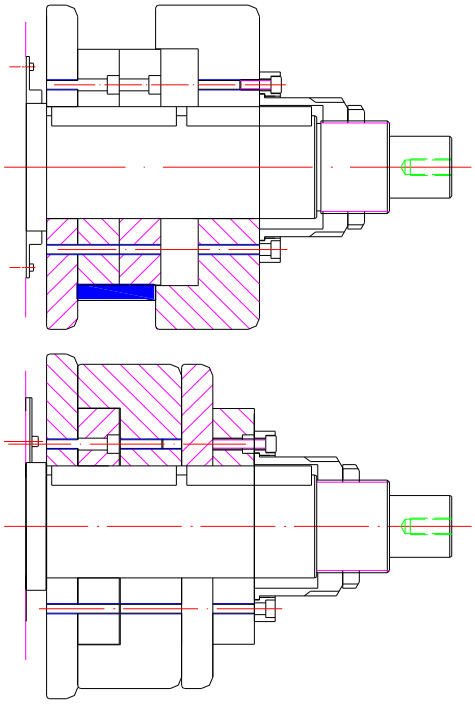
HOW TO USE THE STANDARD ROLLS



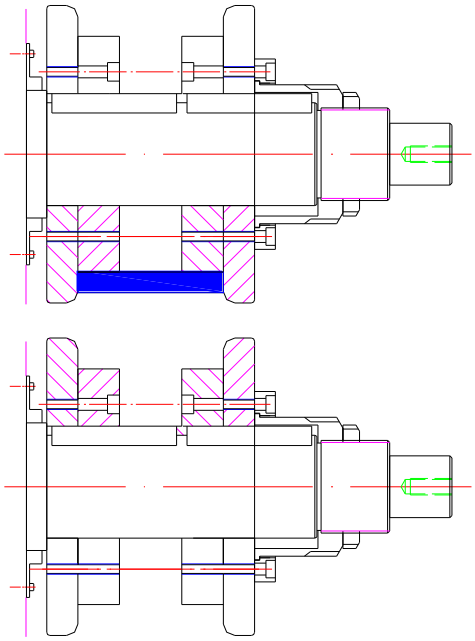
FORM – 1 FORM– 2

PLATE (Horizontal).

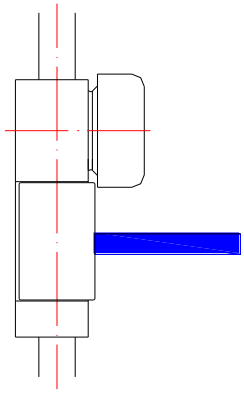
Note: To bend plate in horizontal position uses a material support.



FORM – 1

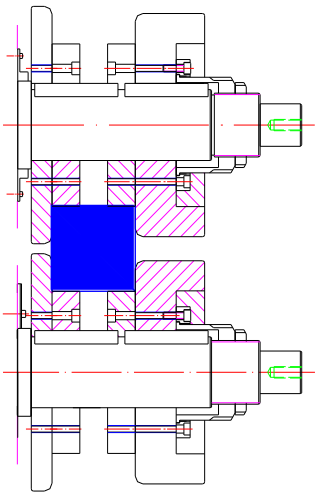


FORM – 2

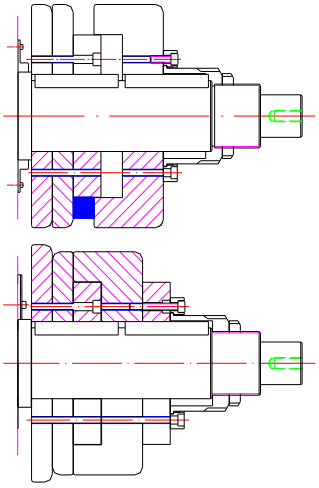


SQUARE

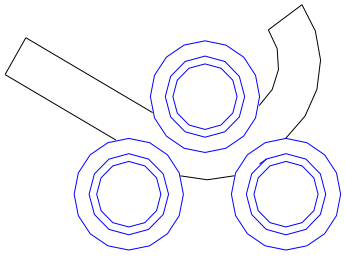
FORM 3: Bending with special rolls.

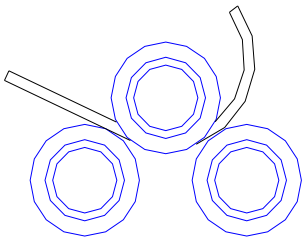


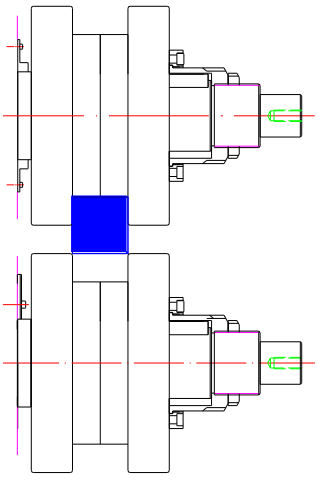
FORM – 1

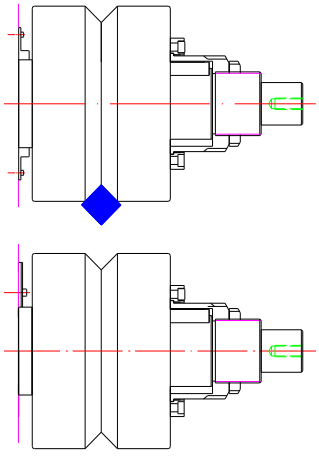


FORM – 2





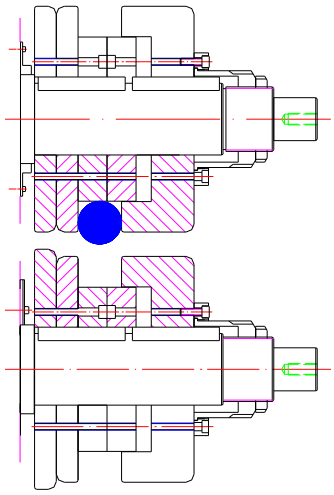




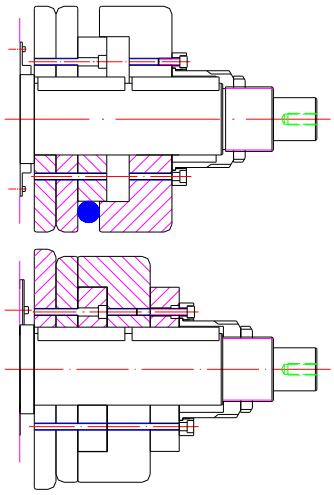
FORM – 3

ROUND MATERIAL

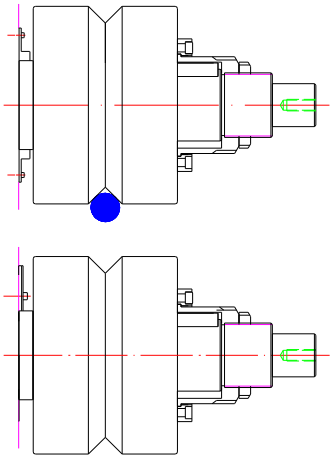
FORM 3: Bending with special rolls.



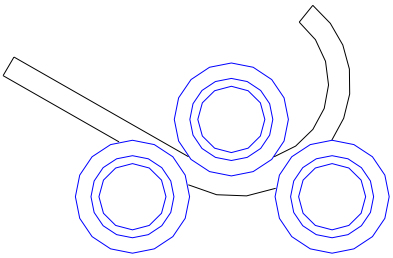
FORM – 1

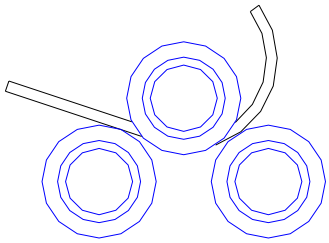


FORM – 2



FORM – 3

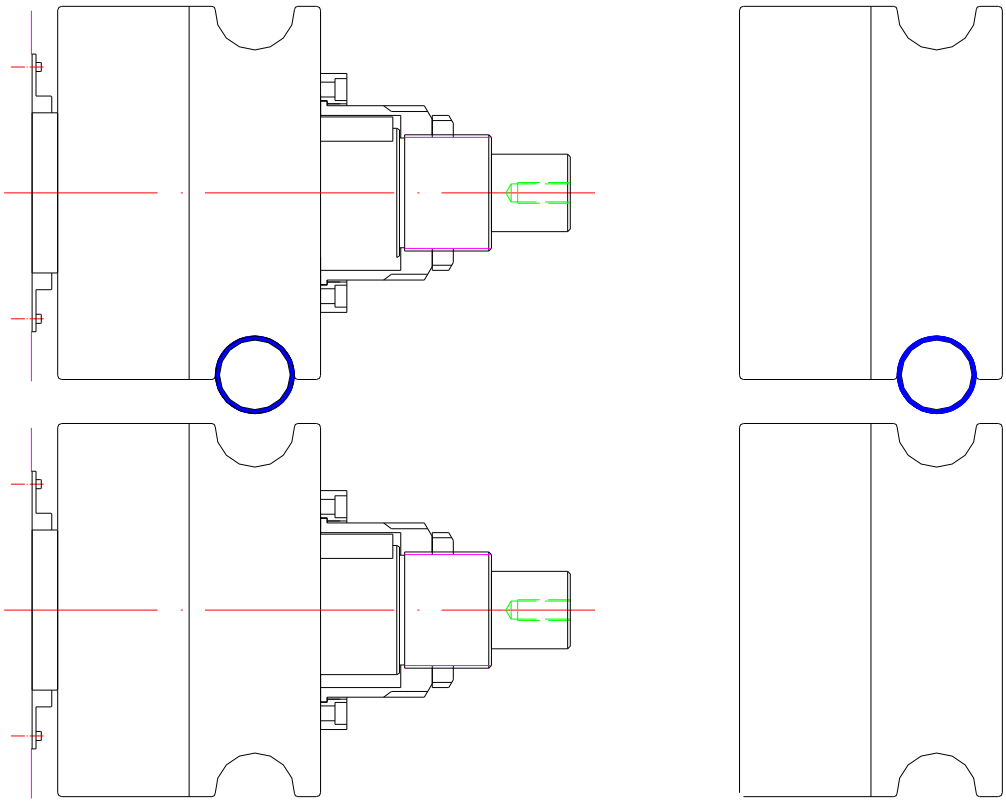




PIPE

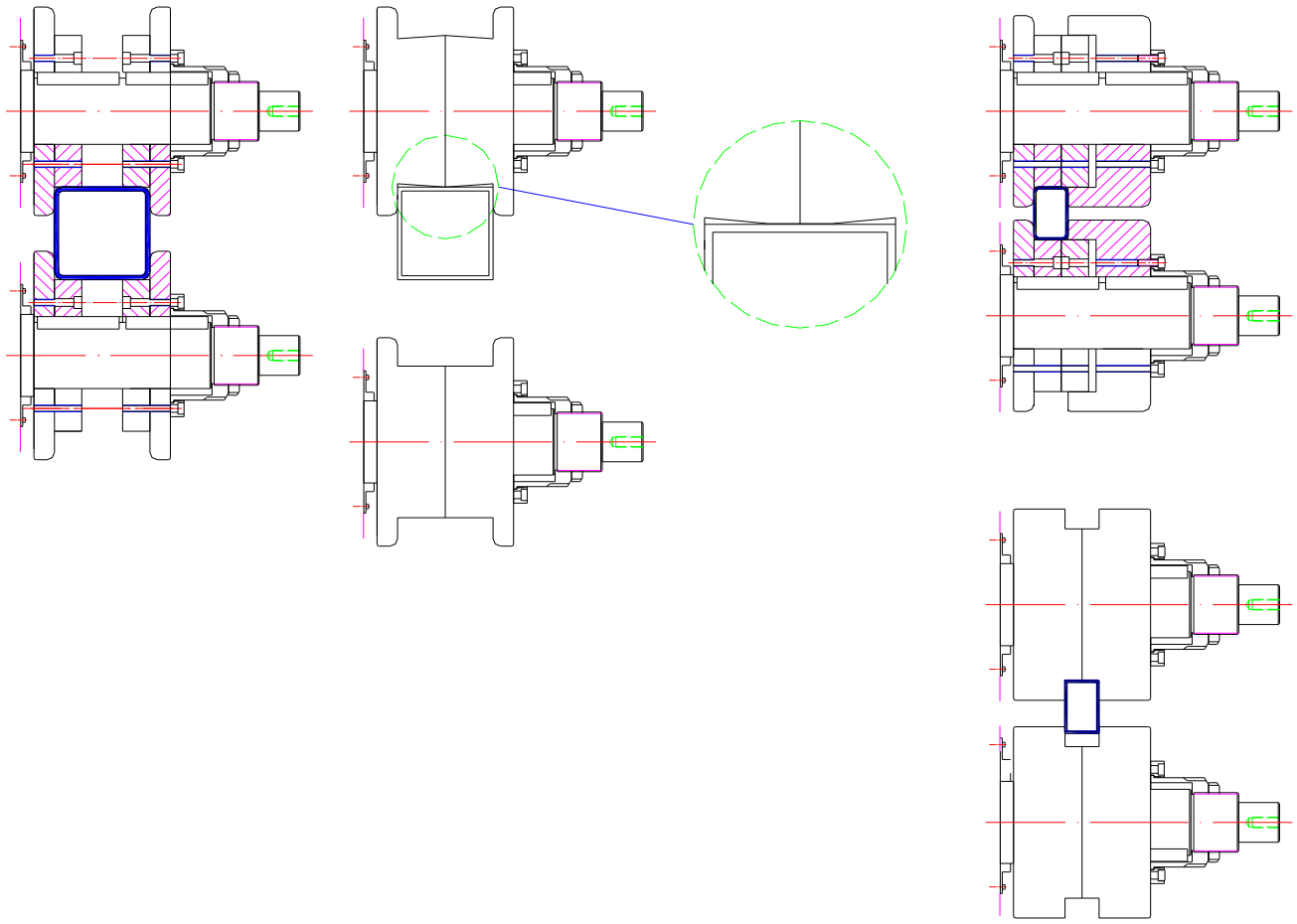
FORM 1: Using special rolls

For each pipe dimension is necessary different rolls.
To bend the thin pipe and stainless steel pipes special rolls are required.



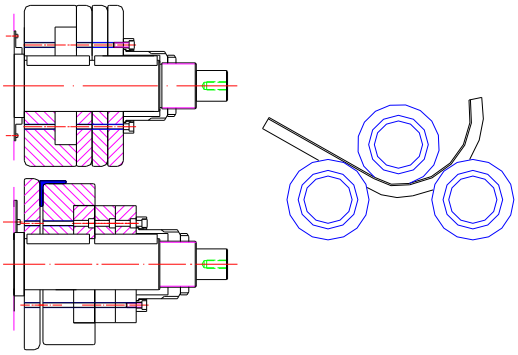
RECTANGLE CROSS SECTION

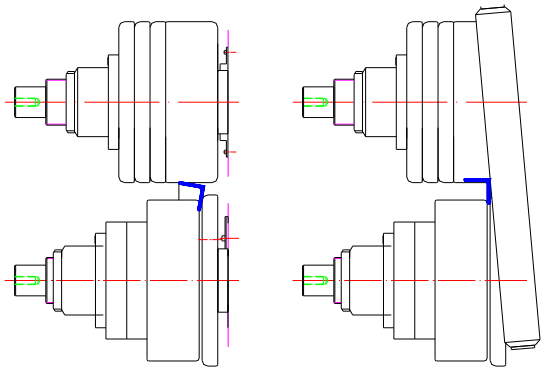
If the thickness of the profile it's high, you can bend with standard rolls. If not you must use special rolls.
Especially for the profile with small thickness the outside face of the bend can collapse.
To stop that situation the profile must be filled with sand.



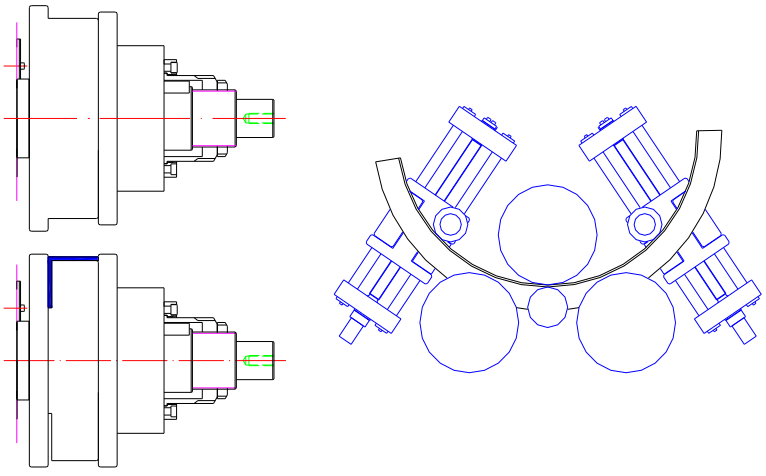
ANGLE

Asymmetric profiles in general and angles in particular require side strengtheners to avoid deformations on the material, which frequently arise. While bending an external wing it is necessary to use the side rolls mounted on the machine. The left side straightener should rest against the bar; the right side straightener should be slightly inclined, pulling the bar in order top get the correct adjustment.
For better results special rolls are required.



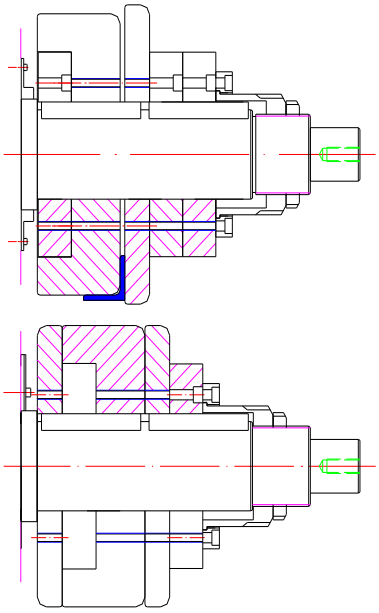


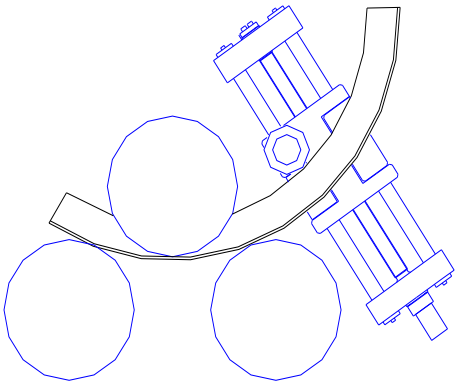
With the special top rolls the external bending regularity.

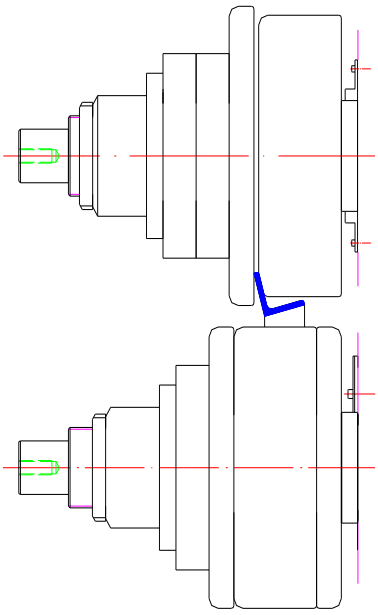


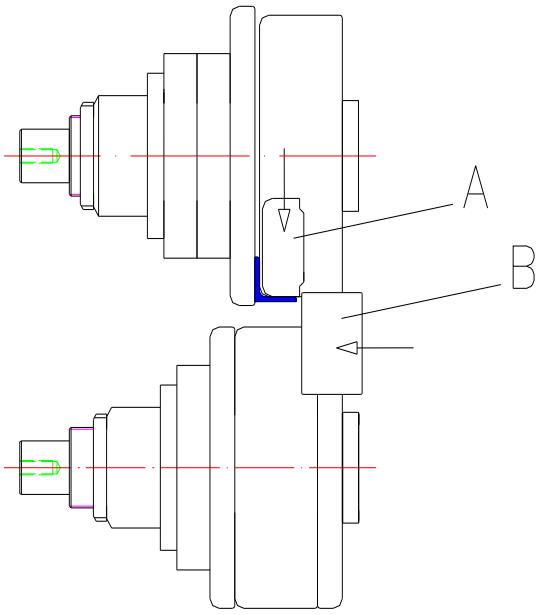
ANGLE

This is one of the most difficult bending jobs and the machine should have special strengtheners mounted (available on request). The supplied support for these strengtheners should be mounted on the upper shaft the profile must always be inserted between the left and right rollers. Once of the wings of the profile must be turned towards the upper roll and the other wing turned to the machine. The extra small roller “A” compresses towards the lower part of the wing while the “B” roller slightly forces the profile horizontally.

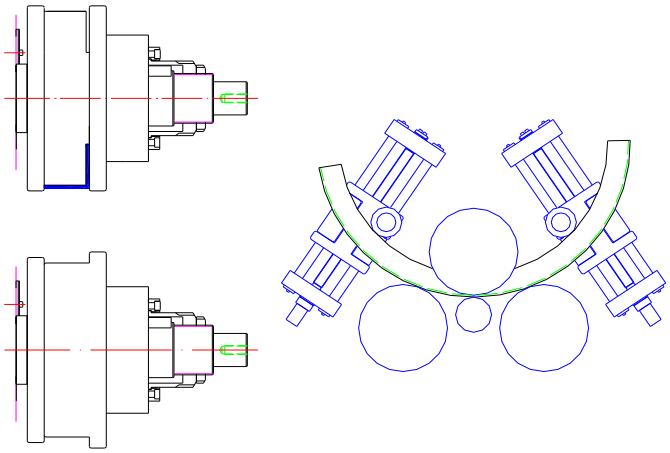






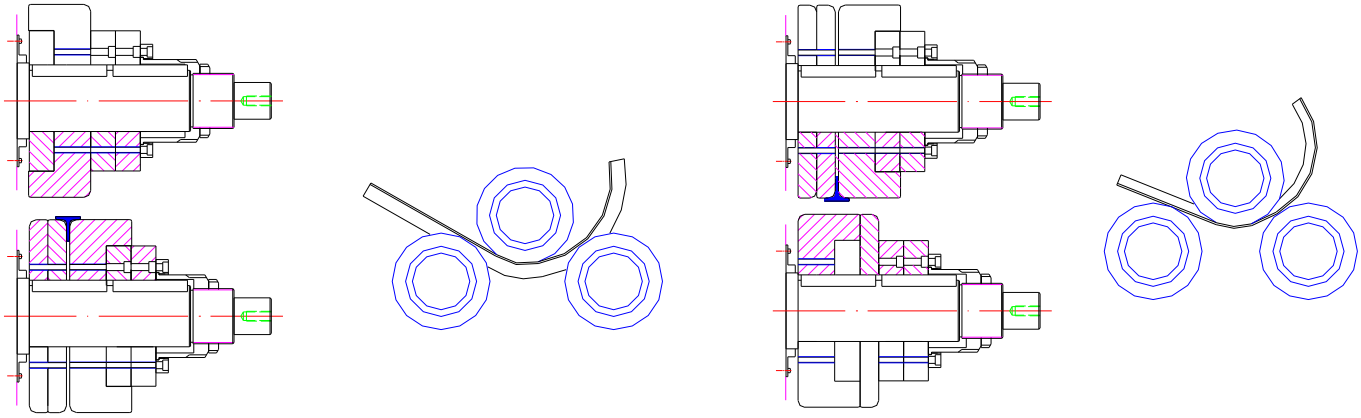


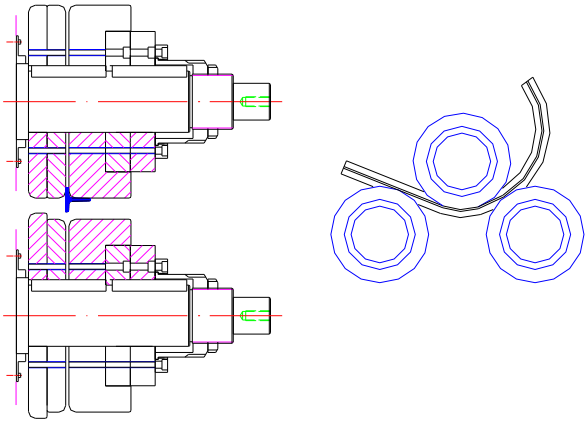
REGULARITY OF THE SPECIAL ROLLS WITH INTERNAL BENDING.



“T” PROFILE

Bending the inside wing T iron material.
Bending the outside wing T Ron material.
Bending then side wing T iron material.

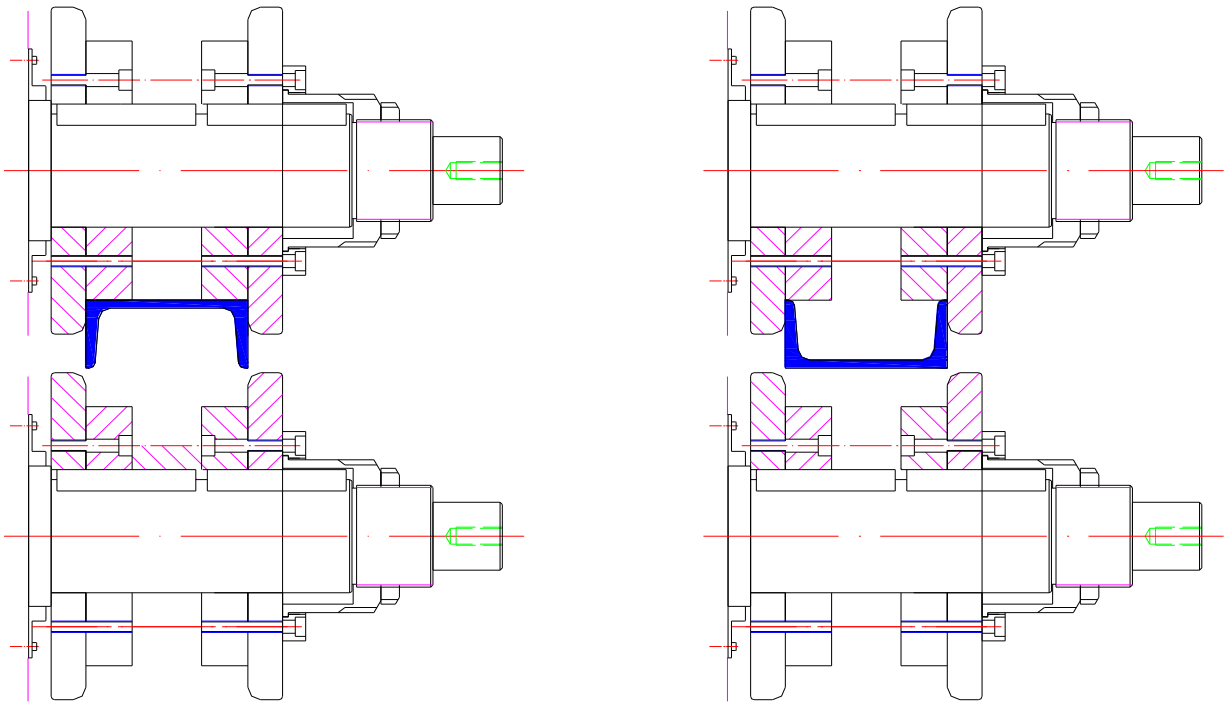




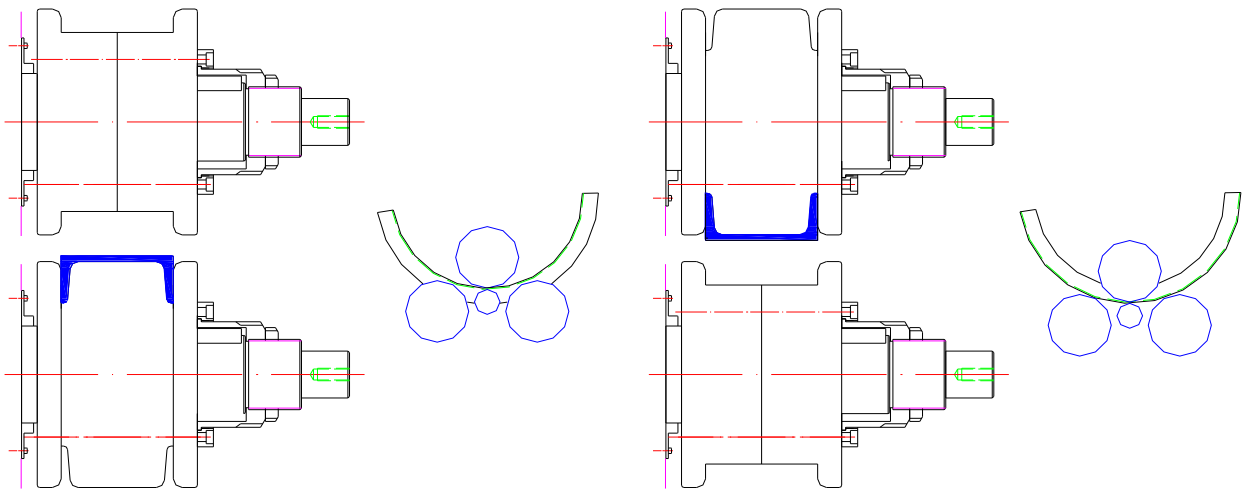
NPU

Bending the inside wing NPU iron material.
Bending the outside wing NPU iron material.

NOTE: Place the material with the suitable dimensions, to get the small diameters and the middle of the material without the deformation.

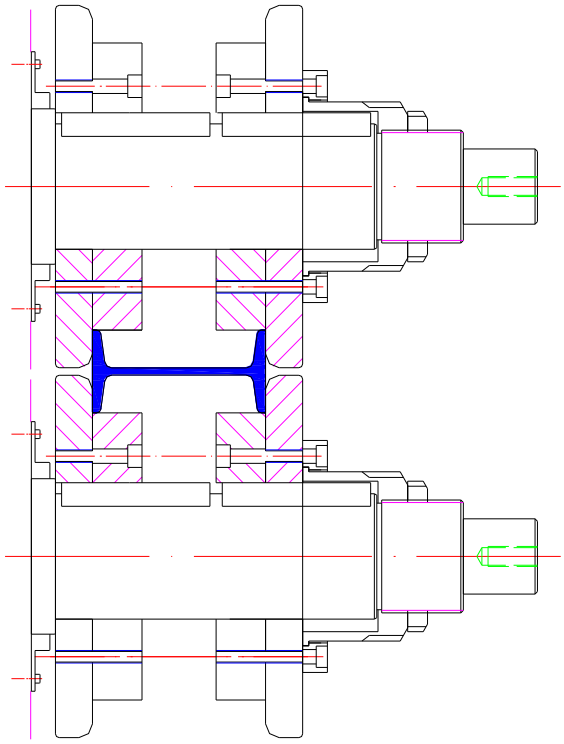


Bending regularity with the special top rolls.

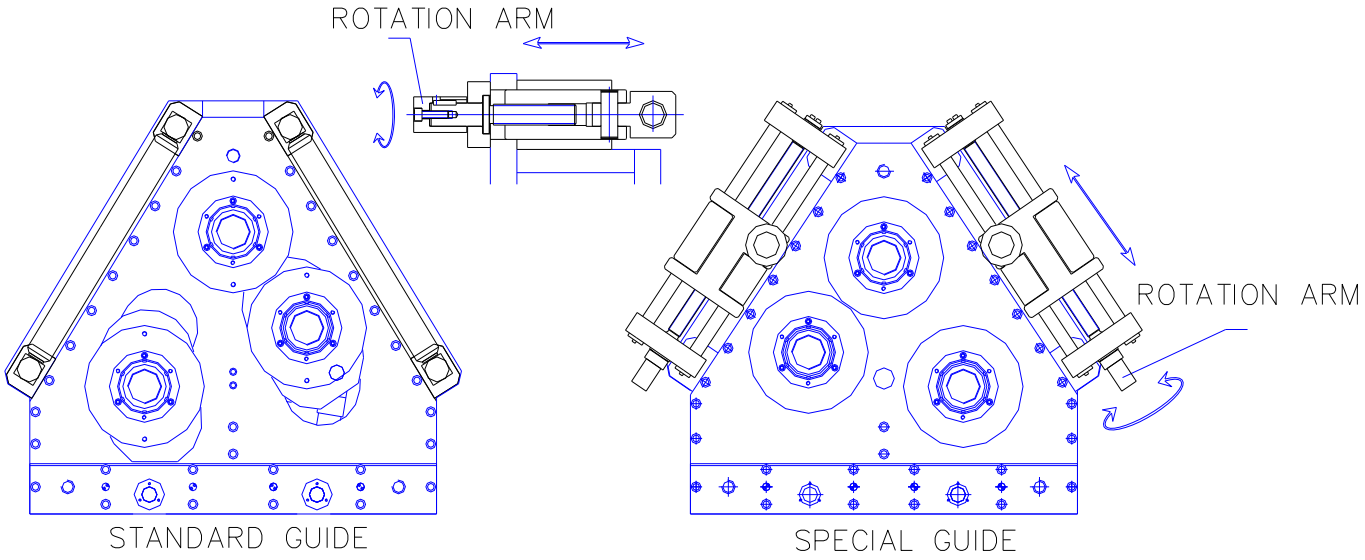


INP

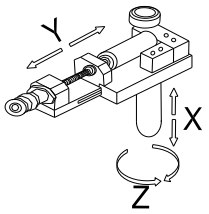
Regularity of the top rolls for the bending dimensions given on the table.



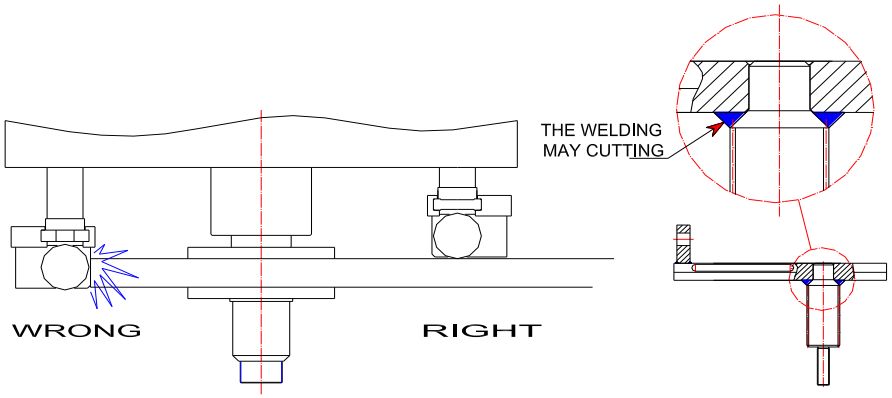
SIDE GUIDES ADJUSTMENT



In the standard machines the guide rolls with the key help
Optional: hydraulic guide rolls machines; moving from the control panels buttons.



HIDRAULIC SPECIAL GUIDE



ATTENTION: Make sure that when you start the bending process, the profile will not crash with the side roll.

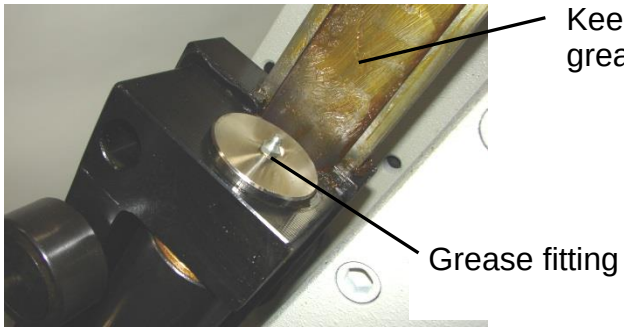
LUBRICATION AND MAINTENANCE

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.*

Regularly inspect, clean, and re-lubricate the moving parts of the machine. Gears, threaded shafts, and bearings should be greased once a month with Shell Alvania R3 or equivalent grease. Also check that all nuts and bolts are properly tightened.



Inspect hydraulic oil level monthly and refill if necessary with Shell #68 hydraulic oil or equivalent. Change after 2000 working hours.

GREASE: Please lubricate the gears and parts after each 500 working hours (use a small brush)

İSO	ROL	SHELL	TOTAL	AGIP	BP	ELF	GULF	ESSO
XM 3	MURCURY 3	ALVANİ AR 3	MULTİS 3	GR MU EP 3	GREASE LTX 3	ROLEXA 3	GULF 3	BEACON3

TRANSMISSION OIL: change after 2000 working hours.

İSO	ROL	SHELL	TOTAL	AGIP	BP	ELF	GULF	ESSO
CC 320	EP 320	OİL 320	CARTER EP 320	BLASİA 320	GRXP 320	SP 320	EP 320	EP 320

Hydraulic Oil

The hydraulic oil is the primary medium for transmitting pressure and also must lubricate the running parts of the pump.
The machine is sent to the customer without hydraulic oil. Don't start to work without filling the deposit.

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

Total capacity (35L).

HYDRAULIC OILS: Change after 2000 working hours.

İSO	ROL	SHELL	TOTAL	AGIP	BP	ELF	GULF	ESSO
MH 32 HIV	Lİ 32 HIV	HİD.YA 32 HIV	ZS 32 HIV	OSO 32 HIV	HLP 32 HIV	ELF 32 AWHIV	32 AW HIV	NUTO HIV

Oil Disposal

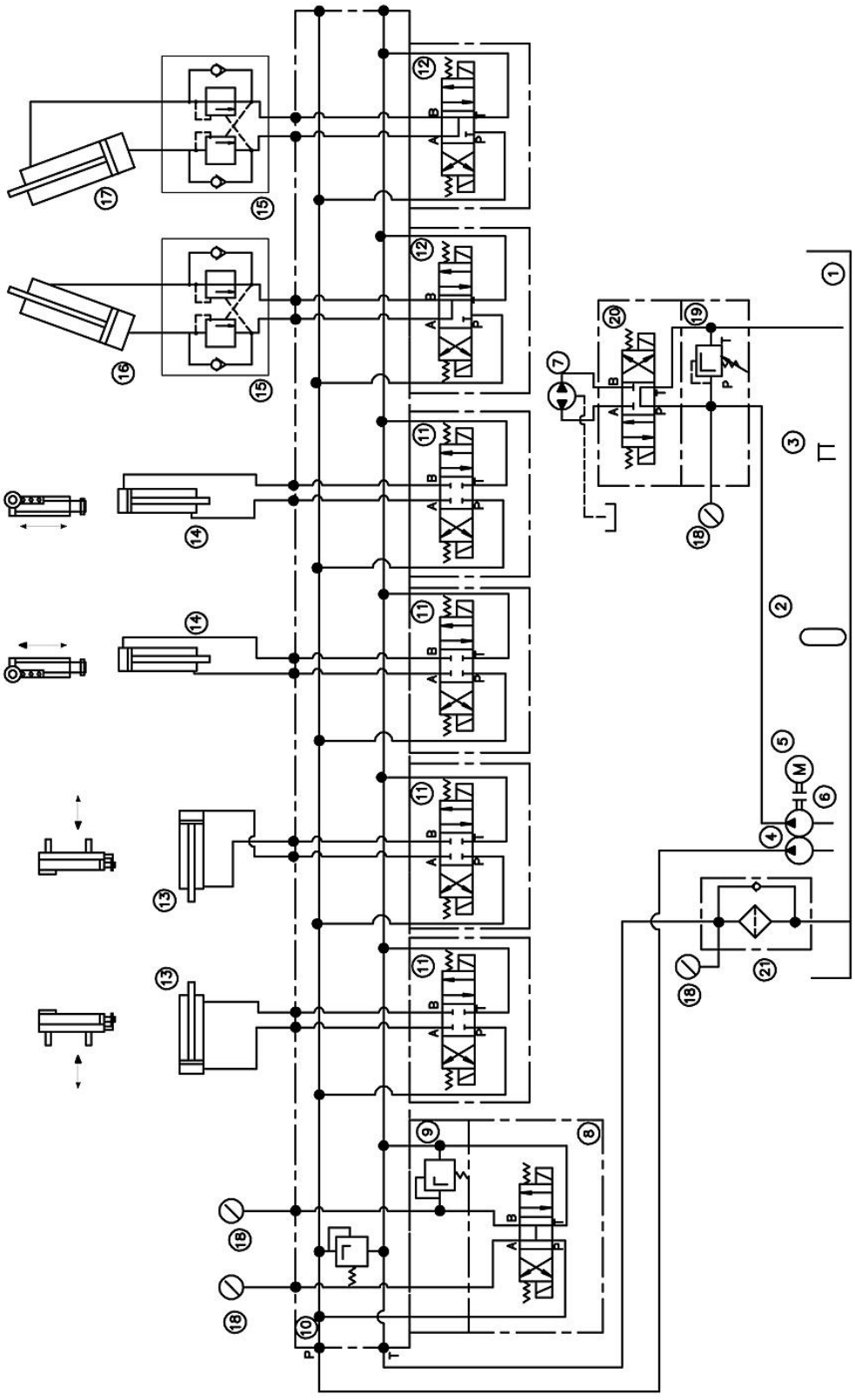
Used oil products must be disposed of in a proper manner following your local regulations.

Storing Machine for Extended Period of Time

If the machine is to be inactive for a long period of time, prepare the machine as follows:

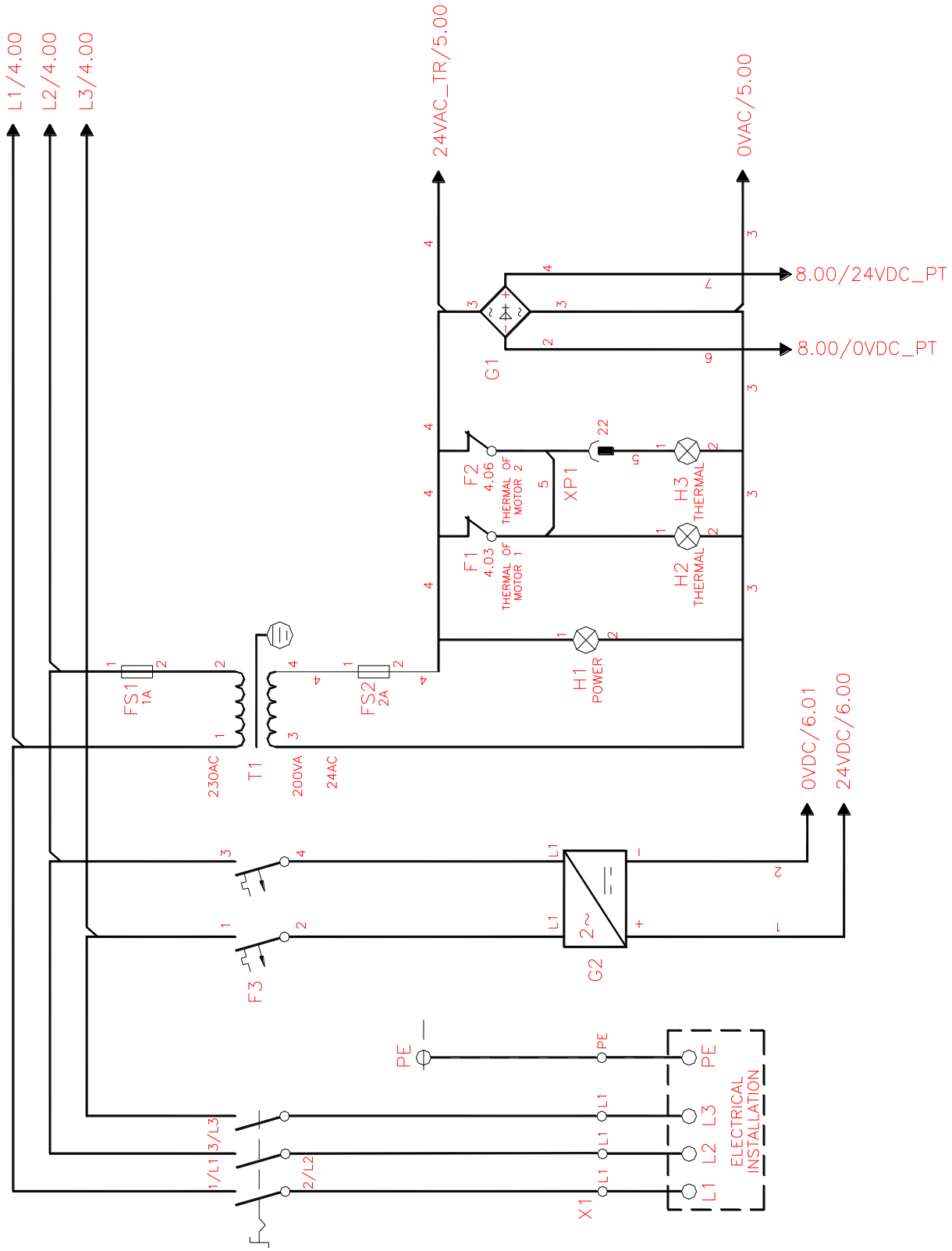
- Disconnect the electrical supply from the power panel.
- Clean and grease the machine.
- Cover the machine.

HYDRAULIC SCHEMATIC & PARTS IDENTIFICATION

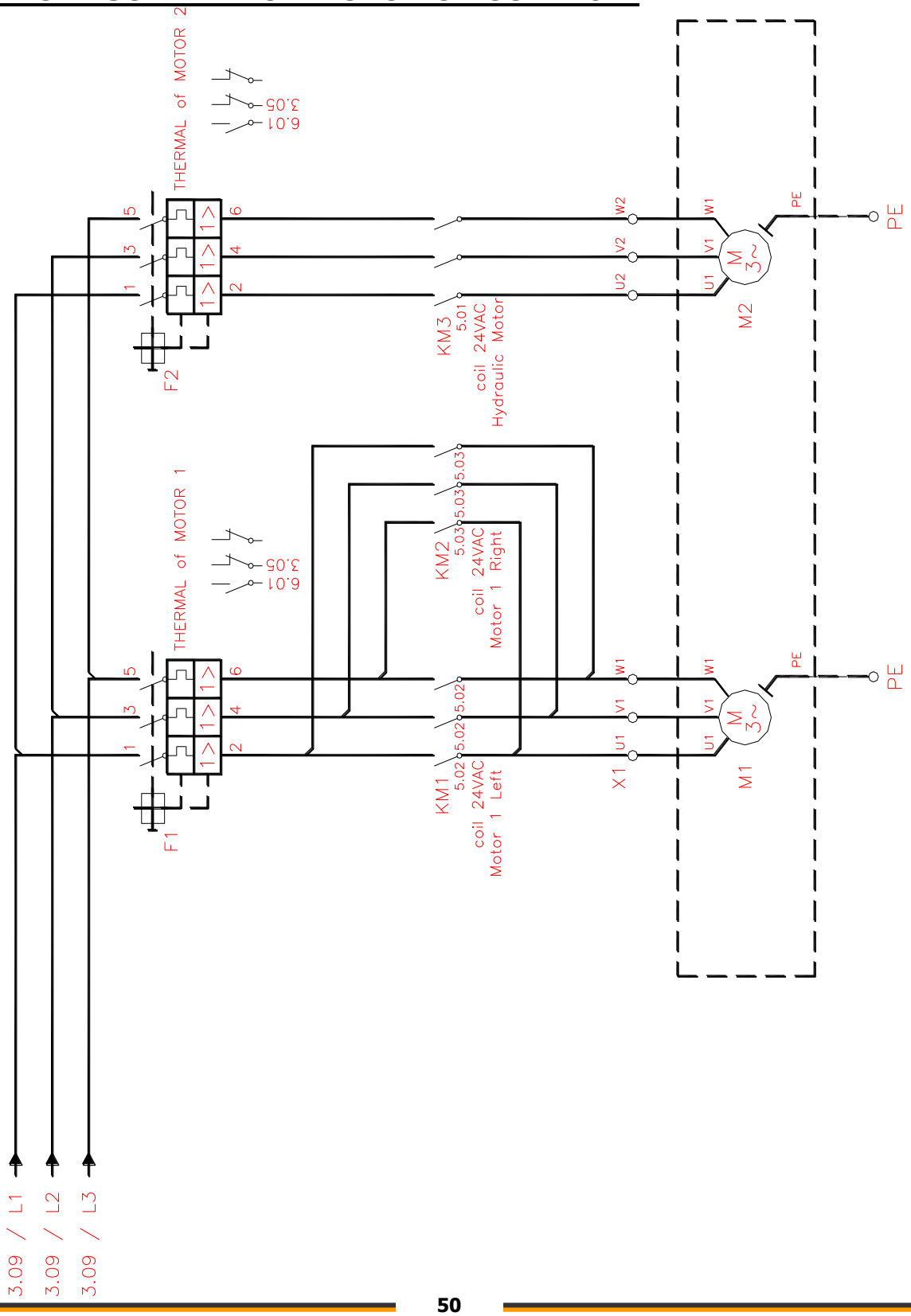


Item	Description	Qty.
1	Hydraulic tank	1
2	Sight gauge	2
3	Filter breather	1
4	Gear pump	1
5	Motor - 15hp (11kw)	1
6	Motor/pump coupling	1
7	Hydraulic motor	1
8	Directional control valve	1
9	Pressure relief valve	1
10	Hydraulic block	1
11	Directional control valve	4
12	Directional control valve	2
13	Guide roll piston	2
14	Guide roll cylinder	2
15	Over-center valve	2
16	Roller cylinder	1
17	Roller cylinder	1
18	Pressure gauge	2
19	Directional control valve	1
20	Pressure relief valve	1
21	Return filter	1

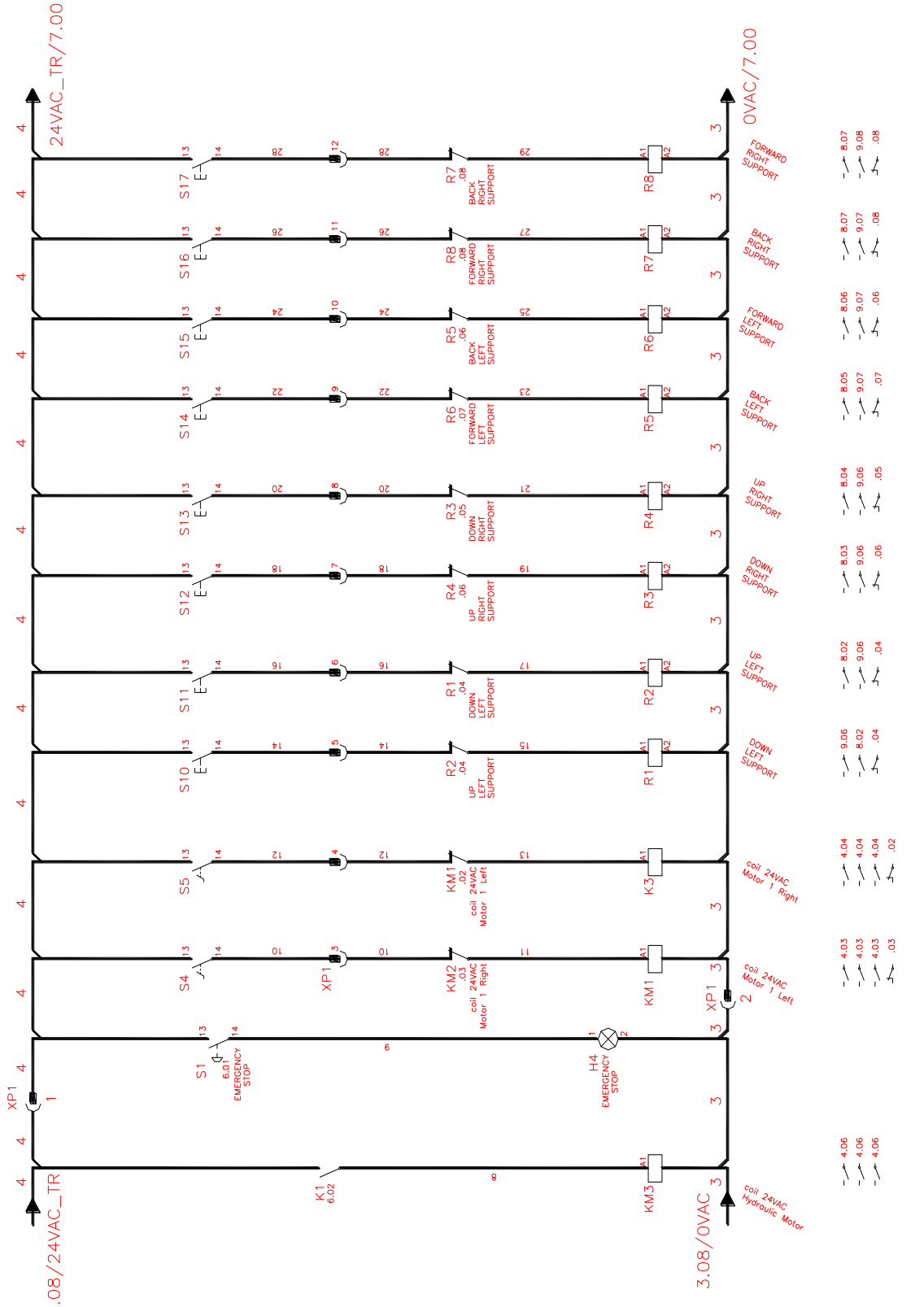
ELECTRICAL SCHEMATIC – POWER CIRCUIT 1 of 7



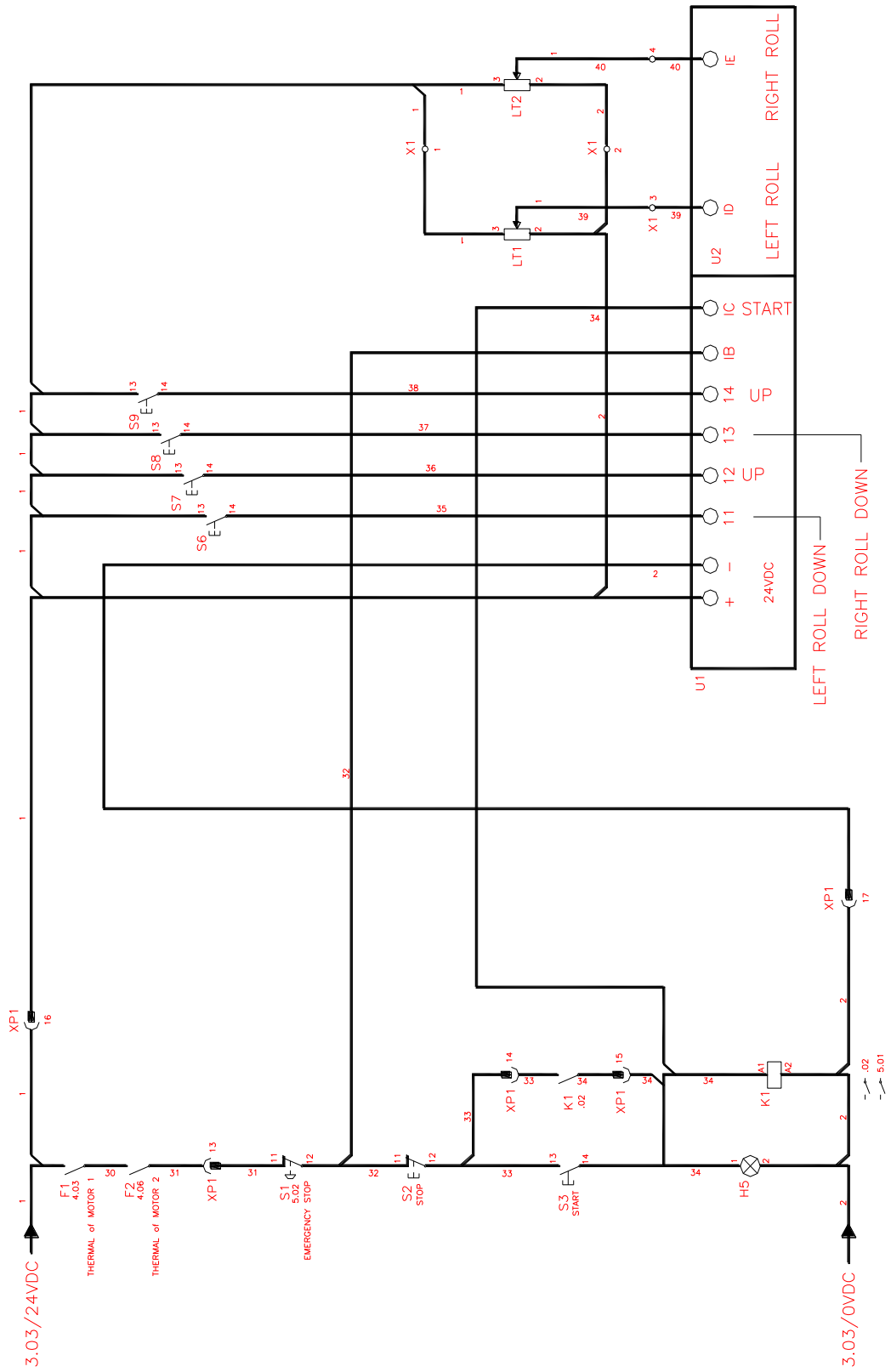
ELECTRICAL SCHEMATIC – MOTOR CIRCUIT 2 of 7



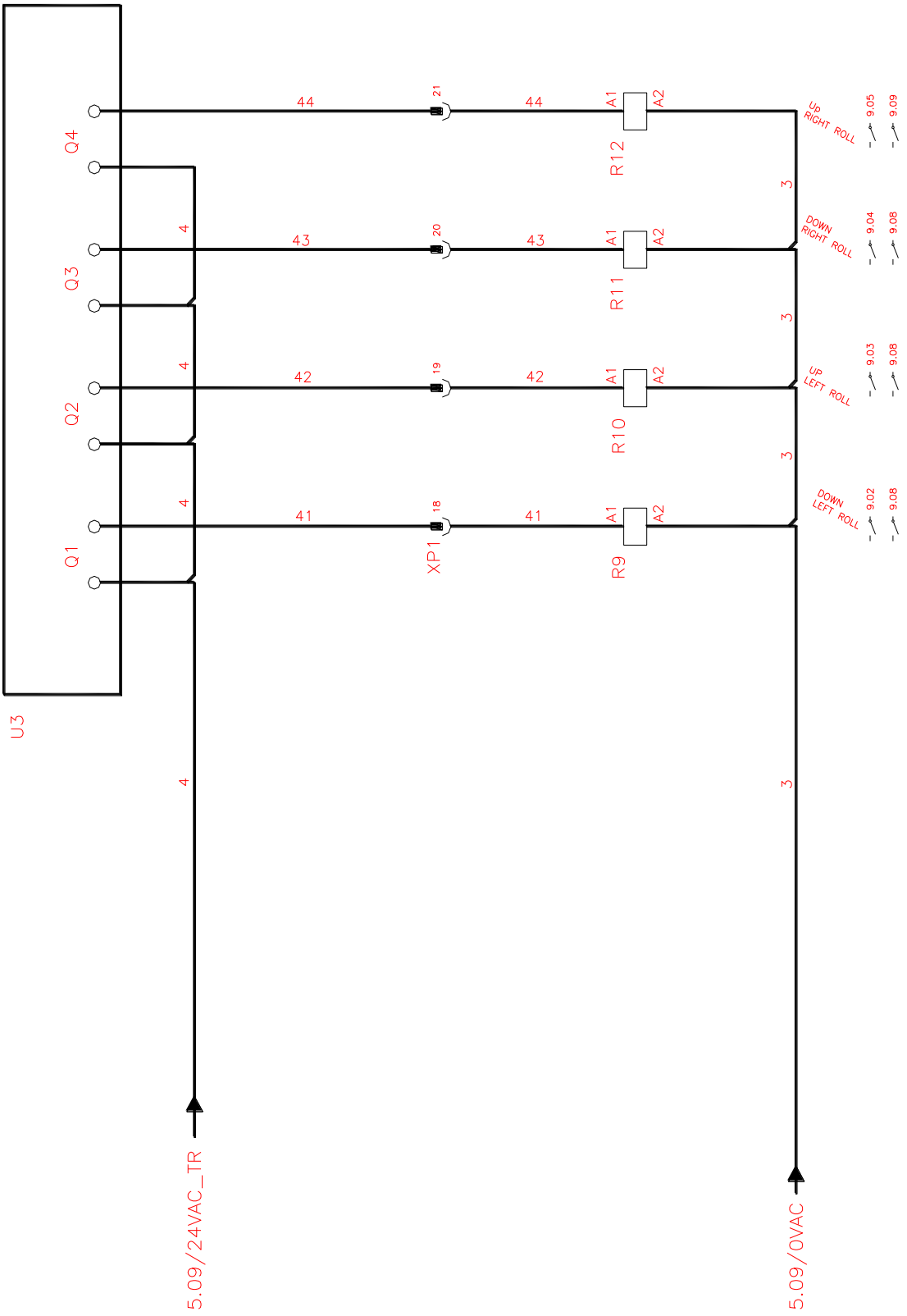
ELECTRICAL SCHEMATIC – LOGIC CIRCUIT 3 of 7



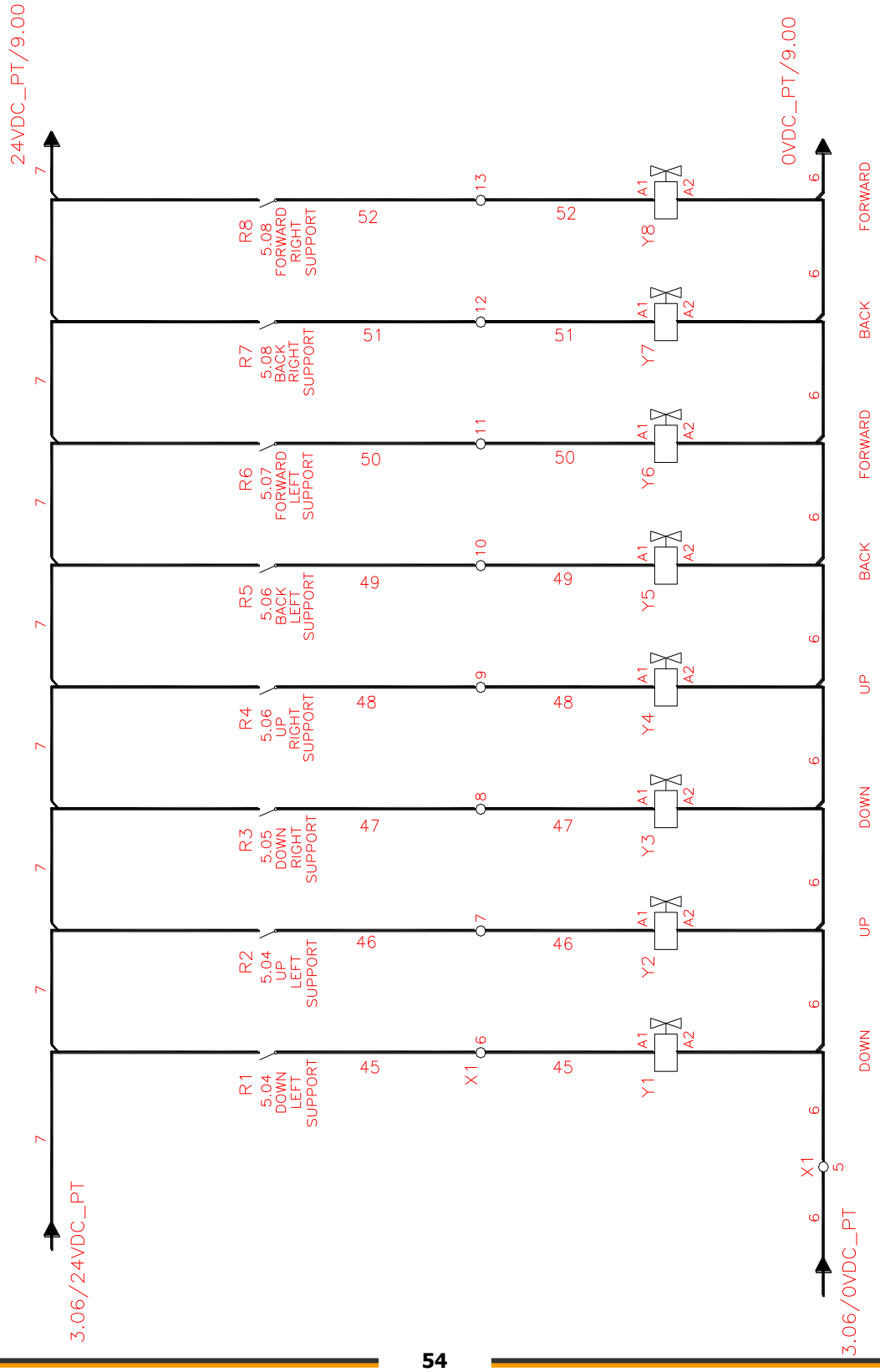
ELECTRICAL SCHEMATIC – LOGIC CIRCUIT 4 of 7



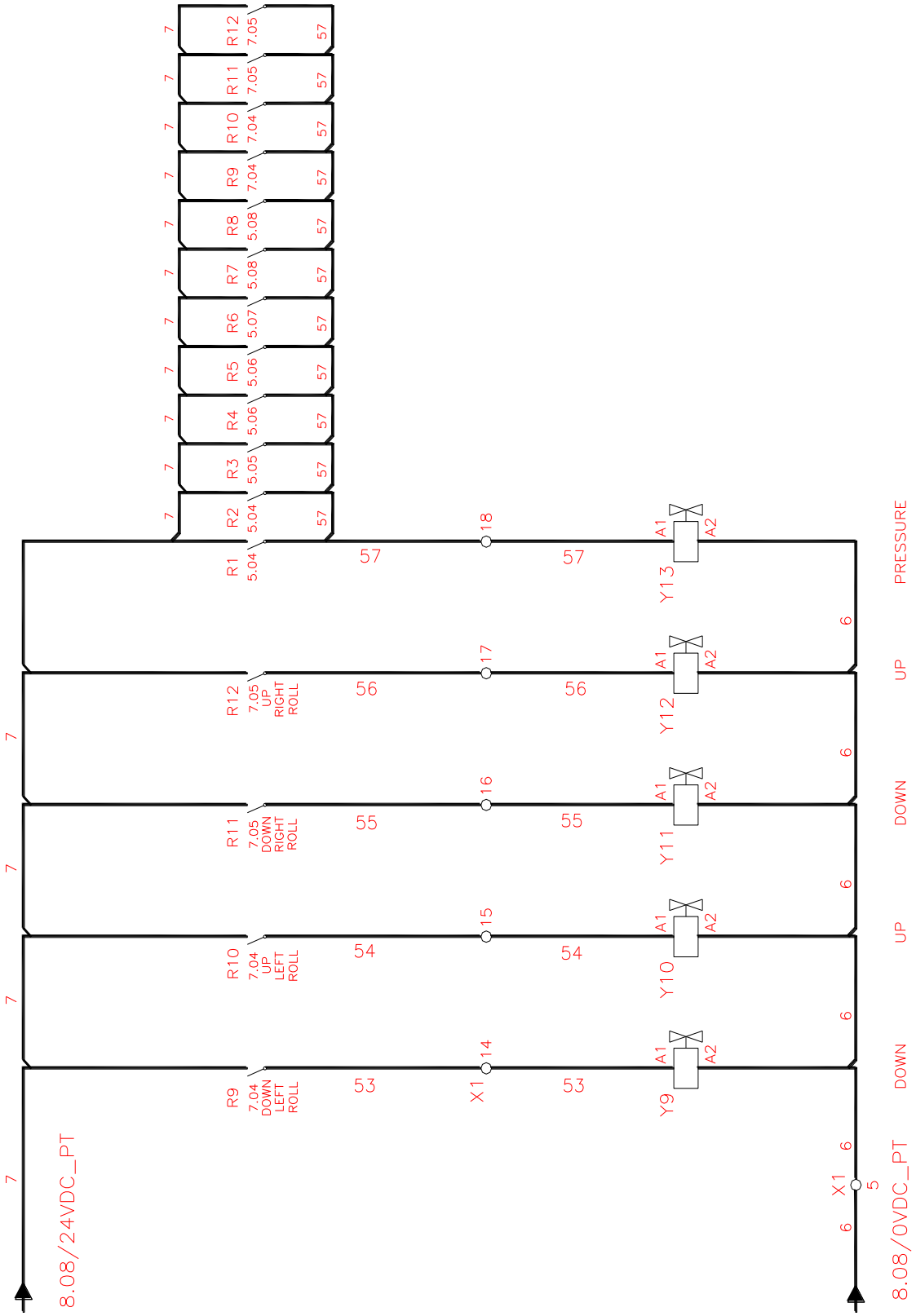
ELECTRICAL SCHEMATIC – LOGIC CIRCUIT 5 of 7



ELECTRICAL SCHEMATIC – VALVE CIRCUIT 6 of 7



ELECTRICAL SCHEMATIC – VALVE CIRCUIT 7 of 7



TROUBLESHOOTING

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

FAULT	PROBABLE CAUSE	REMEDY
MACHINE DOESN'T RUN	Power to machine disconnected	Reconnect power
	Check if the Emergency stop button was pressed	Twist clockwise (cw) to reset
	Power switch on electrical box is off	Turn switch to on position (1)
	Thermal sensor detected overheated motor	Wait for motor to cool down

NOTES

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