



# OPERATOR'S MANUAL

Metal Working



Book 1 of 2

## HYDRAULIC SHEAR MODEL: SH-120500-HD

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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 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 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](mailto: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.

 **DANGER**

 **WARNING**

 **CAUTION**

**NOTICE**

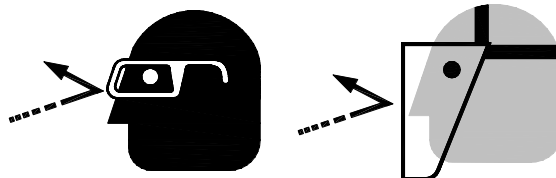


**SAVE THESE INSTRUCTIONS.**  
**Refer to them often and use them to instruct others.**



### **PROTECT EYES**

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



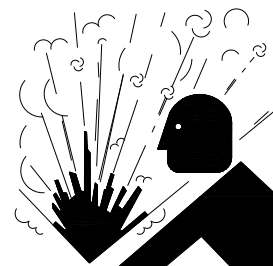
### **PROTECT AGAINST NOISE**

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



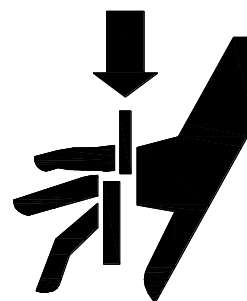
### **HYDRAULIC HOSE FAILURE**

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



### **BEWARE OF SHEAR HAZARD**

Keep hands and fingers clear from under the blade.  
**NEVER** place your hand or any part of your body in this machine. Blade is sharp. Placing hands or fingers near blade will result in cuts and possibly loss of fingers or limbs if placed in machine. **NEVER** place your hand or any part of your body in this machine.

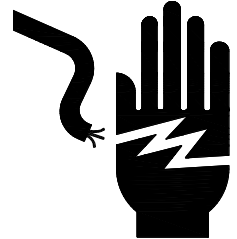






### **HIGH VOLTAGE**

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



### **EMERGENCY STOP BUTTON**

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



## **SAFETY PRECAUTIONS**



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

Safety equipment such as guards, hold-downs, safety glasses, dust masks and hearing protection can reduce your potential for injury. But even the best guard 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. **DO NOT** bypass or defeat any safety interlock systems.
5. **Remove any adjusting tools.** Before operating the machine, make sure any adjusting tools have been removed.
6. **Keep work area clean.** Cluttered areas invite injuries.
7. **Overloading machine.** By overloading the machine, you may cause injury from flying parts. **DO NOT** exceed the specified machine capacities.
8. **Dressing material edges.** Always chamfer and deburr all sharp edges.
9. **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 machine's rated capacity.
10. **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.
11. **Dress appropriately. 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.
12. **Use eye and ear protection.** Always wear ISO approved impact safety goggles. Wear a full-face shield if you are producing metal filings.
13. **Do not overreach.** Maintain proper footing and balance at all times. **DO NOT** reach over or across a running machine.
14. **Stay alert.** Watch what you are doing and use common sense. **DO NOT** operate any tool or machine when you are tired.
15. **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.
16. **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.
17. **Blade adjustments and maintenance.** Always keep blades sharp and properly adjusted for optimum performance.



18. **Keep children away.** Children must never be allowed in the work area. **DO NOT** let them handle machines, tools, or extension cords.
19. Keep visitors a safe distance from the work area.
20. **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.
21. **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.
22. **Turn off** power before checking, cleaning, or replacing any parts.
23. Be sure **all** equipment is properly installed and grounded according to national, state, and local codes.
24. 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.



## **TECHNICAL SPECIFICATIONS**

|                                                                 |                                               |
|-----------------------------------------------------------------|-----------------------------------------------|
| Mild Steel Maximum Thickness                                    | .500" (12.7mm)                                |
| Stainless Steel Maximum Thickness                               | .375" (9.5mm)                                 |
| Shear Length                                                    | 122" (3100mm)                                 |
| Blade Rake Angle                                                | .5° - 2°                                      |
| Blade Clearance                                                 | Manual Hand Wheel .002" - .024" (.05 - .60mm) |
| Strokes                                                         | 7-35/min.                                     |
| Maximum Ram Travel                                              | 6.5" (167mm)                                  |
| Back Gauge Length (motorized)                                   | .4" – 39.3" (10 – 1000mm)                     |
| Maximum Cutting Force                                           | 130389lbf (580kN)                             |
| Maximum Hydraulic Pressure                                      | 3190psi (22MPa)                               |
| Hydraulic Pump Flow                                             | 12.4gpm (47Lpm)                               |
| Hydraulic Reservoir Capacity                                    | 35gal (132.5L)                                |
| Main Motor                                                      | 20hp (15kw) 220V, 3ph, 60hz, 54A @1740rpm     |
| Back Gauge Motor                                                | 0.5hp (0.37kw) 220V, 3ph, 60hz, 2A @1650rpm   |
| Power                                                           | 220V 3-Phase / 60 Hertz                       |
| Shipping Weight                                                 | 19181lbs (87004kg)                            |
| Shipping Dimensions                                             | 152" x 135" x 91.5" (3860 x 3420 x 2320mm)    |
| Based on a material tensile strength of *64000 PSI – mild steel |                                               |
| **100000 PSI – stainless steel                                  |                                               |

## **TECHNICAL SUPPORT**

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

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



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



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



## 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.





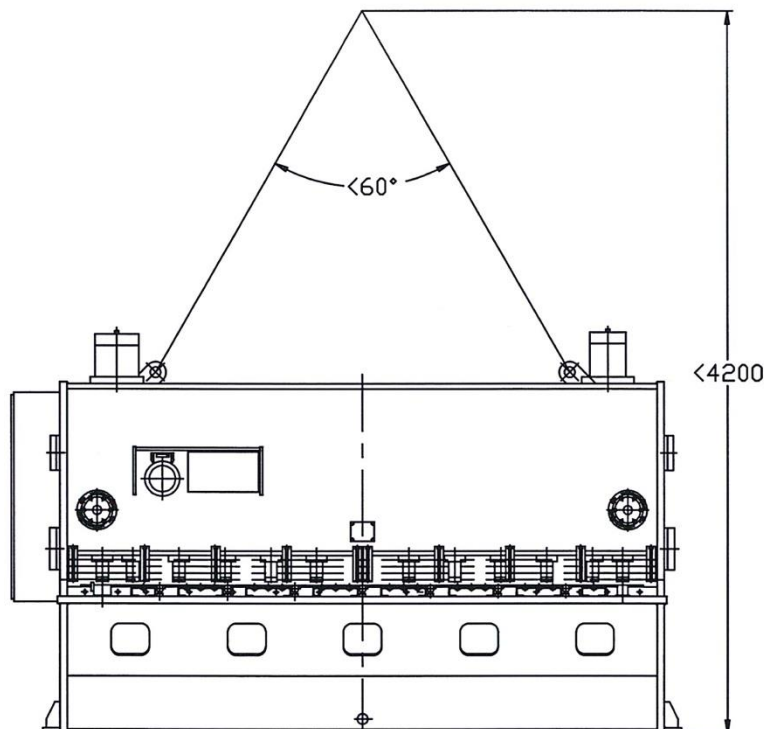
## TRANSPORTING AND LIFTING



**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:

- Always lift and carry the machine with the lifting holes provided at the top of the machine.
- Use lift equipment capable of lifting 1.5 to 2 times the weight of the machine.
- Check if the load is properly balanced by lifting it an inch or two.
- Make sure the machine is balanced. While transporting, avoid rough or jerky motion, and maintain a safe clearance zone around the transport area.
- 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 when looking for a suitable location to place the machine:

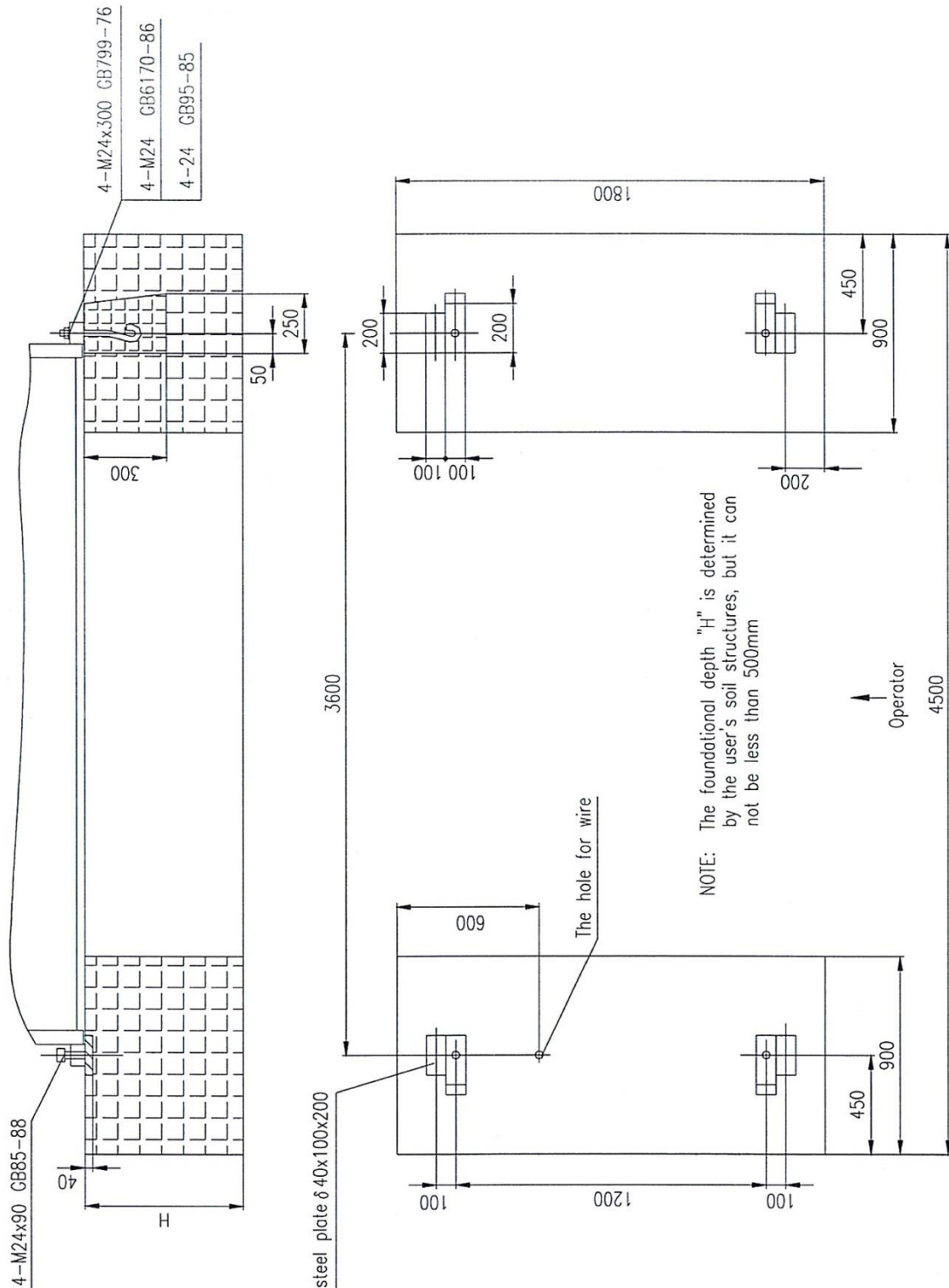
- Overall weight of the machine.
- Weight of material being processed.
- Sizes of material to be processed through the machine.
- Space needed for auxiliary stands, work tables, or other machinery.
- Clearance from walls and other obstacles.
- Maintain an adequate working area around the machine for 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.

### **Anchoring the Machine**

Before the installation, the foundation must be prepared based on the foundation drawing. The depth of the ground will depend on the actual soil conditions at the installation site. The base shall not less than 19.5" (500mm). Concrete pouring on the foundation is made in two pours. The machine will be placed on the foundation 10 to 15 days after the first pour. With rough level adjustment and anchor bolts laid down, then make the second pour. 18 hours later

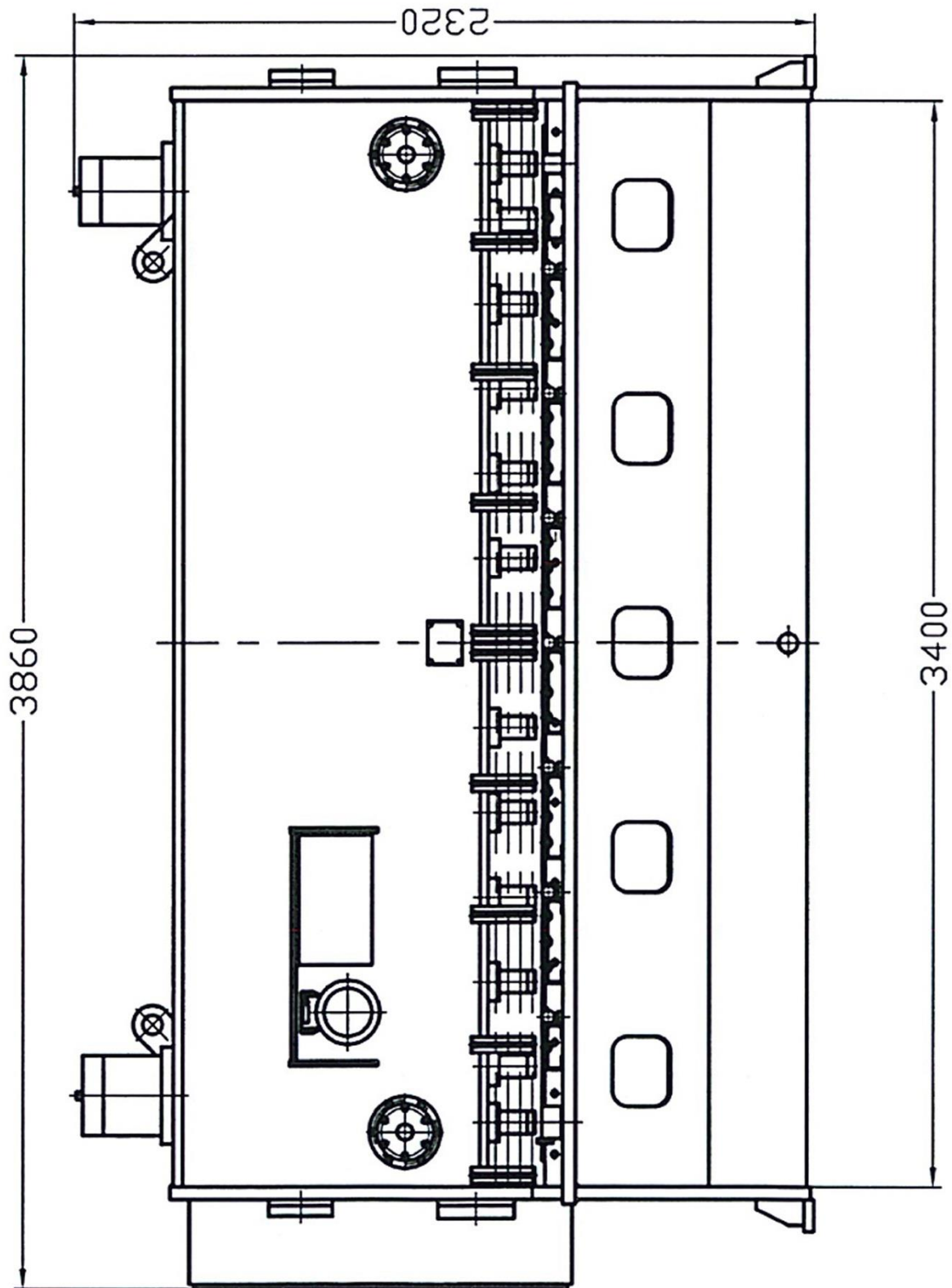


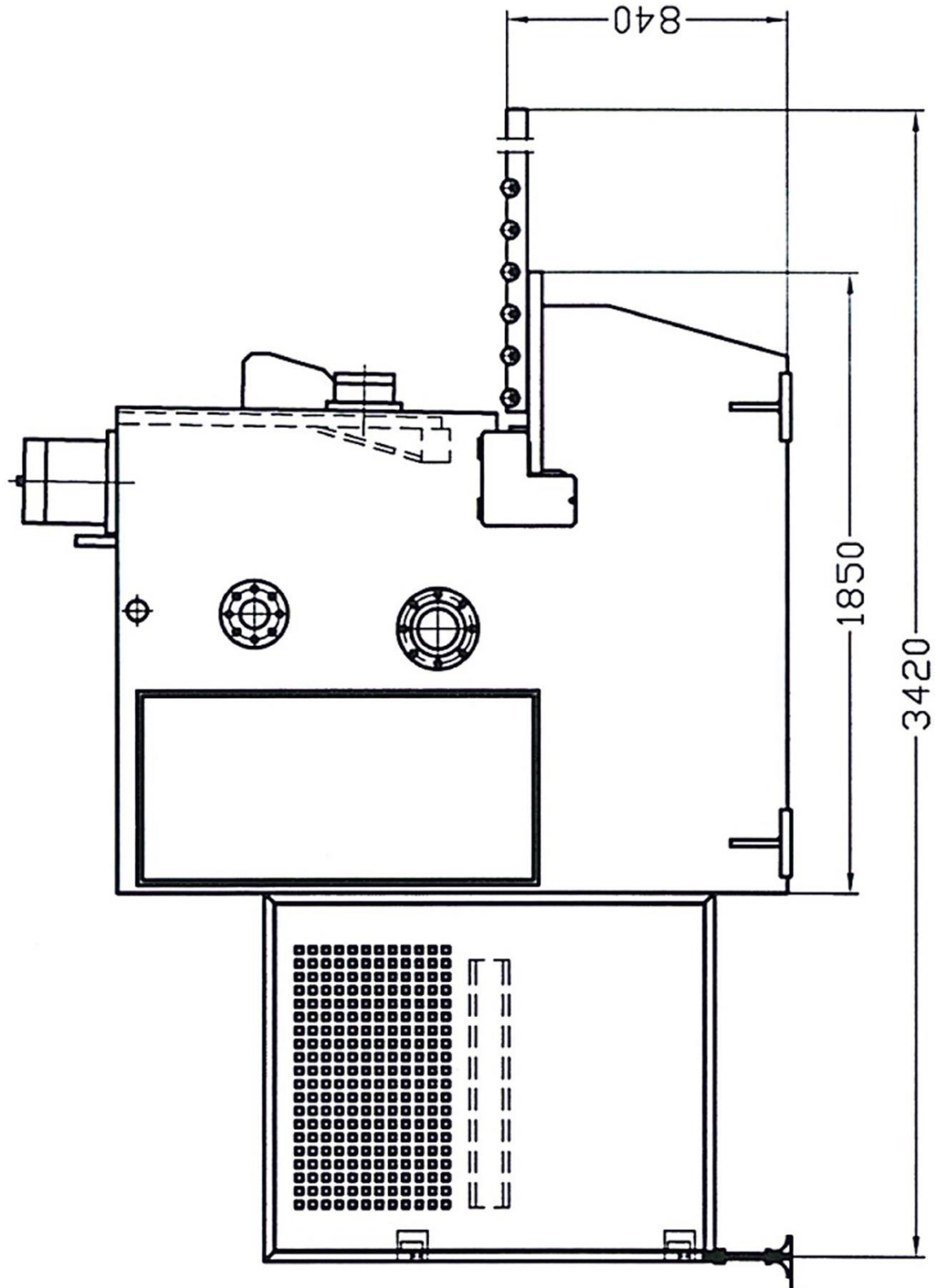
readjust and level to within 0.002"/39.5" (0.05/1000mm) and tighten the anchor bolts (The level should be placed on the support of lower blade for level adjustment).  
The tolerance in the machine's longitudinal and transversal directions .008"/39.5" (0.2/1000mm).





## OVERALL DIMENSIONS







## ASSEMBLY AND SET UP



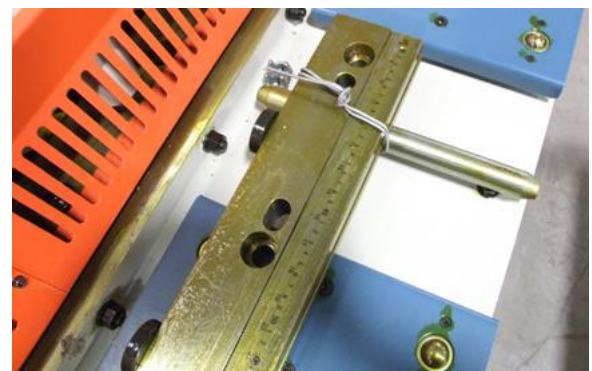
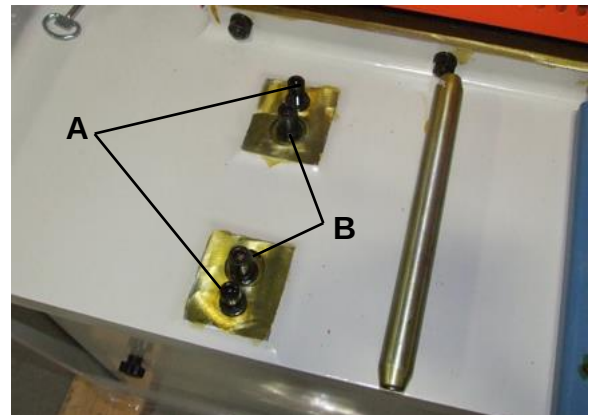
**WARNING:** For your own safety, DO NOT connect the machine to the power source until the machine is completely assembled and you read and understand the entire instruction manual.

### Connecting the Foot Pedal

1. Unpack the foot pedal and route the plug connector to the bottom of the electrical enclosure.
2. Connect and secure the plug into the socket.
3. Position the foot pedal as needed for ease of operation. DO NOT allow the harness to become a trip hazard.

### Squaring Arm

1. Remove the squaring arm mounting bolts (A).
2. Unpack the squaring arm and clean the rust inhibitor off of the squaring arm and the mounting pads.
3. Place the squaring arm over the eccentric post (B).
4. Install the mounting bolts (A) so that they are lightly tightened but that the arm may be adjusted to square.
5. Using a framing square aligned to the squaring arm and the shear blade cutting edge, adjust the eccentric posts (B) until square.
6. Tighten the mounting bolts (A).







## Guards and Light Curtains

1. Unpack the left and right back guards and the support pads.
2. Install the support pads into each guard so that at least 1" (25mm) of thread is in the guard and the pad.
3. Set the initial length of the pad to be about 10" (254mm) from the bottom edge of the guard. This will be adjusted at the end of the installation.
4. Remove and use the four mounting bolts in the frame to attach the guards to the frame.
5. Adjust the support pads to just contact the floor and then add 1/2 turn additional down (extending) to provide the support to the end of the guard.
6. Lock the jam nuts in place.
7. On the left (electrical cabinet end) end of the shear, route the wire harnesses for the light emitters through the stiffener channel and connect the plugs.
8. The plug connections are PC1-T to PC1-T and PC2-T to PC2-T.
9. Connect the plug PC1-T and PC2-T.
10. Install the emitters onto the inside of the left (electrical cabinet) side back guard so that they are to toward the machine and pointing toward the far end of the machine.



**Note:** Typically, the emitter connected to PC1-T is mounted on top and the PC2-T emitter is mounted low. As long as the wires reach easily from the channel to the emitter, the top or bottom position does not matter.



**Note:** When tightening the mounting brackets to the guard tube, slide the bracket inboard toward the shear as far as possible.







11. Install the reflectors onto the inside of the right side back guard so that they are to toward the machine and pointing toward the far end of the machine.



**Note:** When tightening the reflectors to the guard tube, slide the bracket outboard away from the shear as far as possible.

### **Aiming the Emitters**

1. When the power has been connected to the machine, turn power on and then turn on the light for the shadow line. Do not run the hydraulic pump.
2. When the light beams are aimed correctly the LED indicator lights on the top of the emitters will be ON.

The emitter bounces a laser light beam off of the reflector and back to the emitter to close the circuit and allow the shear to operate.

The light beam does not need to be exactly in the center of the reflector for operation.

3. Generally, if both back guards are mounted securely and positioned in line with the frame then are mounted to, then aiming will be almost automatic. Normally the left (electrical cabinet) side guard may be pushed inward about 1 degree to complete aiming.
4. Test the light curtain operation using the shadow line. If either light beam is broken, the shadow light will turn off. This is a quick visual indicator of the light curtain operation.



### **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. Refer to any labels or marking affixed to the outside of the machine, if none exist, use SHELL BRAND #46 or #68 hydraulic oil or an equivalent with similar specifications. (Based upon location temperature and availability.)

Verify that any cylinder rams are in the retracted position to prevent overfilling of the tank. Recheck the oil level after the first few hours of operation and again after the first full week of operation.

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



## ELECTRICAL



**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 Supply

The machine is supplied to run on 220VAC, 3ph, 60hz. The control transformer TC1 supplies the power of AC 24V and AC 220V to the control circuit. The solenoid valve is supplied with power of DC24V.

In order to avoid the cover high voltage drop caused by the current peak value, the section of the main supply cable must be selected correctly and connected reliably with the coil in of the machine power supply.

To guarantee the safety of you and you equipment, the machine must be connected with the earthen grid by the cable whose section is as same as that of the main supply cable. It is recommended to make an earth device especially for the machine.

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 change 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 an amperage rating slightly higher than the full load current of machine.
- A separate electrical circuit should be used for your machines. 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 machine.
- 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 machine 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.



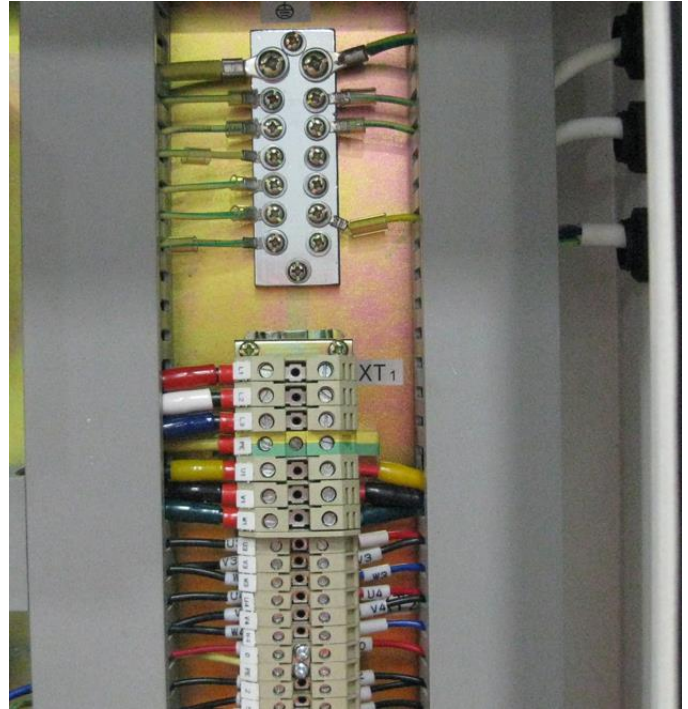
**WARNING:** In all cases, make certain the receptacle in question is properly grounded. If you are not sure, have a qualified electrician check the receptacle.

- 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 machine is properly grounded.
- Repair or replace damaged or worn cord immediately.



### **Power cord connection:**

1. Unlock and open the electrical enclosure door.
2. Insert a strain relief fitting into an open hole at the bottom of the electrical cabinet to grip the power cord (supplied by customer) and route a power cord into the cabinet to the top of the terminal strip at the upper right side of the cabinet (XT1).
3. Connect the three power wires terminals L1, L2, & L3. Connect the ground wire (typically green) to the PE terminal.
4. Check that the power cord is routed inside the cabinet so as to avoid contact with other components inside the cabinet.



### **Check for correct rotation of the motor**

1. Close the electrical enclosure door.
2. With power connected and the main disconnect turned ON, the power light on the control panel will be lit.
3. Place the Stroke switch in the JOG position.
4. Press the motor start button and listen for the sound of the hydraulic pump pumping fluid. Check that the rotation direction of the motor is in accordance with the indication of the nameplate of oil pump. If not, change it at once. In case air is found in the hydraulic system, push the buttons for motor starting and stopping alternatively until the air is discharged. Recheck the hydraulic oil level.
5. Press the foot pedal. The clamping cylinders should extend and the blade beam should move down. **If not**, disconnect power to the machine, and switch the L1 and L3 wires. **DO NOT** move the ground wire.





## CONTROLS FUNCTIONS



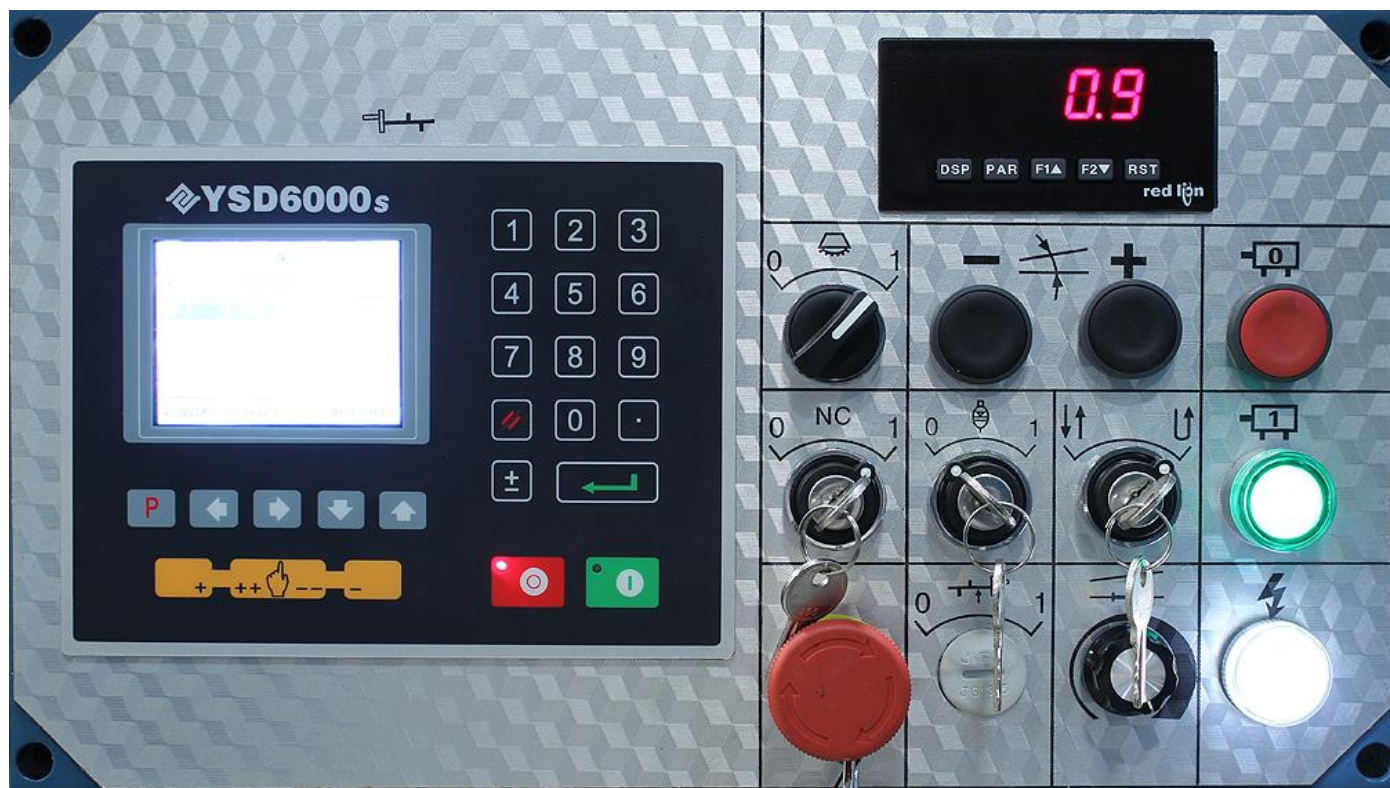
|                        |                                                                                                                                                                    |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| YSD6000                | Used to set and store bending parameters for either single or programmed usage.                                                                                    |
| DRO (Digital Read Out) | Displays the rake angle of the upper blade in degrees as compared to the lower stationary blade. This is a display and does not program or control the rake angle. |
| Shadow Lamp            | When turned On, this will produce a shadow line at the point that the material will be cut. This can be used to align the material to the cut point.               |
| Rake Angle Minus (-)   | Reduces the rake angle of the upper blade.                                                                                                                         |
| Rake Angle Plus (+)    | Increases the rake angle of the upper blade.                                                                                                                       |
| Motor Stop Button      | Stops the hydraulic pump motor operation.                                                                                                                          |
| NC Key Switch          | Provides power to the YSD6000 Controller.                                                                                                                          |
| Accumulator Switch     | Place in the On position to direct hydraulic pressure to the accumulator if needed. This is NOT a common operation.                                                |
| Stroke Cycle Switch    | Sets the system to function with the operator full foot pedal stroke control or operator single touch foot pedal stroke control.                                   |
| Motor Start/Run Switch | Press to start and run the hydraulic pump. The switch button will illuminate green when the pump motor is running.                                                 |



|                             |                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Emergency Stop Switch       | In the event of an unwanted or unsafe condition, press the E-Stop to stop all machine functions.<br>Twist the knob to reset the switch.                                                                                                                                                                                                                          |
| Cutting Stroke Control Knob | Controls the ram down travel (stroke) during the cutting process. Turning the knob fully counterclockwise will limit the ram travel to only small portion of the blade on the left end of the blade will produce a cut. Turning the knob fully clockwise will allow the ram to travel down the full stroke and cut material over the entire length of the blade. |
| Power Lamp                  | The lamp will be illuminated when the main disconnect on the electrical cabinet is powered on.                                                                                                                                                                                                                                                                   |

## SYSTEMS OPERATION

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







**Note:** It is recommended the minimum cutting width be equal to or greater than 15 times the thickness of the material in order to have a good workpiece with clean edge and with no twist or deformation.

### **Operation Procedure**

1. Turn ON the main power disconnect switch and press the motor start button to start the motor.
2. If not already completed during the wiring, inspect if the rotate direction of the motor is in accordance with the indication of the nameplate of oil pump. If not, stop the motor and change the wiring immediately.
3. Adjust the blade gap clearance using the handwheel to the left of the control panel. Rotate the handwheel until the pointer is pointing at the material thickness dimension for the material to be cut.
4. Adjust the rake angle for the thickness of material to be cut. The rake angle is best set at the lowest angle that will provide a cut.
5. Adjust the shearing stroke based upon the width of the material to be cut.
6. Run the beam down and back up at least one stroke before beginning to cut material.
7. Recheck the adjustments and when the machine has been adjusted for the material to be cut, shearing can be started.

### **Shearing Stroke Adjustment (shearing in section)**

1. Using the adjustment of knob, the shearing stroke of cutting beam can set to cut a few inches wide up to the full width of the blade. You can choose a small shearing stroke for cutting a workpiece with smaller width to shorten the shearing time and raise the shearing efficiency.
2. Rotate the shearing stroke knob counterclockwise to shorten the stroke and clockwise to increase the stroke.

### **Shadow-line Cutting**

Turn the shadow-line lamp ON and verify that the shadow line is exactly in line with the cutting edge of the blade. If not, the adjustment has to be made as following:

3. Loosen the lamp support screws.
4. Move the lamp support forward or backward until the lamp light is aligned with the cutting edge.
5. Hold the lamp in position and tighten the support screws.



## **Blade Clearance Adjustment**

To obtain a high-quality shearing section, a suitable blade clearance must be selected according to the material to be cut. This shear is equipped with a fast adjustment handwheel for blade clearance.



**Note:** This is a general guide for setting the blade gap. Your specific settings may change based upon several factors regarding specific material and other machine settings and conditions. This is based upon a general guideline of blade gap is equal to 6.5%-7% of material thickness. These settings are based upon mild steel. Other material will differ. Generally, slightly larger gap for material such as stainless steel, and a slightly smaller gap for softer material of aluminum or copper.

**Under no circumstances do you want the blades making contact with each other as this can cause blade breakage as well as premature dulling of the cutting edges.**

1. With the blade in the fully up position, rotate the handwheel until the pointer is pointing at the closest dimension for the material to be cut.
2. Operate the shear for 1 or 2 cycles with NO material to verify that there is no interference and allow the shear ram to fully position.
3. Test the cut on scrap material. Fine adjust if needed. Keep notes about the gap position for each specific material and thickness.



**Note:** Whenever the adjustment has been completed, trial shear scrap or excess material of the same exact type as the production piece to verify the adjustments. Readjust as needed until a satisfactory shear section is obtained.



**Note:** For shearing plastic material, the blade clearance should be a little bit smaller and a little bit larger for brittle material.





### **Back Gauge Operation**

The back gauge is electrically controlled by YSD6000S control and display. The back gauge can be moved only when the cutting beam is stopped at the top dead point. The movement is transmitted through a braking motor and a reducer.

A counter and push-buttons for control system are located on the face of the controller panel. The back gauge may be moved in fast speed to get to the new distance quickly and then slow speed to complete the adjustment.

In case the reading in the counter is not conformed to the actual size, input the actual size by digit key in the counter, and then push "RESET" key.



**Important:** When adjusting the back gauge, always finish with the back gauge moving forward.

**Example:** If the back gauge is currently located at 10" (254mm) and the new position is to be 20" (508mm). Move the back gauge back to at least 21" (533mm) and then forward to the 20" (508mm) position. This will avoid errors cause by thread clearance.

### **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.



## **HYDRAULIC SYSTEM**

Refer to the hydraulic schematic for additional detail and to the components being discussed.



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

### **Cutting Stroke**

When the pump is started, press the footswitch. The coil YA2 solenoid valve (No.13) is energized and the spool moves to close the P port.

Oil is directed to the clamping cylinders. The clamping cylinders will be pressurized and lower to clamp and hold the material.

At the same time, pressurized oil will divide to enter the top chamber of the left cylinder.

With oil forcing the left cylinder piston to move down, oil from the left cylinder lower chamber is forced across to the upper chamber of the right cylinder. This also forces the piston down and the oil from the lower chamber of the right cylinder will flow into the accumulator (No. 20).

Because the volume of the lower chamber of the left cylinder is nearly equal to that of the upper chamber of the right cylinder, a serial synchronous circuit is formed which moves the cutting beam downward evenly.

### **Return Stroke**

When the cutting beam reaches the return point, coil YA2 is deenergized.

With no valve energized the hydraulic pump will run at idle with fluid flowing back to tank.

At the same time pressurized oil from the accumulator will reverse the flow of oil into the cylinders causing the beam to rise back to the TDP.

### **Rake Angle Adjustment**

The rake angle is changed by adding or removing oil from the upper chamber of the right cylinder while keeping the left cylinder stationary.

1. With the pump running, press the pushbutton for rake angle increase or decrease as needed for the material to be cut.
2. When the decrease button is pressed the YA1, YA2, and YA3 coils are energized and oil will flow through valve (No. 10) and enter the upper chamber of right cylinder and the oil in the lower chamber of the right cylinder will flow to the accumulator. With the left cylinder stationary, the right cylinder comes downward while the rake angle decreases.
3. When the increase button is pressed the YA2 coil is energized and oil in the upper chamber of the right cylinder will flow back to the tank through the valve (No.10). With the left cylinder stationary, the right cylinder comes downward while the rake angle increases.





## ELECTRICAL SYSTEM OPERATION

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

### Main power switch

Turn the main disconnect switch QS located on the back side of electrical cabinet ON, the power indicator HL1 lights. The operating control circuit is energized.

### NC Controller Start

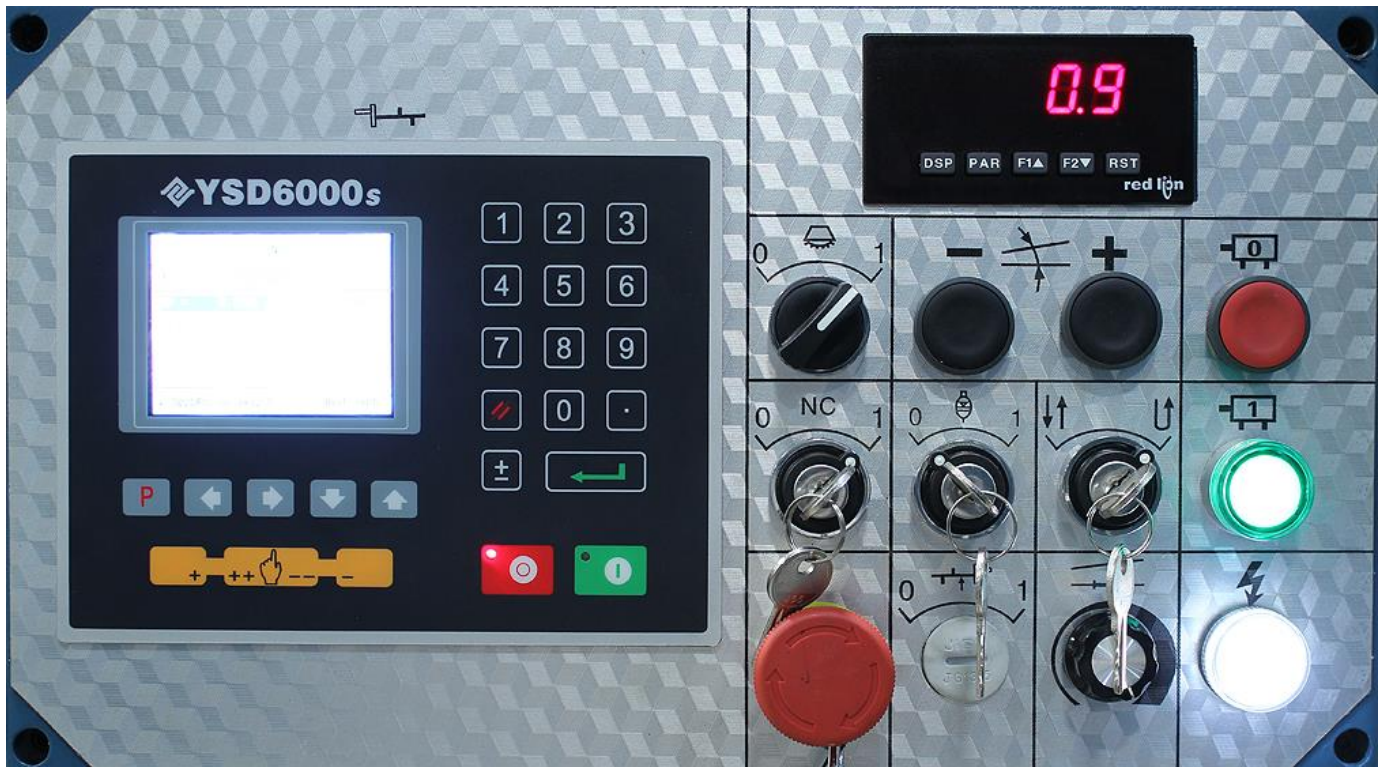
Turn the NC Key switch to the ON (1) position and allow the YSD6000s controller to power on and complete the boot up cycle.

### Motor start of main oil pump

Push and hold briefly the green start button SB2. The button of the switch will illuminate and the hydraulic pump motor (main motor) will start and run.

### Motor stop of main oil pump

Push the red stop button SB1. The main motor stops and the green indicator HL2 turns off.







### **Rack Angle**

Push the SB7 (+) button and the valve YA3 is energized. When the other hydraulic and mechanical functions are met, the rack angle will increase until it contacts the limit switch SQD. Push the SB6 (-) button and the relay KA2, KT3 and valve YA1, 2, and 3 are energized. When the other hydraulic and mechanical functions are met, the rack angle will increase until it contacts the limit switch SQC.

The LED display lights HL11-HL16 will illuminate in turn as the rack angle changes from 0.5°-3.0°.

### **Stroke Cycle Key Switch**

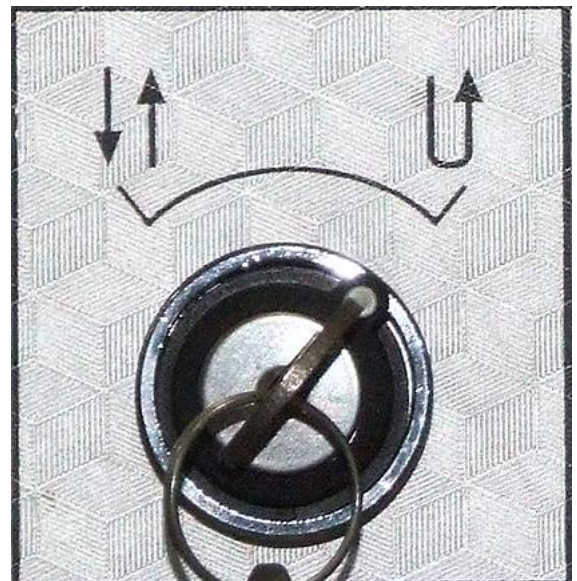
#### **Pedal Hold Cycle:**



With the pedal hold cycle, the operator must hold the pedal for the beam to continue to go down. If the operator releases the foot pedal the beam will return to the TDP.

With the pump running place the stroke cycle key switch SA1 in the left position. If not full up the beam will move to the top dead point and stop. At the TDP the limit switch SQA will close, the relay KA6 is energized to energize the KA1 relay which in turn will hold itself energized. Then step on the footswitch S1, the relay KA3, timer relays KT3, and KT4 and valve YA2 are energized and the beam comes down.

When the footswitch is released or when the time set on the KT4 expires, the relay KA3, timer relay KT4 and valve YA2 are de-energized. The relay KA4 and valve YA2 are energized and the beam returns to the TDP.



#### **Full Single Cycle:**



During full single cycle operation, the operator may press and release the foot pedal. The beam will travel down until the timer KT4 expires or until it reaches the lower limit switch SQC and then return to the TDP.

Place the stroke cycle key switch SA1 in the right position. Press (and release if wanted) the footswitch S1, the beam will move down. The KA3 relay is energized and holds itself. When time on the time delay relay KT4 expires or the beam reaches the limit switch SQC is close, the relay KA4 and valve YA2 are energized and the beam returns to the TDP.

The length of stroke time (aka time delay timer KT4) is controlled by the potentiometer RP1 located on the control panel.



## **Accumulator Charging**



**Important:** This is not a common function. The accumulator has been charged from the factory and will not require charging unless someone has tempered with or inadvertently actuated the accumulator hydraulic circuit ball valve. This story is only intended to provide understanding of the accumulator circuit.



**Note:** This operation requires two people to be able to reach switches and valve at the same time.

Turn knob SA1 to "0", and turn knob SA3 to "1", the relay KA4 and valve YA1, 2, 3 are electrified. At the same time, loosen the stop valve of accumulator, then fill accumulator according the value on the pressure gauge. Then shut off the stop valve as soon as the value is present and turn SA3 to "0". Accumulator charge is complete.

## **System start light**

Check if the emergency stop switches of the control panel and the foot pedal have been reset, and that the light curtain for the safety-guarding on the back of the shear are closed.

## **Back Gauge:**

The back gauge of this machine is controlled by the YSD6000s numerical control system. More detailed operational information will be later in this manual.

The button SA4 is the power switch for YSD6000s system. The motor of back gauge is controlled by variable frequency drive.

- a) Starting and middle moment: The variable frequency drive supplies 50Hz frequency to the motor, during this time the motor will operate at full-speed.
- b) Ending moment: When the back gauge gets close to the target value, the frequency supplied to the motor will decrease to 5-10Hz and the motor will operate at slow-speed. The slow speed reduces inertia to near zero and improves the position precision of the back gauge.

## **Limit Switch on Frontal Safe Bar:**

Limit switch SQ1 is installed on the frame under the frontal safe bar.

It is used to protect the operator's safety. Machine will not run when the limit switch is deactivated. When the safety bar is reset, the machine will return to normal operation.



## OPERATION INSTRUCTION, YSD6000s



### Keys



Clear/Delete key, clear current numbers entered



Enter: in programming interface, press this key to confirm the parameter entered.



Stop, Stops operation and the LED in the corner will illuminate.



Start, to let the controller operate in the automatic running interface. The LED in the corner will illuminate when running.



Interface switching, mainly used to switch among parameter interface, programming interface and diagnose interface and to modify in program sequence.



Left Direction key, moves the cursor to the left or page back.



Right Direction key, moves the cursor right or page forward.



Cursor up, press this key to show previous parameter.



Cursor down, press this key to show next parameter.



Function Key. Press to switch pages for different functions.



Symbol Key. Press this key to switch the symbol of value in the input area between + (positive) and – (negative).



0 – 9 Digit Keys. The 10 digit key pad.



Decimal key. This key allows you to input decimal symbol.



Low speed forward moving key.



Low speed forward moving key.



High/low speed selection, press this key to output high speed and release to output low speed key.

### Display Screen

The display screen is a 160 x 160 dot matrix LCD display.

- Title bar: display relevant information of current page, such as its name, etc.
- Current Position: This displays the current relative position of the X axis (Back Gauge).
- Parameter Edit Area: Displays the parameter name, parameter value and system information.
- Status bar: display area of input information and prompt message, as well as units of measure.

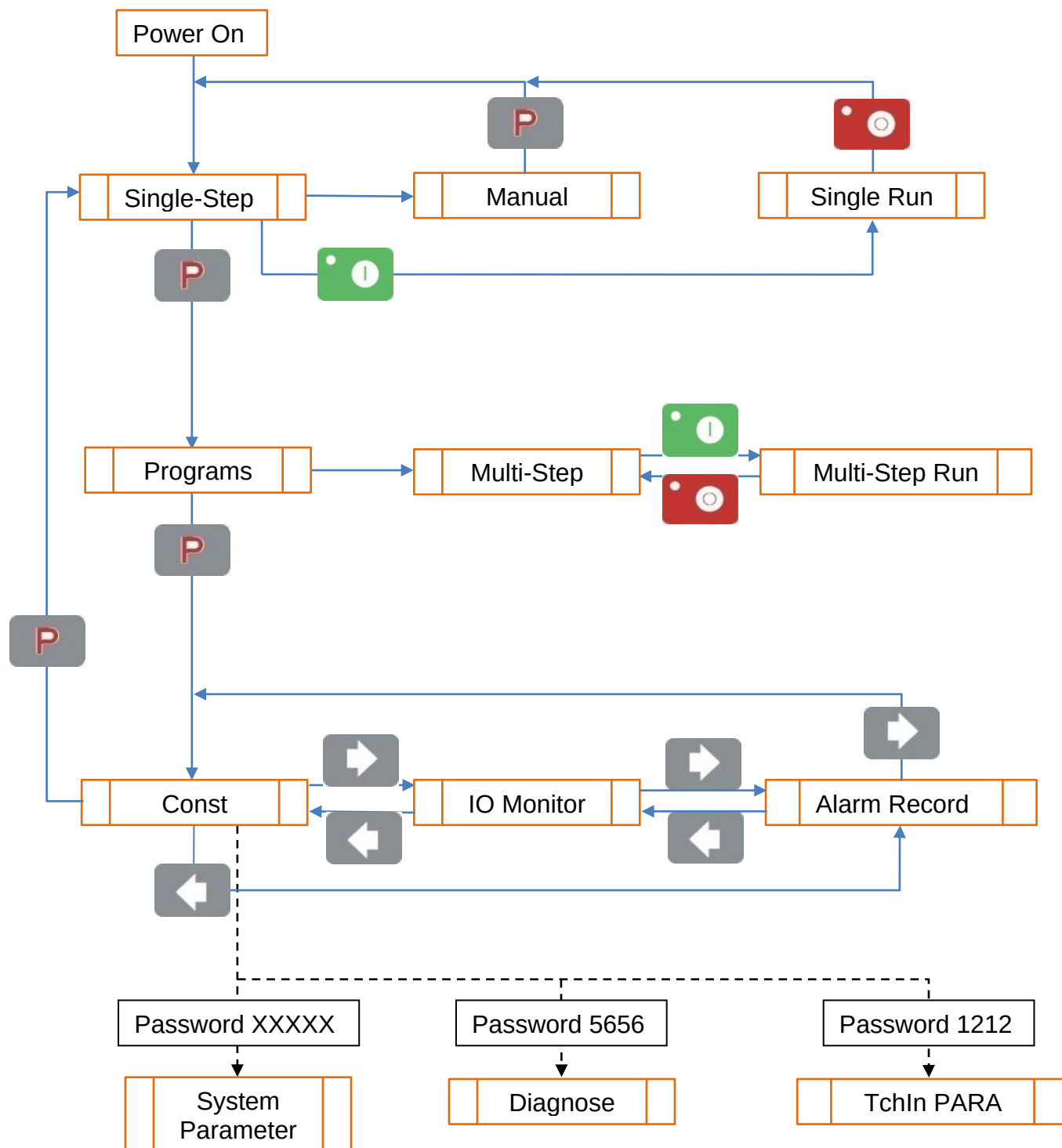
|                     |                              |       |      |       |
|---------------------|------------------------------|-------|------|-------|
| Title Bar           | SINGLE                       |       |      |       |
| Current Position    | X= 5.999 G=-----             |       |      |       |
| Parameter Edit Area | XP =                         | 6.000 | GP = | 0.000 |
|                     | DX =                         | 0.100 | CL = | 0     |
|                     | PP =                         | 0     | CP = | 1188  |
| Status Bar          | DestPos of axis X Unit: inch |       |      |       |





## BASIC OPERATION FLOWCHART

The controller interface switches as the flowchart shows as follows:





## **Start and Stop**

After finishing the programming, press  to run the device.

The device starts, the green indicator light will be on.

Only on the SINGLE page, PROAGRAM page or STEP page, the machine can run after

pressing . In other pages, press  to run is invalid.

When there is any alarm, the machine cannot start until the alarm is clear, the machine can then start again.

Press  to stop the machine immediately. At the same time, the page on the device moves backs to the previous programming page.

The device does not start, the red indicator light will be on.

## **Parameter Setting**

When editing the parameter, press the , , , or  arrow buttons to select the parameter you want to modify. Input the value and press the  enter button to finish. When editing the parameter, please review the tip in the edit row at the bottom of the screen. If the value is out of range, the tip will display "Out of range". Input a correct value to correct.

## **Alarm Reset**

When there is any alarm, the machine stops immediately. If you want to recover the machine's operation, you need to clear the alarm.

On the CONST page, press  arrow button to enter the ALARM RECORD page. The most recent alarm information will display from the top down. Use the information within the status bar at the bottom of the screen to progress through the problem. Then press the  reset and then  enter button to clear the alarm. The machine is then ready to return to operation.

## **OPERATION EXAMPLES**

### **Single Step**

Used when the material being processed into workpieces have the same length. For this example, we use 6 inches.

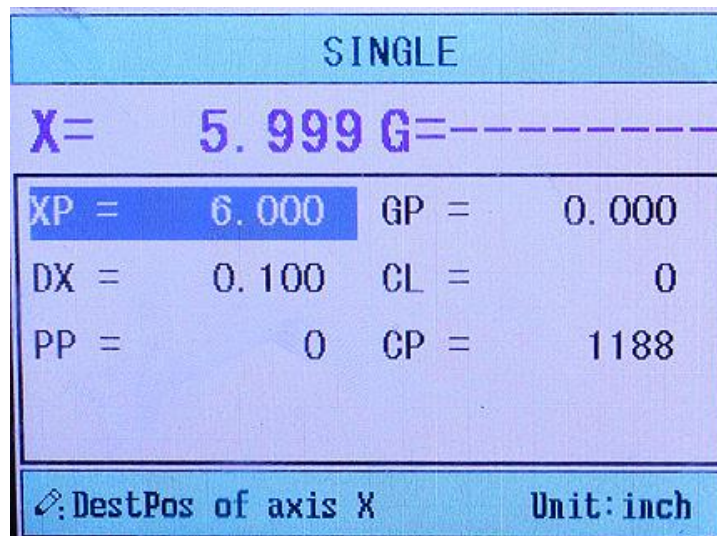
- Length of each workpiece is 6"
- Gap is Not used. Step manually.
- Distance of retracting is 0.2"
- Time for the back gauge retract delay is 2.00sec.
- Workpiece is 10.



| Parameter | Setting                                        |
|-----------|------------------------------------------------|
| XP        | 6.00"                                          |
| GP        | Not used.                                      |
| DX        | 0.2"                                           |
| CL        | 80 (typical default. Normally does not change. |
| pp        | 10                                             |
| Others    | According to the actual situation to set.      |

1. Power on, the device displays the single-step parameter page automatically.

2. Press either the , , , or  arrow keys to highlight and then modify the selected parameter.



3. Press the  start button to run the device. The device will enter the running page.



**Note:** Parameter can only be set when Stop indicator is on. The G axis is not active and cannot be changed.

### Multi-Step

If there are 5 pieces of material which need to be processed into three workpieces with different length as noted in the following:

- The first sheet: Length is 4", Distance of retracting is 0.25".
- The second sheet: Length is 12", Distance of retracting is 0.25".
- The third sheet: Length is 24", Distance of retracting is 0.25".



This operation will edit and save in the number 2 program folder setting the following parameters on the PROGRAM page.

| Page    | Parameter    | Setting   |
|---------|--------------|-----------|
| PROGRAM | ST           | 3         |
|         | pp           | 5         |
| 1 / 3ST | XP           | 4"        |
|         | GP           | Not used. |
|         | DX           | 0.25"     |
|         | Repeat Times | 1         |
| 2 / 3ST | XP           | 12"       |
|         | GP           | Not used. |
|         | DX           | 0.25"     |
|         | Repeat Times | 1         |
| 3 / 3ST | XP           | 24"       |
|         | GP           | Not used. |
|         | DX           | 0.25"     |
|         | Repeat Times | 1         |

1. Power on, the device displays the single-step parameter page automatically.
2. Press the  button to switch to PROGRAMS manage page.



3. Press number 2 or use the , , , or  arrow keys to select the number 2 program folder.



4. Press the  enter button to enter the number 2 folder program page.
5. Using the information from the chart above, press either the , or  arrow keys to highlight and then modify the selected parameter.

| NO.2         |         | PROGRAM |       |
|--------------|---------|---------|-------|
| X=           | 10.00   | G =     | 10.00 |
| ST:          | 3 STEP  |         |       |
| PP:          | 5 PIECE |         |       |
| CP:          | 5 PIECE |         |       |
| ↗:Total Step |         |         |       |

6. Press the  arrow button to enter 1/3ST page, and modify the parameters using the information in the 1 / 3ST row of the chart above.

| PROGRAM2            |        | 1 / 3ST |      |
|---------------------|--------|---------|------|
| X=                  | 10.00  | G =     | 1.00 |
| XP:                 | 100.00 | mm      |      |
| GP:                 | 1.00   | mm      |      |
| DX:                 | 5.00   | mm      |      |
| Cut Length:         | 80     | %       |      |
| Repeat Times:       | 1      | TIMES   |      |
| ↗:DestPos Of Axis X |        |         |      |

7. When the information is entered as desired, press the  arrow button to enter 2/3ST page, and modify the parameters using the information in the 2 / 3ST row of the chart above.





8. Repeat the steps for the 3 / 3ST page.
9. Press the  button to switch to PROGRAMS manage page.
10. Press the  start button to run the device. The device will enter the running page.

## **PROGRAMMING**

This device has two programming methods, which are single-step programming and multi-step programming. The user can set up programming according to actual demand.

### **Single-Step Programming**

Single-step programming is generally used for processing single step to finish work piece processing. That is, one cut into one piece of material, or several cuts into a sheet of material in which every cut uses the same back gauge position. For example, if cutting a sheet of material into the same size strips.

When the controller is power on, it will automatically enter single-step program page.

### **Operation Steps**

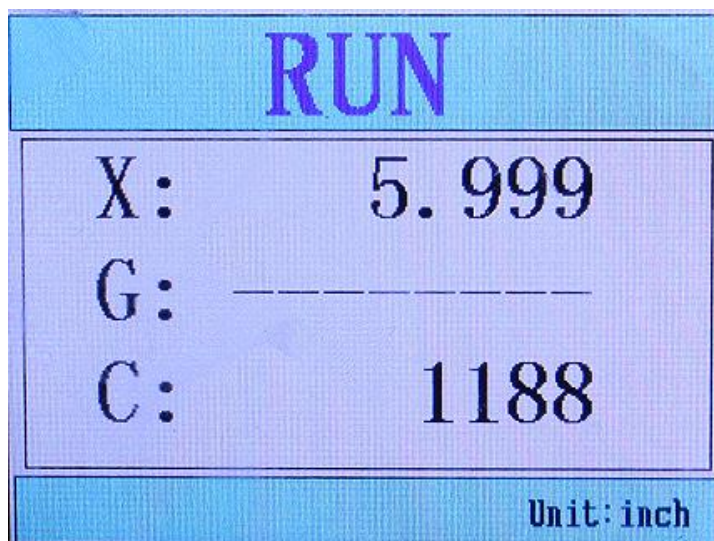
1. After starting up, the device will enter set up page of single-step program automatically.

| SINGLE              |       |           |         |
|---------------------|-------|-----------|---------|
| X=                  |       | 5.999     | G=----- |
| XP =                | 6.000 | GP =      | 0.000   |
| DX =                | 0.100 | CL =      | 0       |
| PP =                | 0     | CP =      | 1188    |
| ✎:DestPos of axis X |       | Unit:inch |         |

2. Press the , , , or  arrow buttons to select the parameter which needs to be set up.



3. Use the numerical keys to input program value and then press the  enter button to complete input.
4. Press the  start button to run the device. The device will enter the running page.



5. Press  to stop the machine and return to the SINGLE screen.



**Note:** Parameter can only be set when Stop indicator is on.

The description of the SINGLE parameters

| Parameter | Default | Range              | Unit    | Description                                                                                   |
|-----------|---------|--------------------|---------|-----------------------------------------------------------------------------------------------|
| XP        | 0.00    | -9999.999-9999.999 | mm/inch | Program position of X axis.                                                                   |
| GP        |         |                    |         | Not Active                                                                                    |
| DX        | 0.00    | 0-9999.999         | mm/inch | Retract distance of X axis.                                                                   |
| CL        |         |                    |         | Not Active                                                                                    |
| pp        | 0       | 0-9999             | -       | The number of processing workpiece in this program.                                           |
| CP        | 0       | 0-9999             | -       | PP = 0: This value is the current work piece.<br>PP > 0: This value is the remain work piece. |



### Operation example

On single-step program page, program back gauge position to 6 inches, retract distance to 0.1 inches, work piece to 0.

Operation steps are shown in Table 2-2.

**Table 2-2 Operation steps of single step example**

| Operation Steps | Operation                                                                                                                                                         |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Step 1          | Press  down arrow to select "XP" parameter                                       |
| Step 2          | Input 6.00 using the numeric key pad                                                                                                                              |
| Step 3          | Press the  enter button to confirm the entry                                     |
| Step 4          | Press the  down arrow to select "DX" parameter, "PP" parameter respectively.     |
| Step 5          | Set up parameter to 0.10 inch, 0 by numerical key.                                                                                                                |
| Step 6          | Press the  start button and the system will execute according to this program. |

With a value of zero (0) in the PP field, the CP field will continue to count up with each stroke of the ram.

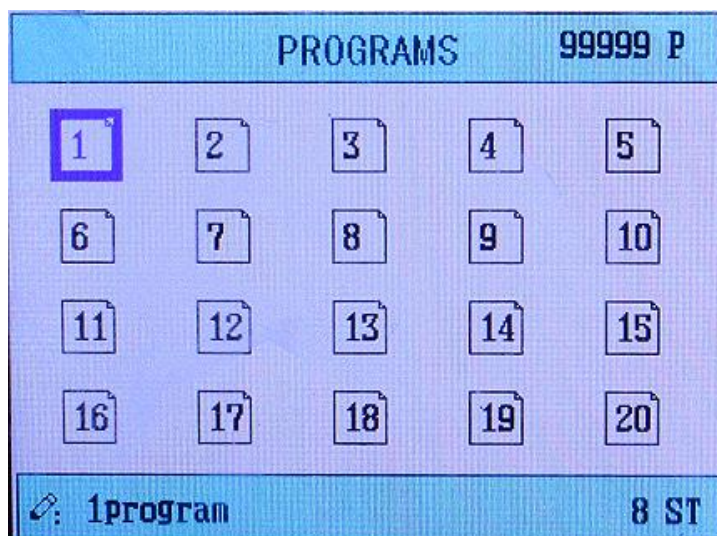


## Multi-Step Programming

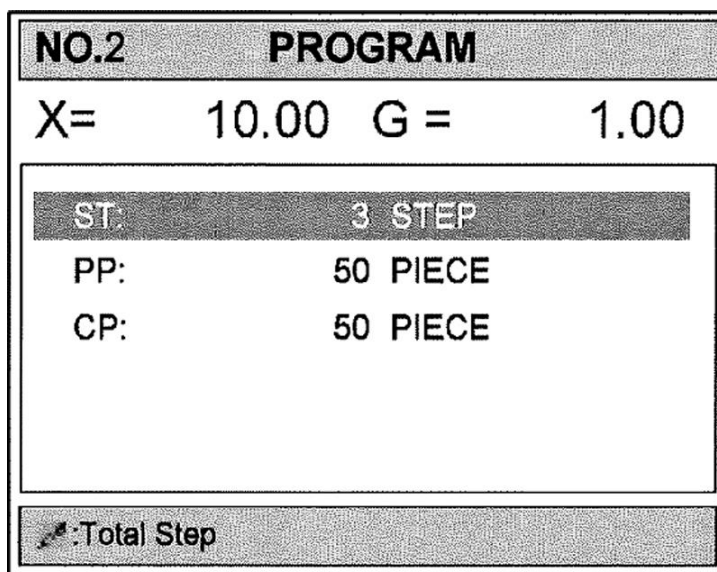
Multi-step program is used for processing single work piece of different processing steps, realize consecutive implementation of multi-steps, and improve processing efficiency.

### Operation Steps

1. Power on, the device displays the single-step parameter page automatically.
2. Press the  button to switch to program manage page as shown.



3. Press either the , , , or  arrow keys to select the program number, or input program number directly, such as input "2".
4. Press the  enter button to enter the multi-step program setting page.







## The description of the PROGRAM parameters

| Parameter | Default | Range   | Unit | Description                                                                                   |
|-----------|---------|---------|------|-----------------------------------------------------------------------------------------------|
| ST        | 0       | 0-25    | -    | The total number of steps in this program.                                                    |
| pp        | 0       | 0-99999 | -    | The number of processing workpiece in this program.                                           |
| CP        | 0       | 0-99999 | -    | PP = 0: This value is the current work piece.<br>PP > 0: This value is the remain work piece. |

- Press the , or  arrow key to select multi-step programming parameter which requires set up, and input setting up value, and press the  enter button and the setup will take effect.
- When the setup is complete, press the  right arrow key to enter the step parameter set page.
- The system automatically makes the step number(s) based upon the value of "ST" parameter on the PROGRAM page.
- Pay attention to the sequence of the step labeling. 1 / 3ST: 1 indicates the current step, 3 indicates the total step. The machine will run in sequence.
- Press the  or  arrow buttons to enter each step page for editing.
- Press the , or  arrow buttons to select the parameter you want to modify. Input the value and press the  enter button to finish the operation.

|                   |       |                |
|-------------------|-------|----------------|
| <b>PROGRAM2</b>   |       | <b>1 / 3ST</b> |
| X=                | 10.00 | G = 10.00      |
| XP:               | 50.00 | mm             |
| GP:               | 2.00  | mm             |
| DX:               | 50.00 | mm             |
| Cut Length:       | 0     | %              |
| Repeat Times:     | 1     | TIMES          |
| DestPos Of Axis X |       |                |





11. Press the  button to switch to PROGRAMS manage page.

#### Description of Step parameters

| Parameter    | Default | Range                | Unit    | Description                    |
|--------------|---------|----------------------|---------|--------------------------------|
| XP           | 0.00    | -9999.999 - 9999.999 | mm/inch | Program position of X-axis.    |
| GP           |         |                      |         | Not Active                     |
| DX           | 0.00    | 0 - 9999.999         | mm/inch | Retract distance of X axle.    |
| Cut Length   |         |                      |         | Not Active                     |
| Repeat Times | 1       | 1 - 99               | -       | The repeat times in this step. |

#### Operation Example

One work piece requires processing 50 pieces as shown below;  
 First Cut: 3 inches; Second Cut: 6 inches; Third Cut: 9 inches  
 The retract for each cut is 0.125 inches. Edit the processing program of this work piece in the No.2 program.

**Table 2-4 Operation steps of multi-step programming example**

| Operation Step | Operation                                                                                                                                                                                                    |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Step 1         | On single step parameter setting page, press the  button to enter program selection page.                               |
| Step 2         | Input "2" and press  to enter multi-step general parameter setting page of program 2.                                     |
| Step 3         | Select "Program step", input "3", press  and the setting takes effect.                                                   |
| Step 4         | Select "PP", input "50", press  and the setup takes effect.                                                               |
| Step 5         | Similar to step 3 and step 4, set "DLY", to 400.                                                                                                                                                             |
| Step 6         | Press the  arrow to enter first step setup page of step parameter.                                                        |
| Step 7         | Select "XP", input 50, press  and the setup takes effect.                                                                 |
| Step 8         | Similar to step 7, set up "concession distance" and "repeat times" to 50 and 1 respectively.                                                                                                                 |
| Step 9         | Press the  arrow to enter second step setup page of step parameter, the setup method is similar to that of step one.      |
| Step 10        | Press the  arrow again to enter third step setup page of step parameter, the setup method is similar to that of step two. |



|         |                                                                                                                                                                 |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Step 11 | Press the  arrow to return to the setup page of the first step.                |
| Step 12 | Press the  start button and the system will execute according to this program. |



**Note:**

- In completion of multi-step programming, return to start step before launching the system; otherwise the program will start position processing at the current step.
- Press left and right direction key to turn pages and browsing among all step parameters.
- Program can be called and revised again.
- In completion of processing all work pieces (50 in the example), system stops automatically. Restart directly will start another round of processing 50 work pieces.

### Manual Movement

In single-step mode, axis movement can be controlled by pressing key manually. This method helps user to adjust machine tool and work piece.

### Operation Steps

1. On single step parameter setup page, press the  or  to enter manual page.

| MANUAL                                                                                               |       |
|------------------------------------------------------------------------------------------------------|-------|
| X:                                                                                                   | 50.00 |
|  : X current pos. |       |

Figure 2-10 Manual page

2. Press the  button to operate at low speed in the increasing direction.  
Press the  button to operate at low speed in the decreasing direction.  
Press the  and the  buttons at the same time to operate at high speed in the increasing direction.  
Press the  and the  buttons at the same time to operate at high speed in the decreasing direction.
3. Press the  button to return to the single step parameter setting page.



## Parameter Setting

User can setup all parameters required for normal operation of the system, including system parameter and X axis parameter.

## Operation Steps

1. On program management page, press the  button to enter programming constant page, as shown in Figure 2-8. On this page, programming constant can be set.

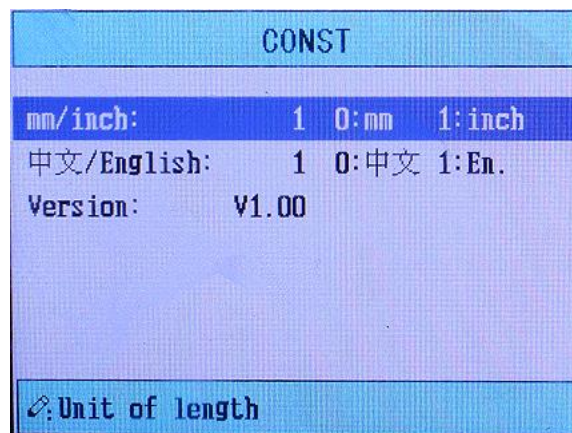


Figure 2-8 Programming constant page

Range of programming constant setup is shown in Table 2-5.

**Table 2-5 Range of: programming constant setup**

| Parameter name     | Unit | Setup range | Default | Remarks                                                                                                           |
|--------------------|------|-------------|---------|-------------------------------------------------------------------------------------------------------------------|
| Metric/Inch system | -    | 0 or 1      | 1       | 0: metric, 1: English system                                                                                      |
| Chinese/English    | -    | 0 or 1      | 1       | 0: Chinese, 1: English                                                                                            |
| Version number     | -    | -           | -       | Software version information, V refers to version.<br>1: indicates version number.<br>0: indicates version level. |



2. Input password "1212", press  to enter system parameter setting page, as shown in Figure 2-9.

|                                                                                            |       |
|--------------------------------------------------------------------------------------------|-------|
| SYS PARA                                                                                   | 1/1PG |
| X digits:                                                                                  | 3     |
| X-safe:                                                                                    | 1.000 |
| Step Delay:                                                                                | 300   |
|  : Range: | 0 ~ 3 |

Figure 2-9 System parameter setting page

Step up parameter, parameter setup range is shown in Table 2-6.

**Table 2-6 system parameter setup range**

| Parameter range         | Unit | Setup range   | Default | Remarks                                                                      |
|-------------------------|------|---------------|---------|------------------------------------------------------------------------------|
| Decimal point of X axis | -    | 0-3           | 2       | Decimal point displayed by X axis position parameter                         |
| Safe distance of X axis | mm   | 0-9999.999nun | 0       | X axis keeps low speed in this range                                         |
| Change step delay       | ms   | 0-9999ms      | 0       | Interval between valid change step signal and change step operation executed |

3. Press the  button to return to programming constant page.



## **ALARM**

The device can detect internal or external abnormalities automatically and send out alarm prompt. The alarm messages are available on alarm list.

### **Operation steps**

1. On the programming management page, press the  button to enter programming constant page.
2. On the programming constant page, press the  arrow button to enter "Alarm History" page to view all alarm history.

As shown in Figure 3-1, the latest 6 alarms, alarm number, and causes can be viewed on this page.

| ALARM RECORD |                 |
|--------------|-----------------|
| A.24         | Mach. Not ready |
|              |                 |

Figure 3-1 Alam1 history page

Alam1 history and message is shown in Table 3-1.

**Table 3-1 Alarm number and alarm message**

| Alarm Number | Alarm Name                      | Alarm Description                                                    |
|--------------|---------------------------------|----------------------------------------------------------------------|
| A.01         | Count reached prompt            | Count reaches preset value                                           |
| A.02         | Minimum soft limit              | Minimum soft limit                                                   |
| A.03         | Maximum soft limit              | Maximum soft limit                                                   |
| A.11         | Count reached shut-down         | When count reaches preset value, system shut down automatically.     |
| A.12         | Beam is not on upper dead point | In single step and multistep mode, beam is not on upper dead center. |
| A.21         | Oil pump not started            | Oil pump signal loss                                                 |
| A.22         | Encoder failure                 | Encoder voltage is too low.                                          |
| A.41         | Parameter storage error         | -                                                                    |
| A.42         | Abnormal power failure          | -                                                                    |
| A.43         | System self-checking error      | -                                                                    |





## **Appendix Common Fault And Troubleshooting**

| Fault Symptom                                                                         | Troubleshooting                                                                              |
|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| When power on, the device will not display.                                           | Check whether No. 1 (24V) and No.2 (OV) terminal is connected or not, or signal is reversed. |
| When X axis programming is operating, the back gauge motor does not move.             | Check wiring to motor                                                                        |
| When program is operating, motor does not move.                                       | Check whether mechanical part has been locked or beam is at the top dead position.           |
| Motor cannot switch from high speed to low speed.                                     | Check whether high-low speed signal has been sent or motor power is too low.                 |
| When the device is in multi-step programming, the program cannot change step.         | Check when beam is on upper dead center, No. 1 (START) terminal is connected to +24V or not. |
| When the device is in multi-step programming, the program cannot count.               | Check when beam is on upper dead center, No. 5 (COUNT) terminal is connected to +24V or not. |
| When programming is operating, the device loses control.                              | Check whether encoder cable is connected or not.                                             |
| When programming is operating, the device actual position will not display or change. | Check whether encoder wiring is correct or encoder cable is connected well.                  |



## ALARM

The device can detect internal or external abnormalities automatically and send out alarm prompt. The alarm message are available on alarm list.

### Operation steps

3. On the CONST page, press the , button to enter IO Monitor page.

| IO MONITOR |  |                          |                          |                                     |                          |                          |                                     |                          |                          |
|------------|--|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|
| INPUTS     |  | UL                       | MR                       | DL                                  | PD                       | BR                       | NC                                  | NC                       | NC                       |
| INPUT:     |  | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> |
| OUTPUTS    |  | G+                       | G1                       | CT                                  | ES                       | RD                       | SP                                  |                          |                          |
| OUTPUT:    |  | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |                          |                          |

4. On the CONST page, press the , arrow button to enter "Alarm Record" page to view all alarm history. The latest 6 alarms, alarm number, and causes can be viewed on this page.

| ALARM RECORD |                 |
|--------------|-----------------|
| NO.          | REASON          |
| A.22         | Mach. Not ready |
|              |                 |
|              |                 |
|              |                 |
|              |                 |
|              |                 |



## **Appendix A Common Fault and Troubleshooting**

| Fault                                                                                 | Troubleshooting                                                                                                                                                                                                            |
|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| When power on, the device will not display.                                           | The electrode of power supply terminal is connected error; please see the information of power nameplate.<br>Voltage is too low.<br>Electrical outlet is not connected.                                                    |
| When program is operating, motor does not move.                                       | Check whether mechanical part has been locked or slider (ram) returns to Upper Dead Point.<br>Check whether the motor wiring is connected well.                                                                            |
| When the device is in multi-step programming, the program cannot change step.         | Check U_Limit and EOS terminals are connected to +24V or not.                                                                                                                                                              |
| When the device is in multi-step programming, the program cannot count.               | Check U_Limit and EOS terminals are connected to +24V or not.                                                                                                                                                              |
| When programming is operating, the device loses control.                              | Check whether encoder cable of G-axis is connected or not.<br>Check whether communication cable of X-axis is connected or not.<br>Check whether the motor direction of X-axis and the encoder count direction are correct. |
| When programming is operating, the device actual position will not display or change. | Check whether encoder wiring is correct or encoder cable is connected well.                                                                                                                                                |



## Appendix B Alarm List

| Alarm NO.       | Alarm Information       | Alarm Description                                                                                                                                                                   |
|-----------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A.01            | Pieces reached          | Normal message, that the count reaches a preset value.                                                                                                                              |
| A.02            | X Pos <minimum          | The current position of X-axis is out of the minimum value, it is necessary to move the X-axis to the soft limit range manually.                                                    |
| A.03            | X Pos >maximum          | The current position of X-axis is out of the maximum value, it is necessary to move the X-axis to the soft limit range manually.                                                    |
| A.04            | G Pos <minimum          | The current position of G-axis is out of the minimum value, it is necessary to move the G-axis to the soft limit range manually.                                                    |
| A.05            | G Pos >maximum          | The current position of G-axis is out of the maximum value, it is necessary to move the G-axis to the soft limit range manually.                                                    |
| A.06            | Out of UDP              | Move the cutter to the Upper Dead Point by foot switch.                                                                                                                             |
| A.08            | X Out of limit.         | When the X-axis is employed for the front feed, the current position of X-axis is out of the soft limit range. It is necessary to move the X-axis to the soft limit range manually. |
| A.11            | Slider Block (Ram) err. | The slider (ram) is not on the TDC in the case of positioning. Move the ram to the Upper Dead Point by foot switch.                                                                 |
| A.12            | Finished work           | Normal message when the count reaches the preset value. Requires operator to manually clear alarm.                                                                                  |
| A.22            | Mach. Not ready         | Need to start the hydraulic pump power.                                                                                                                                             |
| A.23            | Encoder abnor.          | The voltage of encoder is abnormal. Check wiring, connections and signal voltage.                                                                                                   |
| A.24            | Comm. Err.              | Can communication is abnormal, please check whether the communication port ground is well.                                                                                          |
| A.25            | X-axis Dropped          | The X-axis driver is missing. Reboot the system and try drive again.                                                                                                                |
| A.27            | Can Send Err.           | The device is not connected to the drive. Check and connect the drive.                                                                                                              |
| A.29            | Safe In Err.            | Light signal loss on the BEND stage, check the screen input signal with or without object light signal.                                                                             |
| A.30            | Power Drop              | The system voltage is lower than the normal value, check whether the system voltage is normal.                                                                                      |
| AX.60-<br>AX.67 | CAN Error               | The X-axis CAN communication is abnormal, restarting the system after clearing the alarm.                                                                                           |



## Appendix C Parameter Description

| Parameter       | Default | Range                | Unit    | Description                                                                                                                              |
|-----------------|---------|----------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------|
| CONST           |         |                      |         |                                                                                                                                          |
| mm/inch         | 0       | 0-1                  | -       | 0: mm<br>1: inch                                                                                                                         |
| Chinese/English | 0       | 0-1                  | -       | 0: Chinese<br>1: English                                                                                                                 |
| Version         | -       | -                    | -       | The current software version number.                                                                                                     |
| TchIn PARA      |         |                      |         |                                                                                                                                          |
| X-tea. in       | 10.00   | 0-9999.999           | mm/inch | When the teaching of X-axis is enabling, the operator assigns to the X-axis of a correct value, to represent the gauge current position. |
| G-tea. in       | 1.00    | 0-9999.999           | mm/inch | When the teaching of G-axis is enabling, the operator assigns to the G-axis of a correct value, to represent current size of the gap.    |
| SINGLE          |         |                      |         |                                                                                                                                          |
| XP              | 0.00    | -9999.999 ~ 9999.999 | mm/inch | Program position of X axle.                                                                                                              |
| GP              | 0.00    | 0-99.99              | mm/inch | Program position of G axle.                                                                                                              |
| DX              | 0.00    | 0-9999.999           | mm/inch | Retract distance of X axle.                                                                                                              |
| CL              | 0       | 0-100                | %       | Actual time of the cut length = Max time of the cut length XCL                                                                           |
| pp              | 0       | 0-9999               | -       | The number of processing workpiece in this program.                                                                                      |
| CP              | 0       | 0-9999               | -       | PP=O: this value is the current work piece.<br>PP>O: this value is the remain work piece.                                                |
| PROGRAM         |         |                      |         |                                                                                                                                          |
| ST              | 0       | 0-25                 | -       | The total number of steps in this program.                                                                                               |
| pp              | 0       | 0-99999              | -       | The number of processing workpiece in this program.                                                                                      |
| CP              | 0       | 0-99999              | -       | PP=O: this value is the current work piece.<br>PP>O: this value is the remain                                                            |





|              |      |                         |         |                                                                              |
|--------------|------|-------------------------|---------|------------------------------------------------------------------------------|
|              |      |                         |         | work piece.                                                                  |
| STEP         |      |                         |         |                                                                              |
| XP           | 0.00 | -9999.999 ~<br>9999.999 | mm/inch | Program position of X-axis.                                                  |
| GP           | 0.00 | 0-99.99                 | mm/inch | Program position of G-axis.                                                  |
| DX           | 0.00 | 0-9999.999              | mm/inch | Retract distance of X axle.                                                  |
| Cut Length   | 0    | 0-100                   | %       | Actual time of the cut length =<br>Max time of the cut length<br>XCut Length |
| Repeat Times | 1    | 1-99                    | -       | The repeat times in this step.                                               |



## **MACHINE ADJUSTMENTS**



**WARNING:** Whenever possible, be sure the electrical disconnect is **OFF** before working on the machine.

Adjustments should be performed as needed by qualified personnel.

Because some adjustments require the machine to be operational, **ALWAYS** follow proper safety precautions when working on or around any machinery.

### **Back Gauge Alignment**

Following the norm, the clearance evenness between the stopper of back gauge and the lower blade should be 0.1mm/m. If it is bigger than the value, the adjustment has to be made. It is very important to reset the counter immediately whenever the back gauge has been adjusted.

If some problem happens for the parallelism between the stopper and the lower blade, the adjustment has to be made as following:

#### **Rough adjustment:**

1. Disengage the chain through loosening the chain wheel and turn the both lead screws respectively until the stopper is parallel to the lower blade.
2. Reassemble the chain on the wheel.

#### **Fine adjustment:**

1. Loosen the screw between the copper nut support and the back gauge frame and adjust the nut on the end of the lead screw until the stopper is parallel to the lower blade.
2. Retighten the screw.



**Attention:** *The back gauge can never be used as a transportation device. It is very dangerous to let the back gauge push the plate on the table to the cutting position. The shearing accuracy will be damaged as well as the back gauge motor will be overloaded and damaged.*

### **Blade Clearance Adjustment**



**Note:** *This adjustment will need to be completed after blades have been sharpened or replaced.*

The location of the cutting beam has already been adjustment before delivery from the factory and does not require and other adjustment. The cutting beam is inclined to the vertical. Namely, it is inclined backward as viewed downward from its top. The inclined angle is 1.5°.

The blade clearance is needed for the readjustment in the following cases:

- The cutting edge has been changed after 80-100 working hours of blade.
- The blade has been reassembled after the grinding of its edges.



The procedures for the readjustment of blade clearance:

1. Reduce the rake angle until the upper blade is parallel to the lower blade.
2. Turn the main motor off and loose slowly the braking valve (No. 13) (see the hydraulic scheme) until the upper and lower blades are overlapped for 1mm and then tighten the valve.
3. Set the blade clearance to the minimum and then adjust it through the bolts on the table so that the blades can come together or go apart.
4. Check the blade clearance with a feeler of 0.05mm which is the maximum permitted value for it.
5. Restart the main motor, filled oil to the accumulator and readjust the rake angle on the request.

### **NOTES**



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# OPERATOR'S MANUAL

Metal Working



Book 2 of 2

## HYDRAULIC SHEAR MODEL: SH-120500-HD

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## **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.

### **Machine Lubrication**

The main lubricating positions of machine:

|                                            |                      |             |
|--------------------------------------------|----------------------|-------------|
| Cutting Beam roller bearings               | Calcium-based grease | 2000 hours  |
| Rolling surface of rollers and guides      | Calcium-based grease | 40-50 hours |
| Lead screws, chain and guiding grooves     | Calcium-based grease | 40-50 hours |
| Exposed wear surfaces and bare metal parts | Calcium-based grease | 40-50 hours |

### **Blade Changing and Grinding**

It is very important to grind the blade edges regularly. Long time use of blade, with no grinding, will increase the cost of grinding, and shorten the blade life as a whole. Continuous shearing with blunt cutting edges, will cause the outer crystal grains of the blade to be damaged under the excessive pressure.

Through the grinding of cutting edges, the outer layer of the damaged crystal grains can be removed. For this, a schedule for blade edges grinding should be made based upon actual production material and schedule.

The following schedule for cutting edge grinding is recommended:

- Cutting edge change after 80-100 working hours for blade;
- Cutting edge grinding after 320-400 working hours for blade. There are 4 cutting edges for each of blades equipped on the machine.



- The schedule recommended above is only to be used for the shears put into normal operation. If the cutting edges of blade are arranged for grinding following the schedule, the removal quantity of blade would be minimum, and its lifetime be maximum possible.
- After the edge grinding or replacement of blade, the blade clearance has to be re-inspected and readjusted.

### **Hydraulic System**

- Inspect the oil level of tank regularly. If the oil is below the mid-line of oil level, replenish the tank immediately.
- The first oil change has to be made after 500 working hours. Afterwards oil change is to be made regularly whenever the machine has worked for 2000 hours.
- Clean the oil suction filter after the first 40 hours of operation and then follow the hydraulic oil changing schedule.
- Clean the hydraulic breather cap after the first 40 hours of operation and then follow the hydraulic oil changing schedule.
- It is recommended not to work below 23°F (-5°C) or above 167°F (75°C). In cases where the temperature is very low, running the system at idle for several minutes will warm the oil. If needed, install a heater in the hydraulic system to warm the oil, or a cooler if the temperature is too high.

### **Changing Hydraulic Oil**

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

Cleaning of the oil tank is very important. Proper hydraulic operation depends upon clean hydraulic oil and a clean hydraulic system.



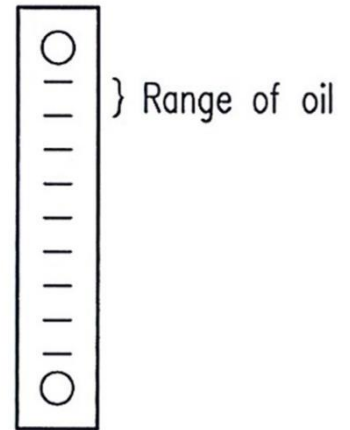
**Important:** *Used oil products must be disposed of in a proper manner following your local regulations.*

1. Remove the center (and right if desired) front cover to access the reservoir.
2. Have a container capable of holding at least 35 gal. (132L) available to drain the tank into.
3. Using the drain plug at the front of the tank or a siphon pump through the top of the tank, empty the tank into the container and recycle according to local standards.





4. Remove the top cover and clean the hydraulic tank and re-install the top cover.
5. Use hydraulic oil #68 SHELL BRAND or an equivalent with similar specifications to fill the hydraulic tank until it reaches the midpoint on the sight gauge.
6. Keep hydraulic reservoir filled to 90% of capacity.
7. 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.
8. A shortage of hydraulic oil will cause hydraulic system breakdown to major mechanical components due to overheating.
9. Change the hydraulic oil and clean the suction filter after the first 500 hours of operation. Thereafter the hydraulic oil and filter should be changed at 2000 hours or annually.



Oil gauge



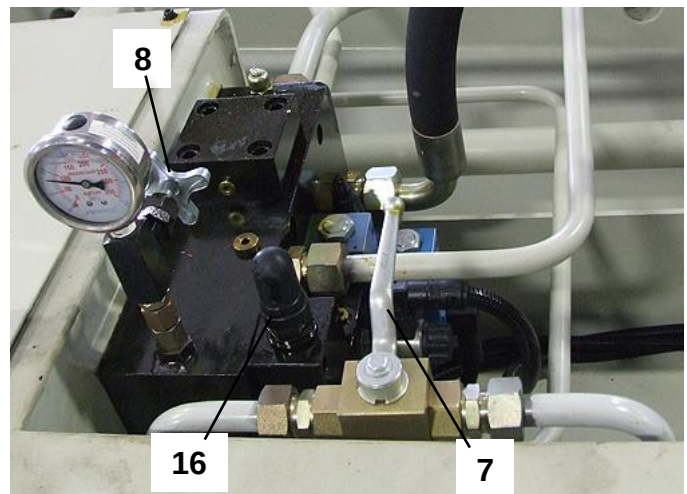
## Hydraulic Pressure Filling the Accumulator

**NOTICE:** This is not a common function. The accumulator has been charged from the factory and will not require charging unless someone has tempered with or inadvertently actuated the accumulator hydraulic circuit ball valve. The accumulator will only require hydraulic pressure filling if the hydraulic pressure gauge is below 8MPa AND the shearing ram will not lift and hold at the full up position.



**Note:** This operation requires two people to be able to reach switches and valve at the same time.

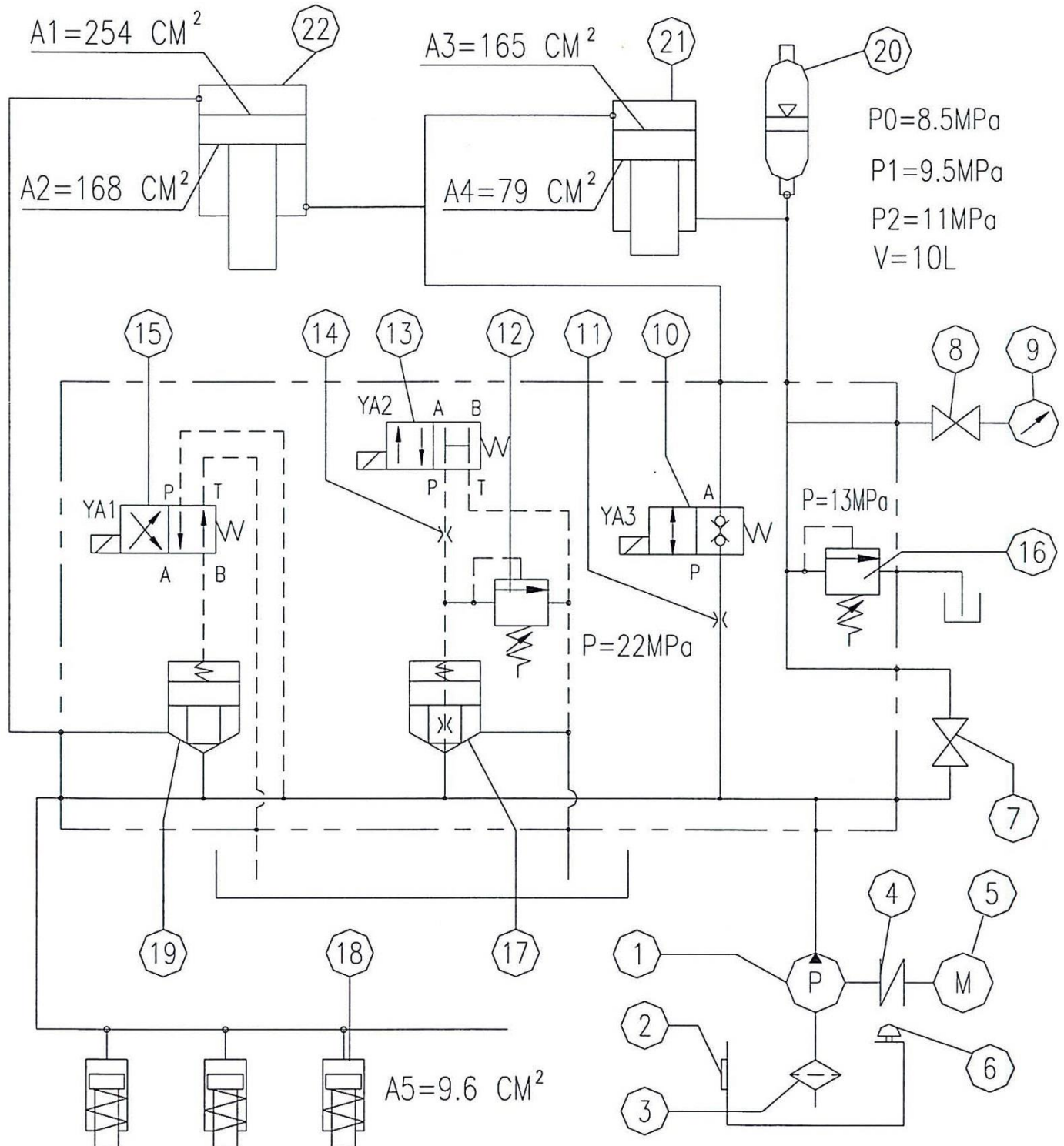
1. Open the shutoff needle valve #8 to allow pressure to the pressure gauge.
2. IF THE SHEARING RAM IS NOT ALL THE WAY AT THE BOTTOM OF ITS TRAVEL, OPENING THE BALL VALVE #7 WILL CAUSE THE RAM TO FALL. Open the shutoff ball valve #7 slowly allowing the ram to lower to the bottom position.
3. Start the pump and place the stroke key switch in the left jog stroke position.
4. Place the accumulator switch in the right "1" position. This will energize the YA1 and YA2 valve.
5. Adjust the relief valve #16, until the oil pressure of accumulator is at 11MPa, this is the P2 value as shown on the hydraulic diagram.
6. Close the shutoff ball valve #7. Then turn the accumulator switch to the "0" position. The cutting beam will raise by the pressurized oil from the accumulator.
7. Close the shutoff needle valve #8. This will prevent the pressure gauge from feeling any pressure spikes during normal operation.







## HYDRAULIC SCHEMATIC





### Hydraulic Engagement Chart

|  | YA1 | YA2 | YA3 |
|--|-----|-----|-----|
|  |     | +   |     |
|  |     |     |     |
|  |     |     | +   |
|  | +   | +   | +   |
|  | +   | +   |     |

### Hydraulic Parts List

| Item | Code                  | Name                    | Qty. | Remarks        |
|------|-----------------------|-------------------------|------|----------------|
| 1    | DVQ25-32FRAR-02       | Oil Pump                | 1    | KCL            |
| 2    | TS-5                  | Fluid Level Sight Gauge | 1    |                |
| 3    | WU-800x100-J          | Suction Oil Filter      | 1    |                |
| 4    | CL-110                | Coupling                | 1    |                |
| 5    | Y2160L-4-15kW         | Motor                   | 1    | 220V 3ph, 60hz |
| 6    | QUQ-20x1.0            | Air Filter/Breather     | 1    |                |
| 7    | DC13-G1/2             | Ball Valve              | 1    |                |
| 8    | DCT-02                | Shutoff Valve           | 1    |                |
| 9    | AT-63-250K-A1-T-02    | Pressure Gauge          | 1    |                |
| 10   | WSM06020W-01-C-V-24DG | Solenoid Valve          | 1    | WANDFLUH       |
| 11   |                       | Throttle Valve          | 1    |                |
| 12   | DGMC-3-PT-GW-41       | Pressure Valve          | 1    | VICKERS        |
| 13   | DG4V-3S-0B-M-U-H5-60  | Solenoid Valve          | 1    | VICKERS        |
| 14   |                       | Throttle Valve          | 1    |                |
| 15   | DG4V-3S-2A-M-U-H5-60  | Solenoid Valve          | 1    | VICKERS        |
| 16   | DBDS6P-1X/200         | Pressure Valve          | 1    | REXROTH        |
| 17   | LC25DB05A-7X          | Two-Way Cartridge Valve | 1    | REXROTH        |
| 18   |                       | Clamping Cylinders      | 17   |                |
| 19   | LC25A05D-6X           | Two-Way Cartridge Valve | 1    | REXROTH        |
| 20   | NXQ-L10/31.5-H        | Accumulator             | 1    |                |
| 21   |                       | Right Cylinder          | 1    |                |
| 22   |                       | Left Cylinder           | 1    |                |

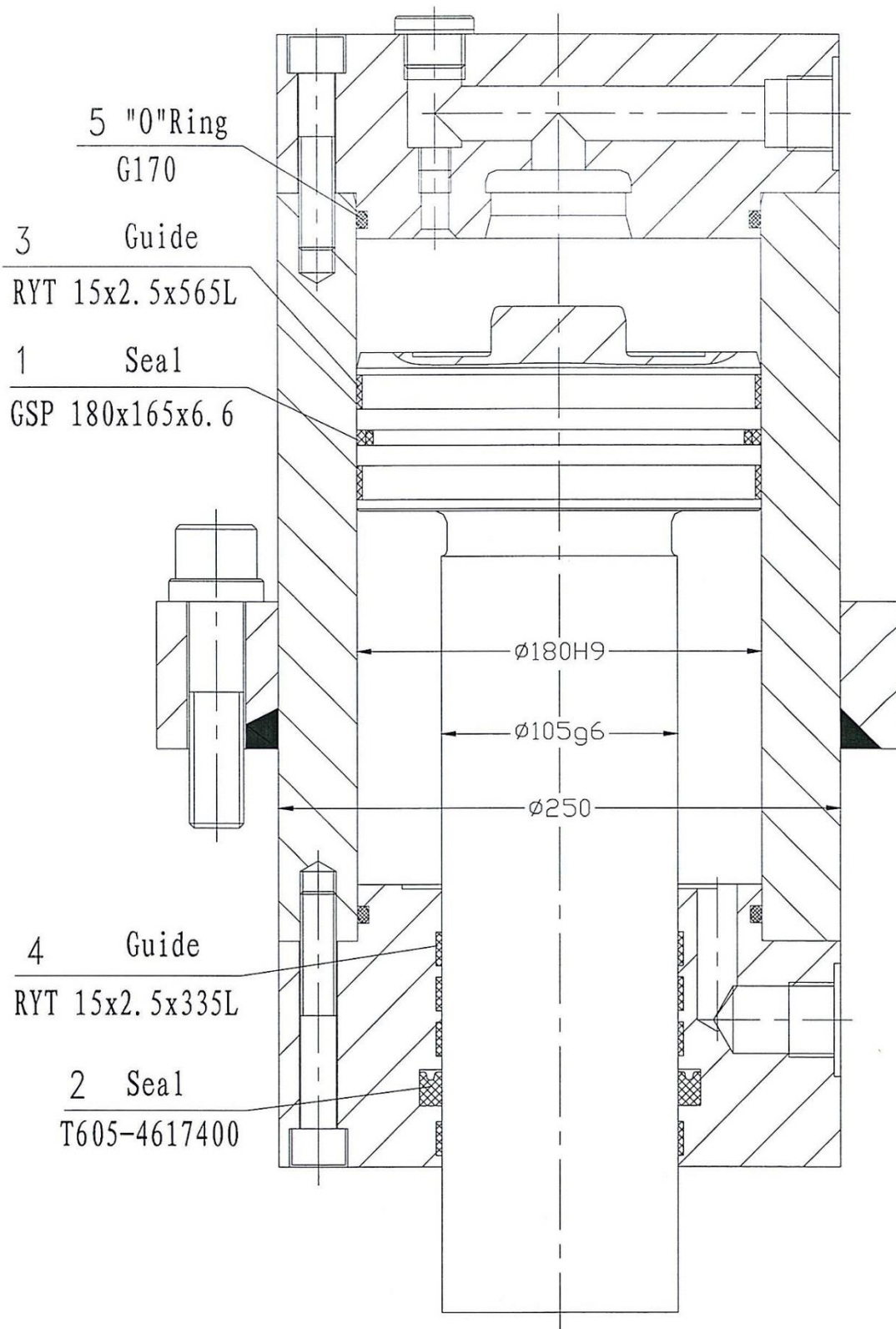


### List of Hydraulic Wear Parts

| No. | Specifications  | Name         | Qty. | Position     | Remarks |
|-----|-----------------|--------------|------|--------------|---------|
|     | GSP 180x165x6.6 | Rod Seal     | 1    | Cylinder-L   | REDUX   |
| 2   | T605-4617400    | Rod Seal     | 1    | Cylinder-L   | Hallite |
| 3   | RYT 15x2.5x565L | Guide Bushes | 2    | Cylinder-L   | NOK     |
| 4   | RYT 15x2.5x335L | Guide Bushes | 4    | Cylinder-L   | NOK     |
| 5   | G170            | O-Ring       | 2    | Cylinder-L   |         |
| 6   | GSP 145x130x6.6 | Rod Seal     | 1    | Cylinder-R   | REDUX   |
| 7   | T605-4617400    | Rod Seal     | 1    | Cylinder-R   | Hallite |
| 8   | RYT 15x2.5x445L | Guide Bushes | 2    | Cylinder-R   | NOK     |
| 9   | RYT 15x2.5x335L | Guide Bushes | 2    | Cylinder-R   | NOK     |
| 10  | G145            | O-Ring       | 1    | Cylinder-R   |         |
| 11  | G140            | O-Ring       | 1    | Cylinder-R   |         |
| 12  | G60             | O-Ring       | 17   | Hold down-CY |         |
| 13  | USH 35x45x6     | Rod Seal     | 17   | Hold down-CY | NOK     |
| 14  | RYT 10x2.0x110L | Guide Bushes | 34   | Hold down-CY | NOK     |
| 15  | Ø70x23          | Protect Lid  | 17   | Hold down-CY |         |
| 16  | BRT3-35x45x3    | Ring         | 17   | Hold down-CY | NOK     |

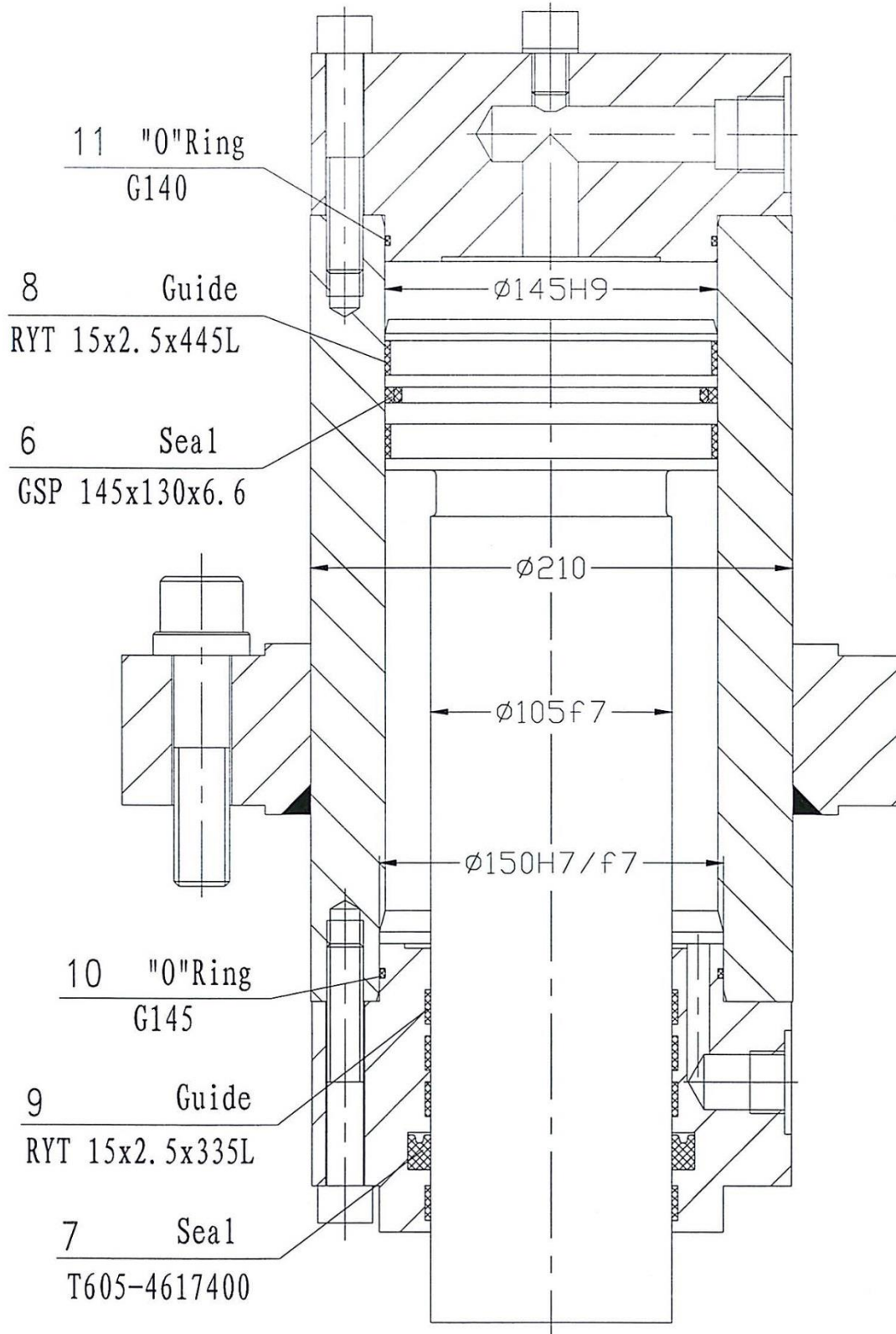


## LEFT HYDRAULIC CYLINDER DIAGRAM





## RIGHT HYDRAULIC CYLINDER DIAGRAM

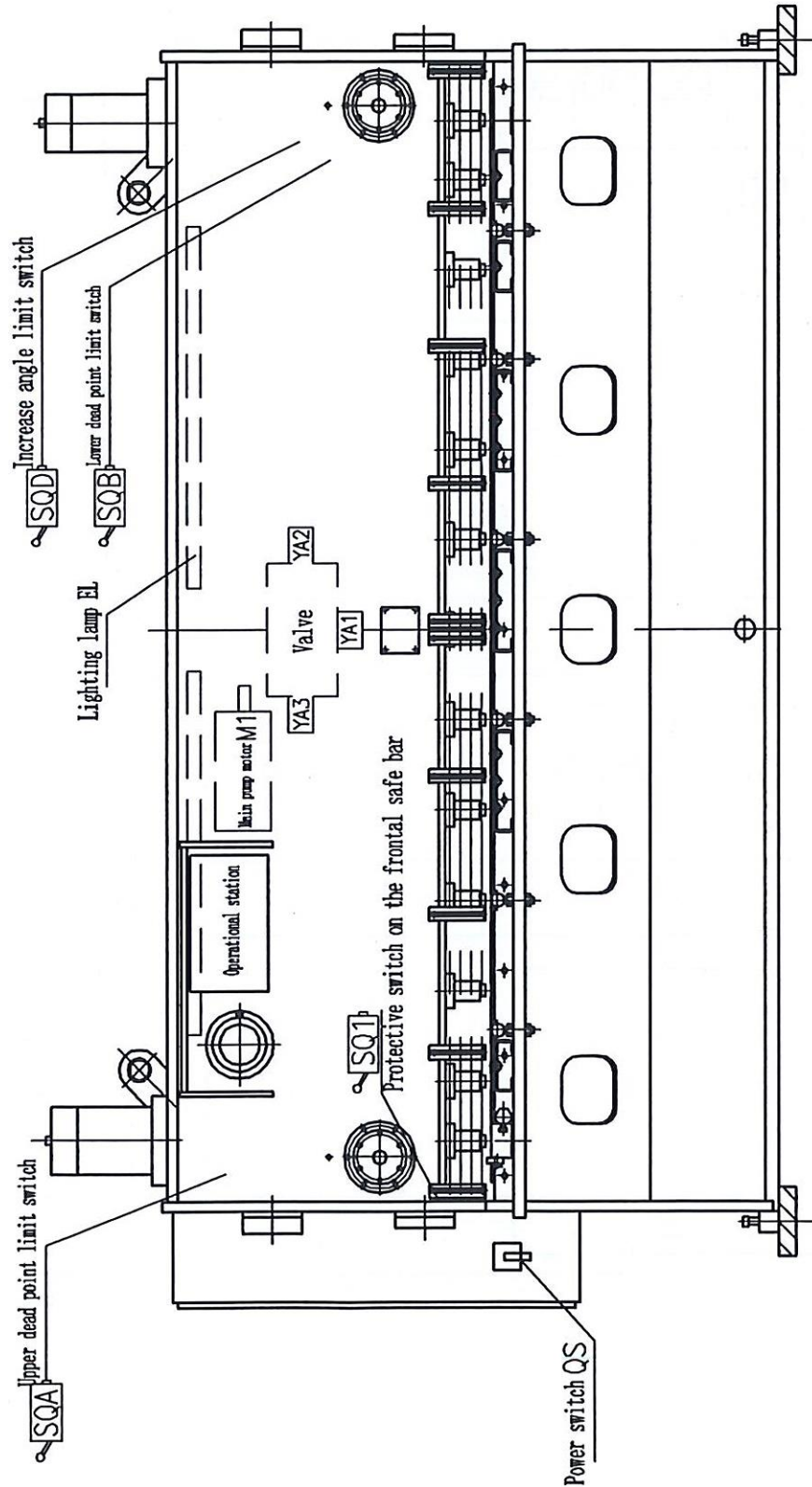


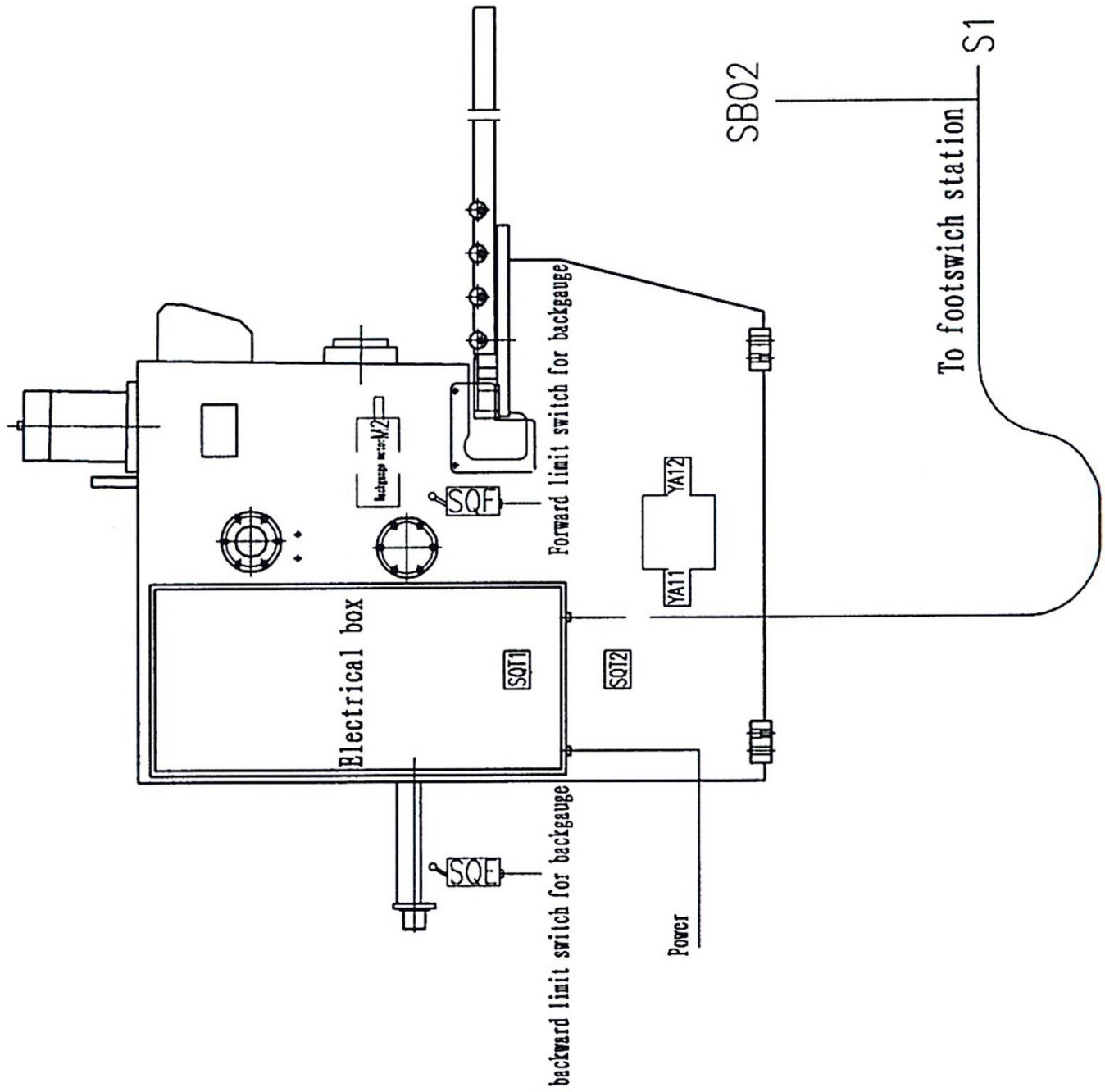






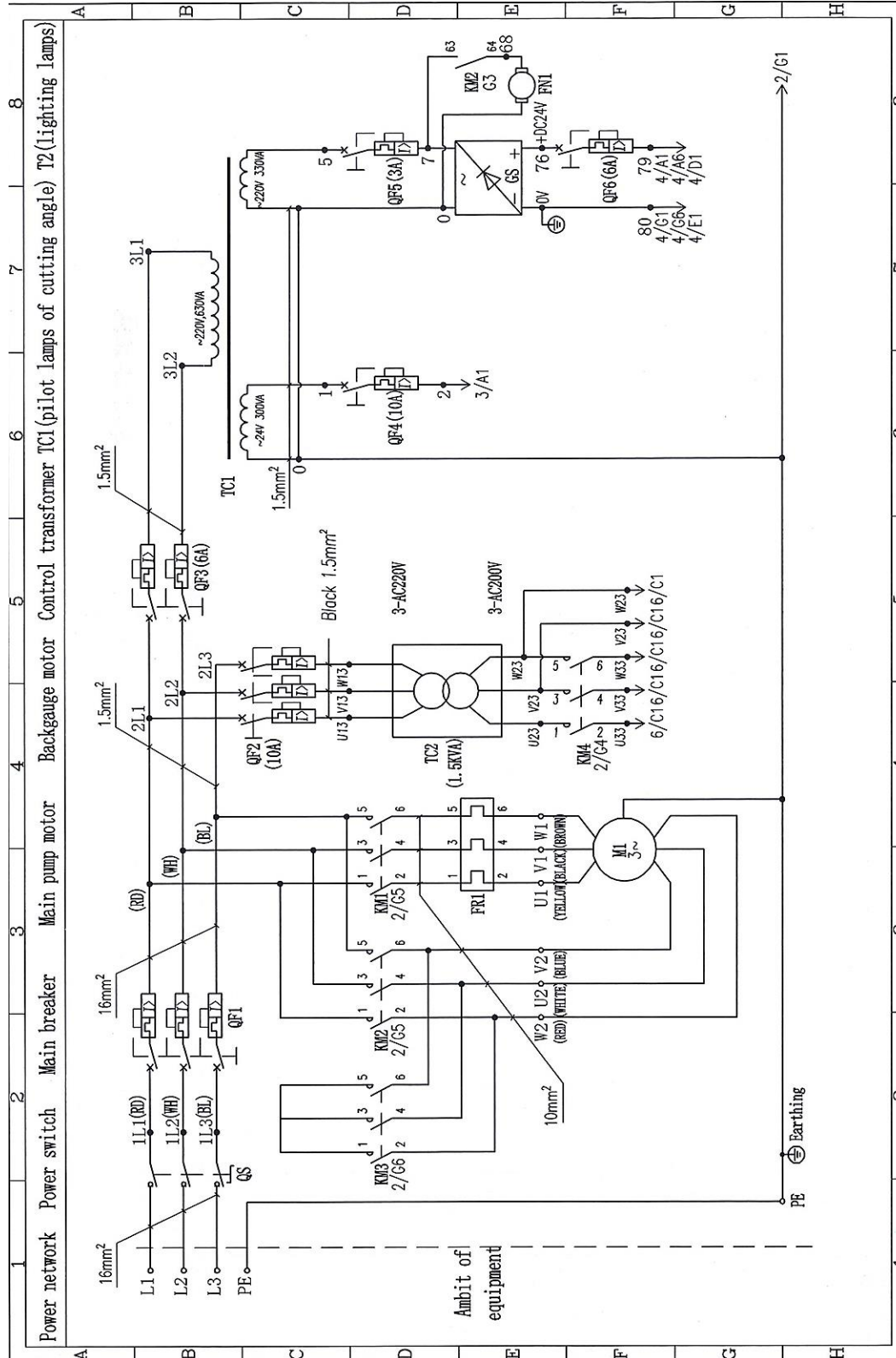
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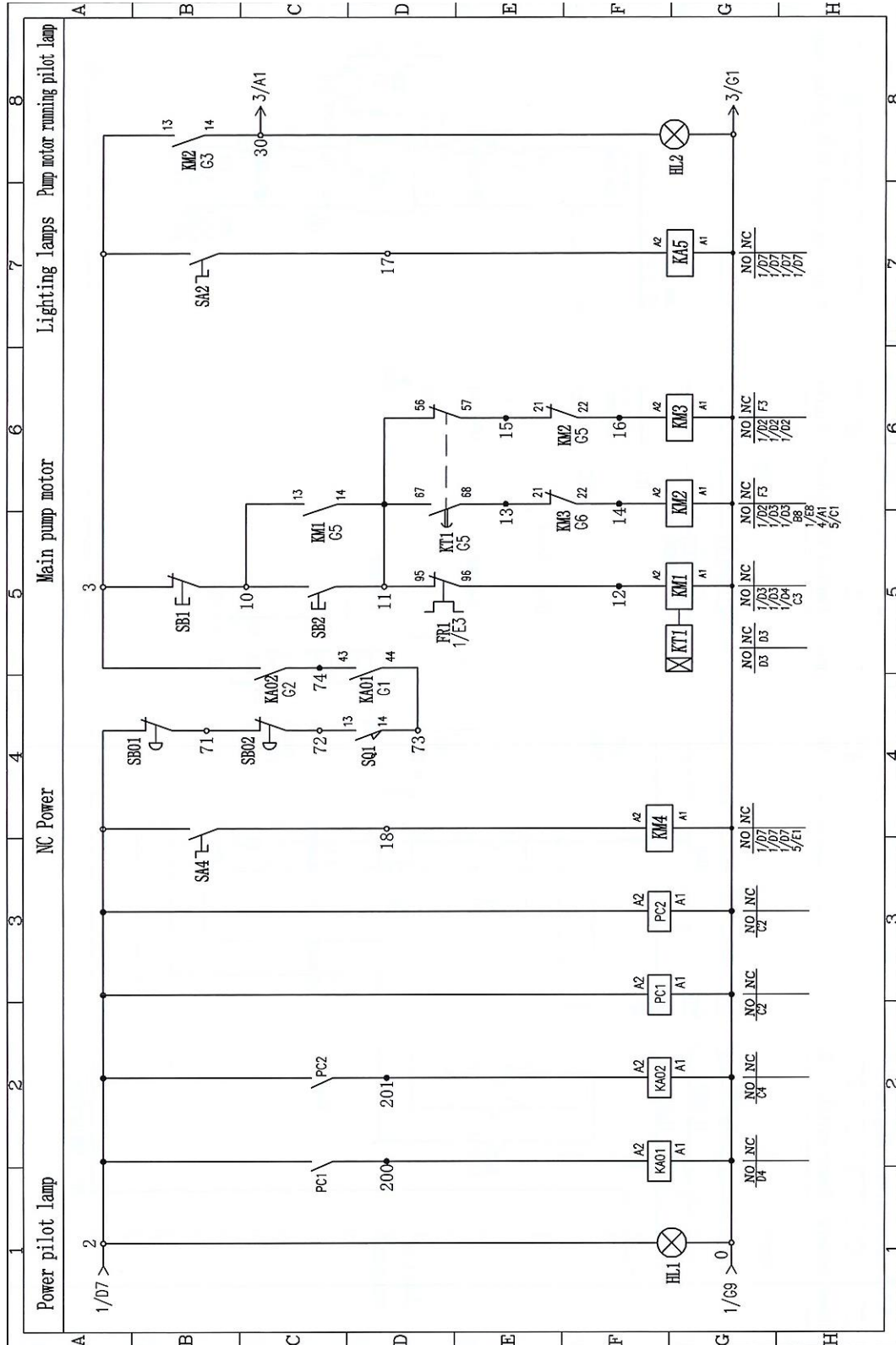




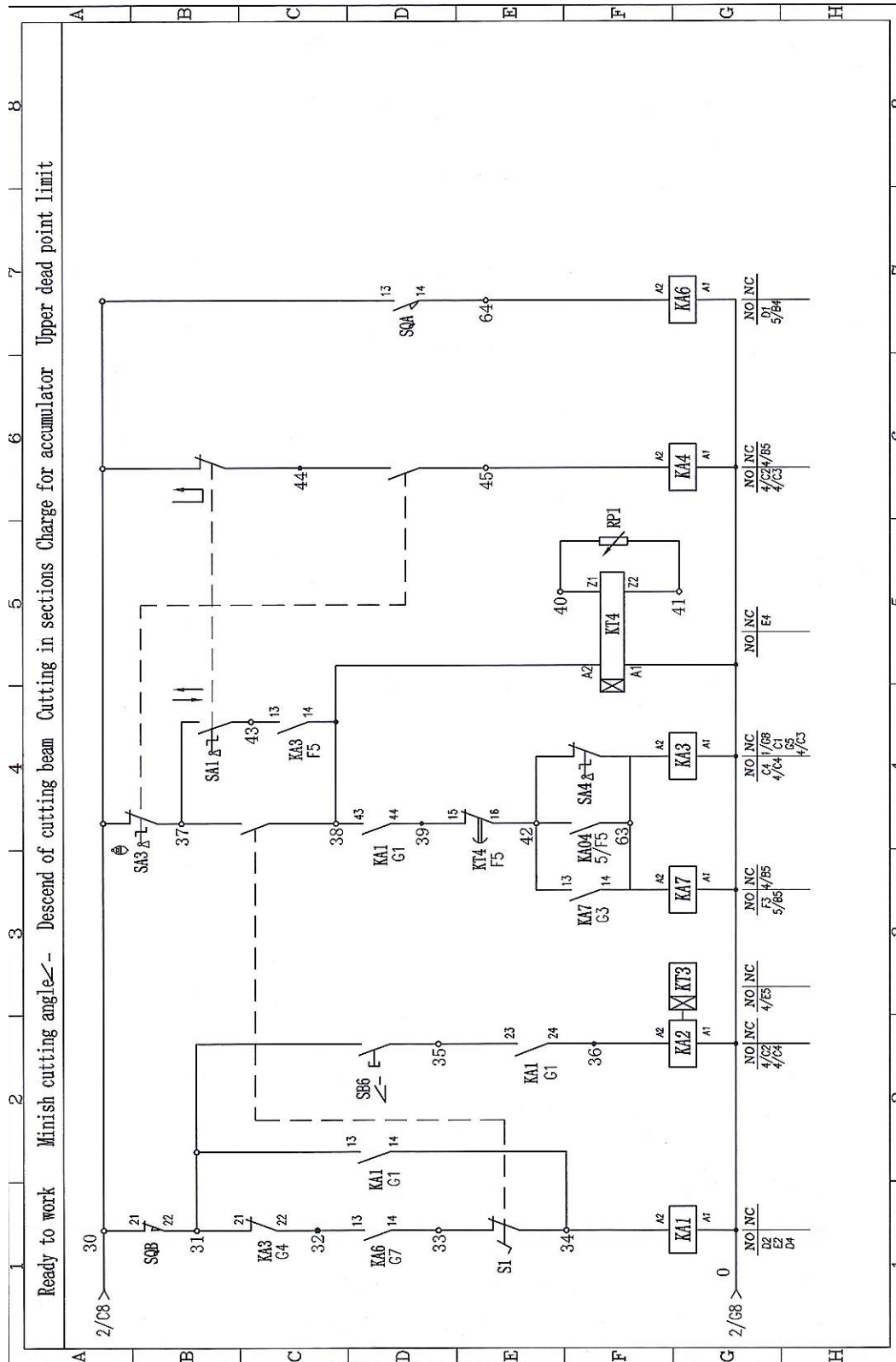


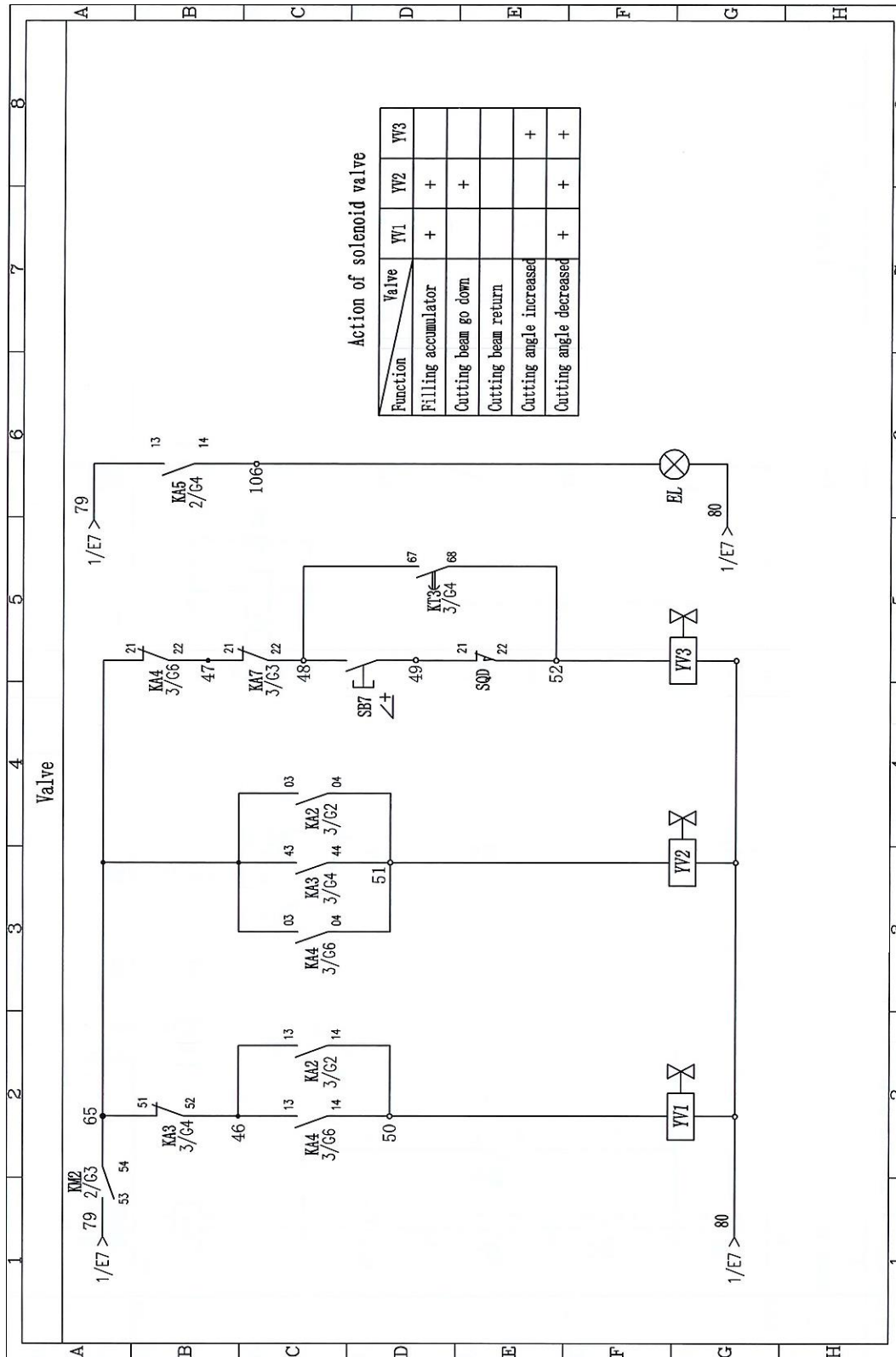
## ELECTRICAL SCHEMATIC

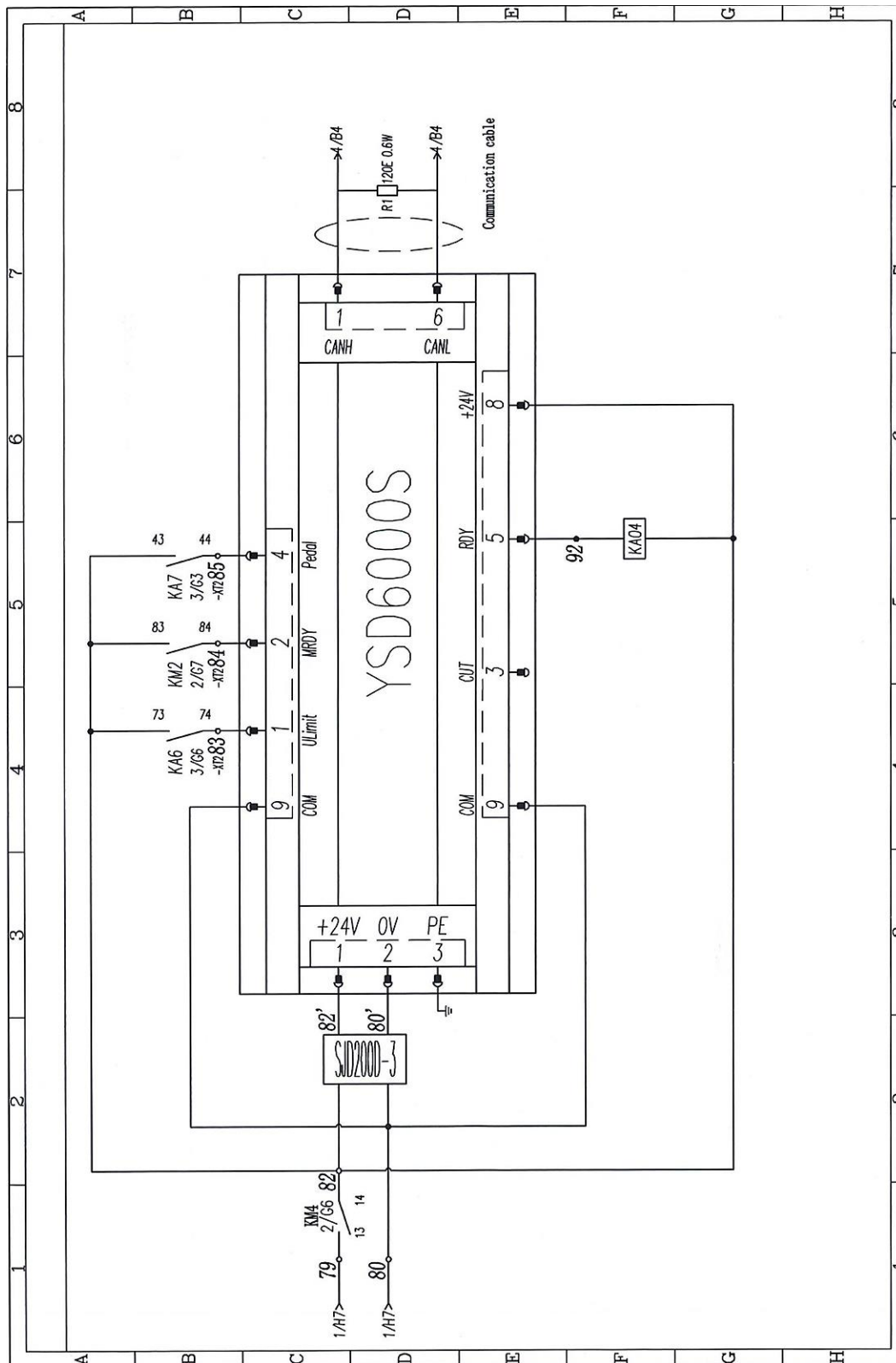


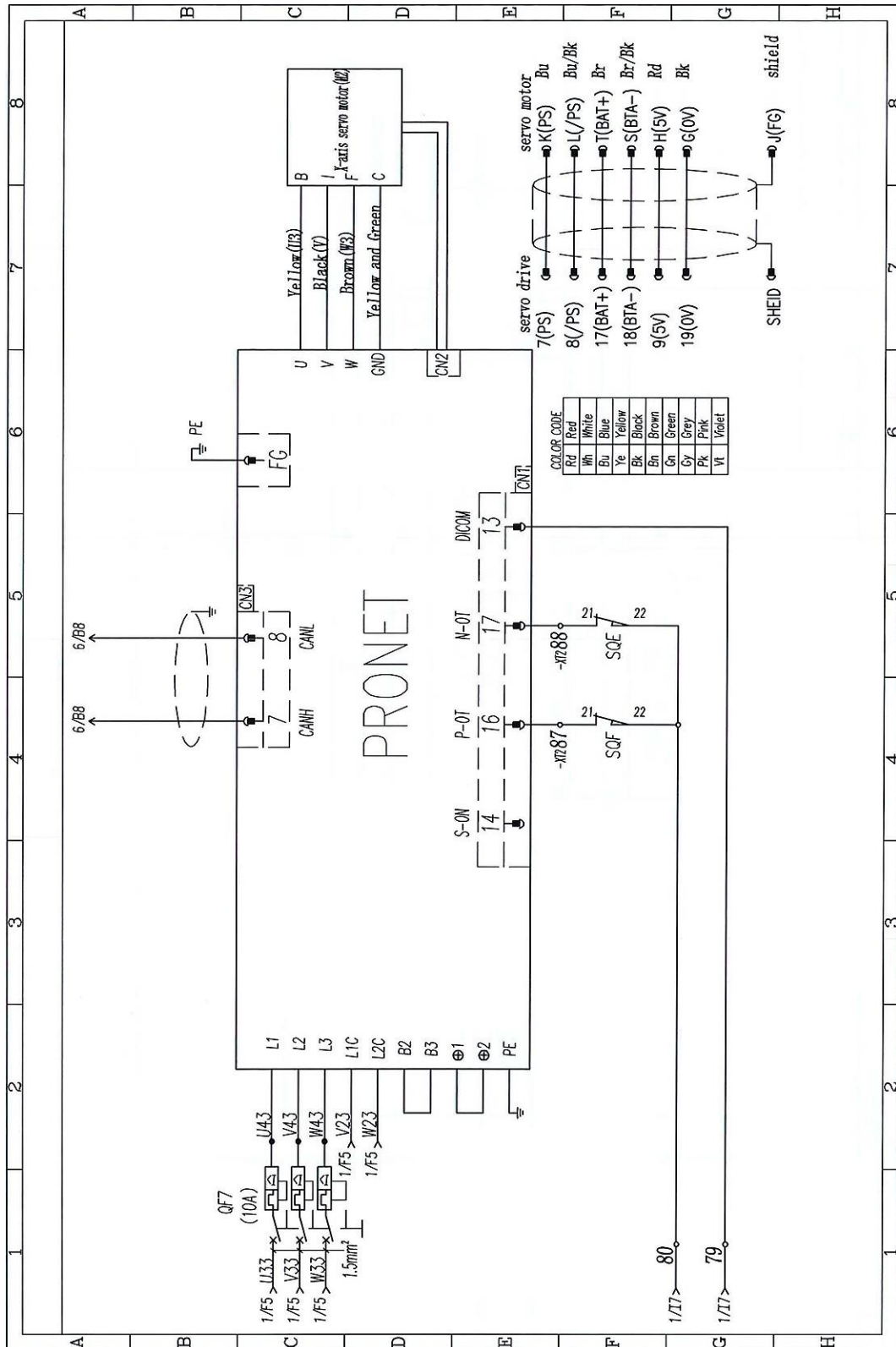






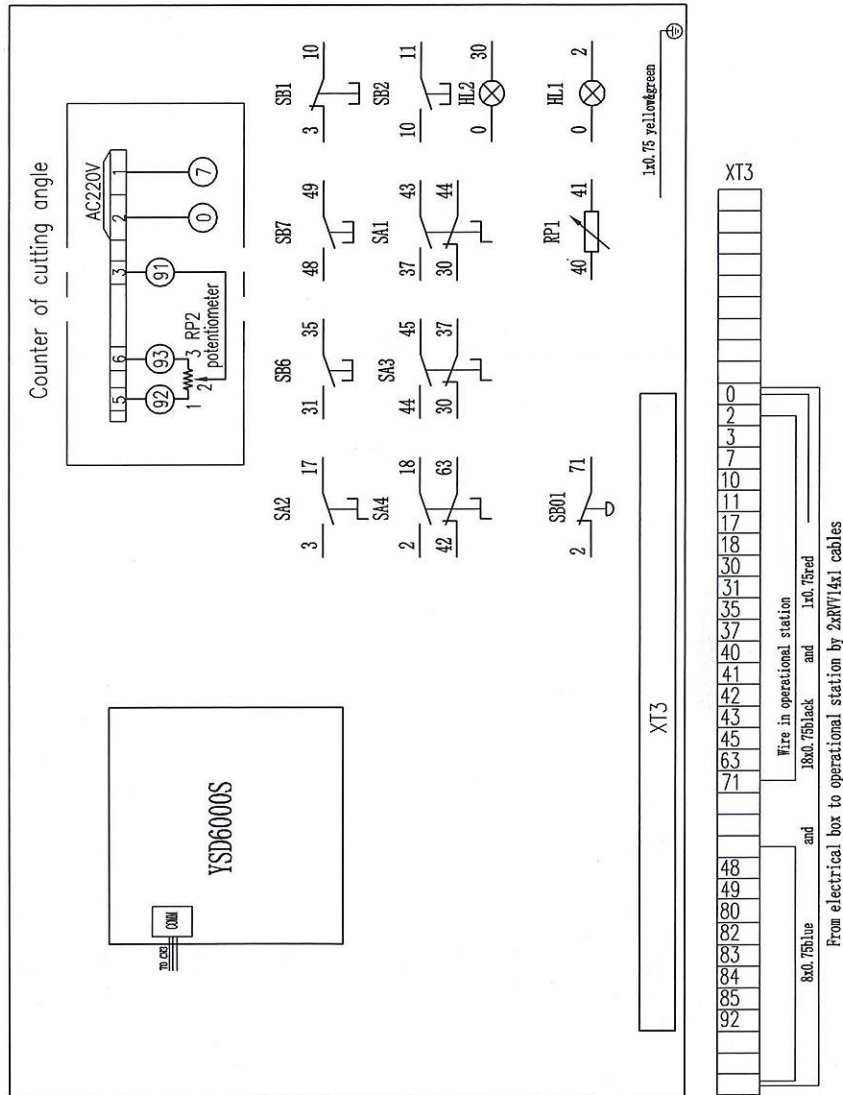




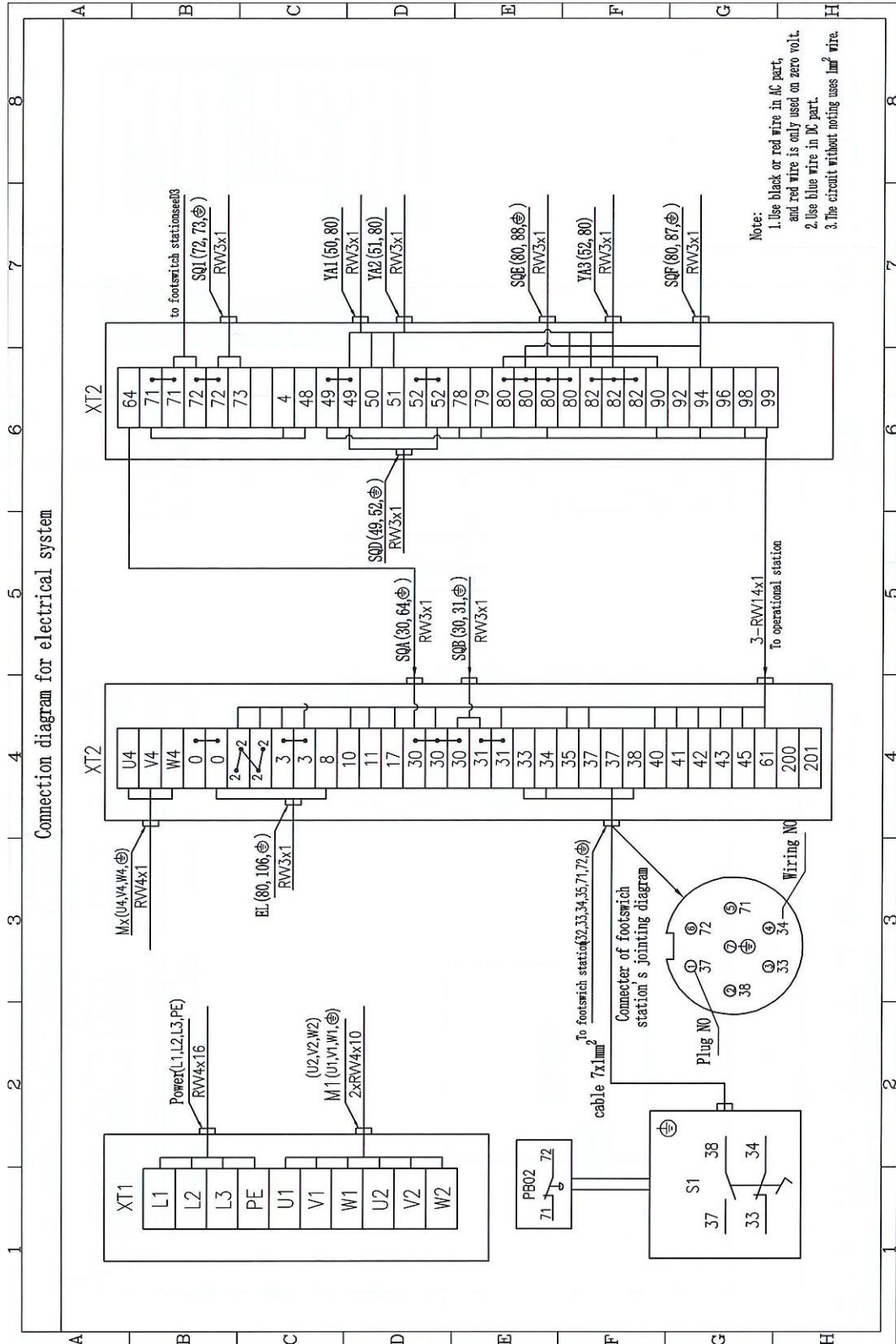


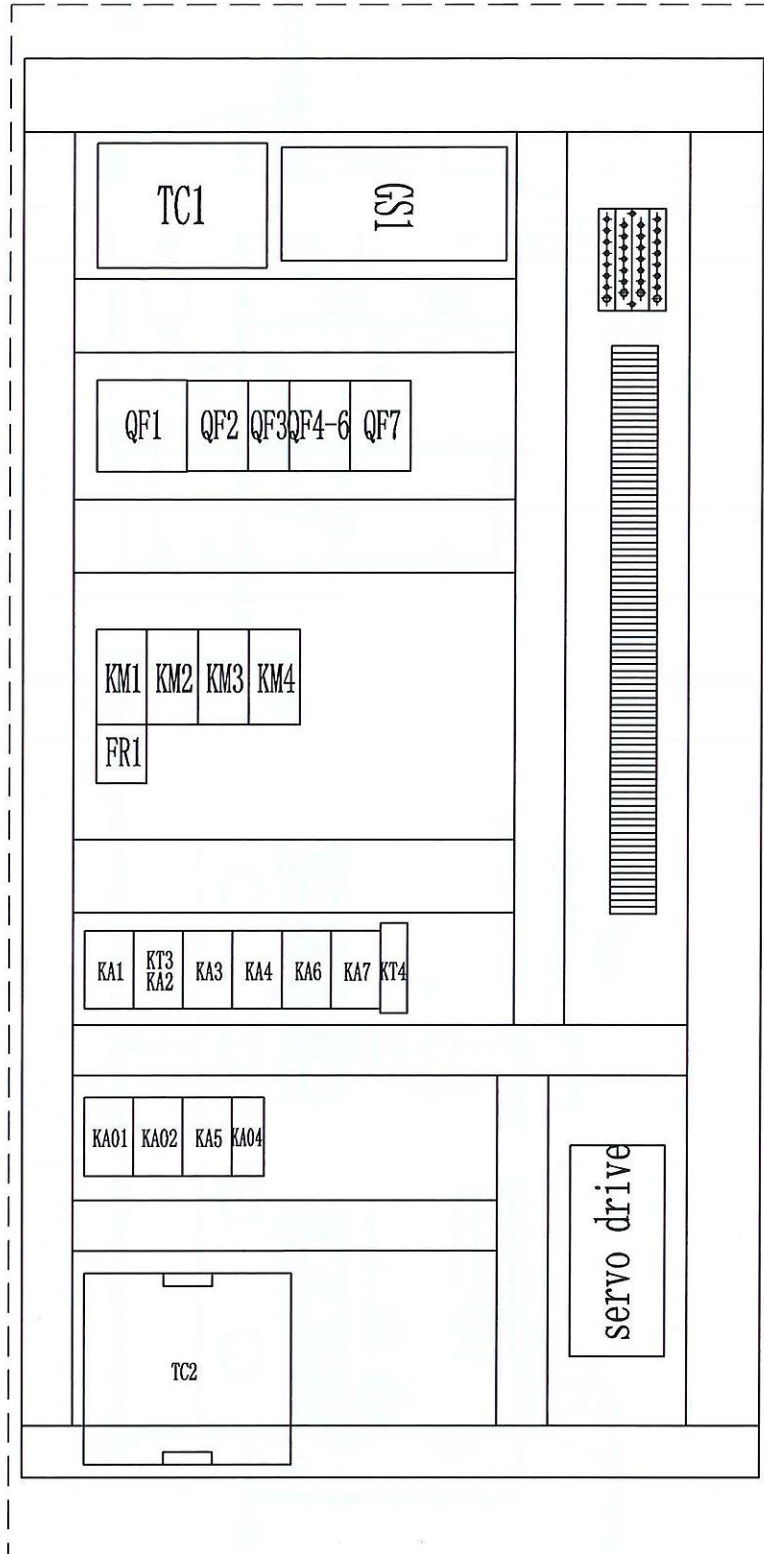


Wiring diagram











## **Electrical Components List**

| Code   | Type          | Name              | Specifications | Qty. |
|--------|---------------|-------------------|----------------|------|
| QS     | V3            | Power Switch      | 63A            | 1    |
| QF1    | GG45-D63-3P   | Circuit Breaker   | 63A, 3P        | 1    |
| KM1, 2 | LC1-D32B7C    | AC Contactor      | AC24V, 50-60Hz | 2    |
| KT1    | LAD-T2        | Time Delay        | 0-30s          | 1    |
|        | LAD-N20C      | Auxiliary Contact |                | 1    |
| KM3    | LC1-D18B7C    | AC Contactor      | AC24V, 50-60Hz | 1    |
| KM4    | LC1-D09B7C    | AC Contactor      | AC24V, 50-60Hz | 1    |
| FR1    | LRD-32C       | Thermo-Relay      |                | 1    |
|        | SAK16         | Terminal Block    |                | 9    |
|        | EK16          | Terminal Block    |                | 1    |
| TC1    | JBK5-630      | Transformer       |                | 1    |
| QF3    | GG45-D6-2P    | Circuit Breaker   | 6A, 2P         | 1    |
| QF4    | GG45-D10-1P   | Circuit Breaker   | 10A, 1P        | 1    |
| QF5    | GG45-D3-1P    | Circuit Breaker   | 3A, 1P         | 1    |
| QF6    | GG45-D6-1P    | Circuit Breaker   | 6A, 1P         | 1    |
| QF2, 7 | GG45-D10-3P   | Circuit Breaker   | 10A, 3P        | 2    |
|        | S-150-24      | DC Power          |                | 1    |
|        | CAD-N32B7C    | Relay             | AC24V, 50-60Hz | 7    |
| KA1, 5 | CAD-N50B7     | Relay             | AC24V, 50-60Hz | 2    |
| KT4    | RE22R2AMR     | Time Delay        | AC24V, 50-60Hz | 1    |
| KA3    | LAD-N02C      | Auxiliary Contact |                | 1    |
| KT3    | LAD-T0        | Time Delay        | 0-3s           | 1    |
|        | DRM570024LT   | Relay             |                | 1    |
| S1     | MD-14H        | Foot Switch       |                | 1    |
|        | C408          | Door Lock         |                | 2    |
|        | PLT-307-RF+PM | Connector         |                | 1    |
|        | BNL-6         | End Section       |                | 8    |
|        | SAK2.5        | Terminal Block    |                | 60   |
|        | TT10-24       | Terminal Block    |                | 2    |
|        | TC6545S       | Wiring Trough     |                | 1m   |
|        | TC4545S       | Wiring Trough     |                | 4m   |
|        | PGH-1         | No. Pipe          |                | 200  |
|        | V-5.5         | Color Pipe        |                | 15   |



|  |                       |                          |                                         |   |
|--|-----------------------|--------------------------|-----------------------------------------|---|
|  | RV30YN20SB203         | Potentiometer            |                                         | 1 |
|  | XB2-BVB1C             | Power Pilot Lamp         |                                         | 1 |
|  | ZB2-BS54C             | Push Button              |                                         | 1 |
|  | ZB2-BZ102C            | Push Button              |                                         | 1 |
|  | XB5-AA42C             | Push Button              |                                         | 1 |
|  | ZB2-BW33C             | Push Button              |                                         | 1 |
|  | ZB2-BWB31C            | Push Button              |                                         | 1 |
|  | XB5-AA21C             | Push Button              |                                         | 2 |
|  | ZB2-BG2C              | Push Button              |                                         | 3 |
|  | ZB2-BZ101C            | Push Button              |                                         | 4 |
|  | ZB2-BD2C              | Push Button              |                                         | 1 |
|  | ZB2-BE102C            | Push Button              |                                         | 2 |
|  | YSD6000S              | Numerical Control System |                                         | 1 |
|  | PAXD                  | Counter                  |                                         | 1 |
|  | OS80-RPVR5Q1          | Photoelectric Switch     |                                         | 2 |
|  | XCK-M115              | Limit Switch             |                                         | 5 |
|  | XCKN2145P20C          | Limit Switch             |                                         | 1 |
|  | EMG-10ASB22           | Servo Motor              |                                         | 1 |
|  | Pronet-10AMA          | Servo Driver             |                                         | 1 |
|  | SG-1.5-220V-240V-200V | 3P Transformer           | 3-220V, 1.5kVA<br>Out 3-200V,<br>1.5kVA | 1 |



## NOTES





## NOTES



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