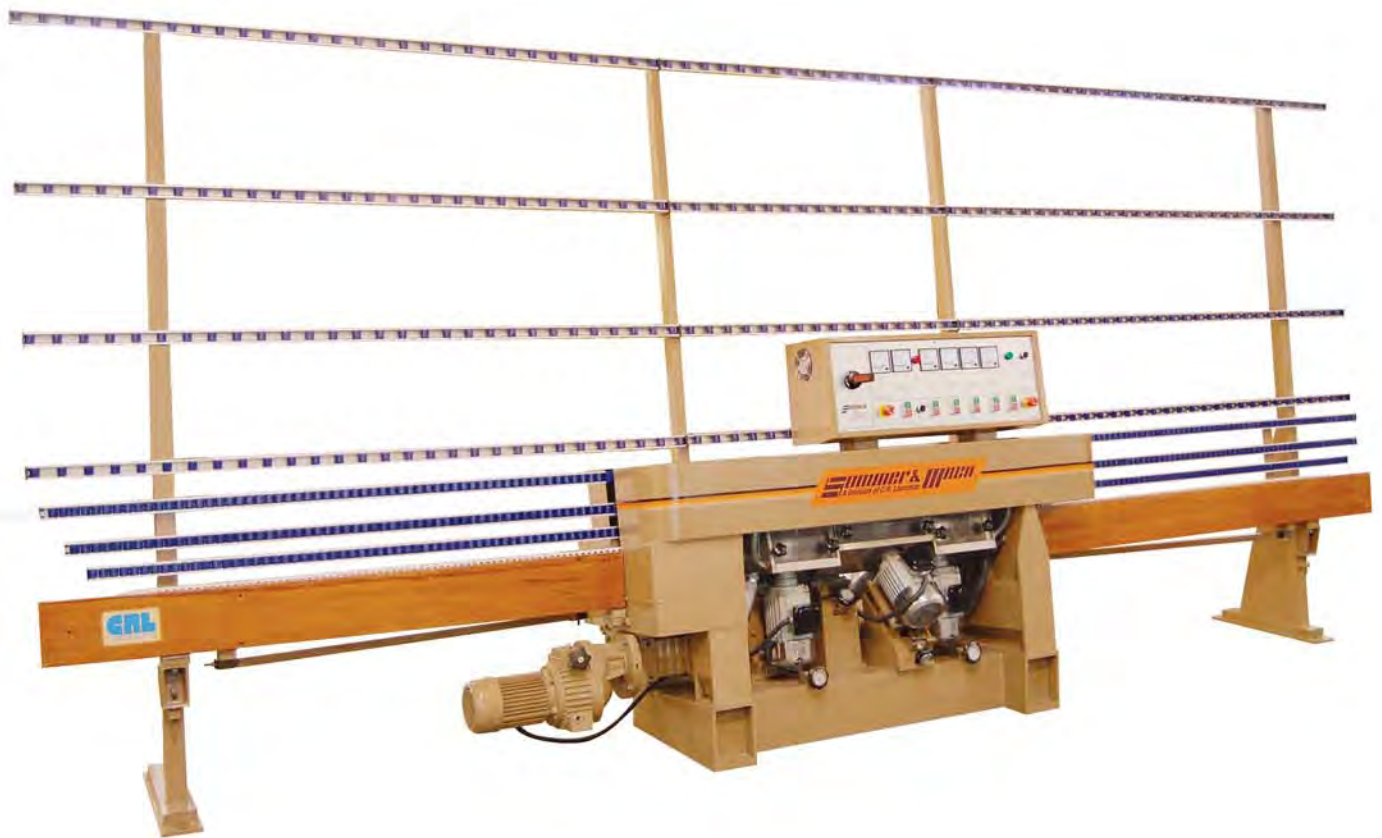




SM4C Cup Wheel Glass Edger

USER MANUAL



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Sommer & Maca Machinery Division • (866) 583-1377 • Fax (866) 584-9722

Contents

| | |
|----------------------------------|----|
| Description ----- | 5 |
| Specification ----- | 5 |
| Installation and Operation ----- | 6 |
| Maintenance ----- | 9 |
| Electrical System ----- | 9 |
| Packing List ----- | 10 |
| Tools ----- | 11 |
| Electrical Schematics ----- | 12 |
| Reference Drawings/Figures ----- | 14 |

Quick Start Guide - Step-by-Step guide to machine set-up

1. Uncrate machine (examine for damage)
2. Check for parts missing (see parts list and diagrams in back of this manual)
3. Position Machine Body in place (see Fig. 7,14)
4. Install leveling feet on main Body and adjust for level (page 6)
5. Install and level ingoing conveyor (see Fig. 10)
6. Install and level outgoing conveyor (see Fig. 10)
7. Install Roller Racks (see Fig.6)
8. Position coolant tank
9. Connect coolant hoses and fill tank (page 7 and Fig 11.)
10. Connect electrical power per local codes (page 6)
11. Check motor rotation. Should be rotating clockwise viewed from above motor

If you encounter any problems, or have questions about setting up or operating the machine, call the parts and service department at (866) 583-1377.

WARRANTY STATEMENT

SOMMER & MACA machinery Division of C.R. Laurence Co., Inc. (Seller) warrants products of its manufacture to be free from defects in materials and workmanship in normal use for one year from the date of shipment unless a shorter period is provided elsewhere in this document. Seller's obligation and Buyer's exclusive remedy shall be limited to the repair or replacement at Seller's option, of defective parts within warranty period, provided Buyer gives Seller immediate written notice of such alleged defects, and if requested by Seller, returns the defective parts to Seller's factory for Seller's inspection.

The warranties contained herein are in lieu of any other warranty expressed or implied, including any warranty of MERCHANTABILITY OR FITNESS FOR PURPOSE.

In the case of equipment furnished by Seller but not of Seller's manufacturer, Seller's liability to Buyer hereunder. Adjustment at the manufacturer thereof makes to Seller. Seller shall in no event be liable for consequential damages.

Warranties hereunder shall not apply to any equipment that shall have been damaged by misuse, neglect, failure to perform maintenance or accident after the shipment thereof by Seller. In addition thereto, this warranty shall be null and void if:

1. Machine is used in a manner contrary to instruction or after malfunction is noticed.
2. Buyer does not honor terms of payment.
3. Machine is modified or altered without the agreement of Seller.

PREFIX

We suggest to carefully follow the instructions in this manual and to regularly follow procedures of maintenance, which will allow you to obtain a higher degree of reliability, safety and durability of the product.

- ❖ This manual contains several advises and precautions for safety. We urge you to read them carefully. In this way you will avoid danger, injuries and eventual damage to the machine.
- ❖ Exclusively trained personnel must do maintenance and repairs.

SAFETY RULES

The machine is provided with all devices of protection both mechanical (chain guard, shelters, etc.) and electrical (sensors, stops, etc.) in order to avoid any contact with moving parts by the operator.

It is absolutely prohibited for anyone to alter or remove any safety devices mentioned above with the power on!!

Any kind of verification, control, cleaning, maintenance, change or substitution of parts must be done with the power off and the main disconnect locked out.

The manufacturer declines any and every responsibility for lack of following safety rules and of injury prevention described below. He moreover declines every responsibility of damages caused by an improper use of the equipment or changes made without authorization. It is also necessary for personal safety that no one beside the operator remains in proximity of the equipment when in use.

General safety rules

When operating electric equipment, it is necessary to adopt the appropriate safety precautions to minimize the risk of electrical shock or injuries. Before operating the machine, read the manual carefully and memorize the following safety rules and save this booklet for future reference:

- ◆ Keep the work area clean and orderly, as unorganized work areas encourage accidents.
- ◆ Before starting, verify the condition of the machine. Check the standard operation and for broken and or damaged parts. Replace all broken or damaged parts by a competent and authorized service person.
- ◆ All repairs performed by unauthorized service personnel will void the warranty and will constitute operating the equipment in an unsafe manner leading to potential danger.
- ◆ It is absolutely prohibited to let children, outsiders, untrained, or people in poor health to touch or use this equipment.
- ◆ Verify that the electrical power source conforms to the electrical specifications before operating this machine.
- ◆ When installing the electrical power source, make sure that the machine is properly grounded.
- ◆ Check the outlet to be appropriate and compatible with the automatic protection switch in the machine.
- ◆ The extension cord if used must have a grounded receptacle, plug and cable as per code.
- ◆ Never stop the machine by disconnecting the power.
- ◆ Check periodically the condition of the cable and replace it should it become cut or frayed. This work is to be performed only by qualified personnel.
- ◆ Do not allow any personnel to come in contact with this cable.
- ◆ Do not ignore these advices. Such an act will constitute an unsafe use of this equipment and will create a potential danger.
- ◆ Personnel authorized by the manufacturer must make repairs.
- ◆ The manufacturer is available for immediate technical assistance to insure optimum performance and the maximum production of the machine.

Description

The CRL/Somaca SM4C Straight Line Glass Edging Machine is capable of producing a flat and seam edge with adjustable arris for different glass thickness. The grinding and polishing are finished in one operation. Precision motors allow for high quality edges. The SM4C machine is equipped with a mechanical stepless reducer for adjusting the conveyor speed.

Specification

- (1). Power source: 3-Phase, 60Hz, 220V
- (2). Total power: 11.50 kW, 15.5 HP
- (3). Glass processing range:
 - ①. Glass thickness: 3-12mm, 1/8- 1/2inch
 - ②. Min size: 100mm×100mm, 4x4inch
 - ③. Arris angle: 45°
 - ④. Max arris width: 2.5mm, 3/32inch
 - ⑤. Max grinding amount of flat edge: 2.5mm, 3/32inch
- (4). Height of input conveyor: 850mm, 33.5inch
- (5). Glass feeding speed: 0.5-3.0m/min, 20-120inch/min
- (6). Overall dimensions: 5588mm×1200mm×2500mm (Without water tank) 220”x47”x98”
- (7). Total weight: 1770kg, 3900lb.
- (8). Feeding speed adjustment:

While the conveyor is moving, turn the hand-wheel of step-less reducer.

CAUTION: DO NOT TURN THE CONVEYOR SPEED KNOB UNLESS THE CONVEYOR IS MOVING.

- (9). Operating Mode: Continuous running and manual feeding.
- (10). Wheel specification: All spindles are equipped with inside diameter Ø50mm cup wheels and AC motors.

Pos.1 Diamond wheel Ø 150mm for flat edge (Fig.1)

Pos.2 Resin wheel Ø 130mm front arris (Fig.2)

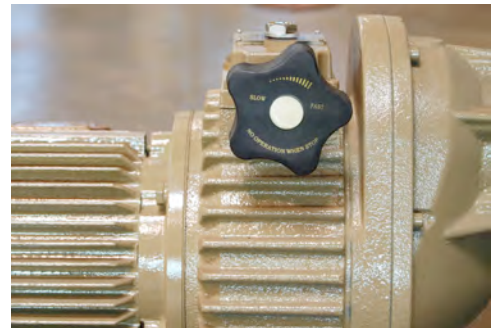
Pos.3 Resin wheel Ø 130mm rear arris (Fig.2)

Pos.4 Polishing wheel Ø 150mm, BK60 for flat edge (Fig.4)

- (11). Grinding Motor Specification:

Pos.1, 4 Motors: 2.2kW, (3 HP) 2 Pole

Pos.2, 3 Motors: 1.5kW, (2 HP) 2 Pole



1. Installation and Operation

(1). General construction (Fig.6)

The SM4C Straight Line Edging Machine consists of an Input Conveyor, Glass Support Rack, Main Machine, and Output Conveyor. It is important to set the machine up on a level surface or level it on an uneven surface.

(2). Lifting (Fig.7)

Two lifting rings are on the main machine and are the recommended way to lift the machine. Use wire cables and a crane to lift the main machine to the installation position. After positioning the main machine onto the feet (see below), remove the lifting rings. Install glass support rack, input and output conveyors and pull rods.

(3). Machine Installation and Leveling Adjustment

- Set up 8 Shock Absorber Feet as shown in the photo at right. Thread a square-head bolt into each foot until it touches the metal plate inside the foot.
- Lift the Main Machine Body and install 4 Foot Pad Assemblies. Add washers and nuts to each bolt but do not tighten them down yet.
- Place a level on the front conveyor guard. Raise the low side by turning the square bolt heads clockwise until the machine is level, side to side. Now adjust the feet to maintain a 5 degree tilt-back. This is the standard angle to keep glass secure on the conveyors. The machine is made with the 5 degree tilt built in. If the adjustment of the feet is not enough to get the machine level, insert flat metal shims between the foot and the machine.
- With the machine level, tighten the top nuts down securely while holding the square bolt head.
- Install the conveyors and assemble the feet onto the conveyor legs the same way the machine was set up. Use a level on each conveyor. The conveyor can be leveled further with its own adjusters. See Figure 10.



(4). Electrical Connection

- The power source box on the backside of the main machine is for connecting the power source. Use 3-phase, 4-wire cables to connect the power source, and make sure there is a good ground connection. Running the machine, check the conveyor running direction, in case the direction is opposite from the direction on the switch, change one pair of wire connections. Be sure the machine is wired according to local codes. You may want a licensed electrician to do the wiring for you.

Caution: Before machines are shipped, all motors are connected for correct rotation direction, do not change the motor connection at will.

Cooling System Connection

I . Power Connection: Plug the water pump into the front socket on the right side of the machine. There are two sockets. The water pump can draw power from either socket.

II .Water pipe connection (Fig.11)

Use the ¾” (19mm) inner diameter plastic tubing to connect the cooling pump to the Water Entrances. 2 adjustable water lines are directed at each of the 4 wheels.

Use 2.5” (63mm) inner diameter plastic hose to connect the drain water from the main machine to the outside water tank.

See figures 17 and 18 for a guide to positioning the coolant nozzles for best performance.

(5). Operating Panel (Fig.12)

1. Power Source Switch with Indicator Light
2. Grinding Motor Ampere Meters
3. Arris (Seam) Motor Ampere Meters (2)
4. Polish Motor Ampere Meter
5. Motor Overload Indicator Light
6. Conveyor Ampere Meter
7. Voltage Meter
8. Main Electrical Disconnect Switch
9. Emergency Switches (2)
10. Conveyor Motor Switch
11. Conveyor Direction Switch
12. Polish Motor Switch
13. Arris (Seam) Motor Switches (2)
14. Grind Motor Switch
15. Water Pump Switch

(6). Assembling the wheels (Fig13)

Fig.13 shows assembly structure of the wheels.



Spindle Motor Hand Wheel

(7). Operation

After machine installation, adjustment and connection, you can start grind set-up and testing.

Grinding wheel position adjustment

1. Turn the hand-wheels of all spindles counter-clockwise to move the wheels backward (away from glass). The grinding positions were adjusted before the machine was delivered. Turning the hand-wheel clockwise one full turn moves the wheel towards glass grinding position in 1mm increments. 1 full turn = 1 mm.

2. Turn on the Main Electrical Disconnect Switch (8) on the left side of the control panel. Voltmeter (7) indicates the power source voltage, check that the voltage is within specified range; turn on Power Source Switch with Indicator Light (1). All other power should be off.

3. Put a piece of glass that is long enough to occupy Pos.1-Pos.4 wheel on the input conveyor. Set the Conveyor Direction Switch (11) to the glass working direction (right to left), Activate Conveyor Transmission Switch (10), the glass should start moving. Stop Conveyor Transmission Switch (10) or Emergency Switch (9) when the front of the glass passes the Pos. 4 wheel.

4. Turn the hand-wheel of Pos.1-Pos.4 spindles clockwise to move the wheels toward the grinding position until the wheel touches the glass (manually turning the wheels during spindle adjustment will help you hear the wheel touch the glass). Record the indicator's position and then turn the hand-wheel of the spindles anti-clockwise to move the wheels away from the glass grinding position.

5. Restart Conveyor Transmission Switch (10), When the glass leaves the main machine to the output conveyor, stop Conveyor, Switch (10) or Emergency Switch (9).

6. Turn the hand-wheel of Pos.1-Pos.4 spindles clockwise to move the wheels towards the glass grinding position back to the above mentioned adjustment position that you recorded.

Grinding Testing

1. Now all the wheels are at Zero grinding position. You can now adjust the wheel position according to the grinding amount desired. In normal operation, Pos.1 grinds about 1/32" of the flat-edge grinding amount. Always test with the Water Pumps running!

2. Adjust the arris wheels in so they grind the desired amount of seam. Generally keep this to a small amount of grinding.

3. Slowly adjust the polish wheel up to achieve the best quality polish.

4. Start Water Pump Switch (15), check the coolant flow and start the Motor Switchs (14), start Conveyor Transmission Switch (10).

5. Put the glass that was used for adjusting the wheel position on the input conveyor. Adjust the wheel grind position according to the indication on the Grinding Motor Ampere Meter (2).

Quantity grinding

1. After several test runs, all the wheels are in the best grinding position. Now you can start quantity grinding.

2. Add about 1/2 pound of synthetic diamond coolant (Cat No. 2651005) to the 45 gallon tank of clean water and start Water Pumps, Switch (15), and check that the coolant is flowing to the wheels. Start the Motors (Switches 12-13-14), start Conveyor Transmission Switch (10). Adjust the transmission speed according to the glass thickness and grinding amount. Put the glass on the input conveyor.

3. Watch the indication on the Grinding Motor Ampere Meter (2) and make up the loss of wheels if it is necessary especially on the polishing wheel. Lower Amp readings indicate less contact with the wheel and therefore the wheel can be adjusted closer to the glass.

Caution: When changing glass thickness, back off the front arris spindle, #2, and slowly dial in the amount of arris to be ground. This should match the rear arris grind, which should not have to be changed when glass thickness changes.

Maintenance

- (1). Check the electrical ground connection occasionally to guarantee safe operation.
- (2). After working everyday, sweep away broken glass pieces and glass grind from the water tank then wash it and check the coolant pipeline for blockage. Clean the machine, use light oil on exposed or unpainted areas. Lubricate the slide plate of the spindles and front conveyor with light machine oil.
- (3). Use special step-less reducer lubrication oil (Mobil SHC 630 Synthetic) to lubricate the mechanical step-less reducer. Change this oil every 1,000 operating hours. The oil level should show on the oil gauge to avoid high oil temperature. Add grease to lubricate bearings and gears of the step-less reducer every 3,000 operating hours. Use Mobil #350 oil in the worm gear box and change it every 1,000 operating hour. Oil level should be at the middle of the oil gauge or have the box $\frac{1}{2}$ full.
- (4). Grease the bearings, gears and sprockets of the right and left gearbox every 3 or 4 months of operating.
- (5). Change the water in the coolant tank periodically. Too much glass powder will block the pipeline and pump, and affect the grinding quality, shortening wheel life.
- (6). Every 3 months of operation, the slideway and pads and chains of the front and rear conveyor should be coated with grease. To make the lubrication, remove the left and right front covers and left and right rear covers in advance, then coat with grease from the corner of chain to the pads that can bring the grease into the slideway of the conveyor.
- (7). Check the front and rear conveyor pads periodically, when most of the conveyor pads have worn seriously, all should be changed.
- (8). Check the wearable plates of the slideway periodically, change them when most of them have worn seriously.

Electronic System

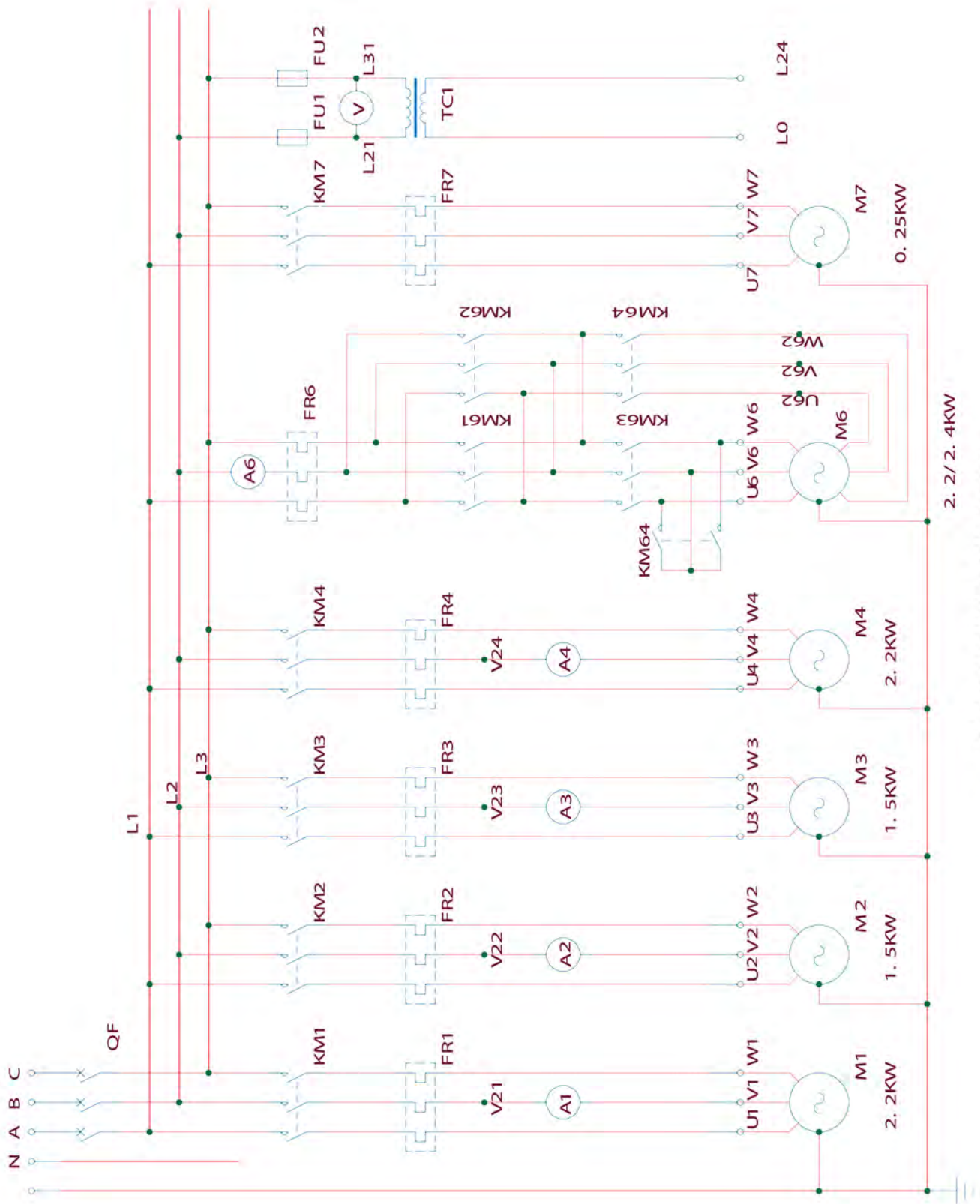
- (1). Main electrical circuit drawing (Fig.15), page 12
- (2). Control circuit drawing (Fig.16), page 13

Packing List

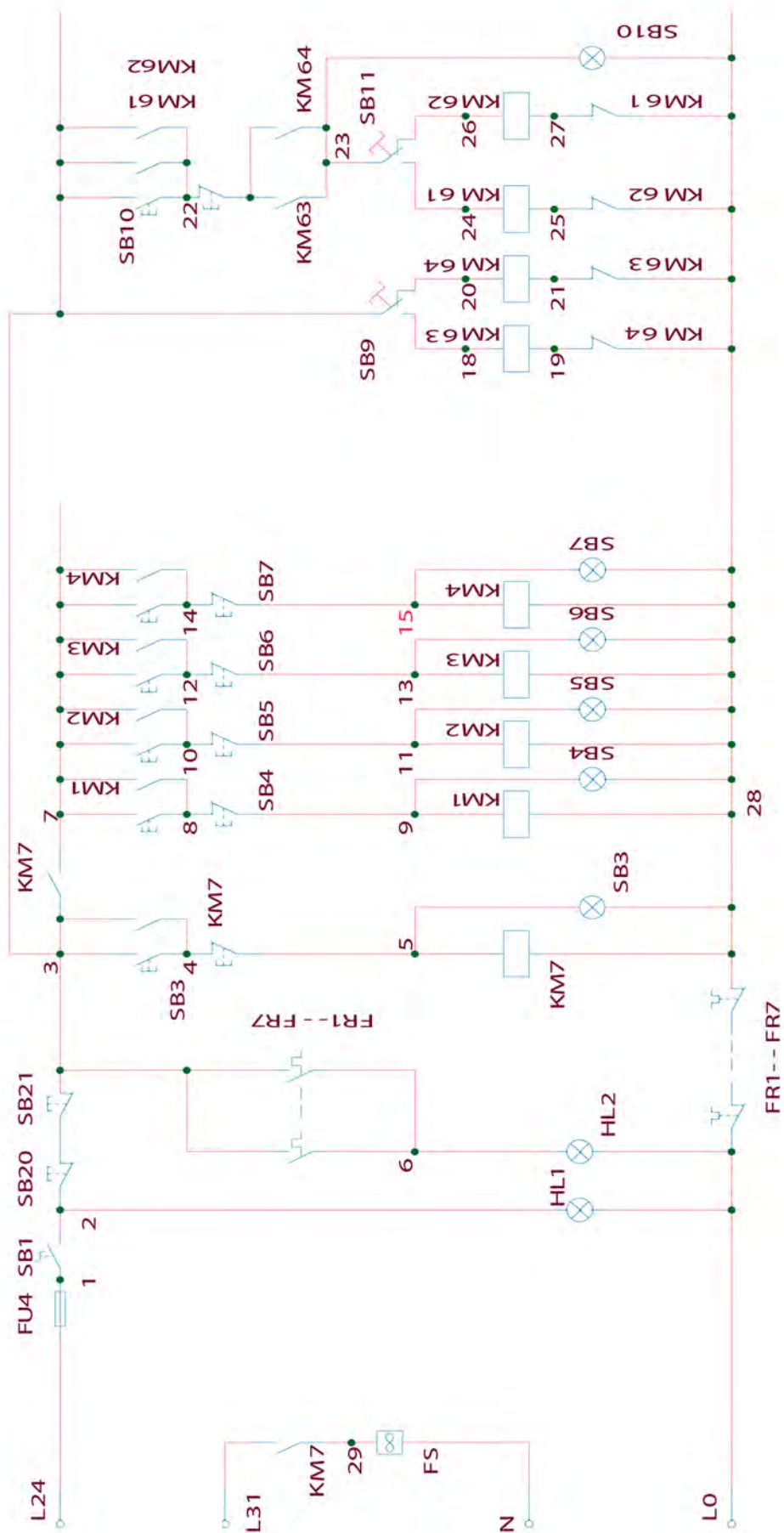
| Packing List of SE5M Straight Line Edger | | | | |
|--|------------------------|-----------------|-----|-----------------------|
| Main Machine, Fitting Parts and Accessories | | | | |
| No. | Item | Description | Qty | Remark |
| 01 | SE5M-00 | Main Machine | 1 | |
| 02 | SE5M-F1 | Input Conveyor | 1 | With wooden, gear etc |
| 03 | SE5M-F2 | Output Conveyor | 1 | With wooden, gear etc |
| 04 | 38.1-XH4289.425+2mm PU | Timing Belt | 2 | |
| 05 | SE5M-F10 | Pull Rod | 2 | |
| 06 | SE5M-F11 | Middle Pillar | 2 | |
| 07 | SE5M-F12 | Rack Pillar | 2 | |
| 08 | 2145mm | Roller Strip | 4 | |
| 09 | 1220mm | Roller Strip | 4 | |
| 10 | 2230mm | Roller Strip | 4 | |
| 11 | 1790mm | Roller Strip | 2 | |
| 12 | 1710mm | Roller Strip | 1 | |
| 13 | 1915mm | Roller Strip | 2 | |
| 14 | 1835mm | Roller Strip | 1 | |
| 15 | SE5M-S1 | Water Tank | 1 | |
| 16 | DB100, 250W | Water Pump | 1 | |
| 17 | M16, □120 | Shock Proof Pad | 10 | |
| 18 | Inner Diameter 63mm | Plastic Pipe | 1 | 6 Meter |
| 19 | Inner Diameter 19mm | Plastic Pipe | 1 | 5 Meter |
| 20 | JQ-25-L1 | Pipe Fixer | 6 | |

Tool Box List

| | | Tools | | |
|------------|---------------------|---------------------|------------|---------------|
| No. | Item | Description | Qty | Remark |
| 01 | | Tool Box | 1 | |
| 02 | S=10,14,17,19,24 | Sockets | Each 1 | |
| 03 | 250mm | Ratchet Handle | 1 | |
| 04 | 250mm | Long Extension | 1 | |
| 05 | 125mm | Short Extension | 1 | |
| 06 | S=10,14,17,19,24 | Combo Wrenches | Each 1 | |
| 07 | 6", 12" | Adjustable Wrenches | Each 1 | |
| 08 | S=3, 4, 5, 6, 8, 10 | Hex Key/Allen | Each 1 | |
| 09 | 75x5, 150x8 | Screwdriver | Each 1 | |
| 10 | | Oil Gun | Each 1 | |



SM4 EDGING MACHINE MAIN CIRCUIT



SM4 EDGING MACHINE CONTROL CIRCUIT

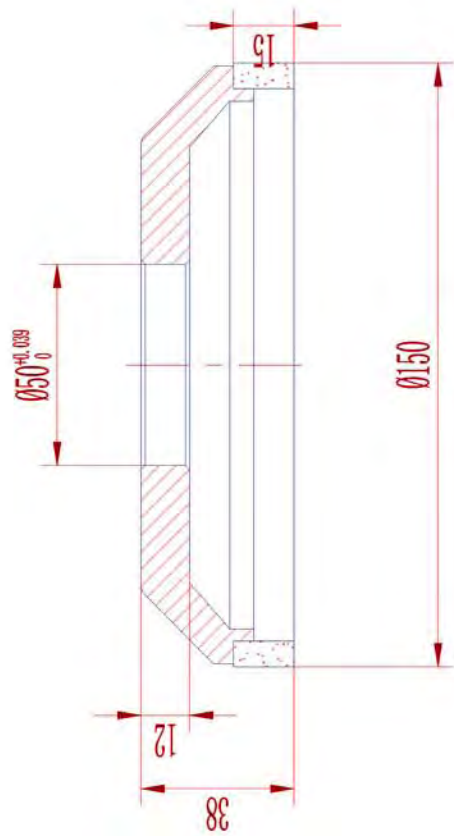


Fig.1 Diamond for Flat Edge

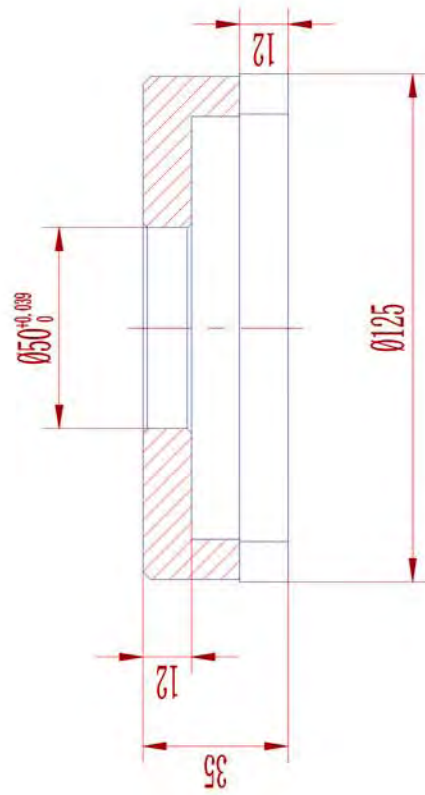


Fig.2 Diamond for Arris

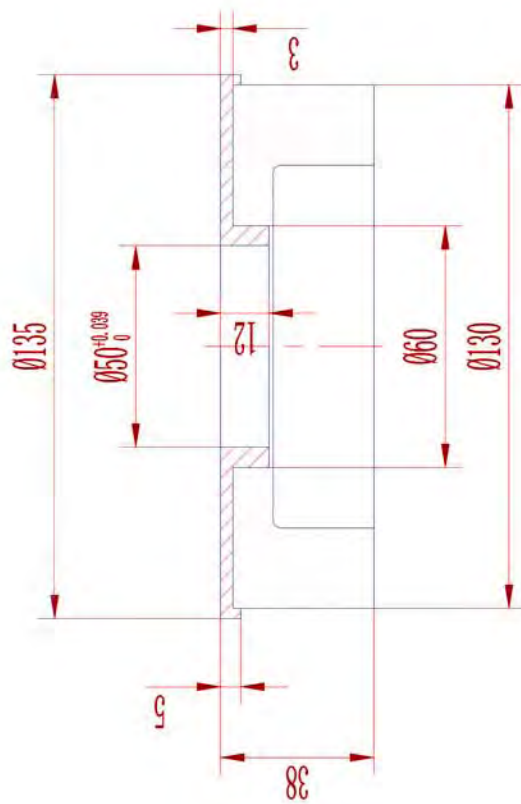


Fig.3 Polishing Wheels for Arris (10S 40)

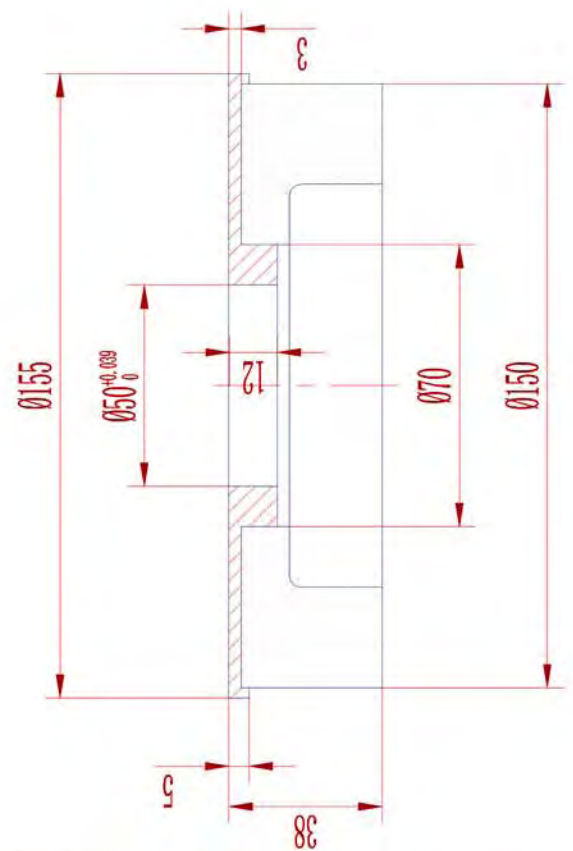
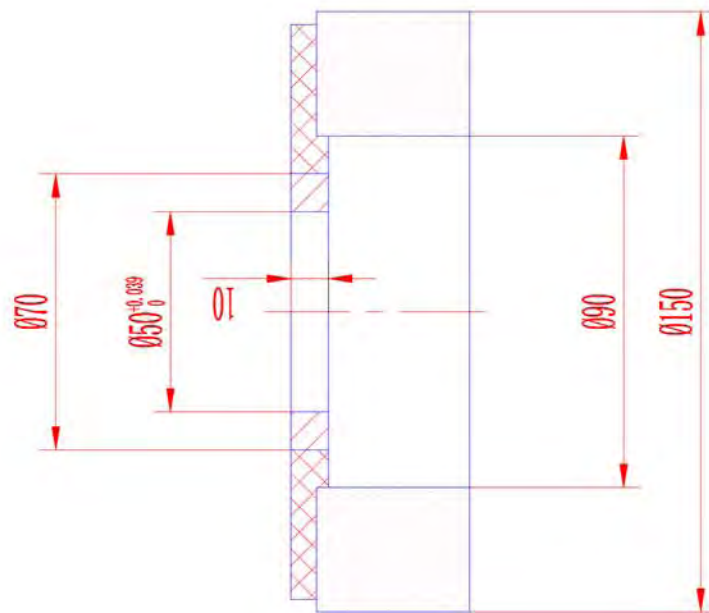


Fig.4 Polishing Wheels for Flat Edge (10S40 or BK46)



Polishing Wheels for Flat Edge (CE3)

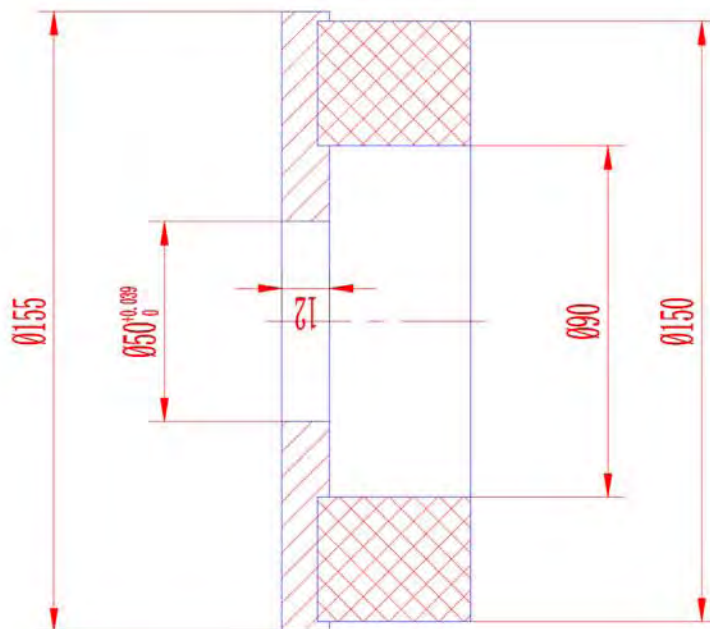
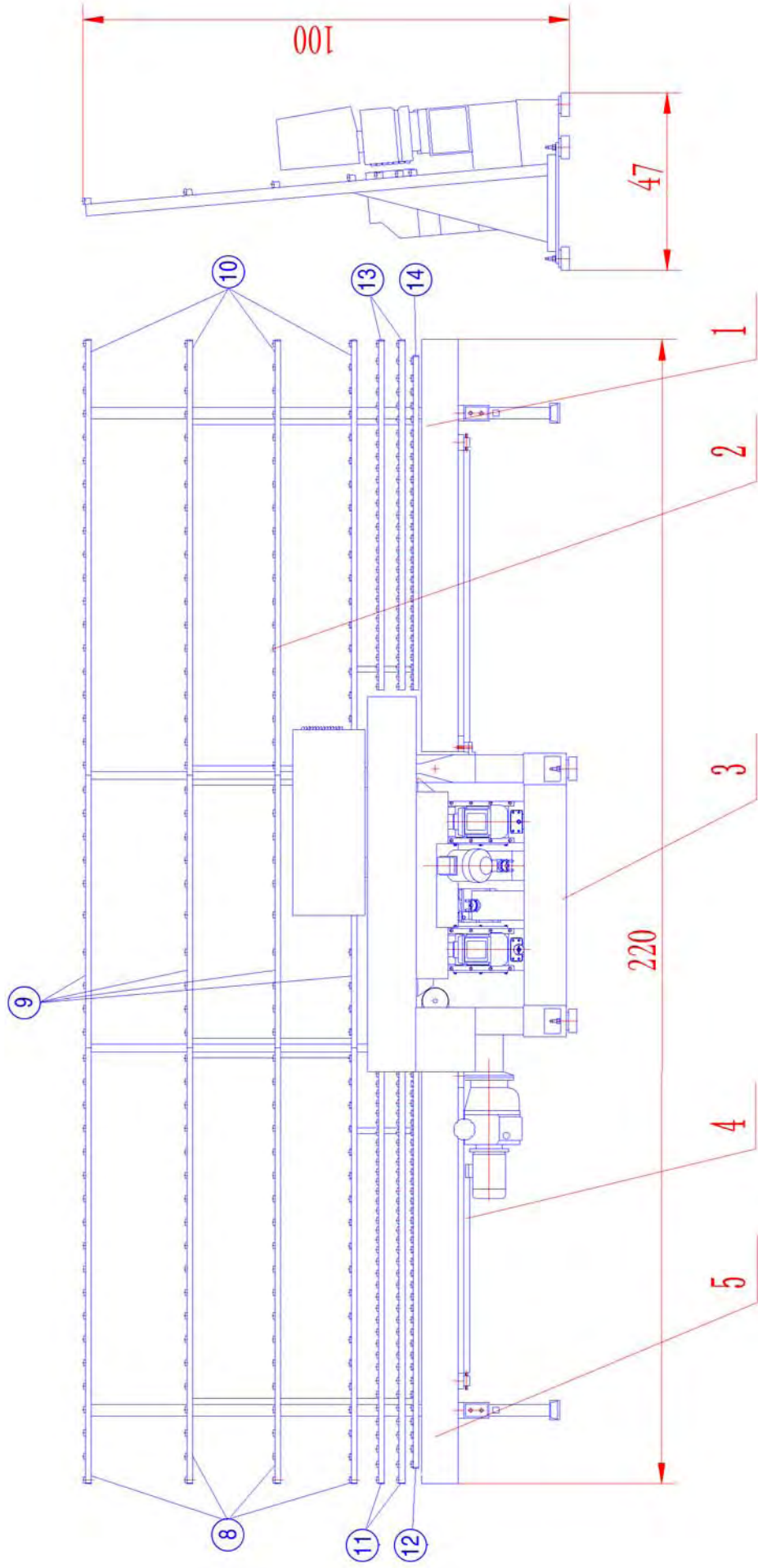


Fig. 5 Polishing Wheels for Flat Edge (Felt)



1. Input Conveyor; 2. Glass Support Rack; 3. Main Machine; 4. Pull Rod; 5. Output Conveyor

Fig.6 General Structure

Lifting Hole

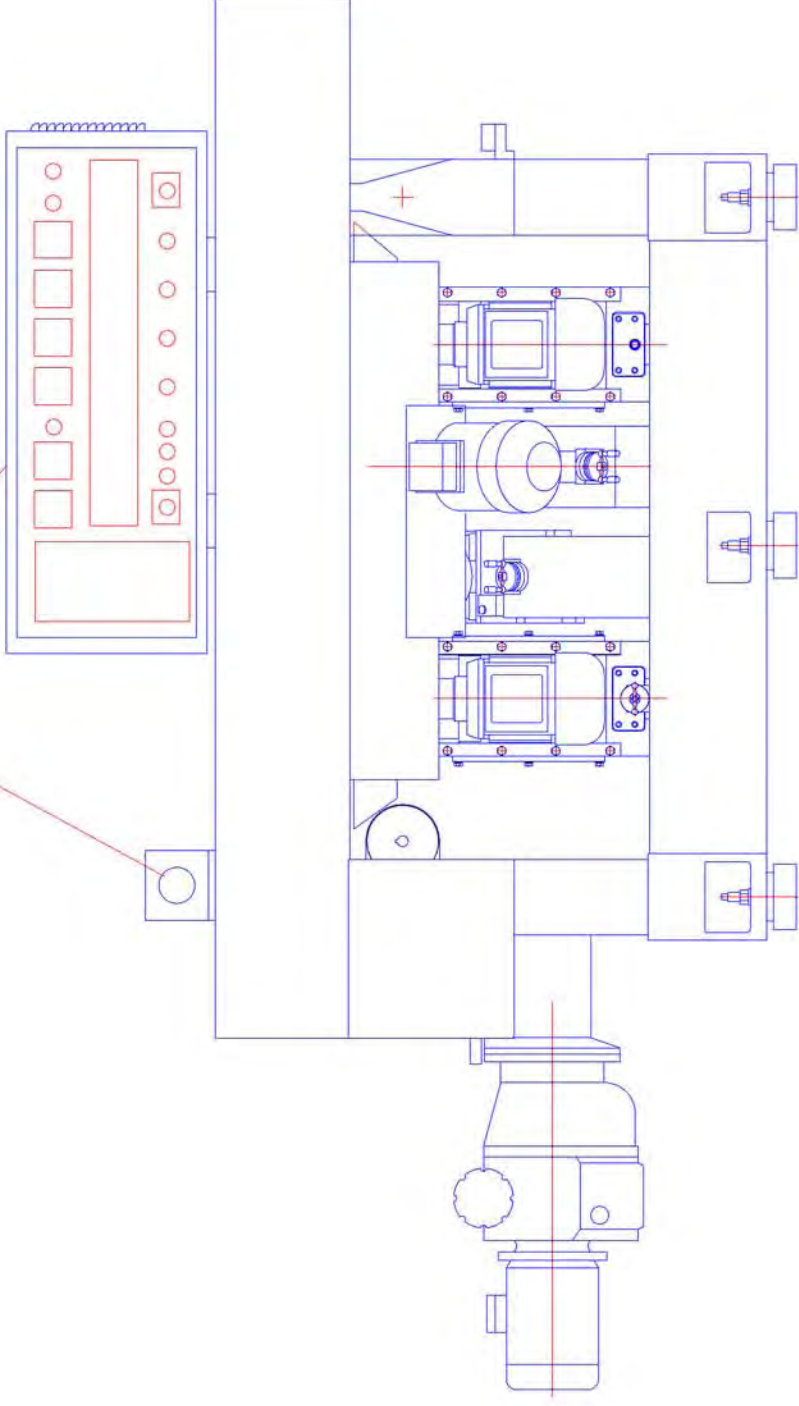
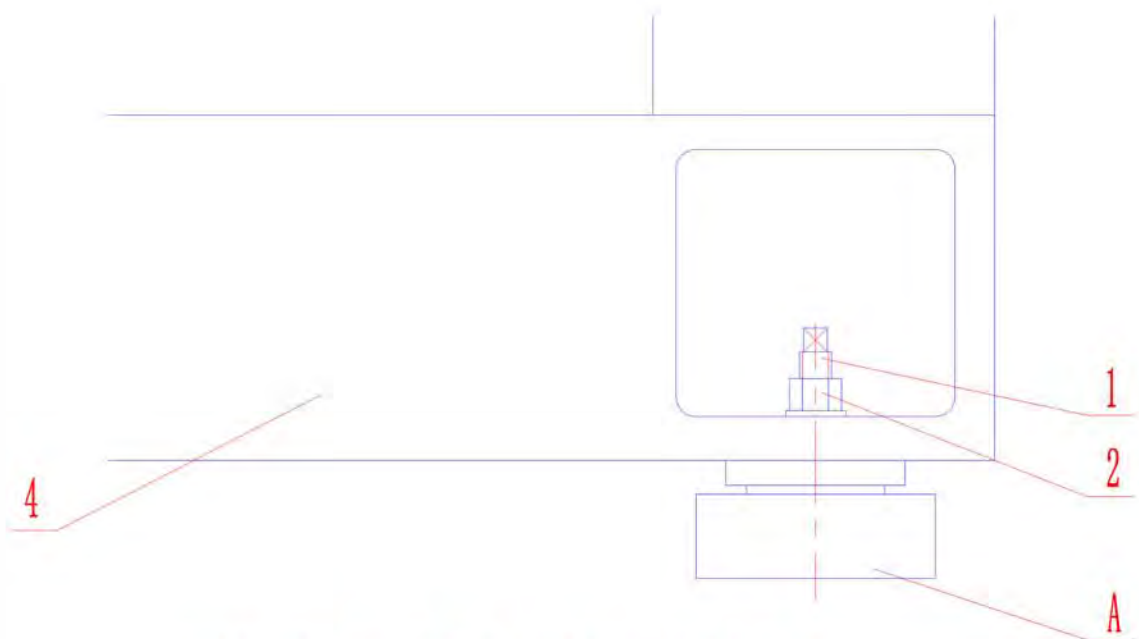
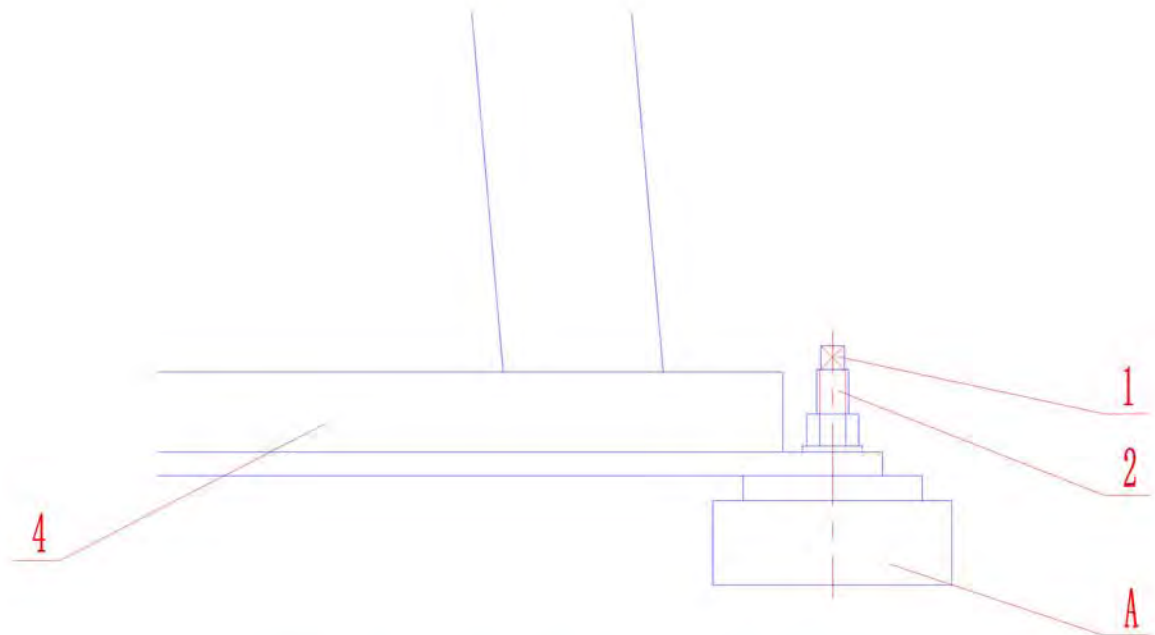


Fig. 7 MACHINE LIFTING



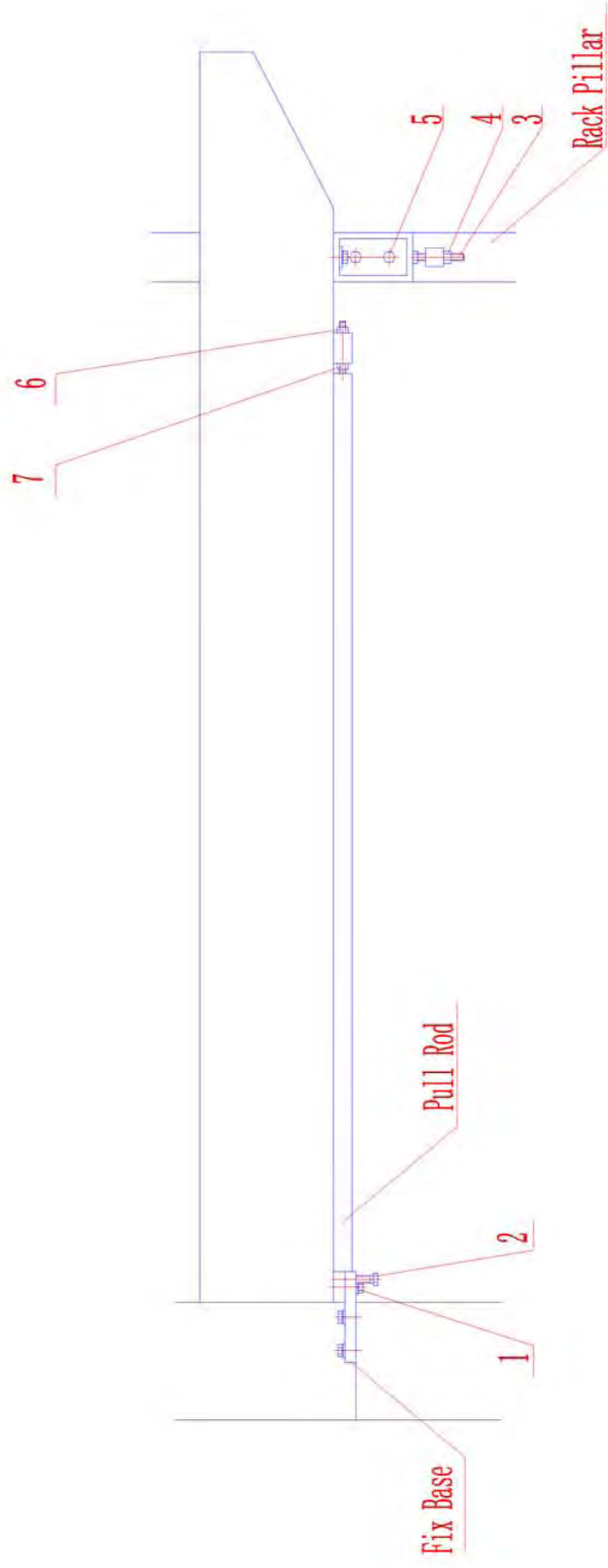
1. Bolt; 2. Nut; 3. Shack Proof Pads; 4. Main Machine

Fig.8 Main Machine Horizontal Adjustment



1. Bolt; 2. Nut; 3. Shack Proof Pads; 4. Rack Pillar

Fig.9 Glass Support Rack Horizontal Adjustment



1, Bolt 1; 2, Bolt 2; 3, Bolt 3; 4, Nut 4; 5, Bolt 5; 6, Nut 1; 7, Nut 2

Fig. 10 Input and Output Conveyor Horizontal Adjustment

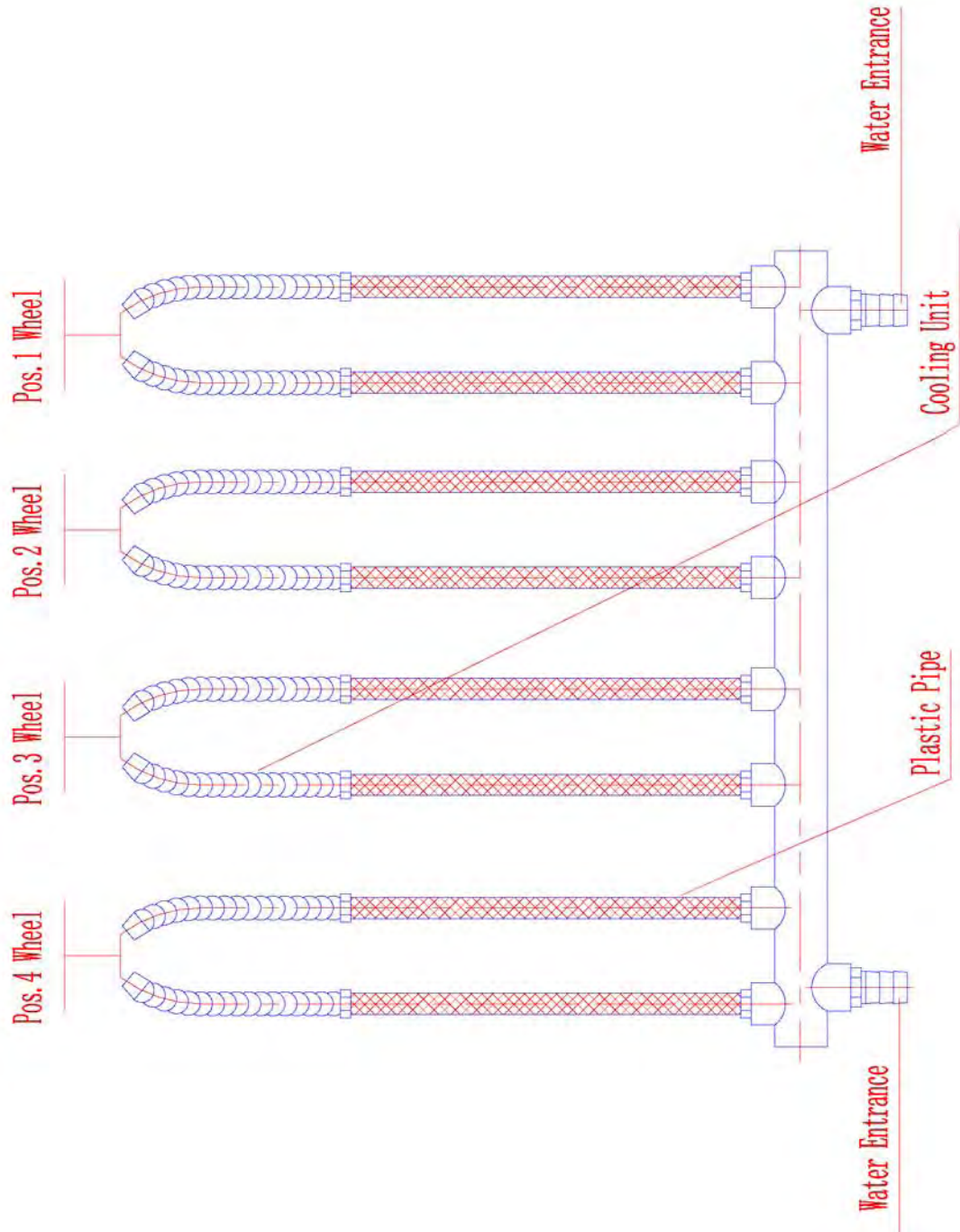


Fig. 11 Water cooling system

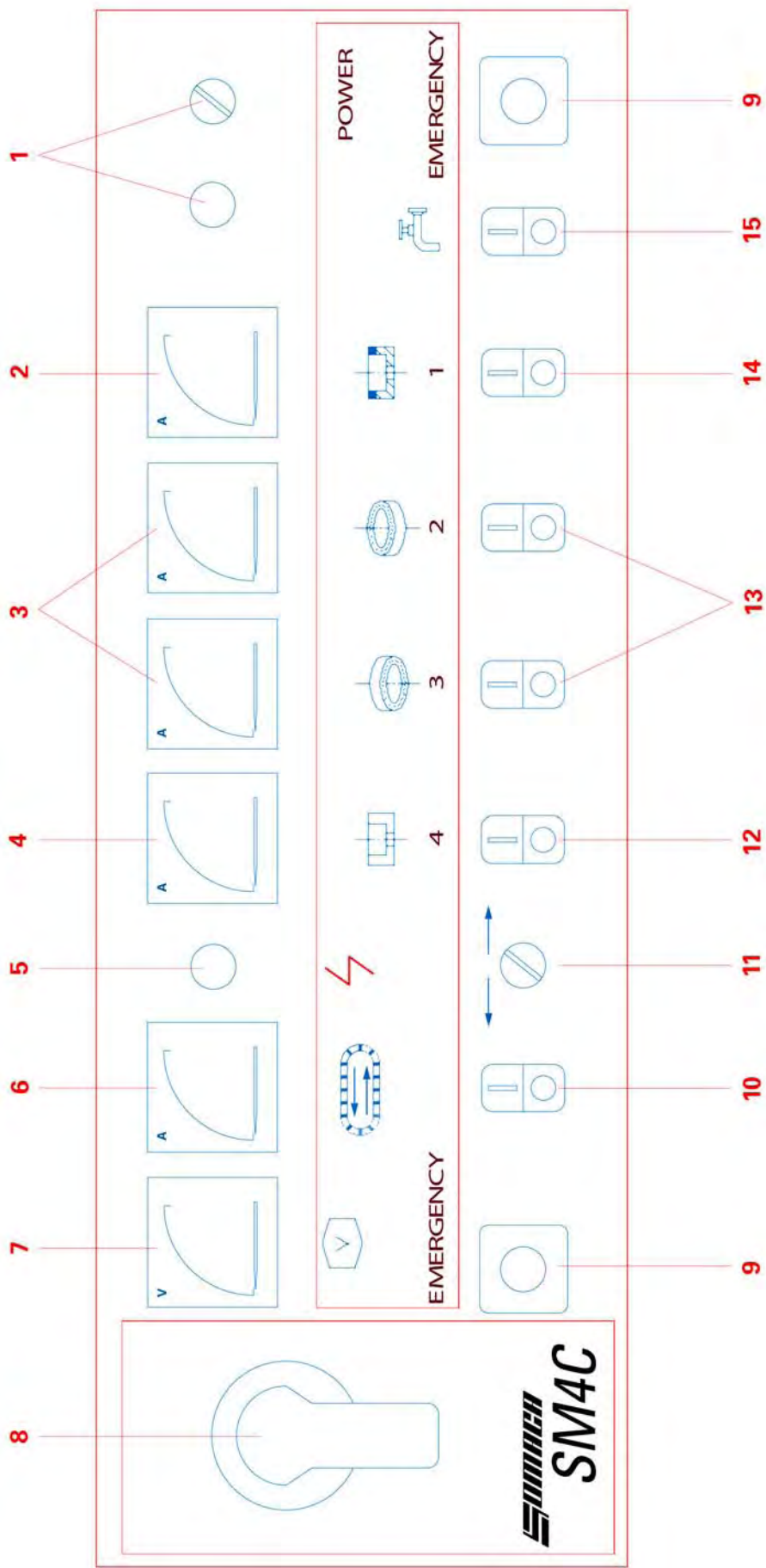
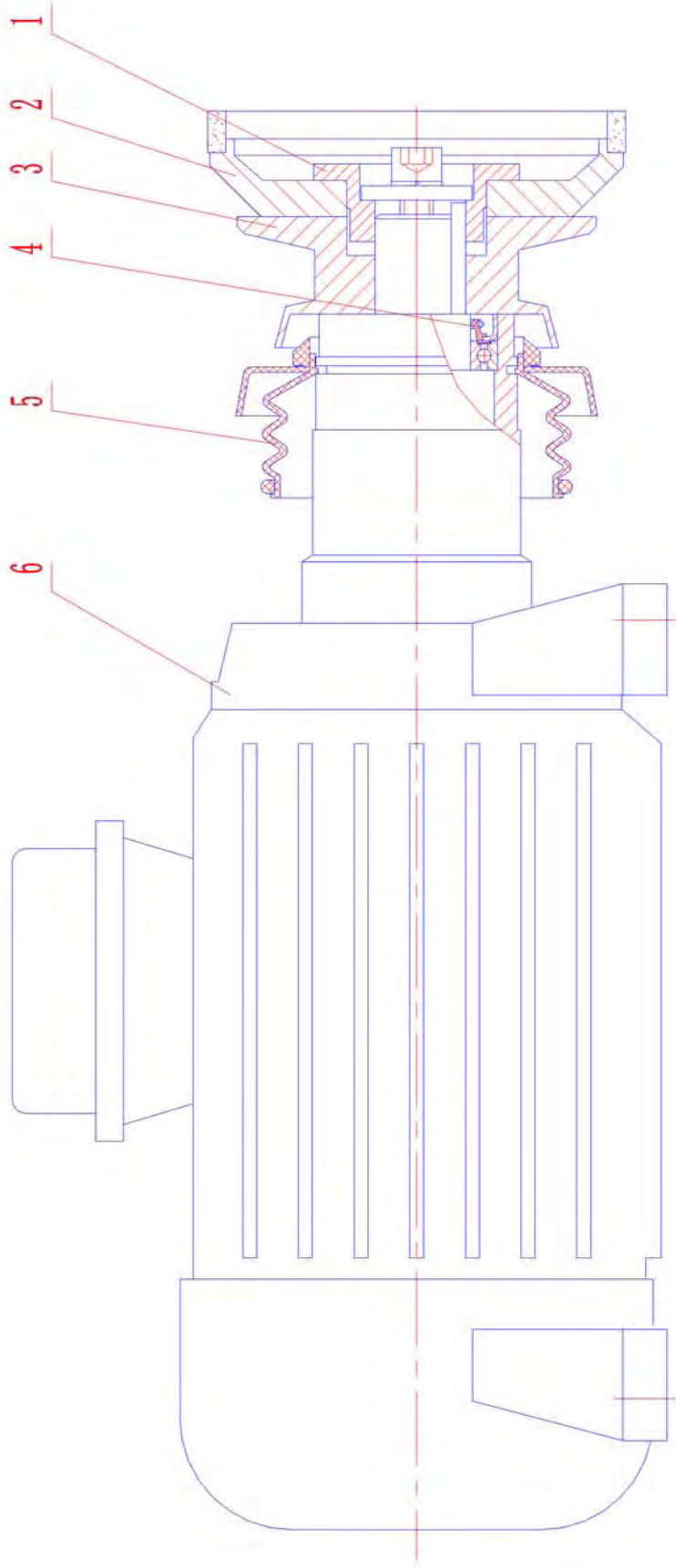


Figure 12



1. Bushing; 2. Wheel; 3. Tray; 4. Bone oil seal; 5. Waterproof; 6. Motor

Fig.13 Structure of Spindle

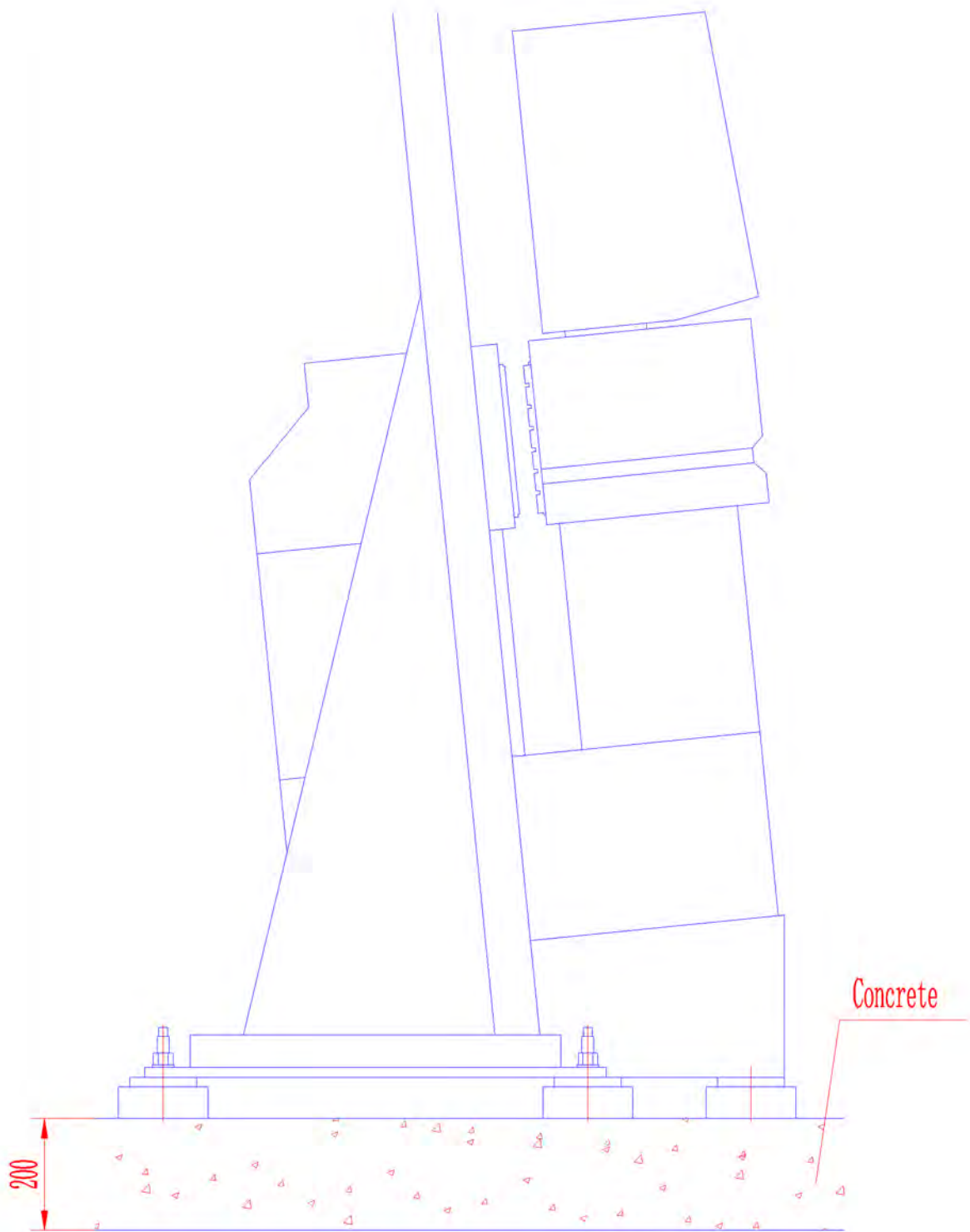


Fig. 14 Installation

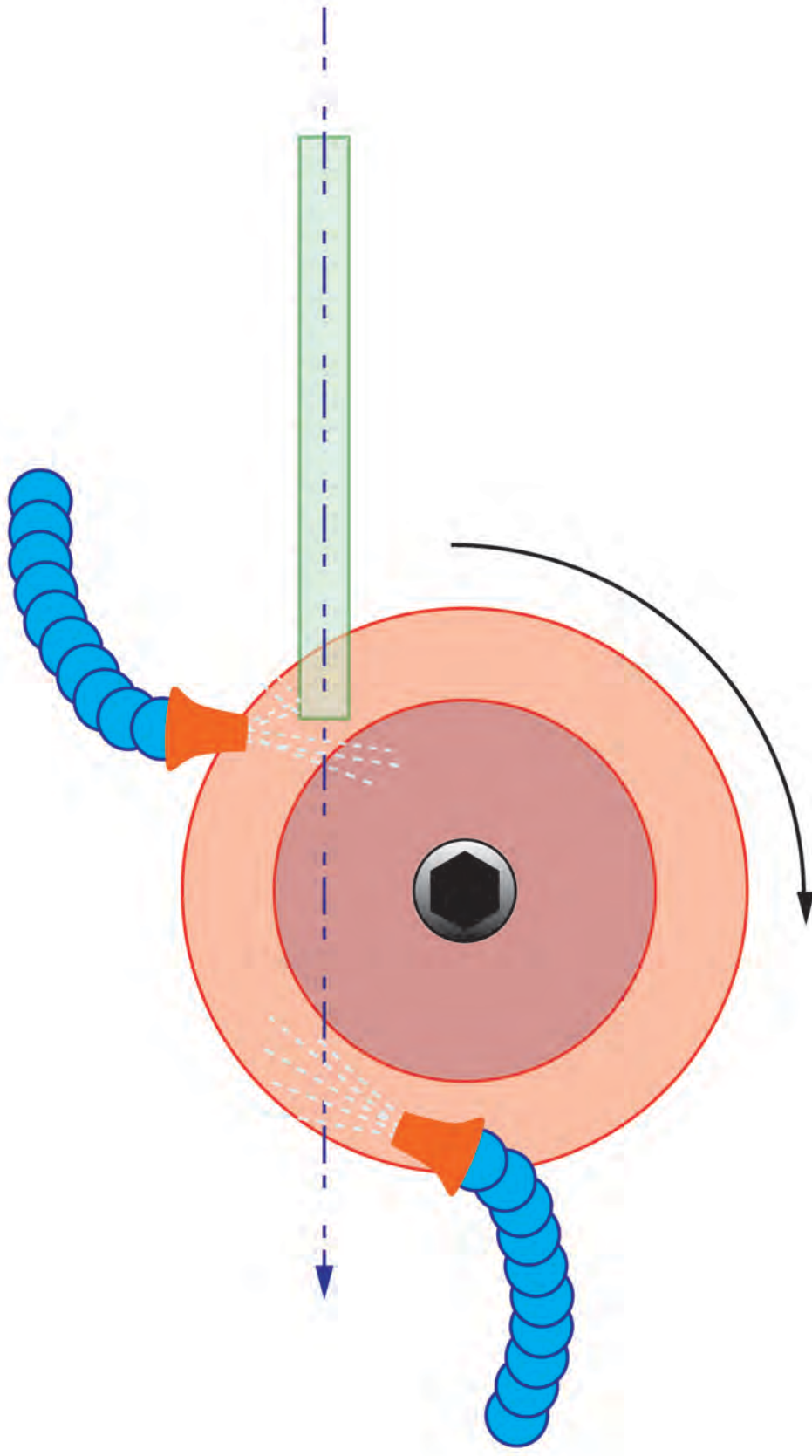


FIGURE 17 (viewed from above)
COOLANT NOZZLE POSITIONS
FOR WHEELS NO. 1 GRIND AND NO. 4 POLISH

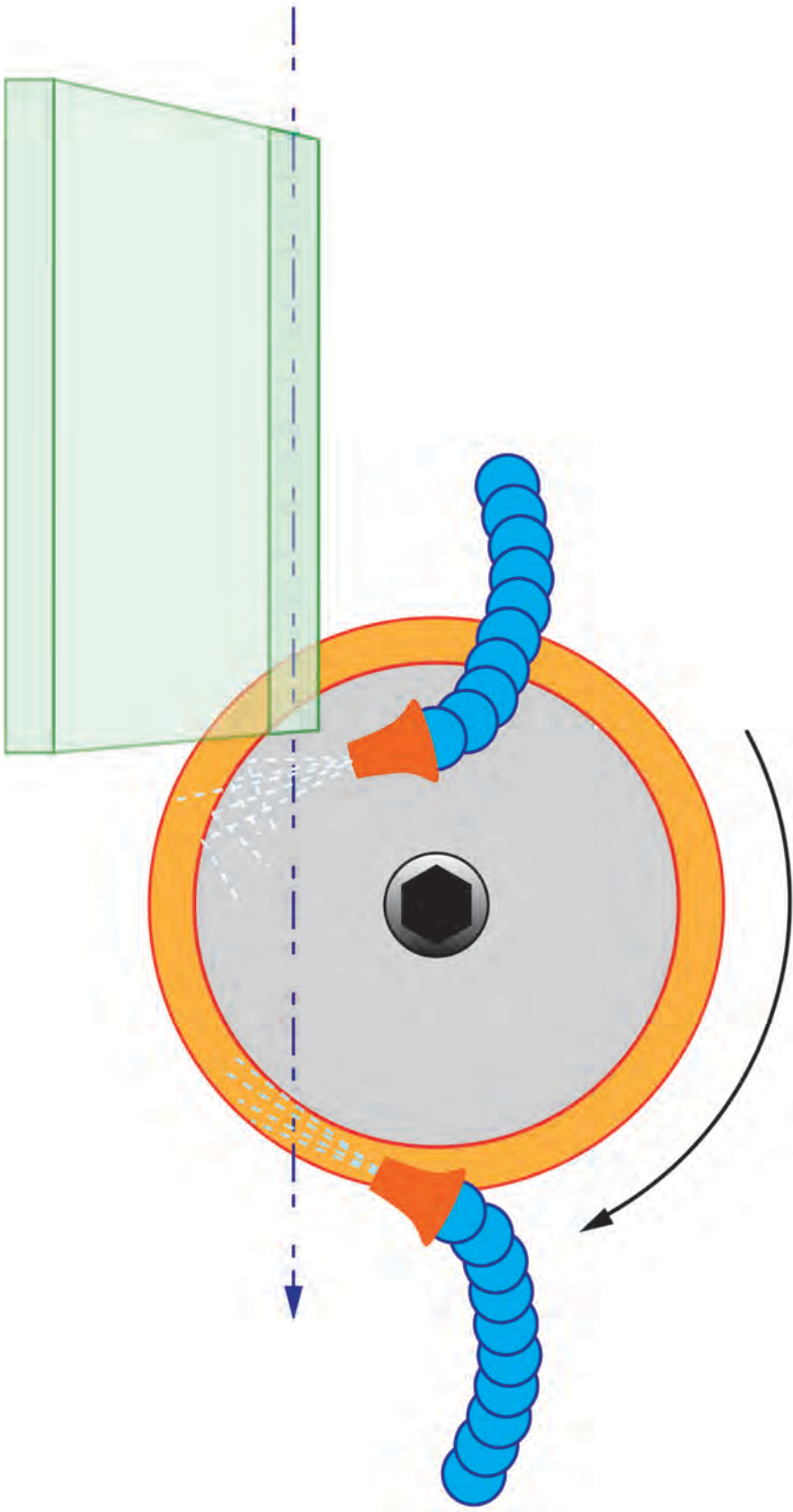


FIGURE 18 (viewed from above)
COOLANT NOZZLE POSITIONS
FOR ARRIS WHEELS NO. 2 AND NO. 3