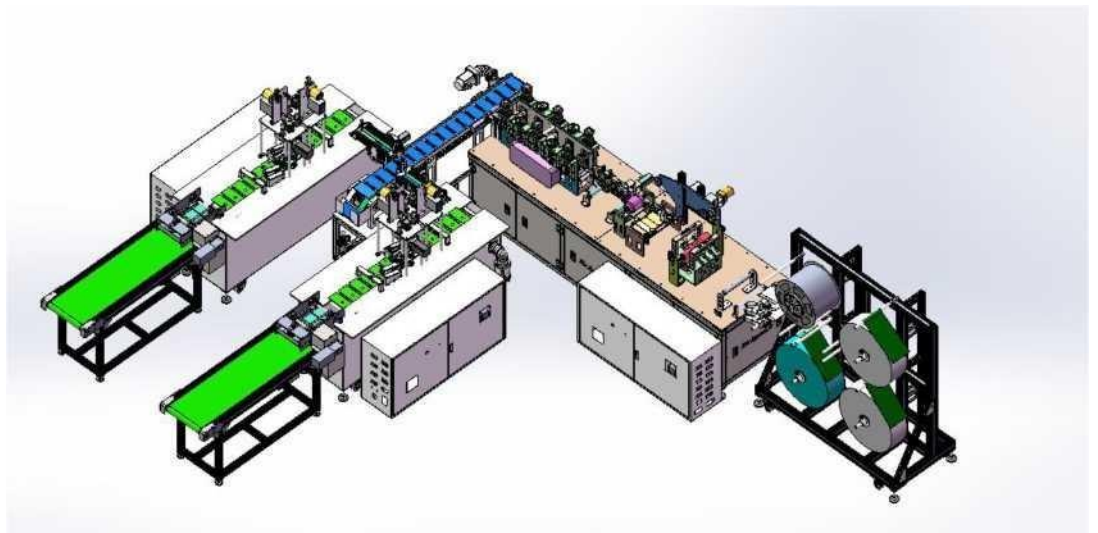




***Richpeace***®

**Richpeace Automatic Medical Mask Production Line Manual**



**Tianjin Richpeace AI Co., LTD.**

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## **1 Production line overview**

### **1 Equipment overview**

This machine is mainly used for the automatic production of flat masks by automatic forming from non-woven fabric rolls, automatic transfer, with a nose clip and rolled material of a set length cut simultaneously, folding at the edges of the mask, folding and flattening, joining by ultrasonic welding, cutting and forming, ultrasonic welding of loops for ears, etc. All these processes are done automatically.

## 2 Use

The machine is suitable for automatic production of three-layer disposable face masks or surgical masks.

### (1) Type of medical mask

Regular medical mask (disposable medical masks), surgical mask and medical protective mask.

### (2) Main material for manufacturing medical masks

Mainly composed of three layers of non-woven fabric.

The inner layer is a typical non-woven fabric. The outer layer is a non-woven fabric with a waterproof coating, primarily designed to block fluids expelled by patients. The middle filter layer is a polypropylene non-woven fabric produced through a melt-blowing process (filters out bacteria).

The outer and inner layers of the surgical mask typically have a material specification of about 25 g per square meter. The middle layer is a meltblown filter. The width of the outer layer is 195 mm–200 mm, of the middle layer 175 mm–180 mm and of the inner layer 175 mm. The core diameter of these three rolls of material is 76 mm and the outer diameter of the roll is 600 mm.

### (3) Other materials including nose clip, mask strings (ear loops), etc.

The nose clip is 3 mm wide, made entirely of plastic, the inner diameter is 210 mm in the rolled form, the outer diameter is approximately 400 mm. Ear loops are made of white nylon with elastic, usually 3 mm in diameter, featuring a hard-core cord.

### 3 Technical features

(1) Self-alignment of three rolls of material fed into the machine, i.e. the outer, filter and inner layer. Continuous symmetrical ultrasound compression of both sides. Continuous pressing with rollers, followed by cutting. The production line branches off into two separate welding machines for attaching ear loops, enhancing line balancing and achieving high productivity. Automatic counting and folding after the ear loops are welded.

(2) The production line follows the »1 in 2« principle, which is the core component of the mask production system, distributing two sets in production for to weld the ear loops.

(3) Ear loops can be made by automatic cutting and automatic welding with ultrasound.

(4) The nose clip can be made by automatic feeding and cutting.

(5) The system offers stability, few malfunctions, a pleasant appearance, high efficiency, energy savings and full automation.

## 4 Main parameters

| Ref. No. | Description   |
|----------|---|
| 1        | Machine model:<br>RPUM-NF28-4URWC-3-175X95-T-VSA-LF1500-NA-3P380 (1 set)<br>RPUM-NF28-4USW-2-10X10-T-VSA-LF1500-NA-3P380 (2 sets) |
| 2        | Suitable for mask types: medical mask, surgical mask.   |
| 3        | Product specification: mask for adults: 175 mm x 95 mm (optional child mask 165 mm x 95 mm; or 145 mm x 95 mm).                   |
| 4        | 10-inch colour touchscreen, LINUX operating system, ARM main control system.  |
| 5        | Speed: 60 pcs/min   |
| 6        | Material: PP non-woven composite fibres   |
| 7        | Layers: three layers  |
| 8        | Processing method: ultrasonic welding   |
| 9        | Air pressure: 0.5–0.6 MPa   |

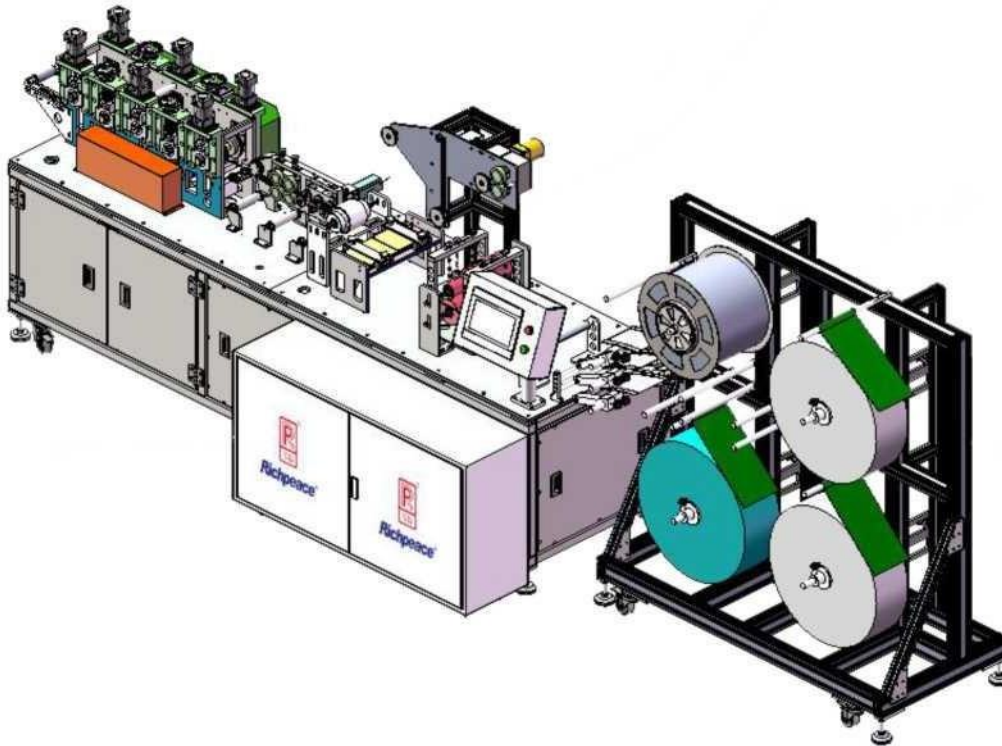
|    |                                 |
|----|---------------------------------|
| 10 | Air flow volume: 1700 l/min     |
| 11 | Power: 20 KW.                   |
| 12 | Voltage: 220V/50Hz or 380/60Hz. |



## 5 Main components

| Ref. No. | Name                               | Qty | Unit |
|----------|------------------------------------|-----|------|
| 1        | Mask semi-finished product machine | 1   | set  |
| 2        | Material rack                      | 1   | set  |
| 3        | Main material conveyor             | 1   | set  |
| 4        | Ear loop welding machine           | 2   | set  |
| 5        | Folding device                     | 2   | set  |

## 5.1 Machine for semi-finished products for masks and material rack



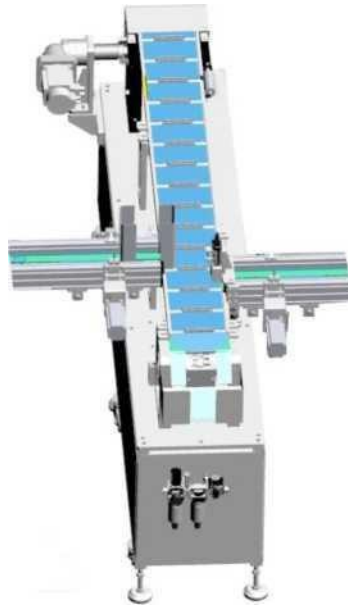
The material consists of three layers, with a wider non-woven fabric at the bottom.

Note: The size of the non-woven paper core must correspond to the factory standard or the diameter specified in the sales contract.

The size of the inner core of the nose clip must correspond to the size of the feed roller.

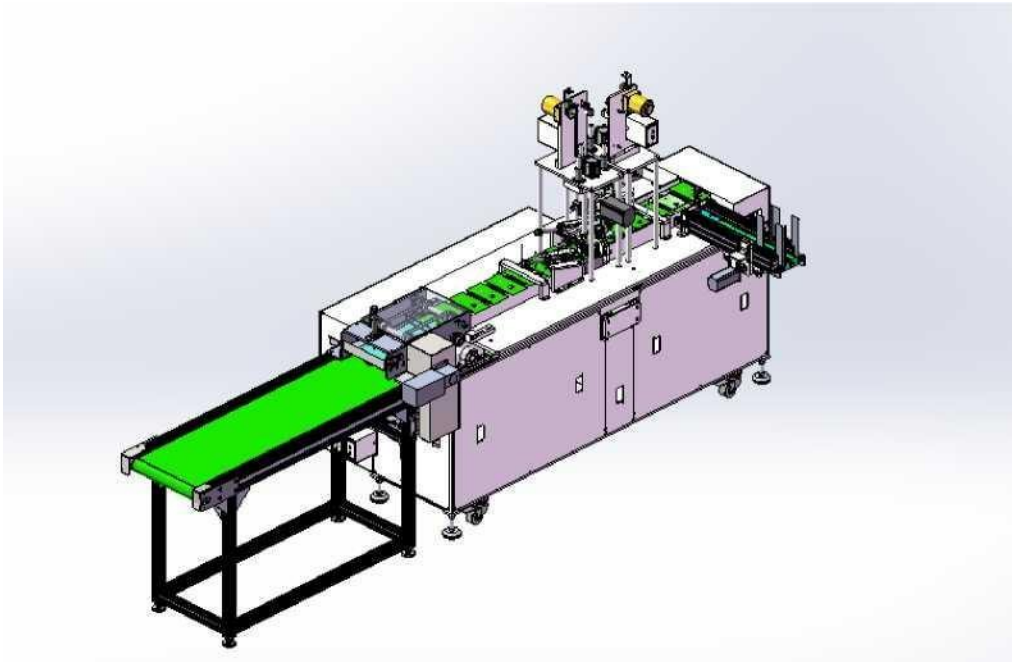
The machine for semi-finished products for masks performs the processes of stacking and stapling (attaching the nose clip), welding on both edges, welding the main body, centre welding and cutting.

## 5.2 Material conveyoyr



The material conveyoyr transports the finished mask piece from the mask design machine to the distribution system; two sets of branched conveyoyrs each carry the masks into position for welding the ear loops.

### 5.3 Ear loop welding machine + folding device



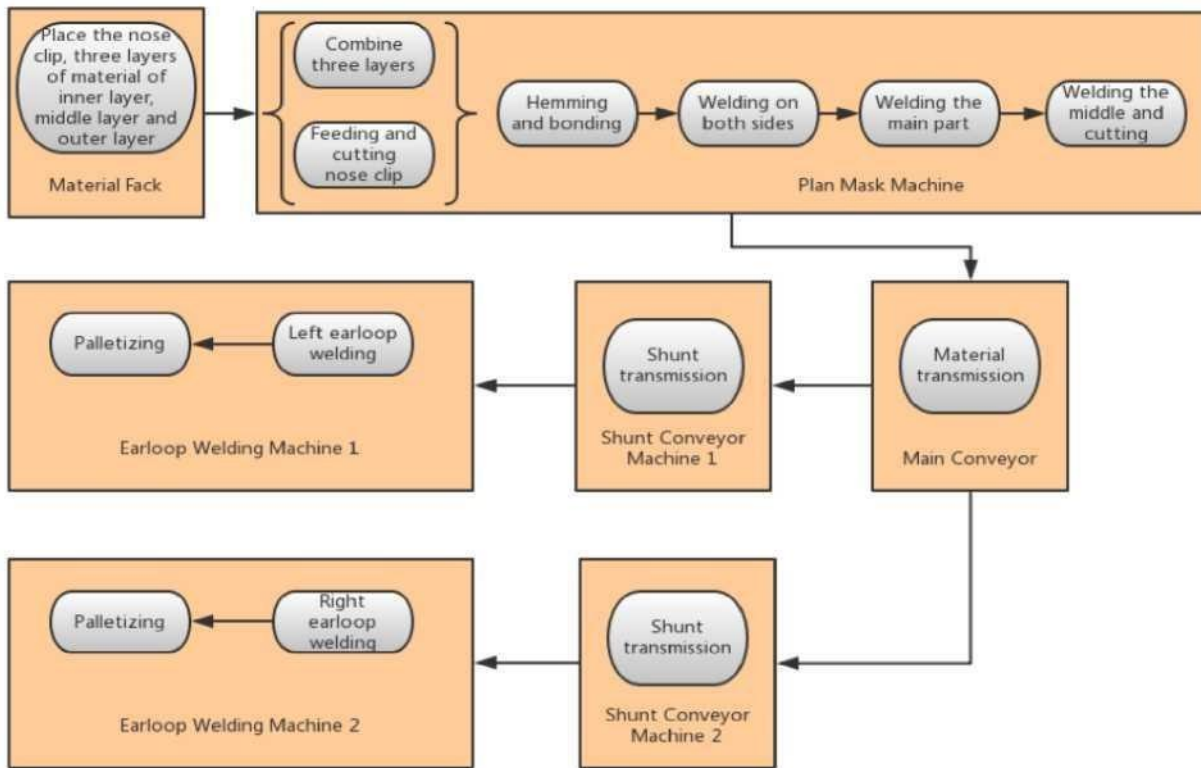
The ear loop welding machine performs the process by automatic conveying, welding and cutting.

The folding device can specify the number of masks to be folded. After that, they are automatically transported to the next process.

## **6 Optional devices**

- (1) Infrared protection device
- (2) Built-in device for folding ear loops
- (3) Built-in device for inner/outer ear loop exchange
- (4) Built-in device for automatic inkjet printing (with drying, one sided)
- (5) Built-in device for checking appearance

## 7 Flow diagram of automatic production



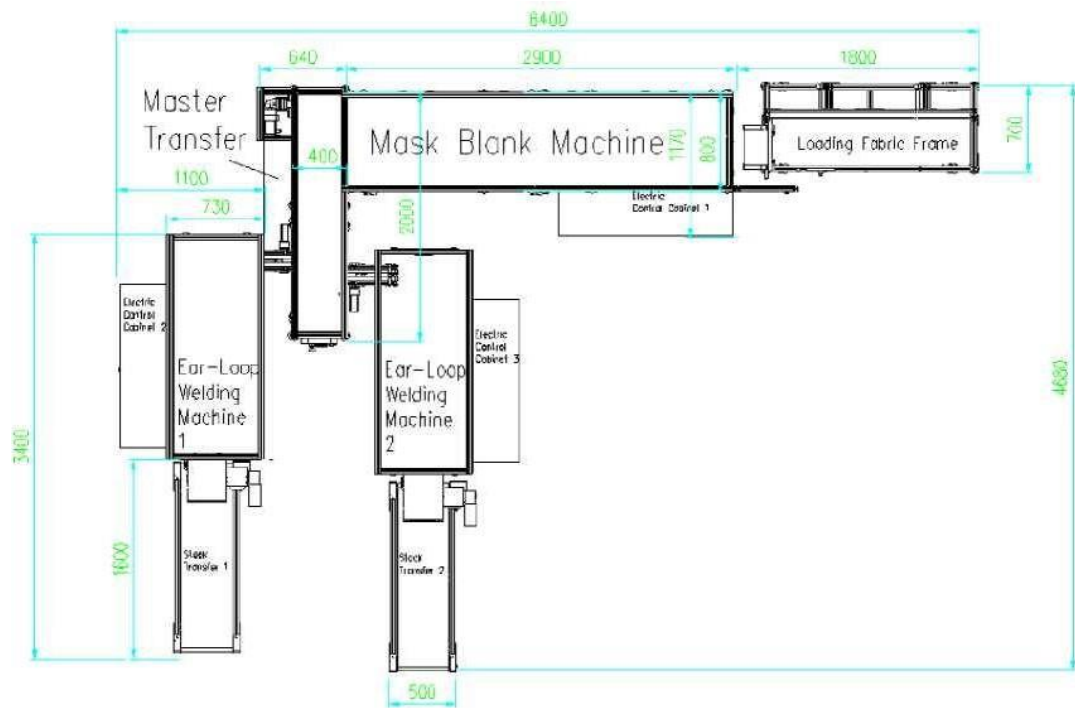
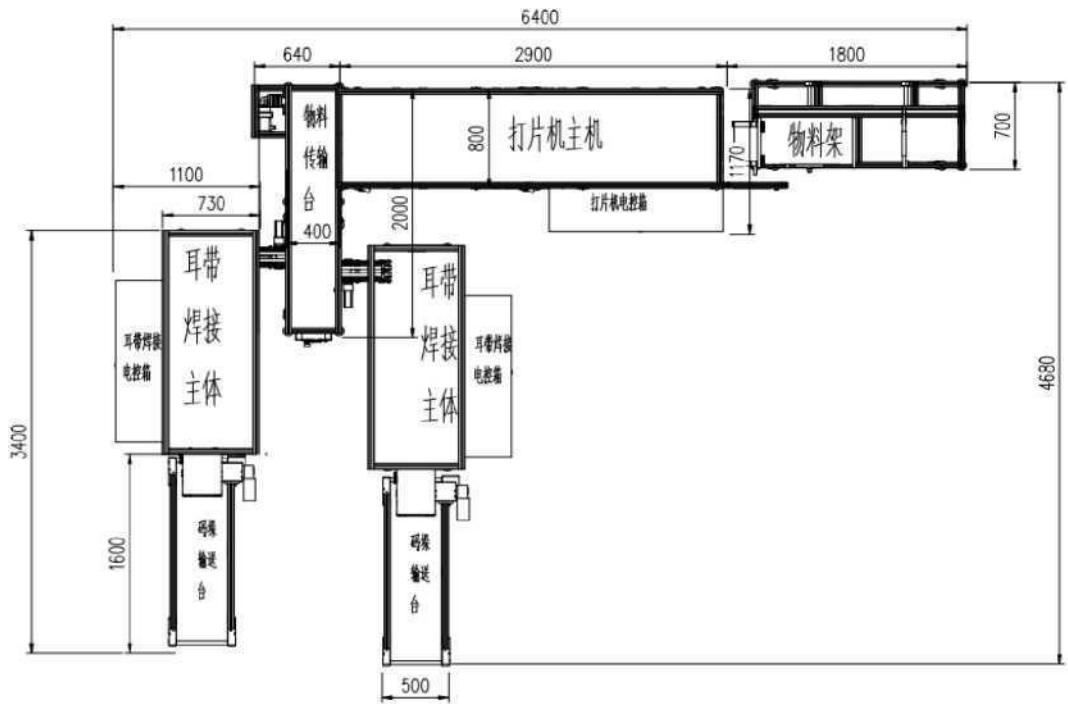
|  |                                   |                     |                       |                       |                                |
|--|-----------------------------------|---------------------|-----------------------|-----------------------|--------------------------------|
| Placing the nose clip, three layers of material of the inner layer, middle layer and outer layer | Combining three layers            | Hemming and bonding | Welding on both sides | Welding the main part | Welding the middle and cutting |
|  | Feeding and cutting the nose clip |                     |                       |                       |                                |
|  |                                   |                     | Flat mask machine     |                       |                                |
|  |                                   |                     |                       |                       |                                |

|                            |                       |                             |                   |
|----------------------------|-----------------------|-----------------------------|-------------------|
| Palletizing                | Left ear loop welding | Diverter                    | Material transfer |
| Ear loop welding machine 1 |                       | Parallel conveyor machine 1 | Main conveyor     |

|                            |                        |                             |  |
|----------------------------|------------------------|-----------------------------|--|
| Palletizing                | Right ear loop welding | Diverter                    |  |
| Ear loop welding machine 2 |                        | Parallel conveyor machine 2 |  |

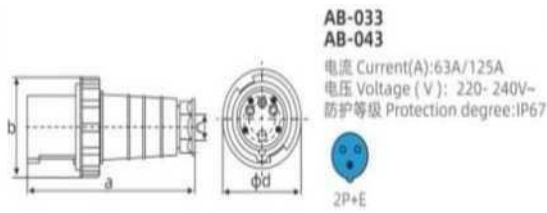
## 8 Safety and preparation procedure for setting up at location

Machine layout diagram (layout area: 6400 mm x 4700 mm x 1700 mm. It is recommended that 800 mm of space is left on each side of the machine for operation and maintenance purposes.)



Main plug used for the mask production line: three-phase 380 V, 125 A, 2P+E 3-core. A 3-core (braided) cable, one strand with a cross-section of 16 mm<sup>2</sup>, is proposed.

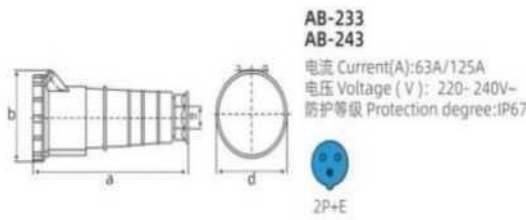
| Earth contact position<br>Rated current(A)         | 6h         |             |
|--|------------|-------------|
|  | 63         | 125         |
| Pole   | 3          |             |
| Dimension(mm)                                      | a          | 232 295     |
|  | b          | 110 123     |
|  | c          | 16-38 30-64 |
|  | φ          | 110 123     |
| Cable nominal cross-section area(mm <sup>2</sup> ) | 6-16 16-50 |             |



**AB-033**  
**AB-043**  
电流 Current(A):63A/125A  
电压 Voltage (V): 220- 240V-  
防护等级 Protection degree:IP67



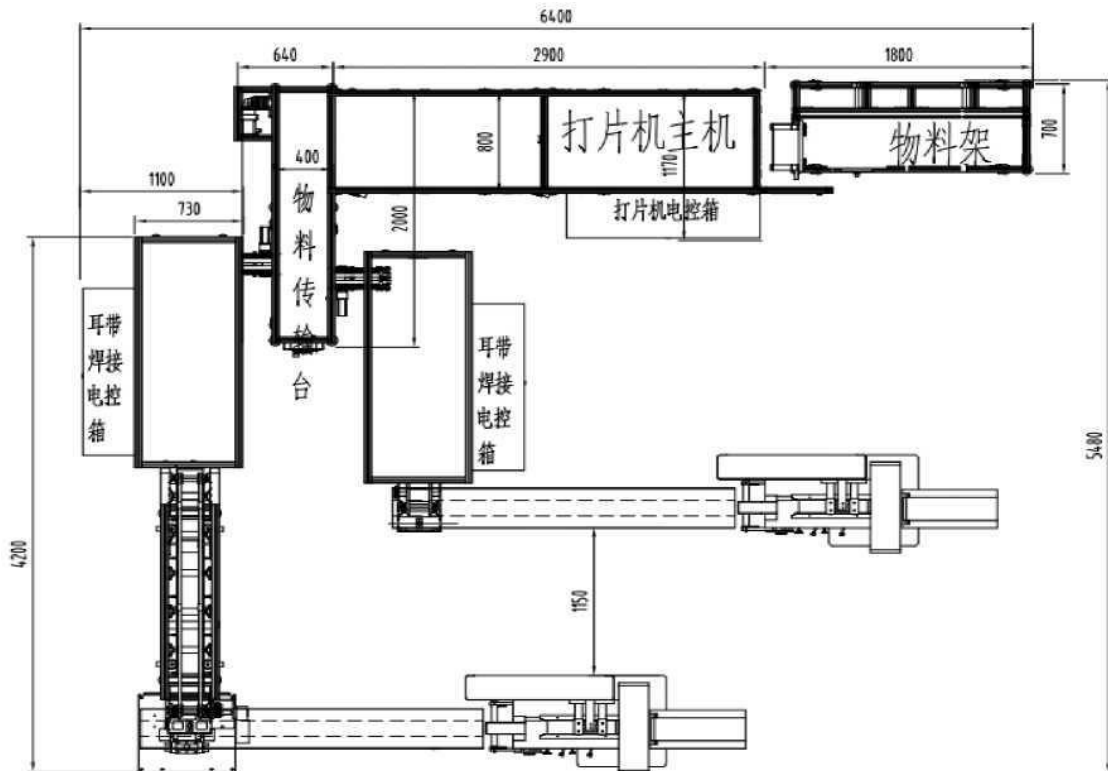
| Earth contact position<br>Rated current(A)         | 6h         |             |
|--|------------|-------------|
|  | 63         | 125         |
| Pole   | 3          |             |
| Dimension(mm)                                      | a          | 240 309     |
|  | b          | 115 129     |
|  | c          | 16-38 30-64 |
|  | φ          | 108 123     |
| Cable nominal cross-section area(mm <sup>2</sup> ) | 6-16 16-50 |             |



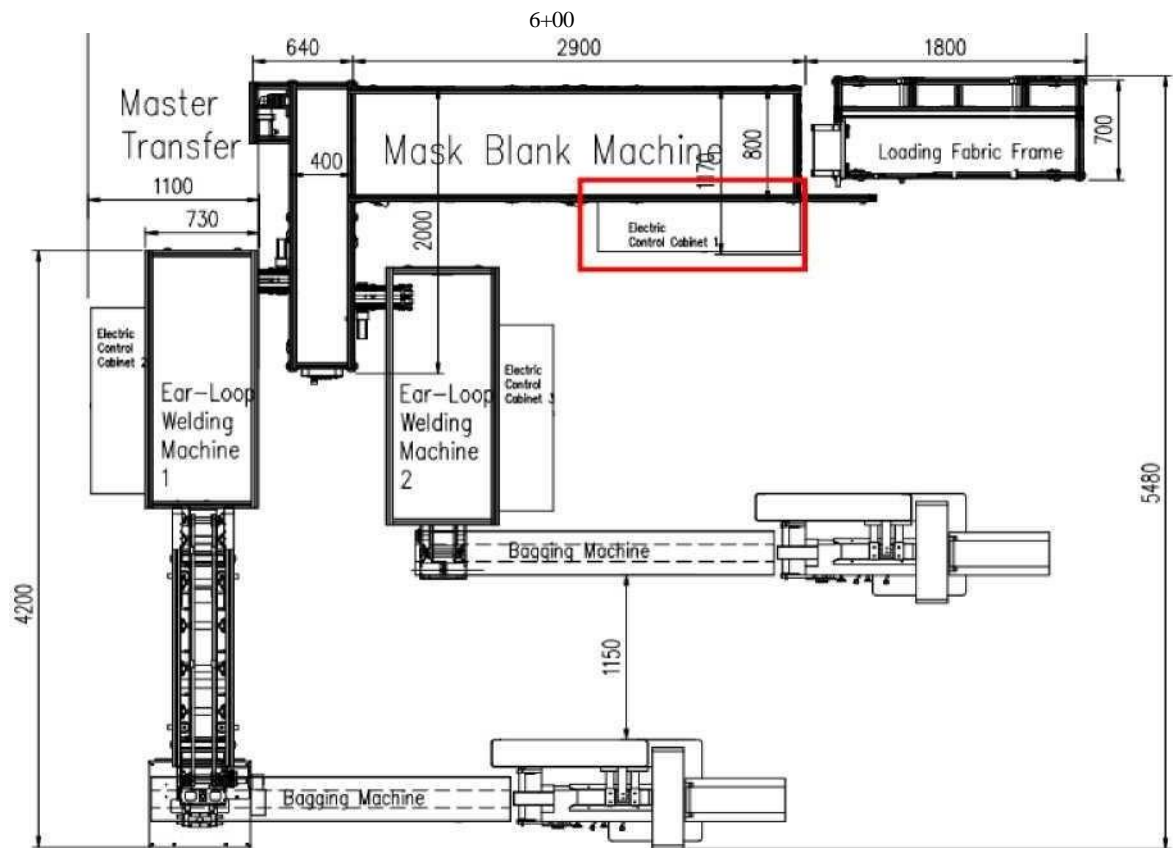
**AB-233**  
**AB-243**  
电流 Current(A):63A/125A  
电压 Voltage (V): 220- 240V-  
防护等级 Protection degree:IP67



Surgical mask production line + packaging machine – Diagram







One set of surgical mask production line + two sets of packaging machine, total power: 24.8 KW.

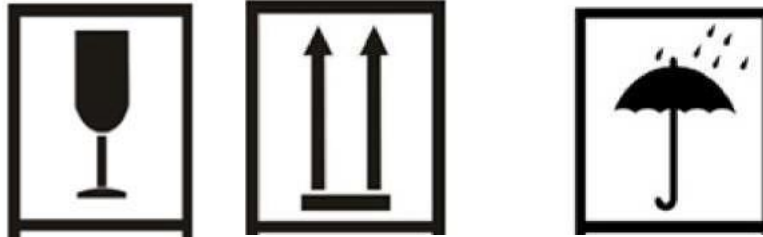
ABSA: AS 0.5–0.6 MPa, AMS 1700 l/min

Air inlet: air pressure 0.5–0.6 mpa, air flow volume: 1700 l/min.

The position of the electrical switch box of the surgical mask manufacturing machine is the connection point of the power supply and the air supply.

## 8.1 Machine inspection after it arrives at the customer's site

When the machine is delivered to the customer's site, make sure that the machine is upright and not tipped over and that the wooden crate is in good condition.



(1) Before unloading at the customer's site, inspect the entire machine for any damage and take photos of any damage found.

(2) Should any damage occur during the unloading and moving of the crate, please document the reason and take a photo as evidence.

(3) Once the machine is fully unloaded, again inspect the entire machine and take photos as evidence.

If you have any questions or are unsure, please contact a Richpeace representative or the Richpeace technical support centre.

## **8.2 Choose the correct tools for handling and lifting**

Use a forklift (over 3 tonnes) to install this mask production line. The forklift must be operated by a qualified person.

Warning: care is required when lifting and handling

A forklift can be used to move and carry the machines. Take extra care when moving and installing the computer control unit and key machine components.

**8.3** Install the machine on a solid floor; it must be placed on a strong and sufficiently rigid surface. If the floor is made of steel plate, it is advisable to mount the machine on a construction beam to enhance load-bearing capacity.

**8.4** Avoid sound pollution. To reduce noise pollution, the interior walls, ceiling and floor of the workshop should be soundproofed using noise-absorbing materials and structures.

**8.5** Avoid direct sunlight on the machine and prolonged exposure to sunlight, as this can cause discolouration, lack of oil, and reduced machine performance. The components of the light sensor may react poorly or even damage the machine. Therefore, it is important to ensure adequate protection from light.

## **9 Connecting the connecting wire**

The electrical connection for the equipment is 380 V, three-phase, with three wires. The machine must be connected to electricity by a qualified electrician. The standard machine connection cable was installed by a Richpeace technician, while the other end must be connected by an electrician.

Do not use the machine without connecting the GROUND wire.

If the machine is not working properly or malfunctions, the GROUND wire can prevent the risk of electric shock.

## **10 Maintenance area**

Make sure that space for maintenance is made available at the installation area.

The layout of the machine must be designed according to a plan that corresponds to the specifications of the equipment. The machine layout size is the actual size of the machine after assembly. We recommend leaving at least 800 mm of space around the machine for operation and maintenance.

## 11 Notes

**11.1** When installing, inspecting and adjusting the machine, ensure that the main power is switched off.

Pay special attention: the main power supply of the machine must be switched OFF when repairing the machine to prevent possible damage from accidental start-up.

**11.2** When repairing and operating the machine, pay attention to the WARNING LABELS and adhere to the safety messages.

The warnings on the machine are defined as follows:



**DANGER**

**There is a high risk of death or serious injury if the instructions are not followed.**



**WARNING**

**There is a likelihood of death or serious injury if the instructions are not followed.**



## ATTENTION

This refers to a potentially dangerous situation which, if not avoided, could result in minor or moderate injury or damage to property.



Forbidden

These measures must be carefully observed to ensure safe operation. For more information, see the statement below.

Although the equipment itself is not flammable, the raw materials used are flammable.

Therefore, it is necessary to have fire extinguishers or fire hoses (internal hydrants) available in the workshop.



禁止烟火

### 11.3 Warning labels and signs (important)

The machine is equipped with warning labels that must be observed to ensure safe operation. Do not remove or repaint these labels.

Warning: if any warning labels are missing or damaged, please contact Richpeace.

Sample warning label:



RISK OF ELECTRIC SHOCK

RISK OF HEAD INJURY

---



RISK OF CUTTING

RISK OF GETTING CAUGHT  
IN MOVING PARTS





RISK OF CRUSHING – AMPUTATION



DANGEROUS – WORKS CAN ONLY BE CARRIED OUT BY AUTHORISED PERSONNEL

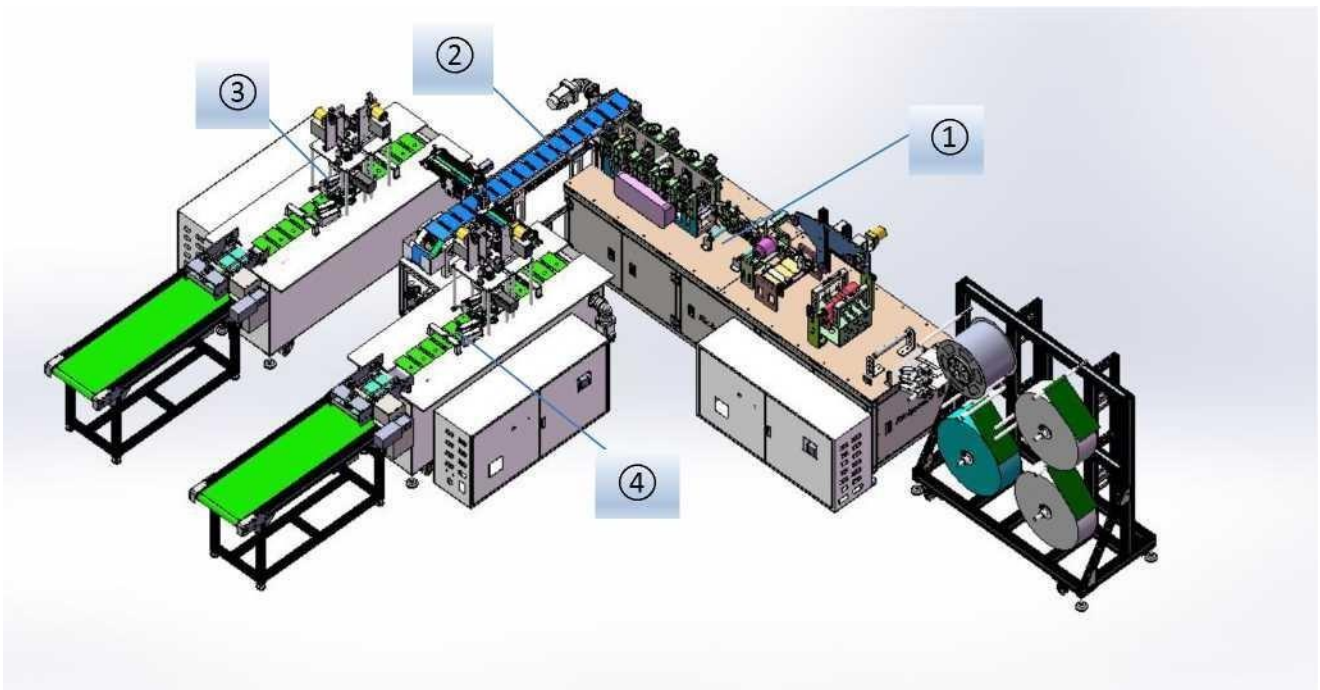
## 12 Installing the equipment

Check the packing list; pay special attention to the spare parts included with the machine.

Before you start assembling the machine, check the packing list and count the parts and accessories that come with the equipment. Inspect the appearance of the machine to ensure it is not damaged, and also check the electrical components and cables for possible damage.

### 12.1 Mechanical installation

- (1) Mask body production unit
- (2) Part of the unit for moving and distributing masks
- (3) Ear loop processing – first part
- (4) Ear loop processing – second part



The equipment parts will be delivered disassembled and will require assembly at the customer's site.

For the assembly process, see the document accompanying the equipment.

## **12.2 Electrical and pneumatic connection**

For connection to electricity and air inlet, see the document accompanying the equipment.

## 13 Basic operation

### 13.1 Basic operation and testing process

Before connecting the machine, it is important to verify that the voltage of the machine meets the specified requirements. Listen carefully to the sound from the control box when the machine is started and the air is being blown in when the machine is plugged in. If an abnormal sound occurs, switch off the electricity and check the machine immediately.

After a normal start-up, the machine should be inspected as follows:

|   |   |
|---|---|
| 1 | Check that the motor responsible for pulling the material for the nose clip is running correctly.       |
| 2 | Check that the motor responsible for transporting the main body of the mask piece is working correctly. |
| 3 | Check that motor responsible for distributing the main body of the mask piece is working correctly.     |
| 4 | Check that the motor responsible for rotating the ear loop string is working properly.                  |
| 5 | Check that the air cylinder is working properly.  |
| 6 | Check that each ultrasonic welding head is working properly.  |
| 7 | Make sure that all start, stop and emergency stop switches are working properly.                        |
| 8 | Check that the security alarm is working properly.  |
| 9 | Check that all safety limit switches are working and are within their safety margin.                    |

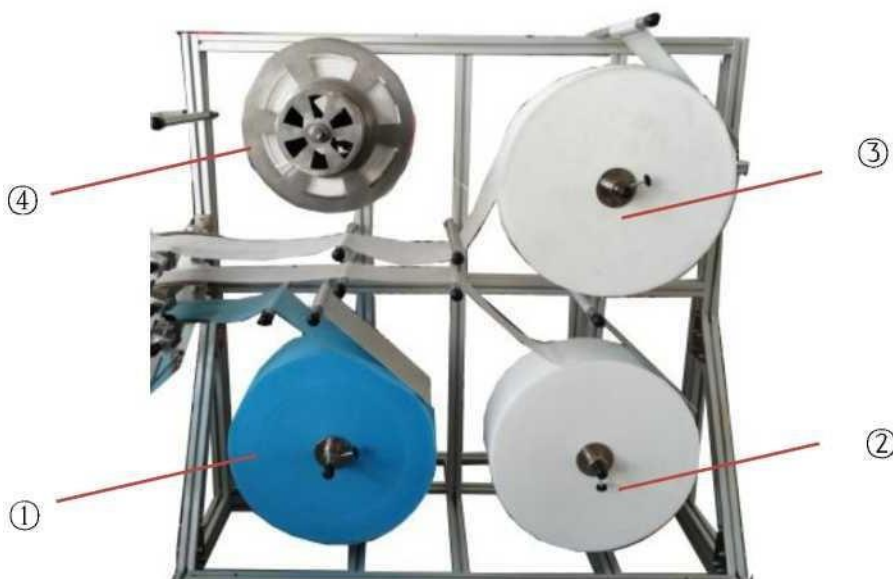
## 13.1 Simulation of all movements

Start the automatic mode and test the equipment in segments, including the mask making section, the mask body carrying and distribution section, the mask body ear loop processing section – part 1, and the mask body ear loop processing section – part 2

## 13.2 Production simulation

### (1) Feeding material

Install the rolls of nonwoven material according to the specifications required by the production process. Correctly position each roll of material and set the direction in which they are fed. See the figure below for positioning the material on the material rack.

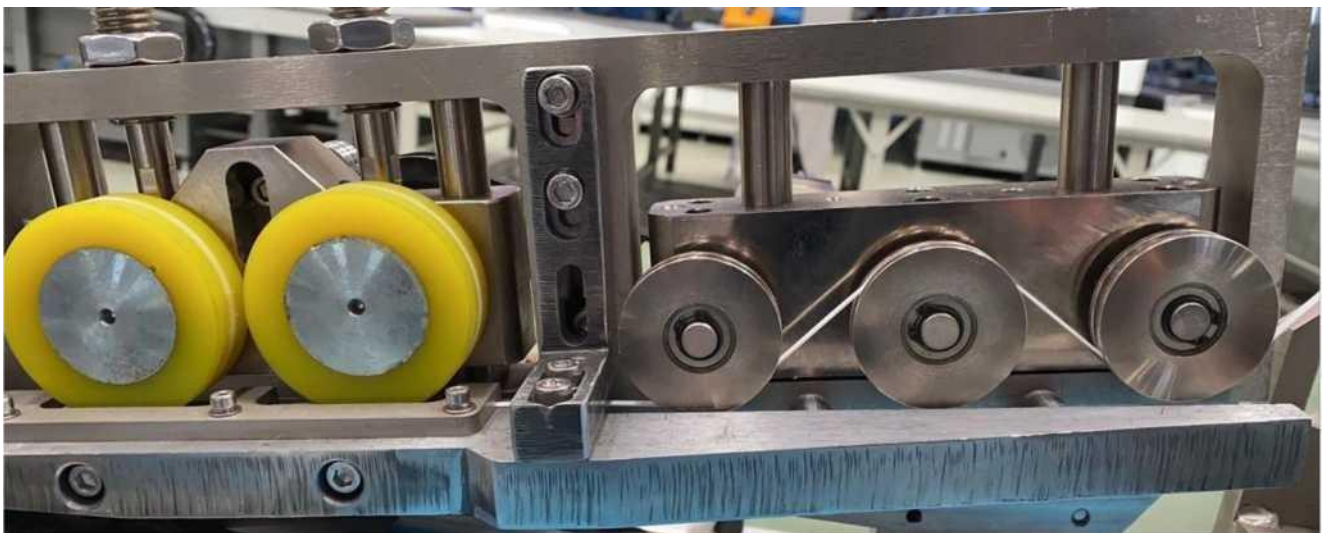


- (1) Material for the widest layer (usually the outer layer)
- (2) Middle layer (non-woven material for melt-blowing)
- (3) Thinner layer (usually the inner layer touching the face)
- (4) Nose clip material

(2) See the following figures for the direction of movement of the material in the section for producing semi-finished products for masks.



(3) The direction of the nose clip material is shown in the figure below:



Attention:

Commissioning of the equipment must be carried out by trained and qualified personnel or by technical personnel authorised by the supplier.

The first production simulation should be set to run at a lower speed. Observe the process and check for any unusual situations during operation.

If the normal performance is good, check the quality of the finished mask. Gradually increase the speed depending on the final product.

## **13.3 Setting and fine-tuning the main section**

### **13.3.1 Setting the position of the cutting section.**

(1) Based on the upper surface of the ultrasonic device, the surface of the receiving platform and the surface of the lower cylinder must be perfectly horizontal.

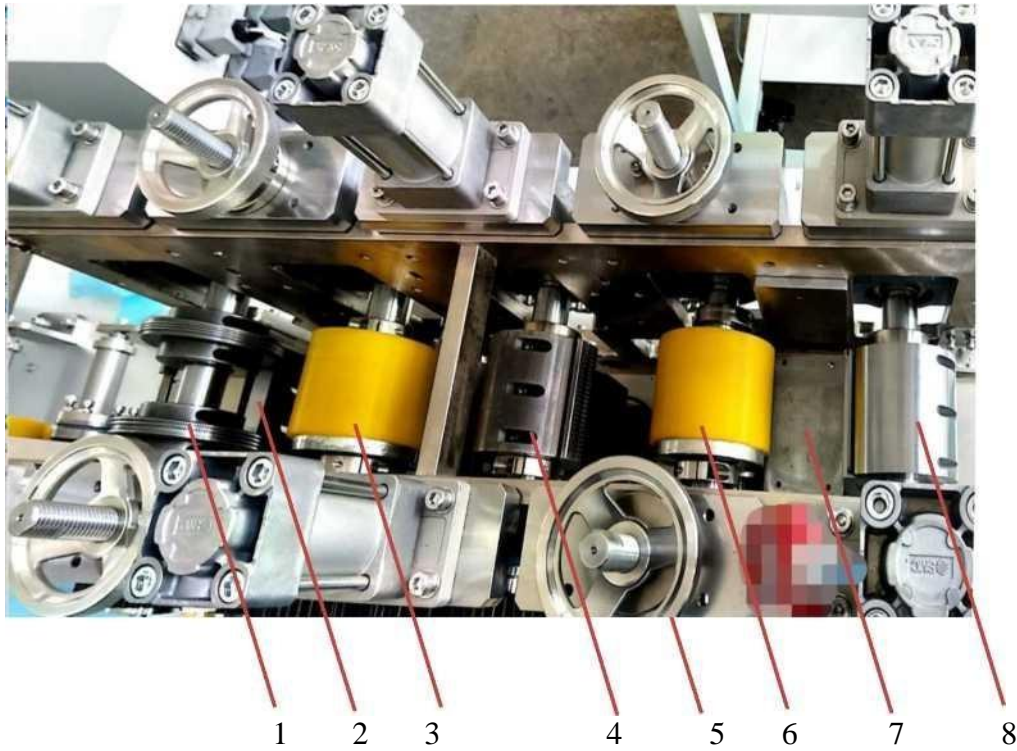
(2) In the initial state, the slots of these embossing rollers and the cutting wheel must be in their upper position.

(3) The transmission wheels should be adjusted to maintain a gap of about 0.5 mm between the top and bottom wheels. This setup ensures they do not drag the material when running, but also that the pieces of material are not too loose.

(4) When the embossing roller and the cutting wheel are at their lowest point, the distance between them and the ultrasound is 0,05 mm.

(5) Installation and adjustment of the embossing rollers – the two half rollers must be secured, and a distance of 0.1 mm to 0.15 mm should be maintained between them.





| Ref. No. | Slovensko                             | Angleško                             |
|----------|---------------------------------------|--------------------------------------|
| 1        | Vtiskovalni valj                      | Embossing roller                     |
| 2        | Ultrazvočna naprava                   | Ultrasonic device                    |
| 3        | Transmisijsko kolo                    | Transmission wheel                   |
| 4        | Vtiskovalni valj                      | Embossing roller                     |
| 5        | Ultrazvočna naprava                   | Ultrasonic device                    |
| 6        | Transmisijsko kolo                    | Transmission wheel                   |
| 7        | Sprejemna platforma (referenčni nivo) | Receiving platform (reference level) |
| 8        | Rezalno kolo                          | Wheel Cutting                        |

## **13.2 Test procedure for ear loop welding machine**

(1) The distance between the base surface of the ultrasound device and the base surface of the platform table is 62 mm.

(2) When the ear loop device is in its upper position, the distance between its lower ground plane and the upper ground plane of the ultrasonic device is 15 mm.

(3) When the ear loop welding point is in its initial position, the distance between its lower ground plane and the upper ground plane of the ultrasonic device is 40 mm.

(4) The scissors are mounted on a scissor holder and their movement is controlled by a pneumatic air cylinder.



1

2

3

4

5

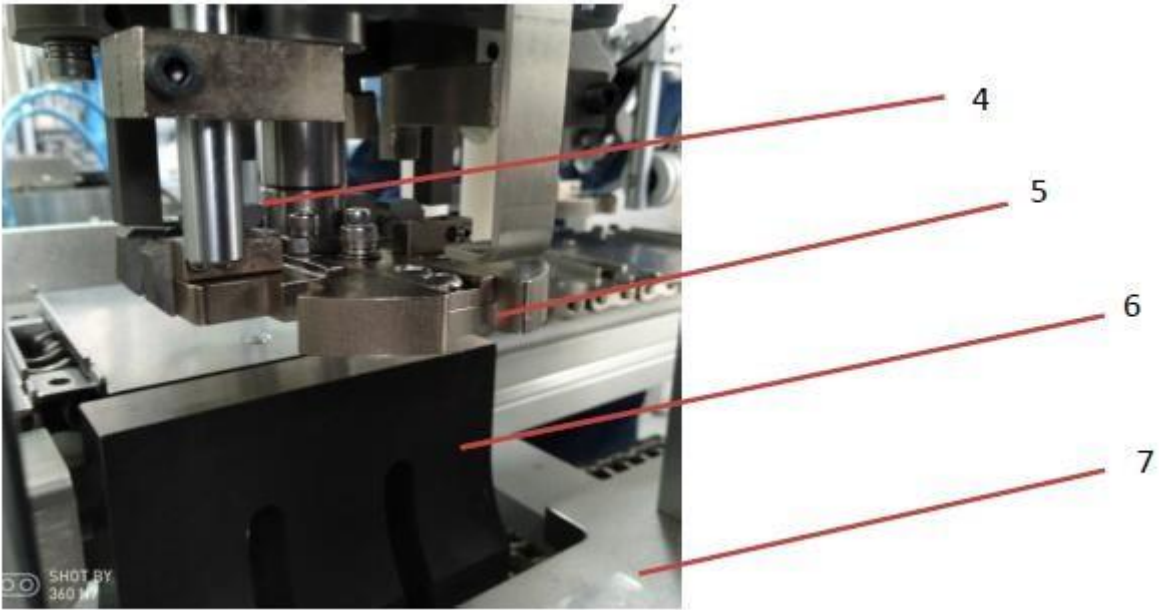
1 scissors

2 scissor holder

3 air hose

4 air cylinder

5 sensor



4 ear loop welding point 5 loop forming device 6 ultrasound device 7 platform panel

## **14 Control panel operation**

### **14.1 Control interface general function**

- (1) Operating status display
- (2) Production statistics display
- (3) Alarm information display
- (4) Parameter setting
- (5) Time

Richpeace will continue to work on improving the control interface and there may be differences between versions.

## 14.2 Basic operation of the control keys

| Ref. No. | Function key                     | Description   |
|----------|----------------------------------|---|
| 1        | Main electrical switch           | Connects the control box and the external input power   |
| 2        | Control box electrical switch    | Turns on the switch box   |
| 3        | Air inlet switch for control box | Connects the pneumatic air inlet device   |
| 4        | GREEN START key                  | Pressing this GREEN key starts the machine  |
| 5        | RED STOP key                     | When the machine is running, pressing this key stops the machine  |
| 6        | Emergency stop key               | In an emergency, press this key to switch off the electricity immediately.  |
| 7        | Manual/automatic mode toggle key | Manual mode – used to test the basic operation of the equipment<br><br>Automatic mode – mode of production that is fully automatic. |

Warning: in the event of any fault, an audible/visual alarm will sound.

## 14.3 Control interface super user function

See the interface user guide for details.

## 15 General malfunction issues

| Ref. No. | Error  | Solution  |
|----------|--|---|
| 1        | Indicator light does not light up when the electric control key is pressed   | Check whether the switch for external electricity is off or on. Check if the fuse in the electrical control box is blown.                 |
| 2        | When pressing the GREEN start key, the machine fails to start  | Check whether the emergency stop switch is reset or not. Check whether the electronic control programme is reporting an error.            |
| 3        | Alarm indicating that the nose clip is missing   | Check whether the strip for the nose clip is running low or missing altogether.   |
| 4        | Transmission part sensor with abnormal basic position.   | Check if the sensor is dirty.   |
| 5        | The welding quality is poor. Press the ultrasonic device test button to make sure that sound is coming from the device.            | The error is in the inverter system.  |
| 6        | The equipment and the converter are functioning normally, but the welding quality is poor and the displayed load value is too low. | Welding downward stroke exceeds the permissible range: the limited position is not set correctly  |
| 7        | Engine drive failure   | This is usually caused by out-of-phase (wiring) power supply. Check if the main power supply or the motor drive has lost connection, etc. |



## 16 Preventive maintenance

### 16.1 Daily cleaning and inspection

Due to the specific requirements of medical mask products, the mask equipment must be kept clean and tidy. After daily operations are completed, the conveyor, turning device, and mask conveyor should be cleaned; it is recommended to wipe them with non-toxic, volatile alcohol. The machine rails must be kept free of dust and foreign particles to prevent them from entering the machine area.

Ensure the welding tip of the ultrasonic welder is clean, and pay particular attention to the voltage and current values of the ultrasonic power box.

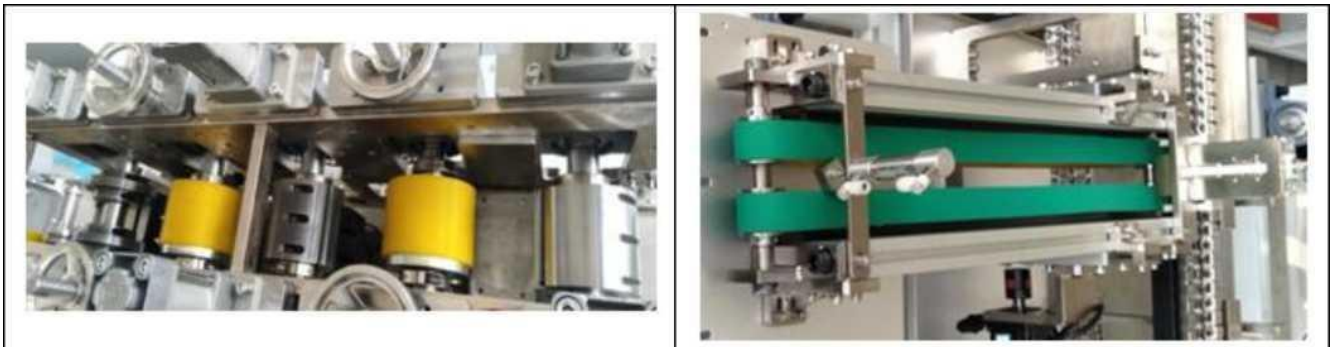
Check the water level reading when filtering the air source. Check that the pneumatic actuator is not leaking and ensure that the pneumatic induction switch is securely fastened.

Check that the thermal insulation of the motor and electrical switch box is adequate. If there is excessive dust, remove it immediately.

Double check that the screws are tightened.

Check the surface of the machine carefully for rusty liquid or condensation, etc. If there is any, clean and apply anti-corrosion oil.

Routinely maintain, inspect, and clean the transmission parts that come into contact with the mask surface.



Check the water in the air filter valve weekly and clean it immediately if necessary. In areas with high humidity, more frequent checks are required.



## **16.2 Routine inspection and maintenance**

Check for any unexpected odour, if detected, immediately switch off the electricity. Ensure that the machine is correctly grounded and does not conduct electricity, to ensure safe production.

Frequently check the power supply to ensure the voltage is stable and not out of phase. Check the entire machine work table daily and remove any irrelevant parts.

Check lubrication for preventive maintenance.

## 16.2.1 Lubricating the guide rail

Before carrying out lubrication and maintenance, switch off the power or press at least one emergency stop button. The guide rail must be cleaned regularly, at least once every 24 hours. Similar maintenance must be carried out before transporting the machine. Clean dirt from the surface of the lead screw with a clean cotton cloth. The guide rail must be well lubricated. Re-lubricate every two weeks, and we recommend using medical-grade petroleum jelly for this purpose.



### 16.2.2. Lubricating bearings

Before carrying out lubrication and maintenance, switch off the power or press at least one emergency stop button. Similar maintenance must be carried out before transporting the machine. Daily cleaning is necessary to prevent dust from accumulating on the bearings. For better preventive maintenance, keep well lubricated, refill oil monthly.



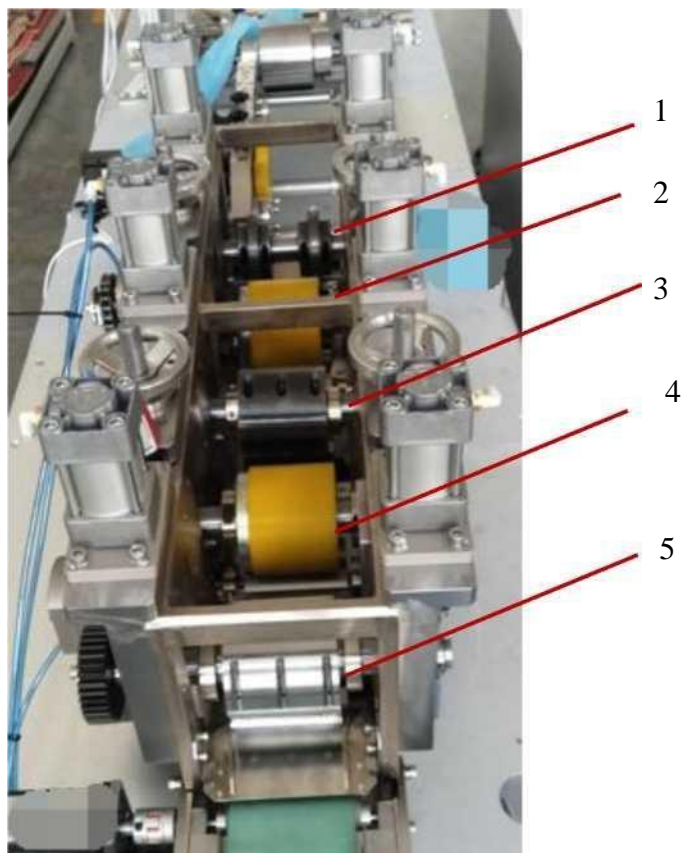
### 16.2.3 Other gears, chains and sprockets

Lubricant must also be applied to the internal transmission parts with the protective cover.  
Some external parts that may come into contact with the mask should be coated with hard petroleum jelly.



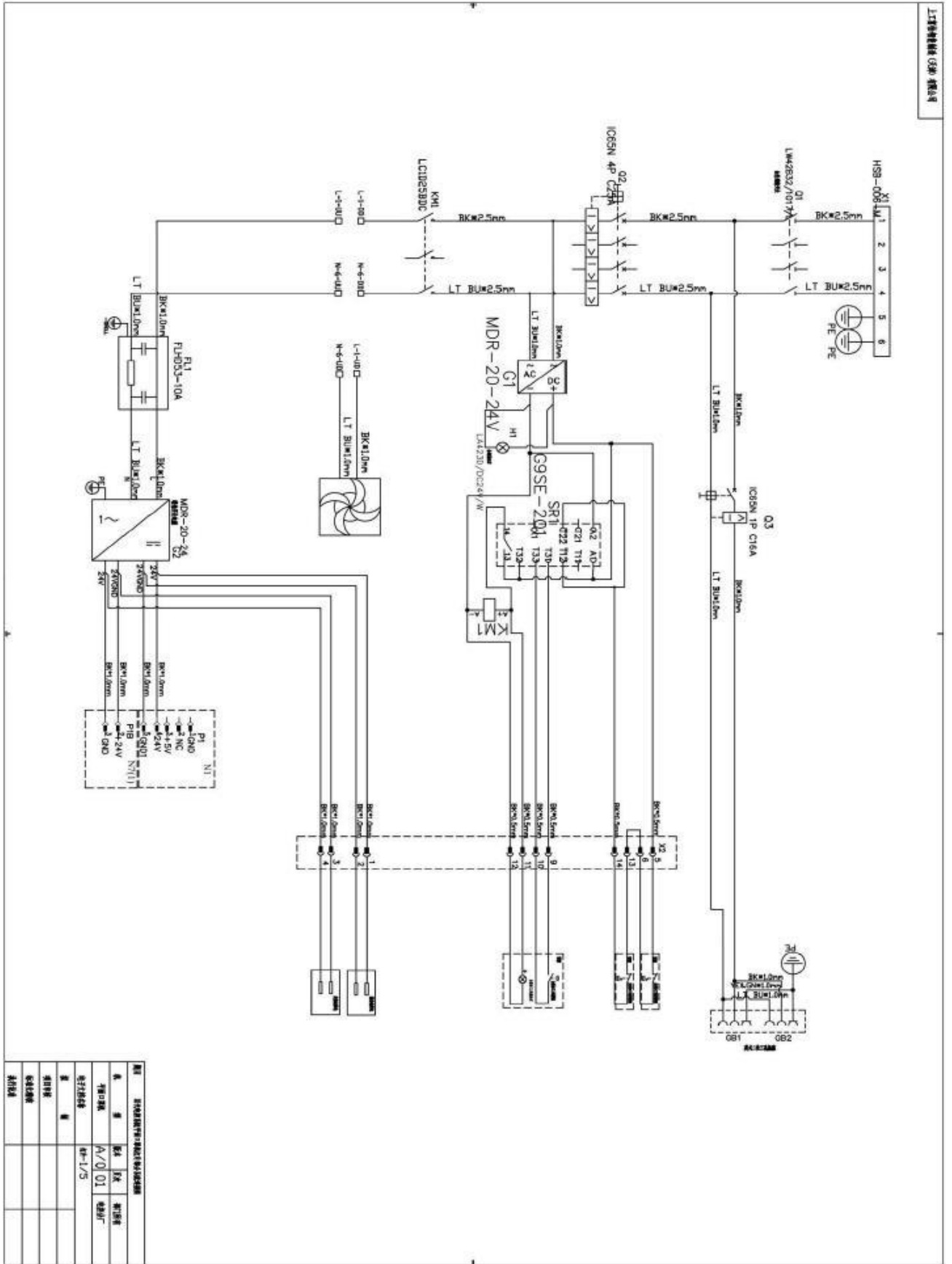
Pay attention to the warning on the maintenance label!

## 17 Part photographs



| Ref. No. | Slovensko                                | Angleško                                |
|----------|--|---|
| 1        | Vtiskovalni valji in ultrazvočna naprava | Embossing rollers and Ultrasonic device |
| 2        | Podajalno kolo                           | Delivery wheel                          |
| 3        | Ultrazvočna naprava                      | Ultrasonic device                       |
| 4        | Podajalno kolo                           | Delivery wheel                          |
| 5        | Rezalno kolo                             | Cutting wheel                           |

# 18 Circuit diagram





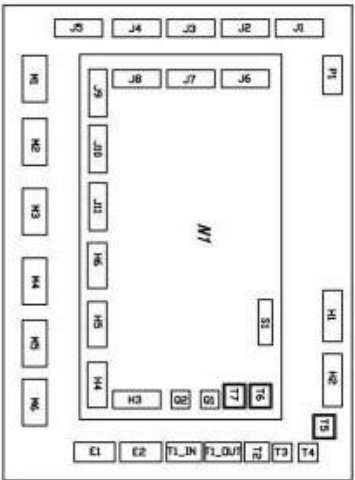
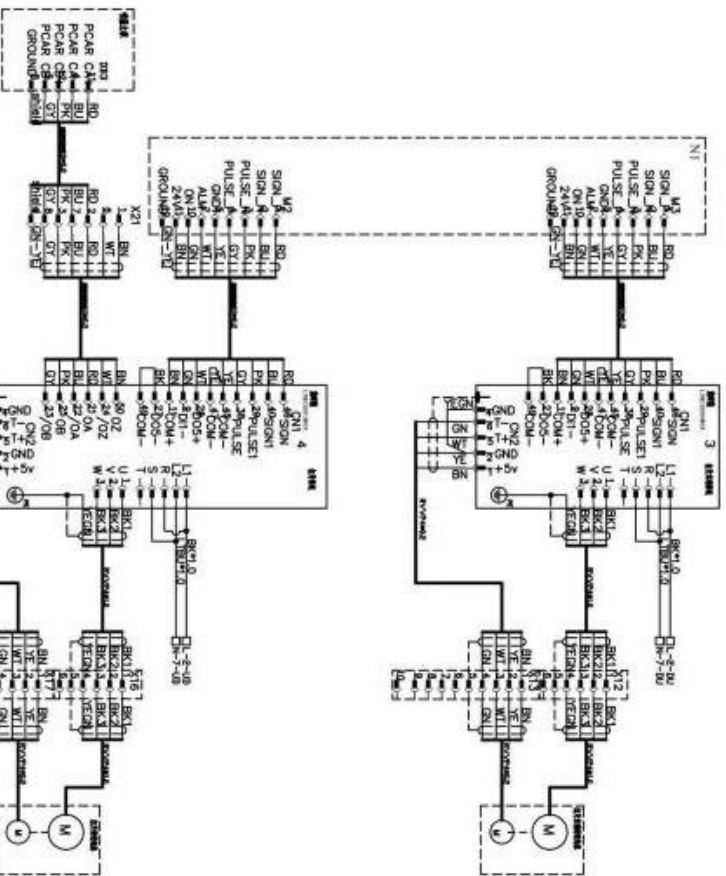
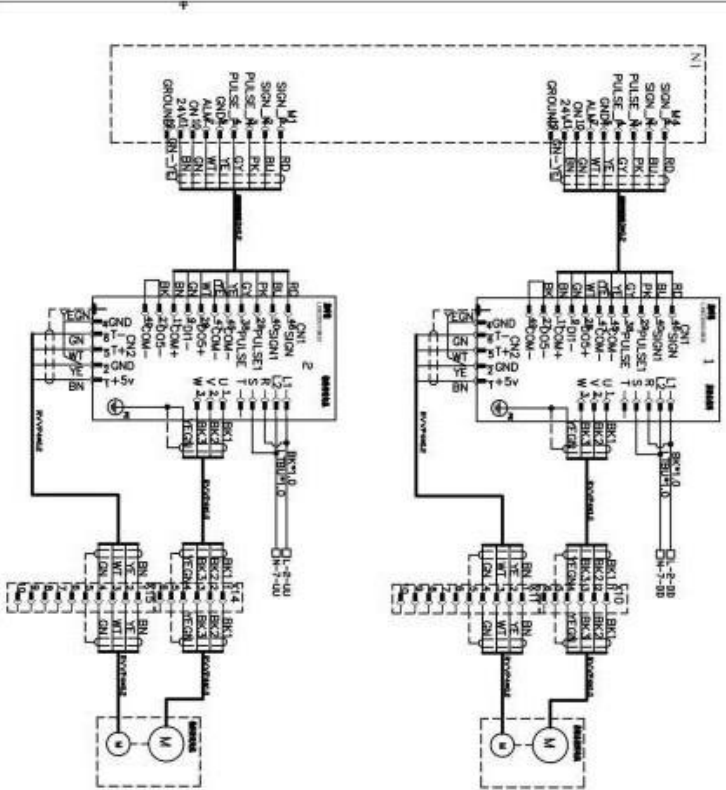
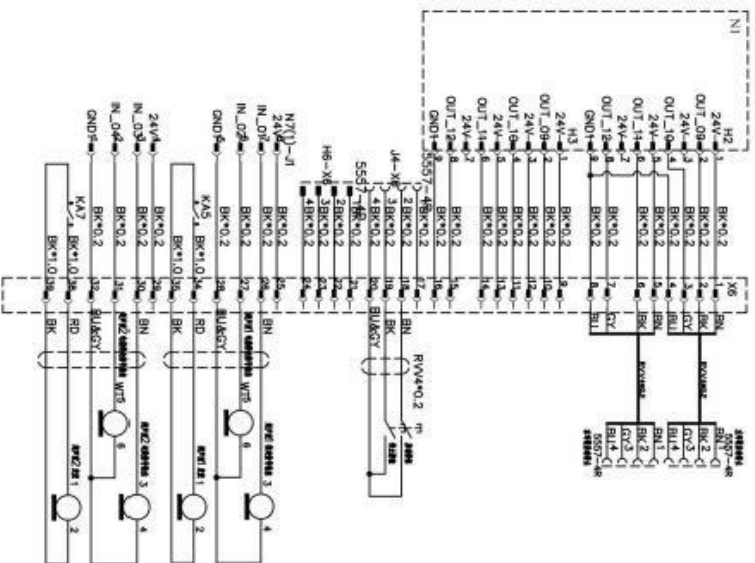
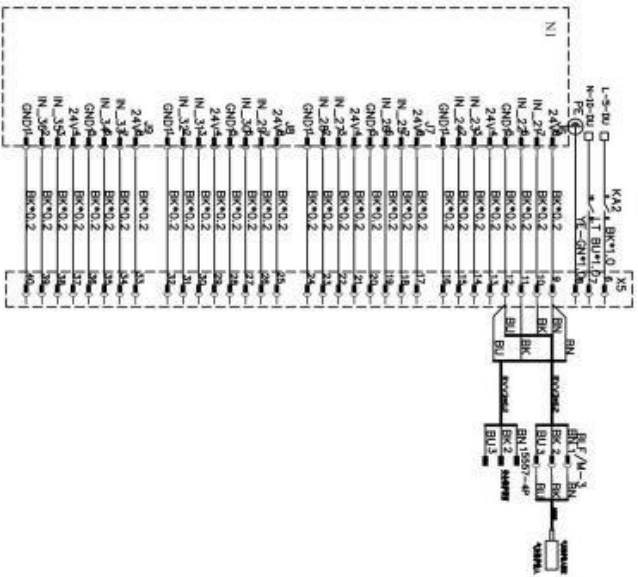


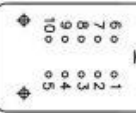
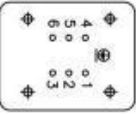
图 1 工业机器人维修 (第2版) 项目6

|       |        |    |    |     |
|-------|--------|----|----|-----|
| 图号    | 名称     | 版本 | 日期 | 设计者 |
| A/01  | 02     |    |    |     |
| 电气连接图 | 6F-2/5 |    |    |     |
| 审核    |        |    |    |     |
| 编制    |        |    |    |     |
| 审核    |        |    |    |     |
| 编制    |        |    |    |     |





0, X12, X14, X16, X18, X20, X13, X15, X17, X19, X2



| 型号规格  |        |    |     |
|-------|--------|----|-----|
| 名称    | 规格     | 数量 | 备注  |
| 端子排   | A/D 04 | 1  | 物料号 |
| 电子线路板 | 研-4/5  | 1  |     |
| 其他材料  |        |    |     |
| 合计数量  |        |    |     |
| 备注    |        |    |     |



## 19 List of standard spare parts

| Ref. No. | Spare parts                      | Specification     | Qty          |
|----------|----------------------------------|-------------------|--------------|
| 1        | Throttle valve                   | AS1201F-M5-06A    | 1 set        |
| 2        | Blade                            | 10*36*3           | 1 piece      |
| 3        | Omron slot photoelectric sensor  | EE-SX671_WR       | 1 piece      |
| 4        | Omron inductive proximity sensor | E2B-S08KN04-WP-C1 | 1 piece      |
| 5        | Omron reflection sensor          | E3ZG-D61-S        | 1 piece      |
| 6        | Cylinder converter               | D-M9NSAPC         | 1 piece      |
| 7        | Blocking pin                     | M3x4              | 1 piece each |
|          |                                  | M4x4              |              |
|          |                                  | M4x8              |              |
|          |                                  | M5x5              |              |
|          |                                  | M6x6              |              |
| 8        | Wide head screw                  | M4x8              | 1 piece      |
| 9        | Hexagon screw                    | M4X10             | 1 piece each |
|          |                                  | M4X8              |              |
|          |                                  | M4x12             |              |
|          |                                  | M5x12             |              |
|          |                                  | M5x16             |              |

## 20 List of tools supplied

| Ref. No. | Tool name                              | Specification | Qty          |
|----------|--|---------------|--------------|
| 1        | Screwdriver for countersunk head screw | M6x40         | 1 piece      |
| 2        | Phillips screwdriver                   | M6x40         | 1 piece      |
| 3        | Screwdriver for countersunk head screw | M5x100        | 1 piece      |
| 4        | Phillips screwdriver                   | M5x100        | 1 piece      |
| 5        | Screwdriver for countersunk head screw | M3x100        | 1 piece      |
| 6        | Adjustable wrench                      | 12x300        | 1 piece      |
| 7        | Type T Allen screwdriver               | 2.5           | 1 piece      |
| 8        | Type T Allen screwdriver               | 3             | 1 piece      |
| 9        | Type T Allen screwdriver               | 4             | 1 piece      |
| 10       | Type T Allen screwdriver               | 5             | 1 piece      |
| 11       | Type T Allen screwdriver               | 6             | 1 piece      |
| 12       | Thread scissors                        | TB-454        | 2 pieces     |
| 13       | Open-end wrench                        | M5.5-7        | 1 piece each |
|          |  | M8-10         |              |
|          |  | M9-11         |              |
|          |  | M10-12        |              |
|          |  | M12-14        |              |
|          |  | M14-17        |              |
| 14       | 9 pieces Long-handled wrench           | M1.5-10       | 1 set        |
| 15       | Needle-nose combination pliers         | MRP-150G      | 1 piece      |

## **21 Warranty conditions**

Warranty period: 12-month product warranty.

During the warranty period, the manufacturer covers the cost of labor and spare parts, excluding consumables and items subject to rapid wear and tear.

Travel, accommodation, subsistence and other expenses incurred by Richpeace engineers in connection with on-site maintenance shall be shared as specified in the contract.

Disclaimer:

Defects caused by incorrect operation or failure to maintain the machine on part the customer are not covered by the warranty.

Consumables are not covered by the warranty.