

JF100G15 PU Sandwich Panel Line

Manual Book



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Introduction

- Ø We would like to thank you for your trust in us and buy the products of Jinggong Science & Technolog.
- Ø In order to ensure the safety of the equipment operation, please pay attention, all specifications should comply with the relevant state labor and safety laws and regulations, and in strict accordance with the provisions of this manual safety operation.
- Ø In order to obtain the best production equipment performance, this machine should be specially trained professionals operation and maintenance, also this manual must be kept to the professionals.
- Ø Before the equipment installation and operation, relevant personnel should master and memorizing the contents of the operating manual.
- Ø If any problems in the process of production, please read this manual. If the problems can be solved, please feel free to contact our after sales service department, we will serve you wholeheartedly.

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Statement:

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1 JF100G15 PU Sandwich Panel Line Summarize

1.1 Equipment composition

This Pu production line mainly consists of decoiler(2 sets), filming and cutting device(upper and lower), roll forming system, pre-heating device, soft layer system, foaming system auxiliary device, PU high pressure foaming system, double belt, double belt heating system, cutting system, stacker system, cooling convey system, packing system, etc.

1.2 Production line main characteristics

This PU sandwich panel line is one continuous and automatically line which integrate mechanism, electrical controlling, hydraulic system and polyurethane chemical reaction technology. The line adopt advanced international roll forming technology, digital servo technology, frequency conversion vector technology and hydraulic controlling technology, automatic stacking technology. The whole line only needs 7-8 operators. The features of this line are following:

2 High automatization

The whole line adopts one full computer integration controlling system of digital servo technology, frequency conversion vector technology and hydraulic controlling technology, which realizes whole connection, collecting control and collecting management. Adopt cutting style of cut to length without machine stop, so that realize full automatically.

2 Easy operation

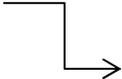
Adopts collecting controlling system, using man-machine conversation interface. After the raw material prepared and finishing other production requirements, input required parameters, then machine can make product automatically.

2 Low production cost

Developing the machine's automatization, the whole line only needs 7-8 operators to operate the machine fully, which saves much labor cost and production management cost for enterprises.

1.3 Working flow

----Aluminum foil layer uncoiling & correction
 -----Coilcar-----Decoiler-----Fliming(cutting)-----Roll
 forming-----Preheating---- Foaming and adhesive spraying -----Laminating in double



belt conveyor(heat preservation) -----Bandsaw cutting (dust absorption) -----Fast conveyor-----Cooling-----Stacking----Packing

1.4 Working environment

1.4.1 Working environment requirement: this production line can work between the temperature $-5\sim+40^{\circ}\text{C}$, stored in $-20\sim+42^{\circ}\text{C}$ do not affect on equipment performance.

1.4.2 The buyer will add room and protective measures according to the real situation.

1.4.3 Equipment according to the workplace should set fortification according to the pollution level of a category II. All kinds of control panel ark should be according to standard IP54 fortification. Other power plate ark fortification should be not below IP54. Motor and reducer protection grade is IP55.

1.4.4 Electrical environment ensure the performance:

2 Power: total power supply is AC three phase four wire.

2 AC voltage: 3 phase 415V/ 220V, $-10\%\sim+15\%$

2 Frequency: $50\text{Hz}\pm 0.5\text{HZ}$ Instantaneous range: $\pm 0.02\%$

2 Production line process parameters

2.1 PU panel specifications

| | |
|------------------------------------|---|
| Length: | Min.cutting length 2 m |
| | Max. cutting length 15 m |
| Wall panel width: | 1000 mm (according to profile) |
| Corrugated panel width: | 1100/1220 mm (according to profile) |
| Corrugated panel thickness: | 30/40/50/60/80/100mm (see the profile drawing) |
| Wall/Cold storage panel thickness: | 40/50/60/80/100/120/150mm (see the profile drawing) |

2.2 Raw material specifications

| | |
|-----------------------------|---|
| PPGI sheet thickness: | 0.35~0.7mm |
| Steel sheet yield strength: | 500MPa--560MPa |
| Coil max.weight: | 8 T |
| Coil inner diameter: | Φ508、Φ610 mm |
| PU foaming material: | Polyether and isocyanate, cyclopentane as foaming agent |
| PU foaming density: | 36~45Kg/m ³ |

2.3 Production line specification

| | |
|-------------------------------|---|
| The highest working speed: | 3-8m/min(adjustable) |
| Total length: | About 130 m |
| Working height: | 1200 mm (height of panel coming out) |
| Foaming pressure: | 150~200 bar |
| Double belt effective length: | 24 m |
| Control mode: | Adopt imported PLC |
| Total power: | About 180 kw(without DBL heating 300Kw) |
| Power supply: | 415V/3P/50 Hz |
| Control voltage: | 24 V/220 V |
| Air pressure: | 0.7 Mpa (prepared by buyer) |

3 Safety regulations

3.1 Production line main features

3.1.1 Safety tips

This production line is in strict accordance with the advanced technology and known safety laws and regulations. But if there is no correct operation or irregularities by trained personnel, harm can still be caused by the following:

- 2 Endanger life and limb of the user.
- 2 Damage the equipment and other material possessions.
- 2 Reducer the efficiency of the equipment.
- 2 Only operate the production line when there is no potential safety hazard and strict enforcement of safety operation specification of the equipment. Operators should have certain safety awareness and operation skills.
- 2 Should be in strict accordance with the rules and regulations of this manual select the scope of application of raw materials and production technology parameters, it is forbidden to exceed the scope of process production operation.
- 2 Any violation of the relevant national safety operation specification and related safety instructions this manual thereby causing loss to the personal property safety, our company won't undertake any responsibility for the these loss.

3.1.2 Organizational measures

- 2 This manual should be placed in the assignments area.
- 2 Besides the operation manual, the operator should also abide by relevant state to prevent safety accidents and the provisions of the laws and regulations to protect the environment.
- 2 This production line staff must read this operation manual before operating the production line, especially the related content of the security.
- 2 The buyer should develop safety operation procedures, to ensure safety in production.
- 2 Production line should be posted in apparent positions around the eye-catching safety warning marks.
- 2 In the running process involving change in the safety facilities, should promptly notify the responsible for personnel handling the fault.
- 2 The buyer should regularly inspect on equipments, found the accident hidden danger promptly eliminate.
- 2 Procurement of spare parts should comply with the provisions of the safety technical

requirements.

- 2 Shall not arbitrarily change the program, adjusting process parameters must conform to the requirements of the scope of technology, it is strictly prohibited beyond setting.
- 2 Debugging test should be in accordance with regulations of the operating manual and check the working condition at any time .
- 2 The necessary tools, equipments for maintenance should be operated by professional personnel.
- 2 Production site should provide sufficient lighting for the operator.
- 2 Production line should be equipped with necessary safety and fire control facilities.

3.1.3 Operator requirements

- 2 Only the personnel through specialized technical training could operate the production line, this equipment operators must have a certain ability of operation, adjustment, maintenance.
- 2 Specially trained personnel on the production line operation need to be authorized by the management of the equipment management, and strictly operate according to operation procedures.
- 2 Only a skilled electrician or electrical engineer shall be authorized to enter production site.
- 2 Only skilled professional staff shall be authorized for hydraulic or pneumatic system work.

3.2 Safety tips of each operational phase

3.2.1 Normal running

- 2 Strictly in accordance with the operating procedures, it is forbidden to violate compasses operation.
- 2 Only in the case of confirmed safe can start to run..
- 2 Before working must check whether there is any damage on the production line equipment and safety facilities and defects. If any problem to be found, should be ruled out in time.
- 2 If any fault in the operation, should immediately stop the equipments, and restart after troubleshooting.
- 2 From time to time, pay attention to the work condition of the production equipment status and security agencies, stop the machine immediately and check with exception.
- 2 Non-production personel shall be prohibited from entering the production line in the operation of the job site, to prevent safety accidents.

3.2.2 Commissioning, maintenance and other special operations

- 2 In testing, adjustment and maintenance operations, only skilled workers and professional

technical engineers can authorized to on-site operation.

- 2 Before special maintenance operations shall notify the relevant operation personnel, it is strictly prohibited to open the operation in the process of debugging maintenance job.
- 2 If necessary, shall ensure that maintenance filed have enough floor space.
- 2 Should always pay attention to safety in the process of operation, so as not to be chewed, crushed.
- 2 When replace the bigger heavier components, use crane and prevent accident.
- 2 Should check all hydraulic pipe, pneumatic pipeline leakage, and interface with or without loose, cable insulation sleeve with or without damage, if find any problem, solve in time.
- 2 The replaced spare parts, equipments should be clear in time, should not interfere with the normal safety production.

3.3 Special danger instrution

3.3.1 Electricity

- 2 Only when the equipment is in a state of shutdown, can for the joint of electrical wire, open and close, and for maintenance and replacement of the fuse.
- 2 Short circuit, high welding current may cause the misoperation or unforeseen circumstances, should stop and check if find any problems.
- 2 Large current will cause power supply fluctuations, please focus on peripheral equipment of the production safety in advance.
- 2 The input power should be equipped with right regulations of the current fuse, if there is malfunction on the power supply system, should immediately stop the operation of the production line.
- 2 Regularly check the electrical equipment, cables and connectors, ruled out the problems in time.

3.3.2 Hydraulic and pneumatic system

- 2 Only skilled professional or after training and experience staff may be authorized for hydraulic and pneumatic systems work.
- 2 Periodically check the hydraulic pipe, hose and nipple leaks and external perceptible damage, loose and other safety accidents, ruled out in time when problems found.
- 2 Before repairing hydraulic system, if it involves oil cylinder, tubing and other structure parts, must reduce the pressure.
- 2 Should be in accordance with the requirements of professional and technical laying hydraulic and compressed air pipes, do not confuse hose fittings, the length and the quality

must conform to the requirements.

3.3.3 Noise

- 2 This production line will cause a certain amount of noise in the operation, the effective noise reduction measure should be taken.

3.3.4 Dust

- 2 This production line will produce certain dust during operation, the effective powder dust removal measures should be taken.

3.3.5 Smell gas

- 2 During the process of PU foam spray, this production line will produce certain peculiar smell gas, the scene should take effective measures to ventilated breathe freely.

3.3.6 Oil, grease and other chemicals

- 2 When at work it comes to oil, grease and other chemical substances, operation should comply with the relevant product safety technical specification.
- 2 Prodent use of burning process materials to avoid burns.

3.3.7 Debris and waste

- 2 During the production will produce a certain amount of debris and waste, should be cleaned in maintenance or downtime, avoid the damage to the rolling parts.
- 2 Waste should be removed in time, to ensure safe and clean production environment.

3.3.8 Hazards associated with high temperature

- 2 The pre-heat oven and double belt heating device have high temperature, pay attention to avoid burns when in the process of debugging.
- 2 Some motor or parts surface has a certain surface temperature, pay attention to safety operation.

3.4 Special safety regulations

3.4.1 For safety, during the equipment operation, not allowed to cross or stay in the area of the production.

3.4.2 When the line running, only the production personnel and professional and technical engineers shall have the right to stay in production area.

3.4.3 When working on electrical facilities, should cut off the main power supply circuit, and put up a sign of danger and take security measures to prevent the accident.

3.4.4 When repairing hydraulic heating components, should cut off the main circuit.

3.4.5 Add fence in the working area to prevent non-relevant personnel to enter in.

3.4.6 All of the emergency stop switch should be put in striking position and the place easy

to hit.

3.4.7 Any item which is not used in the working, such as spare parts, tools, spare gas cylinders are not allowed to be placed in the operation area.

3.4.8 Operators should wear appropriate protective equipment, ensure the safety in production.

3.4.9 All the workers, management personnel and authorized people entering the work area shall abide by the relevant state laws and regulations on safety in production.

4. Installation and maintenance

4.1 Installation

4.1.1 Equipments details

The production line includes the below equipment parts:

| No. | Equipment Name | Model | Remark |
|-----|----------------------------|-------------|--------|
| 1 | Decoiler | JF100G15.01 | 8T |
| 2 | Film and cut device | JF100G15.02 | |
| 3 | Roll forming machines | JF100G15.03 | |
| 4 | Foaming system accessories | JF100G15.04 | |
| 5 | Double belt | JF100G15.05 | 24m |
| 6 | Bandsaw machine | JF100G15.06 | |
| 7 | Pre-heating oven | JF100G11.08 | |
| 8 | Double belt heating device | JF100G15.09 | |
| 9 | Corona device | JF100G15.10 | |
| 10 | PIR Gluing device | JF100G15.11 | |

4.1.2 Foundation

This production line has special foundation design, especially for the uncoiler, the double belt machine, the concrete foundation needs to be able to withstand the equipment.

Should decorate gutter according to the production line layout and high transformer room. The gutter need to add cover plate.

4.1.3 Transport hoisting

Using bare-metal way transport, it is better to use hemp rope or wire rope handing, between the rope and machine padded wooden pads or cardboard to protect the parts. If deives with rings or hook, the rope must be on hangers or hook lifting transportation.

4.1.4 Equipment in place

After completion of the foundation and before the installation, should make the center line on the floor according to the layout drawing, the equipments to be placed in response to the centerline and according to the positioning of plane diagram.

Pay special attention to: All the equipment components should be kept the same level working height and in the same center line.

4.1.5 Debugging tools and equipments

In equipment installation and debugging process, the buyer shall prepare the following things:

4.1.6 Factory preparation

- 2 The fence, fire prevention facilities and necessary palisade, isolation structures.
- 2 Production line foundation.
- 2 The power supply facilities, power distribution cabinet (See the specific location in the PU production line foundation drawing which provided by the seller.) .
- 2 Screw air compressor (with storage tanks, filters, dryers and connecting line), to provide pressure is 0.7Mpa, flow is more than 3m³/min clean air to the air supply points, (See the air supply points location in the PU production line foundation drawing which provided by the seller) .
- 2 Crane and other lifting, transportation equipments, welding machine and welding materials for on-site installation. One set of 10Ton travelling crane which lifting height is more than 6m. It is better to prepare another set of 5Ton travelling crane. 10m lifting belts 2 pieces and 5m lifting belts 2 pieces.

2. Raw materials

(1) Foaming chemical materials

According to 4 or 5 components PU high pressure foaming system.

(2) Steel Coil:

- 2 Coil inner diameter: Φ508 or Φ610 mm ;
- 2 Corrugation roof panel: thickness 0.6mm width 1100/1220mm
- 2 Wall/Cold storage panel:: thickness 0.6mm width 1100mm

(3) Cleaner

Methylene chloride or acetone

(4) Supplementary material(for reference)

2 Nylon film(sticky)

Inner diameter:Φ75mm, width 1050 mm, 2 coils(one coil at least 1000m); width 1200mm, 1 coil(one coil at least 1000m).

2 Side adhesive tape or Sponge bar(inner diameter more than 20mm)

| Profile | Item | Thickness 30mm | Thickness 40mm | Thickness 50mm | Thickness 60mm | Thickness 80mm |
|------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Roof Panel | Tape height | 50/15 | 60/25 | | | |
| | Sponge bar height | 15 | 25 | | | |
| Wall panel | Tape height | | 10 | 20 | 30 | 60/55 |
| | Sponge bar height | | 10 | 20 | 30 | 50 |

3. Lubricating oil, grease

- 2 Hydraulic oil VG46 500 L
- 2 Industrial gear oil ISO VG220 100 L
- 2 General lithium grease 5 kg
- 2 High temperature lithium base grease 10 kg

4. Installation and inspection tools

| No. | Name | Specification | Qty. | Remark |
|-----|-------------------------|---|--------|-------------|
| 1 | Tachymeter | Speed | 1 pc | |
| 2 | Tachymeter | Temperature | 1 pc | |
| 3 | Cogas protective welder | 1.2mm welding wire | 1 set | |
| 4 | Percussion driller | Drilling diameter 8-20mm | 1 set | |
| 5 | Level gage | | 2 sets | |
| 6 | Hydraulic jack | 5T | 2 sets | |
| 7 | Spirit level | | 1 set | |
| 8 | Pinch bar | | 2 pcs | |
| 9 | Patch board | | 2 pcs | 100m length |
| 10 | Polisher | | 1 set | With tools |
| 11 | Electrical hand driller | Drilling diameter 4.2/5.2/6.7 /8.7/10.5 | 2 sets | |
| 12 | Screw tap | M5,M6,M8,M10, M12 | 1 set | |
| 13 | Line drop | | 4 sets | Magnetic |

| | | | | |
|----|-------------|--------|-----------|----------|
| 14 | Ink duct | | 1 set | With ink |
| 15 | Tape | 5m/10m | 1 pc each | |
| 16 | Angle ruler | 500mm | 1 pc | |

Remark : *actual items quantity should be determined according to site condition.*

4.1.6.1 Others

Other equipments tools no specific mentioned should be provided by the buyer.

4.1.7 Electrical connections

Power supply cable provided by the buyer, it must be through the cable trench or trough laid, and in conformity with the relevant standards of the state.

4.1.8 Hydraulic unit

In hydraulic pipe installation, pipe interface must be absolutely clean, treatment of cleaning should be done when necessary.

4.2 Maintenance

4.2.1 Mechanical unit

- 2 Each shift needs to clean the equipment, move waste, instruments and so on.
- 2 For the moving parts to oil lubrication, regularly check the oil level position, add lubricant oil in time.
- 2 Add lubricating oil for the double belt machine chain plate bearing regularly.
- 2 Regular cleaning and clean foaming machine gun and nozzle, as shown in the foaming system operation manual.
- 2 Check tightness of conveyor chain after every 80 hours work time, timely adjust if necessary. Should remove surface dirt after 2000 hours work time.
- 2 Regular check the reducer lubrication devices work is normal or not, for example, the double belt reducer, if any abnormal found, should stop to check and restart after make sure no problem or repairing.

4.2.2 Hydraulic system

- 2 The maintenance of hydraulic system of hydraulic components long trouble-free working is very important. 80% of the failure and the damage was due to pollution, lack of maintenance and fluid by the improper selection.
- 2 Every day shall check the seal of hydraulic system, oil level, temperature after several

hours running, visual quality of the oil on a regular basis.

- 2 Every year or after 3000 hours work time, to change the new hydraulic oil, dirty oil can significantly reduce all function or life of hydraulic components, replace the filter on a regular basis.
- 2 Working temperature for hydraulic oil is 50°C, if the temperature is higher than 70°C, it will reduce the service life of hydraulic oil and seals.
- 2 Oil temperature rise sharply is a warning signal, then it is necessary to stop the machine and check immediately.

Visual evaluation of hydraulic oil:

| Appearance | Pollution | The possible reasons |
|----------------------------|-----------------|--------------------------------------|
| Black color | Oxide | Overheating, insufficient oil change |
| Emulsion | Water or foam | Water or air intrusion |
| Water precipitation | Water | Water intrusion |
| Air bubble | Air | Air intrusion |
| Suspension inhaled dirt | or Particles | Wear, dity and aging |
| Tar smell | Aging | Overheating |

Suggested to check the hydraulic system pressure at least twice a month, and adjust in time.

4.2.3 Cooling unit

The interval of cleaning time depends on the water quality, temperature and water circulation, should check the dirt and scale once a month, and check the cooling water sealing interface.

4.2.4 Pneumatic parts

Pneumatic system should check once a week if there is a leak, check for mechanical damage on the pneumatic hose and pipe, check the gas and water separator and automatic emptying outlet are in good condition or not.

4.2.5 Electrical components

- 2 Should check one time a year on the electric control cabinet components and ventilation components, if have dust or debris, do the regular cleaning.
- 2 Untrained personnel is absolutely not allowed to operate the production line.

5.Upper decoiler

5.1 Introduction

The decoiler in the PU sandwich panel is indispensable in the production line. the decoiler can apply to such other equipment as roll forming machine and sandwich panel, etc, Use very extensively.

5.1.1 Usage

As decoiler in the PU sandwich panel is indispensable in the production line. in the front of the whole production line。 The machine completes steel feeding, tighten, initiative uncoil, strain steel plate, feeding material and so on action.

5.1.2 Feature

(1) Simple structure , rational, the appearance is beautiful , ability is strong that exist in year, it is reliable to operate steadily, economic science.

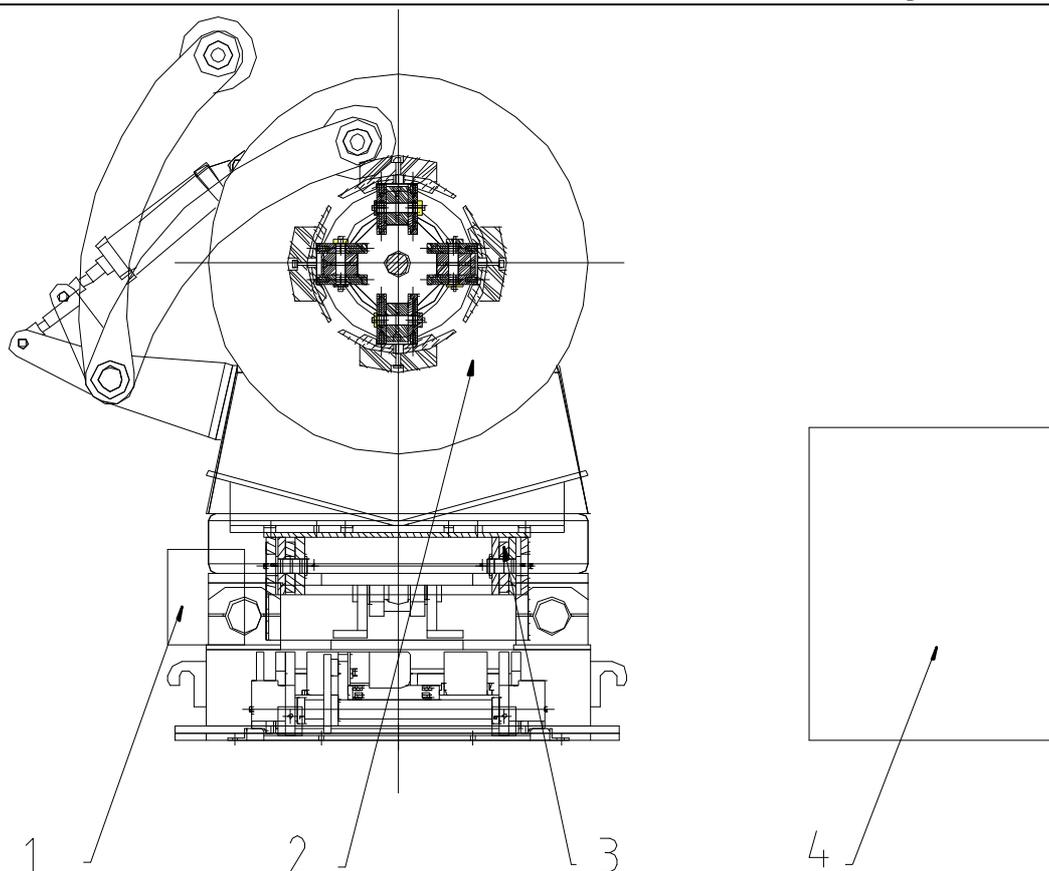
(2) It is simple and convenient to maintenance, the operation expenses are low.。

(3) Reasonable adjustment organization, can adjust center of the steel plate, strictly causes the volume material center to be consistent with the production line center. Meet the production line demand

(4) New-type transmission organization, the hydraulic pressure motor is driven, Installation is convenient, operate simply, convenient, Device of hydraulic transmission are steady, The response is fast, inertia is small , small, with low costs, with high efficiency , light weight.

5.1.3 Exterior and constitute

This decoiler are made up of decoiler frame, up &down coil car, hydraulic station and electric box.:



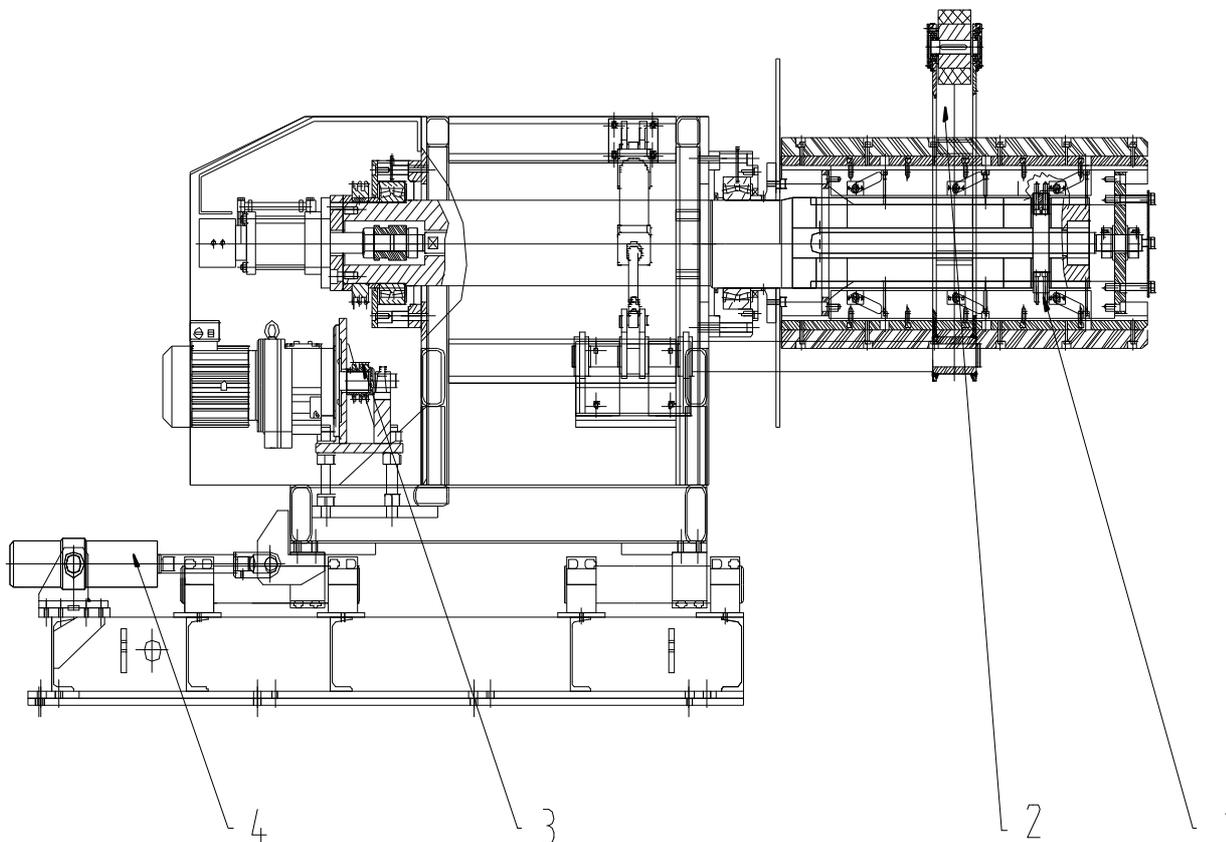
1 . Hydraulic station 2 . Decoiler frame 3 . Coil car 4. Electric box

5.2 Main technical parameters

| | |
|--------------------------|------------------------|
| Decoiler load: | 8T (Max.) |
| Decoiler rotate seepd: | 0~25m/min (Adjustable) |
| Material width: | 1250 mm (Max.) |
| Coil inner diameter: | φ508 mm、φ610 mm |
| Center adjusting width: | 250 mm (Max.) |
| Coil car walking speed: | 6m/min |
| Coil car lifting stroke: | Max.500mm |
| Coil car infeed stroke: | Max.3000mm |
| Air pressure: | 0.7 MPa |
| Air FLOW: | 10L/min |

5.3 Main structure

5.3.1 Decoiler frame structure



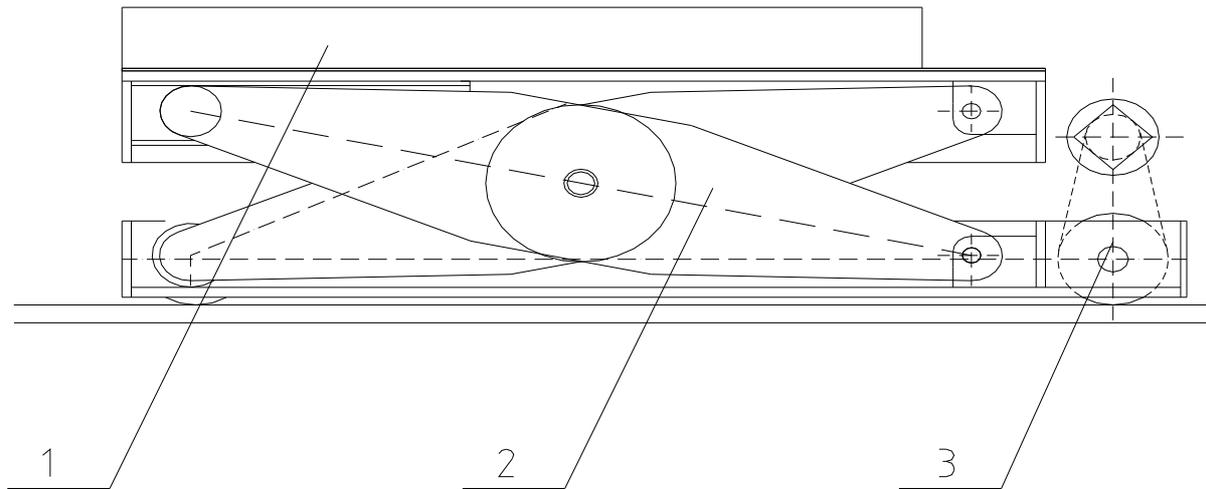
- 1 . Expansion mechanism 2 . Pressing mechanism 3 . Drive mechanism**
4 . Adjustment mechanism

This uncoil frame drive wheel by hydraulic pressure, through the main axle drive the chain wheel, the steel follow the main axle eddy, thus achieves the initiative coil .

The tighten of inside support in the uncoil frame is by the oil crock flex of belt rotary distributor, tighten coil steel after incline guide, then the steel is fixing on the uncoil frame。 The main axle to positive eddy, coil steel feeding, the main axle to reversal, the coil steels return.

The press material frame flirt press arm by cylinder. Cylinder rise, press material loose .the cylinder is fall, press arm will tighten. If the uncoil is initiative, the press material must tight coil steel.

5.3.2 The structure of coil car



1. Coil frame 2. Lifting frame 3. Walking mechanism

This rise and fall coil car through the oil motor impetus chain wheel. Walks the wheel through the chain wheel impetus, thus causes the coil car to walk along guide rail. The rise and fall frame is by the hydraulic ram after the connecting rod function lift table, completes on. up and down action.

Rise and fall coil car landscape orientation and up-down rise, it has self-locking protection.

5.4 Hydraulic pneumatic system

5.4.1 Components for hydraulic system

This hydraulic system consists of five components:

Power element:hydraulic pump and motor.

Execution element:hydraulic cylinder and motor.

Control element:Three four-way solenoid valves, hydraulic control one-way valve,speed control valve, etc.

Auxiliary component:Oil pipe,joint, oil tank,oil filter, pressure meter, etc.

Adopt 46# hydraulic oil, the system maximum pressure is 12Mpa.

5.4.2 Testing and note of the hydraulic system

(1) First check the hydraulic oil whether is enough, hydraulic oil filled to 80% of the fuel tank is appropriate, if less please fill it. Next check each connection place and installation place whether correct and fastening through the installation drawing.

(2) Start the oil pump motor, open the pressure gauge switch, adjust the stack overflow valve let the system pressure is 5 Mpa, check valve blocks, oil cylinder, oil pipes, joints whether there is a leak, if yes please tightened or replaced to no leakage. When the installing process, due to the

hydraulic oil was full of in pipeline and cylinder that lead to the oil surface in the fuel tank drop, or due to leakage caused oil surface drop, it should be fill the hydraulic oil in time to avoid the oil pump suction air.

(3) Start the oil pump motor, adjust the stack overflow valve let the system pressure is 7 Mpa, run at no-load conditions about 10min, and check each of the electric solenoid whether is good, action whether is correct, if wrong please correct it timely. To ensure that no leakage of the hydraulic system and the action is normal.

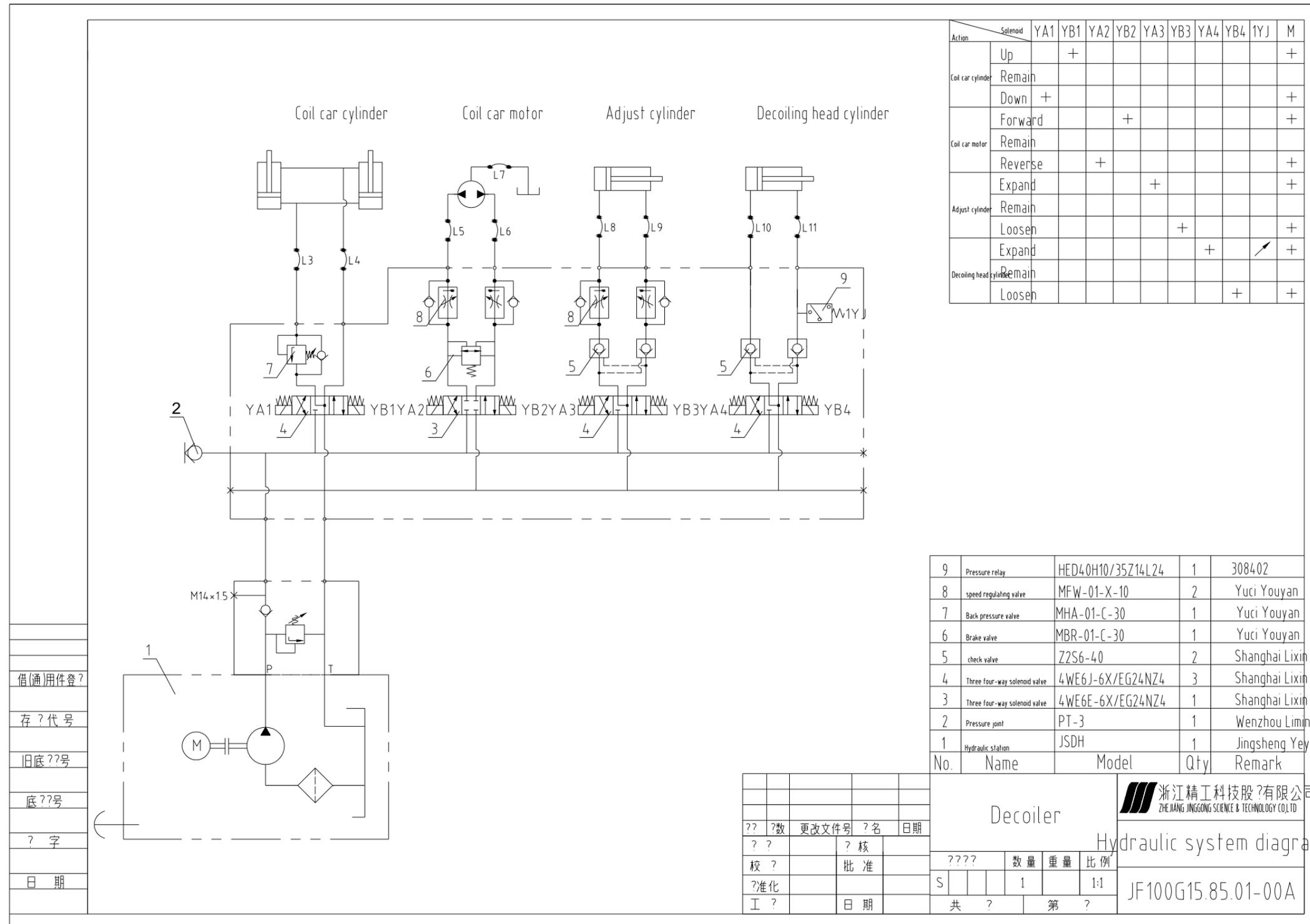
(4) One year to replace hydraulic oil at a time, clean the fuel tank inside wall when replace the hydraulic oil, at the same time check the blockage degree of the oil filter be cleaned or replaced.

5.4.3 Pneumatic parts

Note the following:

- 1、 Compressor pressure should be stable and filter water.
- 2、 The air pressure should be not less than 0.7Mpa, the air flow should be not less than 0.5m³/s;
- 3、 Oil mist lubrication recommended L-FC32 oil, often check the oil, in order to avoid bad lubrication, should be combined with in time after using.

Hydraulic diagram see attachment



5.5 Electrical operate system

5.5.1 Basic operation

Turning on the total switch on the electric apparatus case first the indicator lamp of faceplate will operate:

Start the main power of the DBL, if the main power of DBL did not start, turn the key switch "on" position, you can start the power and operate the machine by separately.

Turn the manual / automatic switch to manually, start the pump, the pump indicator light can be carried out following steps:

1. Operate the button of functional block on the faceplate, can control and move the coil car inside and outside, rise and reduce.
 - 1)、Move inside: the knob move inside position .oil pump will start .the indicator light of oil pump will show ,the coil car begin to move ,and favor uncoil frame .loose knob or touch inside move switch ,the oil pump will stop. the coil car will stop move inside.
 - 2)、Move outside: the knob move outside position, oil pump start, and the coil car move outside, loose knob or touch the outside move switch, the oil pump will stop, and the coil car will stop move outside.
 - 3)、Rise: turn the button on the hoist position, oil pump start, the coil car will rise, loose knob. oil pump stop, coil car stop rise. (notice: the coil car have no limit place switch, it must prevent too high)
 - 4)、Fall: the button in the fall position, oil pump start, coil car begin to fall, loose knob or fall the fall switch, oil pump stop, coil car stop fall.
2. Through the button of uncoil frame function key on the operate faceplate, it can control positive turn, reversal, loose tighten, center adjust of uncoil frame and roll forming machine, and the loose ,tighten of press arm.
 - 1)、Uncoil frame positive turn: the button in the positive turn , the oil pump start, the uncoil frame begin to positive turn, loose the button. the oil pump will stop, the uncoil frame stop operate.
 - 2)、Reversal of uncoil frame: the knob in the reversal position, oil pump start, the uncoil frame begin to reversal, loose knob, oil pump stop, uncoil frame will stop operate.
 - 3)、The tighten of uncoil frame: the knob in the tighten position, the oil pump begin to tighten, knob move middle or tight the press (press relay act), the oil pump stop, uncoil

frame will stop tighten.

4)、Uncoil frame loose: hold the knob move loose position, oil pump start ,uncoil frame begin to loose ,loose knob, oil pump stop., uncoil frame stop tighten.

5)、Press arm press (loose),the button of press arm in the press or loose position, press arm is press or loose

3. If in the manual position, through operates the button of cover film cutting function on the face board, it can control cover film roller compact and loose. Pull knife reversal and positive turn, board advance and back, and the board cutting.

1)、cover film roller tighten (loose): the button of cover film roller in the tighten(loose)position, the cover film roller is tighten(loose).

2)、Pull knife reversal ,positive turn: enable the button in the reversal position, it cutting rightwards(the position of person is accord to the way of come the plate, touch the right limit place is stop; the button in the positive turn position, pull knife cut leftwards, touch left stop.

3)、The advance and backpedal of board: the knob in the advance position, pull board motor positive turn, steel advance ; the knob in the backpedal position, pull board motor is reversal, the steel backpedal.

5.5.2 Normal trouble and resolve of electric:

| Trouble phenomena | Examine point | Resolve |
|--|--|---|
| Indicator lamp of trouble is bright , can not any operation. | 1、urgent stop press 2、switch clique of oil pump motor 3、Don't start the main power | 1、the button of clockwise rotation, enable urgent stop loose. 2、Inspects the electrical machinery whether overloads , does not have the overload, close the switch 3、Start the main power |

| | | |
|--|--|---|
| Decoil frame can not tighten | <ol style="list-style-type: none"> 1. Whether the pressure relay does damage 2. Electromagnetism clique is stifled. | <ol style="list-style-type: none"> 1、 Change pressure relay 2、 Clean or change the electromagnetism clique |
| Coil car can not go down | <ol style="list-style-type: none"> 1、 Fall the damage of the limit place switch 2、 Electromagnetism clique is stifled. | <ol style="list-style-type: none"> 1、 Change the limit place switch Wash or change electromagnetism clique. |
| Coil car can not move inside and outside | <ol style="list-style-type: none"> 1、 Damage of in (out) move limit place switch 2、 Electromagnetism clique is stifled | <ol style="list-style-type: none"> 1、 Change the limit place switch 2, wash or change electromagnetism valves |

5.5.3 Notice and operate regulations

5.5.3.1 Notice

1. Before opening machine, you should inspect the machine that the electricity, the fluid, the gas various systems, they are whether normal, the source of gas whether achieved the predetermined pressure, confirms then opening machine.
2. Regular (a week) to bearing, guide rail, tail of wild goose groove, chain wheel lubrication and inspection attrition situation, if wears seriously, adjust the clearance in time, Is unable to adjust should replace immediately.
3. This equipment uses AC400V the three-phase 50HZ power source power, the pressure of control line is AC/DC24V, the pressure of indicating lamp is 24V, The user may carries on the maintenance according to the electrical schematic diagram and the table.
4. This equipment must reliably earth.
5. All electrical components must maintain cleanly, to its is regularly clean and inspects various electric appliances part the insulation and the connection tight situation..
6. Stop work, should cause to rise and fall coil car to return to the original place,

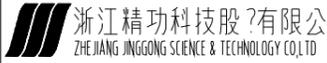
means the rise and fall coil car under the uncoil frame, prohibit coil car park on the corridor.

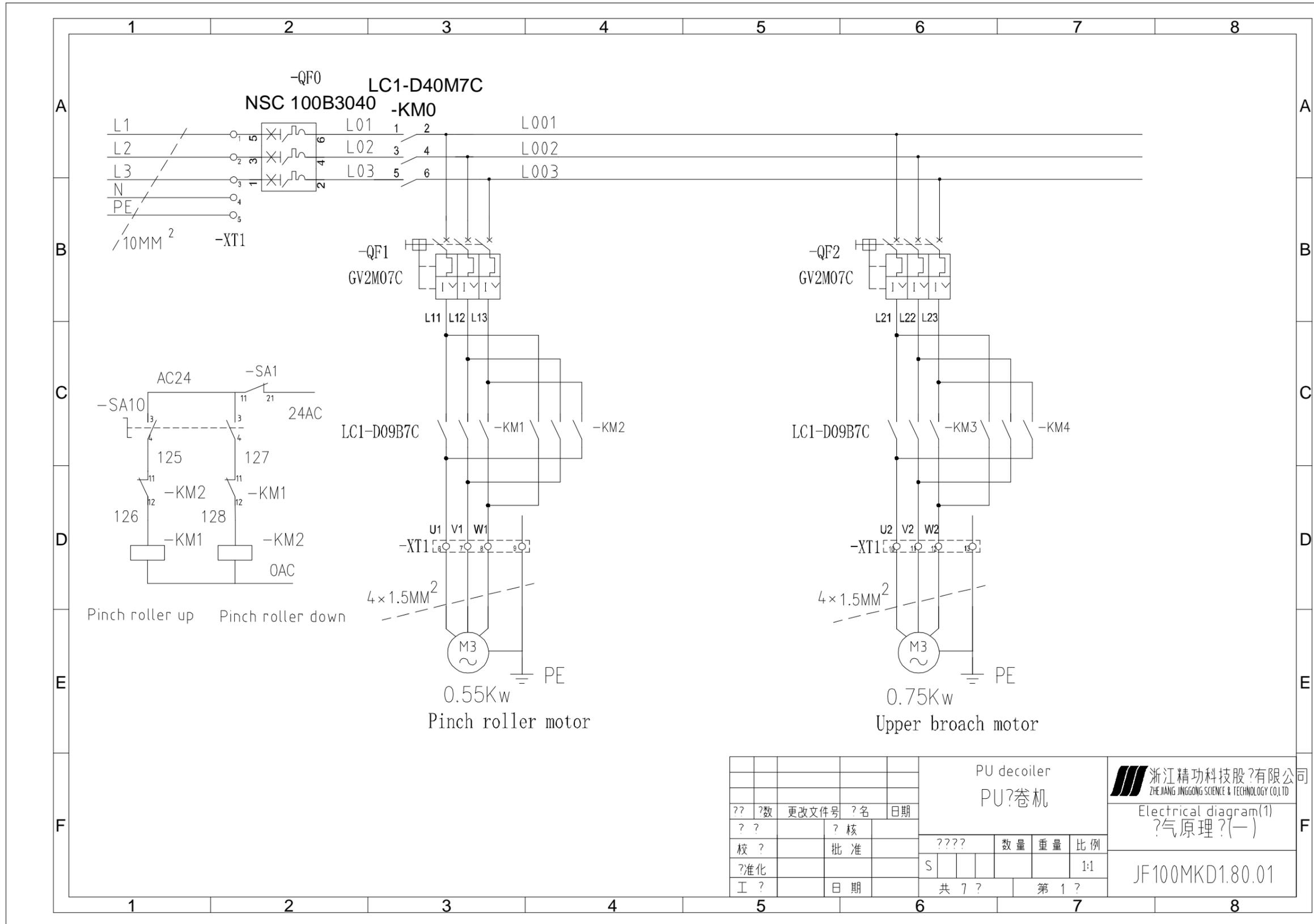
7. If the equipment has the trouble, must carry on the repair by the specialized technical personnel.

5.5.3.2 Operate regulations

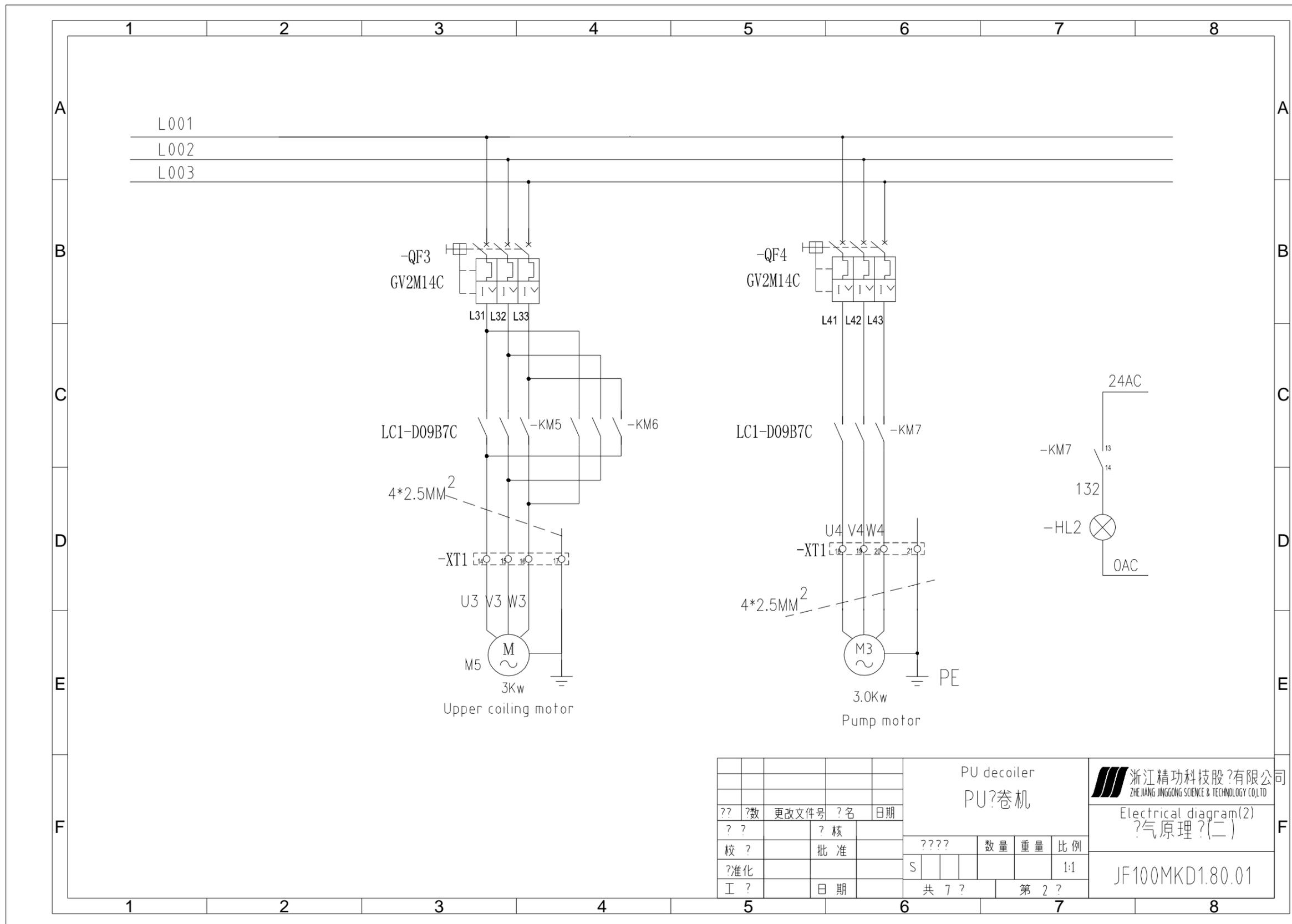
1. The coil car moved the outside of decoiler.
2. Put the steel roll in the coil car, Avoids attacking as far as possible
3. Make the coil car move inside, and near the uncoil frame.
4. Make the core axes of uncoil frame loose.
5. Elevates the coil car, enable the axes of steel and center line of decoil, then coil car move inside, until roll of steel perch.
6. Open tighten switch, it make the uncoil frame tighten.
7. Fall coil car, Enable it to return to the initial position.
8. Use the uncoil frame positive turn, enable the steel board deliver the product line.
9. The board come, stop positive turn, and open, cooling, enter into normal product.

Upper decoiler electrical diagram see the attachment

| | | | | |
|---|--------------------------------|-------|-----------------------------|-------|
| 1 | 2 | 3 | 4 | |
| Input and output table | | | | A |
| X0 | Dcoilder manual/auto | Y0 | Convey converter forward | |
| X1 | Upper broach | Y1 | Convey converter reverse | |
| X2 | Decoiler forward | Y2 | Convey converter jog | |
| X3 | Decoiler reverse | Y3 | | |
| X4 | Spare | Y4 | Decoiling converter forward | |
| X5 | Spare | Y5 | Decoiling converter reverse | |
| X6 | Convey forward | Y6 | Decoiling converter jog | |
| X7 | Convey reverse | Y7 | | |
| X10 | Upper broach forward limit | Y10 | Ready signal | B |
| X11 | Upper broach reverse limit | Y11 | Decoiler head timing expand | |
| X12 | From ultrasonic 2 relay output | Y12 | Spare | |
| X13 | Decoiler inverter alarm signal | Y13 | Oil pump motor | |
| X14 | Emergency stop signal | Y14 | Upper broach forward | |
| X15 | Convey alarm signal | Y15 | Upper broach reverse | |
| X16 | | Y16 | | |
| X17 | From ultrasonic 2 relay output | Y17 | | |
| X20 | Film manual/auto | Y20 | | |
| X21 | Oil pump start/stop | Y21 | | |
| X22 | Solenoid valve | Y22 | | C |
| X23 | | Y23 | | |
| X24 | | Y24 | | |
| X25 | | Y25 | | |
| X26 | | Y26 | | |
| X27 | | Y27 | | |
| PU decoiler PU?卷机 | | | | D |
|  浙江精工科技股份有限公司 ZHEJIANG JINGGONG SCIENCE & TECHNOLOGY CO., LTD. | | | | |
| Input and output table ?入?出表 | | | | |
| JF100MKD1.80.01 | | | | |
| ?? | ?数 | 更改文件号 | ?名 | 日期 |
| ?? | | | ?核 | |
| 校? | | | 批准 | |
| ?准化 | | | S | |
| 工? | | 日期 | 共 1 ? | 第 1 ? |



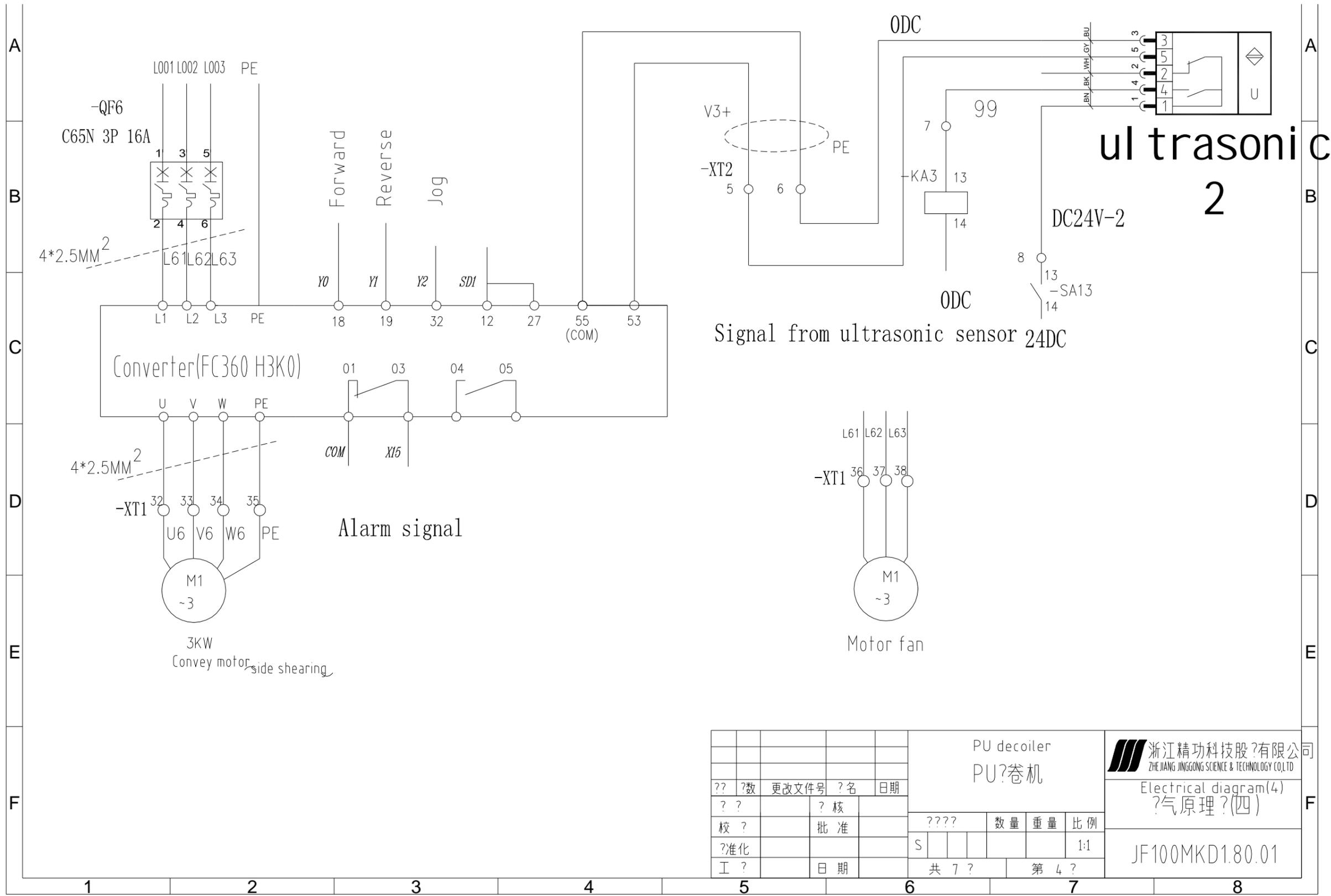
| | | | | | | | |
|-----|----|-------|----|-------------|-------|----------|--|
| | | | | PU decoiler | | | 浙江精工科技股份有限公司 ZHEJIANG JINGGONG SCIENCE & TECHNOLOGY CO., LTD. |
| | | | | PU?卷机 | | | |
| ?? | ?数 | 更改文件号 | ?名 | 日期 | | | Electrical diagram(1) |
| ?? | | | ?核 | | ???? | 数量 重量 比例 | ?气原理?(一) |
| 校? | | | 批准 | | S | | 1:1 |
| ?准化 | | | | | | | JF100MKD1.80.01 |
| 工? | | | 日期 | | 共 7 ? | 第 1 ? | |

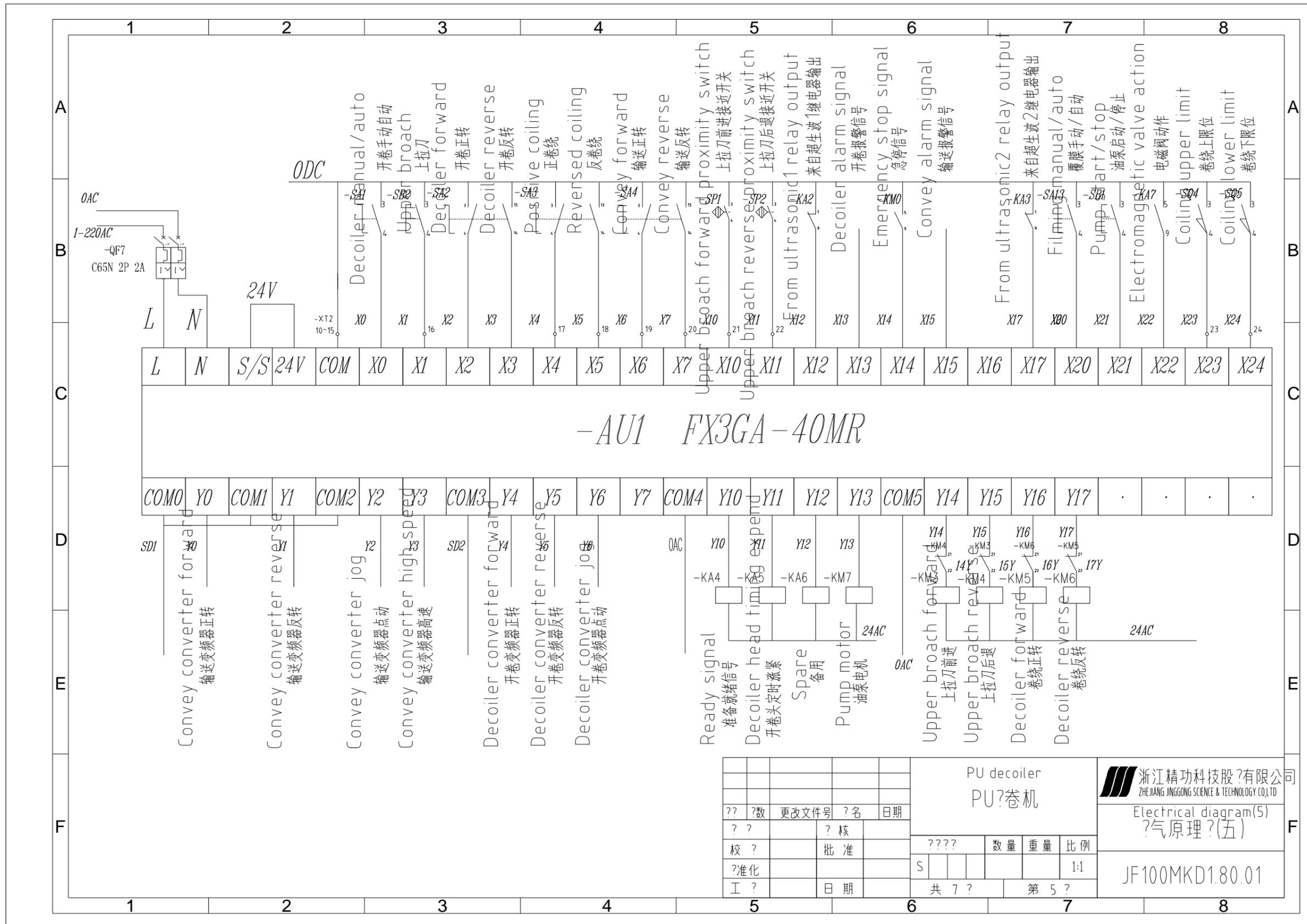


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|----|---|-------|----|----|-------------|----|-------|--|
| | | | | | PU decoiler | | | 浙江精工科技股份有限公司 ZHEJIANG JINGGONG SCIENCE & TECHNOLOGY CO., LTD. |
| | | | | | PU?卷机 | | | |
| ?? | 数 | 更改文件号 | 名 | 日期 | ???? | 数量 | 重量 | 比例 |
| ?? | | | 核 | | | | | 1:1 |
| 校 | ? | | 批准 | | S | | | |
| 准化 | | | | | | | | |
| 工 | ? | | 日期 | | 共 7 ? | | 第 2 ? | |

Electrical diagram(2)
?气原理?(二)

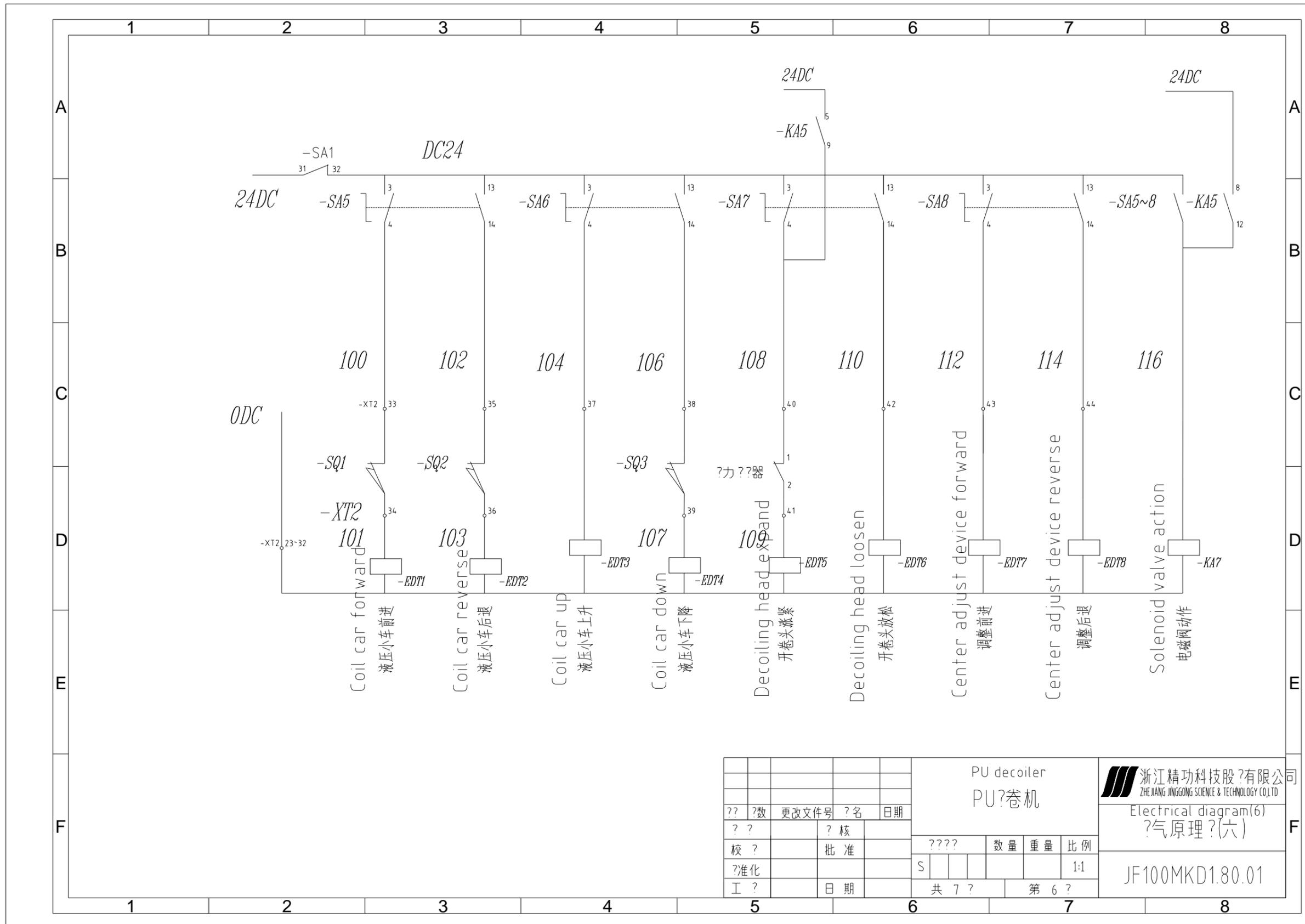
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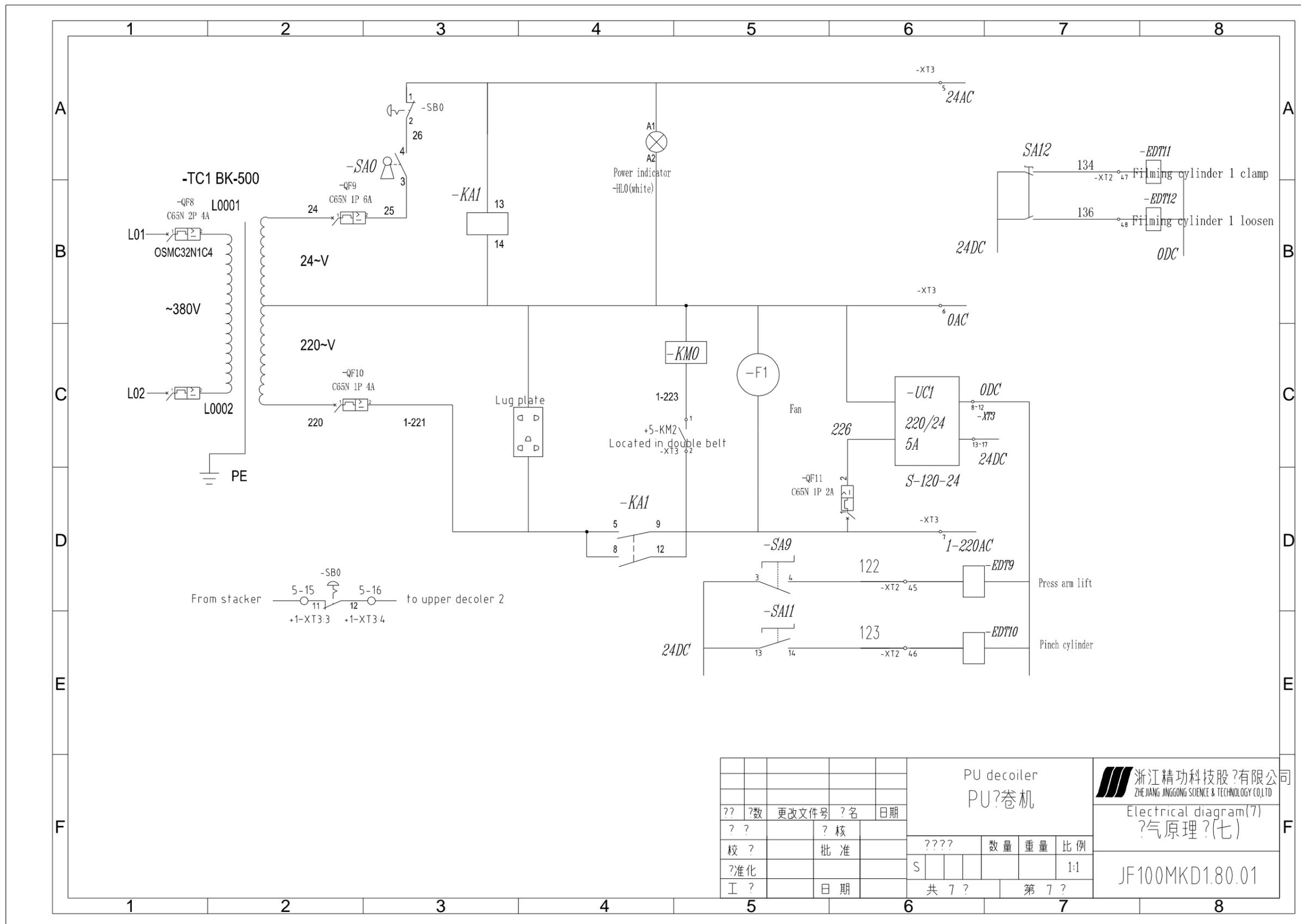




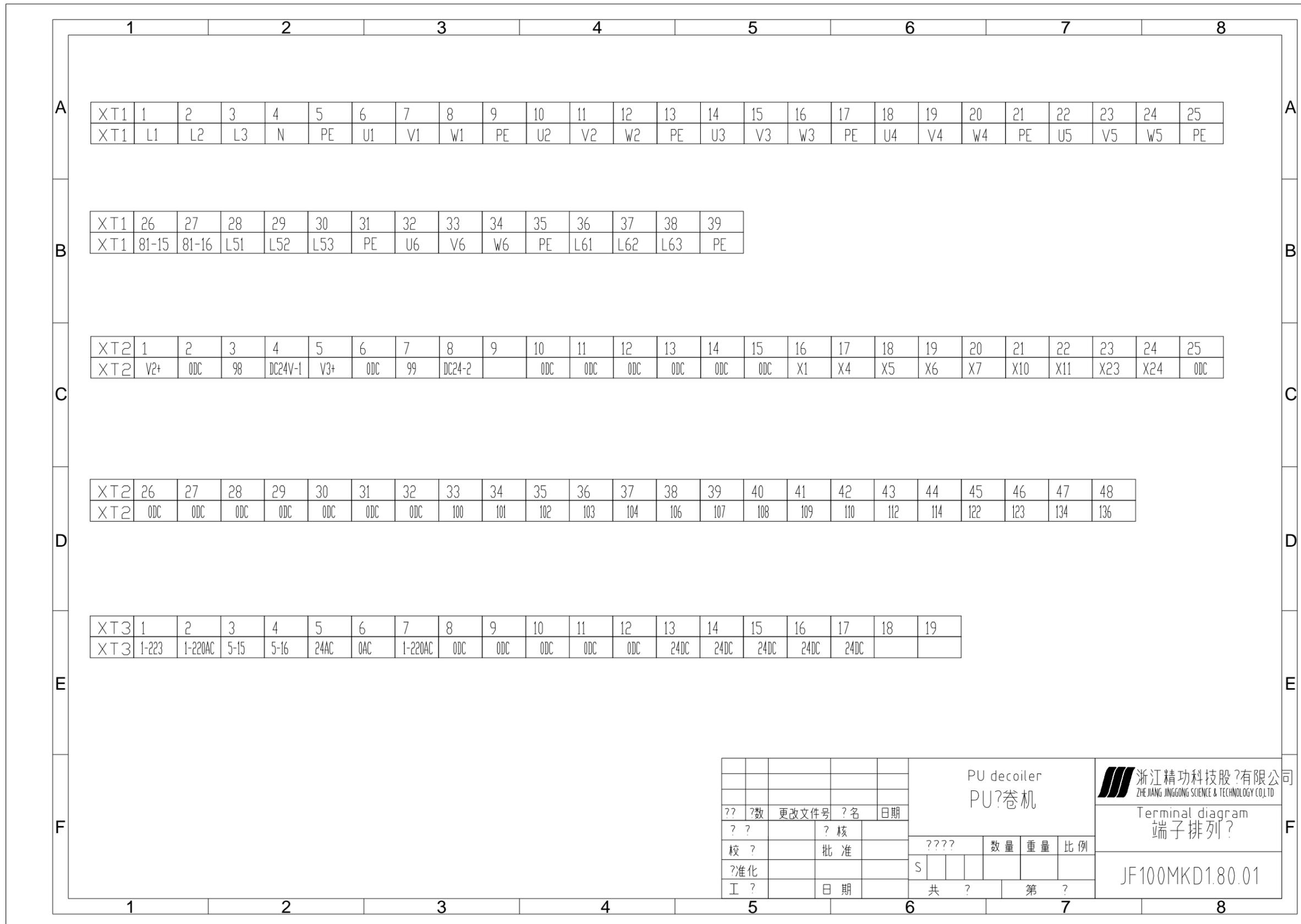
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| PU decoiler PU卷机 | | | | 浙江精工科技股份有限公司 ZHEJIANG JINGGONG SCIENCE & TECHNOLOGY CO., LTD. | | | |
| ?? ?数 更改文件号 ?名 日期 | | | | Electrical diagram(5) 气原理?(五) | | | |
| ?? ?核 | | 批准 | | ???? | | 数量 重量 比例 | |
| ?准化 | | 日期 | | S | | 1:1 | |
| 工 ? | | | | 共 7 ? | | 第 5 ? | |

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| | | | | | | | | | |
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| | | | | PU decoiler | | | | 浙江精工科技股份有限公司 | |
| | | | | PU卷机 | | | | ZHEJIANG JINGGONG SCIENCE & TECHNOLOGY CO., LTD. | |
| ?? | ?? | 更改文件号 | ?? | ?? | ?? | ?? | ?? | Electrical diagram(7) | |
| ?? | ?? | | ?? | 核 | | | | 气原理?(七) | |
| 校 | ?? | | 批 | 准 | | 数量 | 重量 | 比例 | |
| ?? | 准 | | | | | S | | 1:1 | |
| 工 | ?? | | 日 | 期 | | 共 7 ? | 第 7 ? | JF100MKD1.80.01 | |



6 Lower decoiler

6.1 Mechanical description

Except the electrical parts, the rest take reference on the upper decoiler.

6.2 Eletrical description

6.2.1 Basic operation

Turning on the total switch on the electric apparatus case first the indicator lamp of faceplate will operate:

Start the main power of the DBL, if the main power of DBL did not start, turn the key switch "on" position, you can start the power and operate the machine by separately.

Turn the manual / automatic switch to manually, start the pump, the pump indicator light can be carried out following steps:

1. Operate the button of functional block on the faceplate, can control and move the coil car inside and outside, rise and reduce.
 - 1)、Move inside: the knob move inside position .oil pump will start .the indicator light of oil pump will show ,the coil car begin to move ,and favor uncoil frame .loose knob or touch inside move switch ,the oil pump will stop. the coil car will stop move inside.
 - 2)、Move outside: the knob move outside position, oil pump start, and the coil car move outside, loose knob or touch the outside move switch, the oil pump will stop, and the coil car will stop move outside.
 - 3)、Rise: turn the button on the hoist position, oil pump start, the coil car will rise, loose knob. oil pump stop, coil car stop rise. (notice: the coil car have no limit place switch, it must prevent too high)
 - 4)、Fall: the button in the fall position, oil pump start, coil car begin to fall, loose knob or fall the fall switch, oil pump stop, coil car stop fall.
2. Through the button of uncoil frame function key on the operate faceplate, it can control positive turn, reversal, loose tighten, center adjust of uncoil frame and roll forming machine, and the loose ,tighten, the center adjusting between the decoiler and roll forming machine.
 - 1)、Uncoil frame positive turn: the button in the positive turn ,the oil pump start, the uncoil frame begin to positive turn, loose the button. the oil pump will stop, the uncoil frame

stop operate。

- 2)、 Reversal of uncoil frame: the knob in the reversal position, oil pump start, the uncoil frame begin to reversal, loose knob, oil pump stop, uncoil frame will stop operate.
 - 3)、 The tighten of uncoil frame: the knob in the tighten position, the oil pump begin to tighten, knob move middle or tight the press (press relay act), the oil pump stop, uncoil frame will stop tighten.
 - 4)、 Uncoil frame loose: hold the knob move loose position, oil pump start ,uncoil frame begin to loose ,loose knob, oil pump stop., uncoil frame stop tighten.
 - 5)、 Center adjusting for decoiler: Turn the center adjusting button to Move inside(move outside) position, it can adjust the decoiler from inside(outside).
3. If in the manual position, through operates the button of cover film cutting function on the face board, it can control cover film roller compact and loose. Pull knife reversal and positive turn, board advance and back, and the board cutting.
- 1)、 cover film roller tighten (loose): the button of cover film roller in the tighten(loose)position, the cover film roller is tighten(loose).
 - 2)、 Pull knife reversal ,positive turn: enable the button in the reversal position, it cutting rightwards(the position of person is accord to the way of come the plate, touch the right limit place is stop; the button in the positive turn position, pull knife cut leftwards, touch left stop.
 - 3)、 The advance and backpedal of board: the knob in the advance position, pull board motor positive turn, steel advance ; the knob in the backpedal position, pull board motor is reversal, the steel backpedal.

6.3.1 Normal trouble and resolve of electric:

| Trouble phenomena | Examine point | Resolve |
|---|---|--|
| Indicator lamp of trouble is bright, can not any operation. | 1. urgent stop press 2. switch clique of oil pump motor 3. Don't start the main power | 1. the button of clockwise rotation, enable urgent stop loose. 2. Inspects the electrical machinery whether overloads , does not have the overload, close |

| | | |
|--|--|--|
| | | the switch 3. Start the main power |
| Decoil frame can not tighten | 1. Whether the pressure relay does damage 2. Electromagnetism clique is stifled. | 1. Change pressure relay 2. Clean or change the electromagnetism clique |
| Coil car can not go down | 1. Fall the damage of the limit place switch 2. Electromagnetism clique is stifled. | 1. Change the limit place switch 2. Wash or change electromagnetism clique. |
| Coil car can not move inside and outside | 1. Damage of in (out) move limit place switch 2. Electromagnetism clique is stifled | 1. Change the limit place switch 1. wash or change electromagnetism clique |

6.3.2 Notice and operate regulations

6.3.2.1 Notice

1. Before opening machine, you should inspect the machine that the electricity, the fluid, the gas various systems, they are whether normal, the source of gas whether achieved the predetermined pressure, confirms then opening machine.
2. Regular (a week) to bearing, guide rail, tail of wild goose groove, chain wheel lubrication and inspection attrition situation, if wears seriously, adjust the clearance in time, Is unable to adjust should replace immediately.
3. This equipment uses AC400V the three-phase 50HZ power source power, the pressure of control line is AC/DC24V, the pressure of indicating lamp is 24V, The user may carries on the maintenance according to the electrical schematic diagram and the table.
4. This equipment must reliably earth.
5. All electrical components must maintain cleanly, to its is regularly clean and

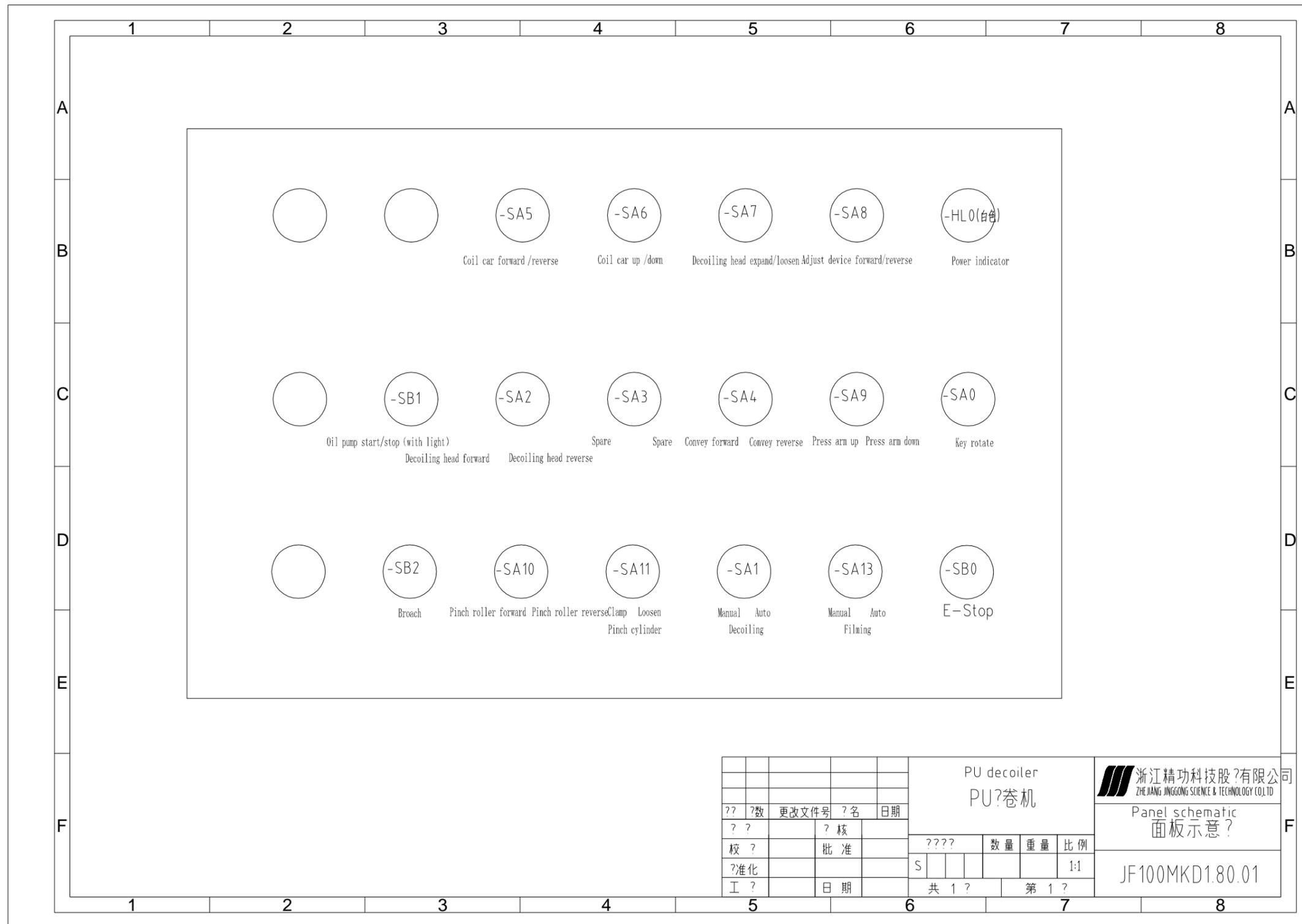
inspects various electric appliances part the insulation and the connection tight situation..

6. Stop work, should cause to rise and fall coil car to return to the original place, means the rise and fall coil car under the uncoil frame, prohibit coil car park on the corridor.
7. If the equipment has the trouble, must carry on the repair by the specialized technical personnel.

6.3.2.2 Operate regulations

1. The coil car moved the outside of decoiler.
2. Put the steel roll in the coil car, Avoids attacking as far as possible
3. Make the coil car move inside, and near the uncoil frame.
4. Make the core axes of uncoil frame loose.
5. Elevates the coil car, enable the axes of steel and center line of decoil, then coil car move inside, until roll of steel perch (meet journey switch) .
6. Open tighten switch, it make the uncoil frame tighten.
7. Fall coil car, Enable it to return to the initial position.
8. Through adjust switch, aim at decoiler and mainframe.
9. Use the uncoil frame positive turn, enable the steel board deliver the product line.
10. The board come , stop positive turn, and open, cooling, enter into normal product.

Lower decoiler electrical diagram



7. Filming and Cutting

7.1 Introduction

The coating cutting device is used to the panel production line of the steel building, lie in the front of the production line. This equipment achieve the steel coating、steel pulling、cutting and so on , use extensively, it is simple and convenient to operate.

7.1.1 Usage

The coating cutting device is collect of the machinery, electricity and gas integrative products .It can make the panel coating、steel pulling、cutting and so on action.

The film device affix the film on the flat plate, avoid the lacquer is damnify. The cutting device it use the change specification. In the work time, in the celerity roller, hive suitable plate in the front of the press equipment, when this plate in the roll forming machine, the plate of cutting device is quiescence, the cutter drive with the motor decelerate motor, snap plate celerity.

7.1.2 Features

- (1) Simple structure、beautiful appearance, the load is strong, operate is steady and reliable, use extensively.
- (2) The maintenance is simple and convenient, the operate charge is low.
- (3) Reasonable adjust framework, it can adjust the coating and steel position, satisfy the production line demand.
- (4) The coating feeding operate is simple and convenient, adjust the coating position (parallel with the steel、adjust center) the process is simple and convenient.
- (5) It can adjust the coating resistance, it make the coating tighten, agglutinate with the steel, can not product the big alveoli.
- (6) In the production line , it can cutting along with the dolly, it have high efficiency.
- (7) Make the coating device and the cutting device together ,coating cutting along with the panel.
- (8) The electric is adopt the PLC control, on the safe side, operate simple.

7.2 Main technical parameters

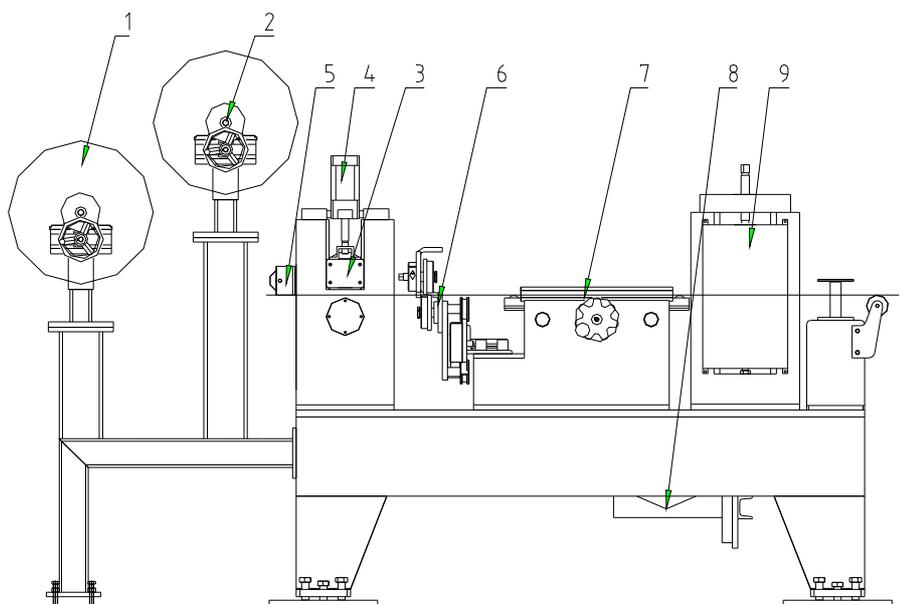
Filming coil outer diameter: Φ 250mm

Coil inner diameter: Φ 75mm

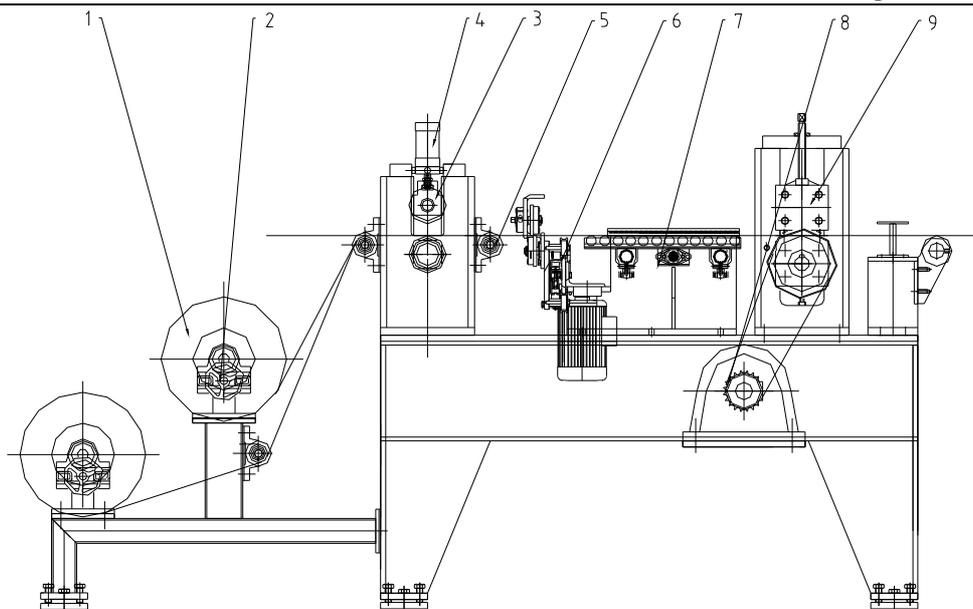
| | |
|----------------------------|----------------|
| Broach motor power: | 0.75 kw |
| Broach speed: | About 45 m/min |
| Effect cutting width: | 1250mm |
| Driven roll motor power: | 1.5 kw |
| Driven roll feeding speed: | About 20 m/min |

7.3 Main frame features

As drawing(1), after the thin steel enter, through 4 (cylinder) rise、fall to control the coating. When cutting the steel, 5 (decelerate motor) working n seconds, the steel sheet go through 7 (guider) ,6 (cutting device) cutting the panel, 9 (rubber roller) ,In this way, it finish the cutting task.



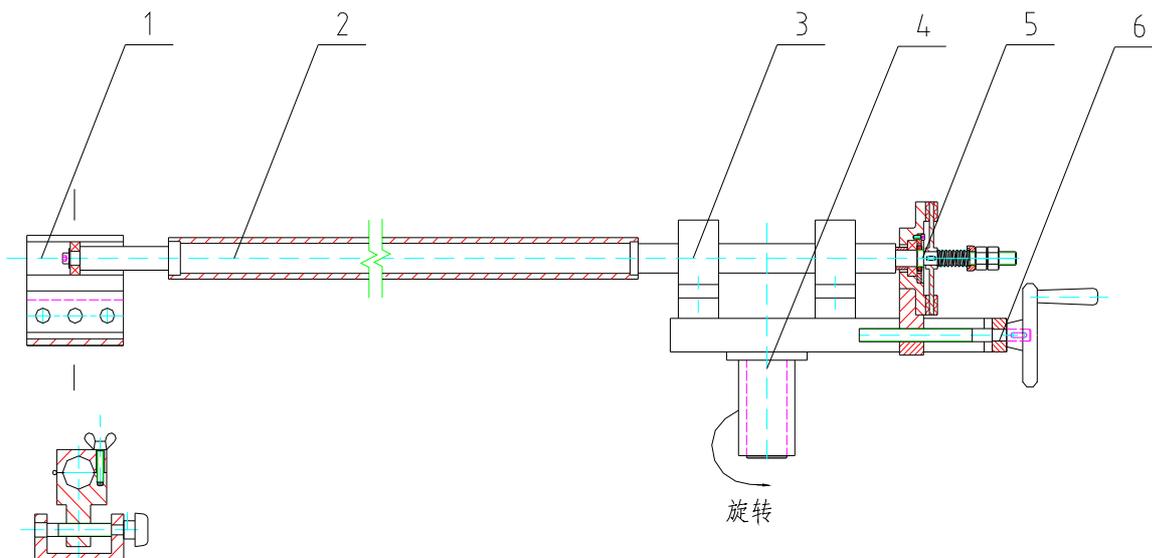
Drawing (1) Upper filming cutting device



Lower filming cutting device

- 1、 Film shaft 2、 Adjusting mechanism 3、 Film rubber roller 4、 Cylinder**
5、 Support roller
6、 Cutting device 7、 Guide device 8、 Drive reducer motor 9、 Draging robber roller

(1) Adjusting mechanism as drawing (2) , when film feeding, through 4 (rotate shaft) rotate 2 (film shaft) , through 1 (longitudinal adjust seat) can adjust the film position easily, satisfy the production requirement. Through 5 (resistance adjust seat) adjust the friction, it can adjust the film resistance, make the film tighten, agglutinate with steel , can not product the big alveoli.



Drawing (2) adjusting mechanism

-
- 1、Longitudinal adjust seat 2、Film shaft 3、Level adjust seat
4、Rotate shaft 5、Resistance adjust seat 6、Trace adjustment device

7.4 Pneumatic control parts

Note the following:

- 1、Compressor pressure should be stable and filter water.
- 2、The air pressure should be not less than 0.7Mpa, the air flow should be not less than 0.5m³/s;
- 3、Oil mist lubrication recommended L-FC32 oil, often check the oil, in order to avoid bad lubrication, should be combined with in time after using.

Pneumatic drawing see the attachment

Pressure roller cylinder group.
φ50/G3/8"

| | | | | |
|----|------------------------|----------------|-----|--------|
| 8 | One-way throttle valve | AS3201F-03-08S | 4 | SMC |
| 7 | Fast-plug connectors | KQ2T08-00A | 2 | SMC |
| 6 | Fast-plug connectors | KQ2H08-02AS | 2 | SMC |
| 5 | Hand rotary valve | VH210-02 | 1 | SMC |
| 4 | silencer | AN20-02 | 1 | SMC |
| 3 | Fast-plug connectors | KQ2L08-02AS | 2 | SMC |
| 2 | Air source treatment | AC20A-02G-A | 1 | SMC |
| 1 | Fast-plug connectors | KQ2L10-02AS | 1 | SMC |
| No | Name | Model | Qty | Remark |

| | | | | | | | |
|----------|------|-------|-----------|-------|-------------|------------------------|--|
| | | | | | | <p>Film and cutter</p> | <p>浙江精工科技股份有限公司 ZHEJIANG JINGGONG SCIENCE & TECHNOLOGY CO., LTD.</p> |
| 借(通)用件登? | 存?代号 | 旧底??号 | 底??号 | ?? ?数 | 更改文件号 ?名 日期 | | |
| ? | ? | ? | ? | ? | ? | ???? | 数量 重量 比例 |
| 日期 | ? | ? | ? | ? | ? | S | 1 1:1 |
| | 工? | 日期 | 2017.10.9 | 共 ? | 第 ? | JF100G15.90.02 | |

7.5 Install and debugging

- (1) Use sophisticated horizontal Gradienter for adjusting vertical and leveling to ensure that the level of the rubber roller not more than 0.2/1000mm, repeated correction after fastening.
- (2) Connected the power source.
- (3) Observe each of drive position whether has the foreign body, if have should clean it and get ready to enter the testing.
- (4) Respectively move for all cylinders, motor, to observe the action whether match with the requirements.
- (5) After everything is ok, repeated operate 2-3 hours under no-load state, running machine, and check the operate functioning.
- (6) To ensure no exceptional then can operate the next step.

7.6 Operate rules

1. The manual /automatic button beat the manual position, through the button of the film cutting function, it can control the film tighten, loose, the cutter reverse、 forward, the panel advance、 backpedal, panel cutting.
 - 1)、 the film tighten(loose): film roller button press the tighten(loose)position, the film roller is tighten(loose).
 - 2)、 cutter reverse and forward: hold the cutter reverse /forward rotate button press the reverse position, the cutter rightward cutting (person position and the come panel direction is identical), meet the right limit stop; hold the button press the forward position, cutter leftward cutting, meet the left limit stop.
 - 3)、 panel advance、 backpedal: hold the panel advance /backoedak button press the advance position, the panel motor forward, the steel advance,hold the button press the backpaedal position, the panel motor reverse, the steel backpedal.
 - 4)、 panel cutting: press the cutting button, at first the film roller 1、 2tighten automatically, then the cutter rightward cutting, meet the right limit stop, delay 1 second, cutter leftward cutting return, meet left limit stop, the film roller 2 uplift.
2. The production line in the automatic operate, it must hold the button press the munaul position, this time press the advance position, the decoiler frame begin to forward and the plate motor will forward, the steel will advance, when the steel about the 1m ,please press the cutting button, that is OK.

3. When film canister feeding, through the rotate shaft rotate the film shaft at first, put the film shaft into the film canister, rotate film shaft reset, adjust the up ,down ,left ,right position of the film canister, after the steel fit into the press equipment, then adhibit the film, and adjust the film canister position, the operate is very simple。
4. The cutter working too long (about three months), the cutter will grow blunt, after that the steel will make a lot of burr, this time must change the new cutter。

8. Roll forming machine

8.1 Introduction

This PU sandwich panel production line is a general equipment for steel structure building, it is widely used and the operation is simple and convenient.

This roll forming system consists of upper roll former, lower roll former, the upper and lower interface conveyor which connected to the roll former and pre-heat oven and the electrical control device.

8.2 Main technical parameters

8.2.1、 The PU panel specifications: (See the profile drawings)

8.2.2、 The reducer motor model and specification:

a、 Upper roll former reducer motor model: R87DV100L4 2pcs

Power: 3KW Output speed: 22 turn/min Reduction ratio:63.68

b、 Lower roll former reducer motor model: R87DV100L4 3pcs

Power: 3KW Output speed: 22 turn/min Reduction ratio :63.68

8.2.3、 The dimension of the roll forming machine:

a、 Upper roll former dimension: 9700 mm×1700 mm×1300 mm (long×width×high)

b、 Lower roll former dimension: 18000 mm×1800 mm×1500 mm (long×width×high) (not include the guid rail and corridor)

8.2.4、 Forming speed: 2~10m/min (adjustable)

8.3 Fundamental structure and working principal

8.3.1 Feeding of the panel

The material of the upper roll forming machine is feeding by decoiler on the PU sandwich panel line, in the working time, put the steel push into the roll by hand , it will turn with the roll then enter into the roll forming

When the board enter into the roll, look at guide position of the board side ,it is uniformity or not, if it is not uniformity, it should adjust the guide position and fix position of the steel on the decoiler, until uniformity, and tighten the steel on the decoiler.

8.3.3 Forming of the machine

a、 Sheet material

The panel is use colored steel of 0.35~0.7 mm thickness Q550A. The length is according to the request and transport condition to setting, the color in according to the standard of steel factory. (Each index of steel according to the standard request of steel Q/BGB440-94) .If the user choice the different material to product, before chose the PU sandwich panel line, tell the seller in advance, because the material of panel influence the quality of the panel. If the panel like this, the seller reject take any responsibility.

b、 The key point of the forming——Roller group

The roller group on the equipment is adopt CAD design, use the high grade type 45 steel , the exterior is plating hard chrome, have the good clean of the exterior. The roller is adopt high grade type 45steel deal with , capability of the integrate structure is good, that ensure the panel is stabilization.

8.4 Installation, debugging

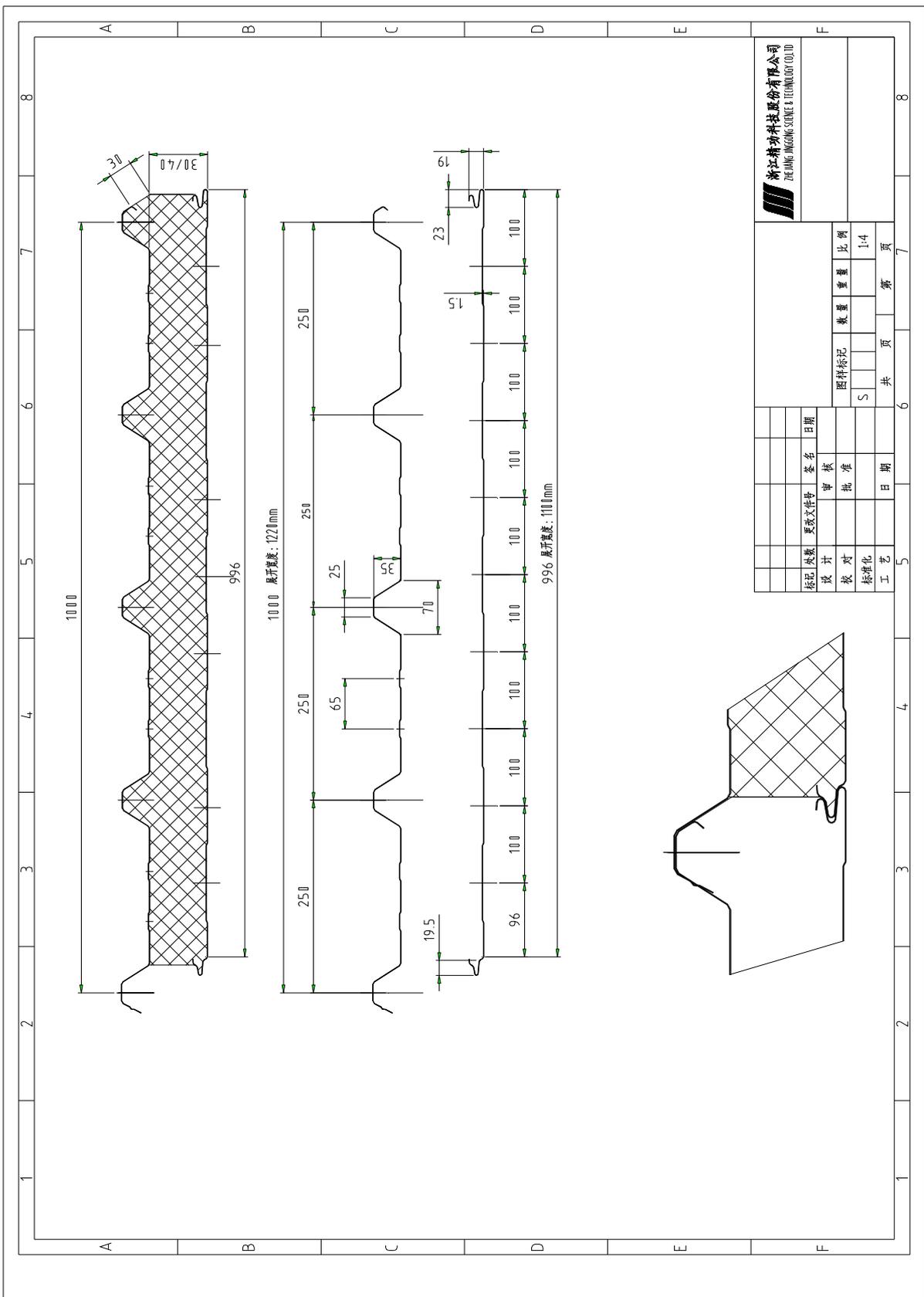
- 1、 Before fixing please check the parts of the product.
- 2、 Before the feeding of the colored steel sheet into the roller, adjust the space between the upper roller and lower roller, first make the lower roller leveled, then line up the two rollers and then adjust the space between the upper and lower roller to be the thickness of the sheet plus 0.25mm. If the finished panel has ripples, widen the space between the two rollers until the sheets turned out to be flat. (The space is usually adjusted before the machine leaves the factory).
- 3、 Notice before operate this machine please closed the door of the defend rail, not put the hand into the roll group, avoid the accident.
- 4、 Before product, it should add the lubricating oil to the drive equipment and the feeding place, reduce the fray, and add the oil between the chain and the gear, the decelerate machine add the oil about half month.
- 5、 This equipment must be ground connected separately.
- 6、 All the electric element and machine parts must keep clean, and cleaning each

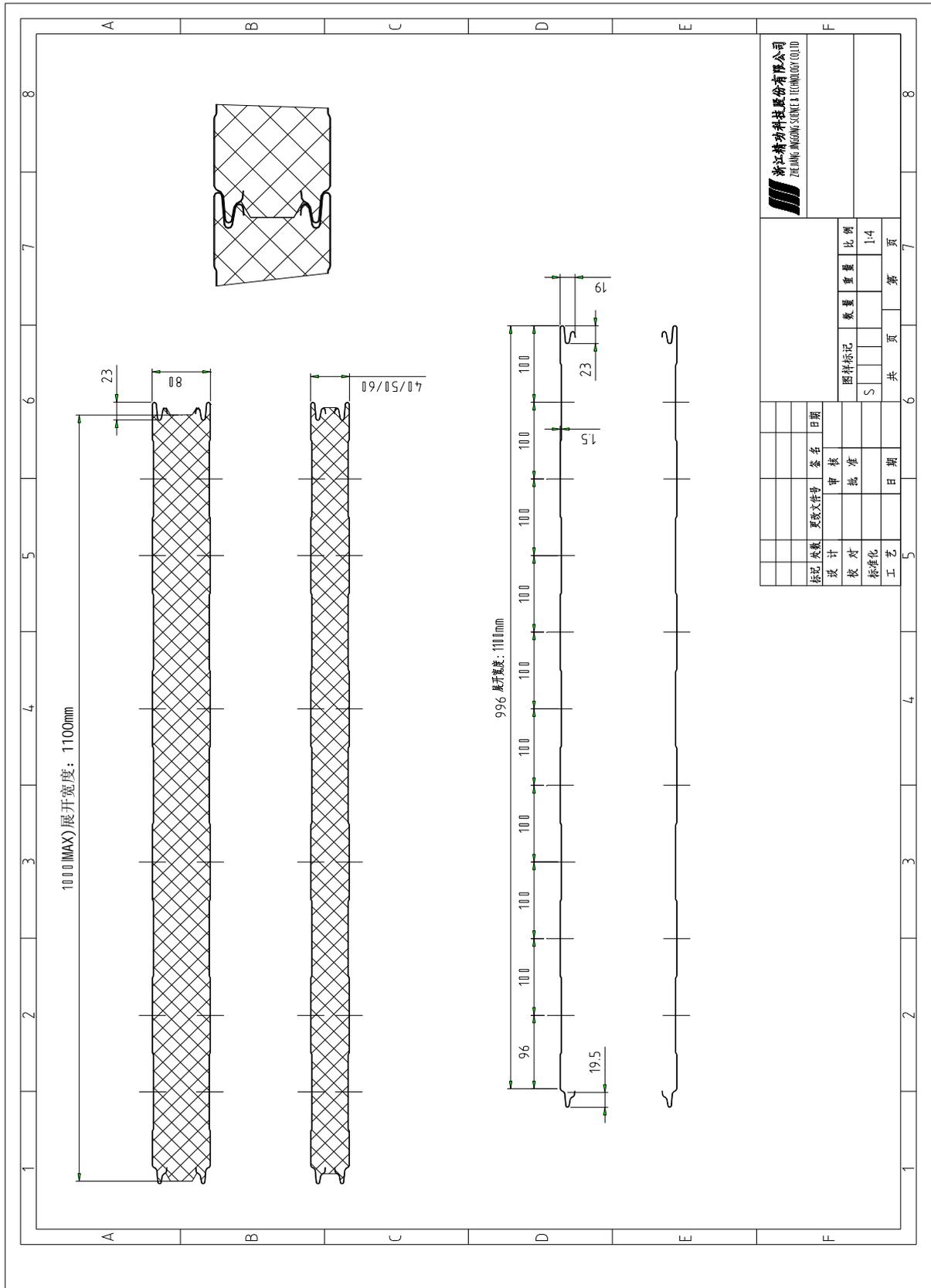
month

8.5 Lifting, transportation and safe

This machine is certified eligible and permitted to be delivered。 In the load and unload process, it must adopt the hang tools ,for example drive a vehicle, the hangs or other hanging machines。 Use the firm cord hitch two side of the frame, like that it can safe hang ,and easy to load and transport。 Under the hang machine can not stand the person, it prevent the problem。 And in the transport process, it should use the flexible material to protect the exterior, put the machine and the fittings should fastness、 safe、 tidiness, avoid knock exterior in the transport process.

Profile drawings:





| | | | | | | |
|---|----|------|----|---------|----|-----|
| 浙江精工科技股份有限公司 ZHEJIANG JINGGONG SCIENCE & TECHNOLOGY CO.,LTD. | | 图样标记 | | 数量 | 重量 | 比例 |
| 设计 | 校对 | 审核 | 批准 | S | | 1:4 |
| 更改文件号 | 签名 | 日期 | 日期 | 共 页 第 页 | | |
| 日期 | 日期 | 日期 | 日期 | 共 页 第 页 | | |

8.6 Electrical control operate system

8.6.1 Function introduction

(1) Emergency stop: When meeting an emergency, can press the stop button, the device will stop and ensure equipment and personal safety. This equipment is a part of the whole production line, do not press stop button if there is no emergency, it will cause unnecessary losses.

(2) Power indicator: indicate the external power supply is normal or not:

(3) Upper roll former manual/auto: in manual mode, can be manually controlled on the roll former; in auto mode, the automatic indicator lighted, allows the upper roll former to run automatically.

(4) Lower roll former manual/auto: in manual mode, can be manually controlled on the roll former; in auto mode, the automatic indicator lighted, allows the Lower roll former to run automatically.

8.6.2 Electrical common faults and processing methods

| No. | The fault phenomenon | Failure analysis | Solution |
|-----|---|---|---|
| 1 | In manual mode, the machine doesn't work. | 1.The inverter alarm 2.The buttons have been damaged 4. Wire connection loose. | 1.Turn on the power again after one minute 2.Change the buttons 4. Reconnect the wire. |
| 2 | In auto mode, the machine doesn't work. | 1. The production line is not in auto mode. 2. D/A module damaged. 3. There is no start signal 4. Wire connection loose. | 1. Start the auto mode. 2. Change D/A module 3. Check PLC output Y35、 Y36 4. Reconnect the wire. |

8.6.3 Notes:

- 1) The equipment must be reliable grounding connected.
- 2) Before starting the machine should check the electric system is normal or not.
- 3) This equipment adopts AC400V three-phase 50Hz power supply, the control circuit is AC24V.
- 4) All electrical components must be kept clean, regular cleaning and checking all the insulation of the electrical components and connections.

8.7 Lower roll former separate cutting

8.7.1 Operating introduction

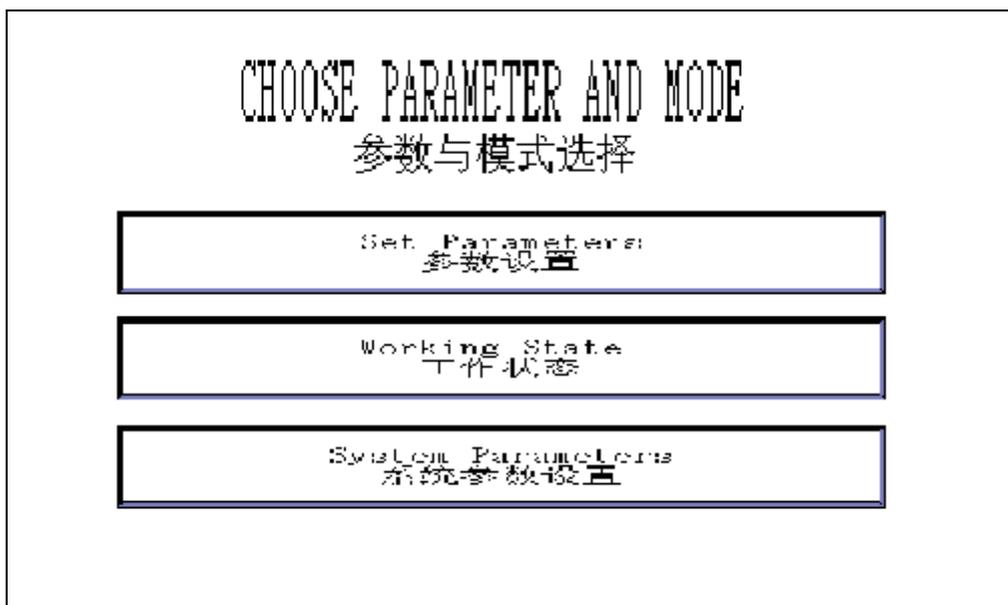
a) Operating step:

Close all air switches, turn the key switch to “open” condition, the power indicator lamp light. The screen will appear the drawing 6.(This equipment is in Chinese/English)



Drawing 6

Press the “continue”, it will appear the drawing 7.



Drawing 7

1. Manual operation

Turn the “manual/automatic” switch to “manual”, after press “pump start” and the oil pump starts, you can operate “manual cut”, “reset”, “main motor forward”, “main motor JOG+”, “main motor JOG-” and “main motor stop” buttons.

2. Automatic operation

In drawing 7, press “set parameters”, it will appear the drawing 8.

| SET PARAMETER | | | |
|---------------|----------------|----|----------------|
| NO. | Set Length(长度) | | Set Blocks(块数) |
| 1 | 123456 | mm | 3456 |
| 2 | 123456 | mm | 3456 |
| 3 | 123456 | mm | 3456 |
| 4 | 123456 | mm | 3456 |

Next
下一页

Return
返回

Drawing 8

In this drawing, you can set the panel length and quantity. After press “Set Length”, and press the number button to input the panel length (unit: mm), and then press “ENT”. After finished set, you will exit; presses “Set blocks” , input the panel quantity, and then press “ENT” and back.

This machine can continuously produce 10 kinds of production with different specifications. According to your requirement, you can set 10 units different data. In drawing 8, press “next”, it will appear the drawing 9.

| NO. | Set Length(长度) | Set Blocks(块数) |
|-----|----------------|----------------|
| 5 | 123456 mm | 3456 |
| 6 | 123456 mm | 3456 |
| 7 | 123456 mm | 3456 |
| 8 | 123456 mm | 3456 |
| 9 | 123456 mm | 3456 |
| 10 | 123456 mm | 3456 |

Up
上页

Return
返回

Drawing 9

After 10 groups of parameters setting, press “return”, return to drawing 7.

Press“working state”, to drawing :

| MACHINE OPERATION | | |
|------------------------|-------|----|
| Required Blocks (设定块数) | 456 | |
| Actual Blocks (实际块数) | 456 | |
| Required Length (设定长度) | 23456 | mm |
| Actual Length (实际长度) | 23456 | mm |

Reverse
反转

Cutting
切断

Return
返回

Forward
正转

Drawing 10

In this screen will indicate the actual product length and the completed panel

quantity.。

Turn “manual/automatic” button to “automatic”, oil pump start, press “main motor forward” button, the machine will enter automatic work condition. If it needs to stop during automatic running, you can press “main motor stop” button. After it, press “main motor forward”, it will work continuously.

3. Length parameter revise:

In drawing 7, press“system parameters”, it will appear drawing 11, this is used to set the cutter blades thickness and slow down moving distance.

| SYSTEM PARAMETER | | |
|---|--------|----|
| Thickness Of Cutter (刀板厚度) | 456 | mm |
| Decelerating Position (减速距离) | 3456 | mm |
| Length Parameter D240 (长度修正参数D240) | 123456 | |
| <div style="border: 1px solid black; display: inline-block; padding: 5px 15px;">Return 返回</div> | | |

Drawing 11

If the produced panel length is different with the set length, you can change the “revising data” parameter, other parameters can not change.

The specific formula is following:

Theoretical length (set length)

$$D240 (new) = \frac{\text{Theoretical length (set length)}}{\text{Actual length}} \times D240 (old) \times 100\%$$

For example, when the set length = 3000mm, the actual length = 3009mm, then we have: D240 (new) = 3000/3009 × D240 (old) × 100%

D240 (old) is the data in the screen

D240 (new) is the data after calculation.

After setting the moving distance, make the frequency form high speed to low speed, it can make the accurate positioning.

8.7.2 Maintenance and safety

- 1) There should be an earth wire independently connected to the ground.
- 2) Keep cleans all the electric components. Clean them once a month.
- 3) Do not open the door of the electric box except for cleaning and adjustment.
- 4) While doing the monthly cleaning, check the insulation and connecting conditions of each electric component. Make sure there is no heat generation or oxidization.
- 5) The machine: AC400V/50HZ.controlling circuit: DC24V, 220V/50HZ, operating parts: AC24V, Please refer to electric principle drawing and table for maintenance.
- 6) Do not modify system parameter unless the operator is specialized in controlling system.
- 7) Once the system does not work properly, please send for specialized technicians or electricians for maintenance.

8.7.3 Common problems and disposal

| Problems | Checking Point | Disposal |
|--|---|---|
| The main motor doesn't work when working by manual | <ol style="list-style-type: none"> 1. The oil pump motor doesn't start 2. The key switch in "Stop" Position 3. The transducer alarming 4. The limit switch doesn't reach the upper limit position 5. Button spoilage | <ol style="list-style-type: none"> 1. Start the oil pump 2. Switch to " On" position 3. Cut off the power and restart after one minute 4. Let limit switch reach the upper limit position. 5. Replace button |
| Right in Manual, Wrong in Auto | <ol style="list-style-type: none"> 1. See if having set panel length and quantity 2. See if system's parameters have been cleared 3. See if the green indicating lamp of photoelectric encoder | <ol style="list-style-type: none"> 1. Set these parameters 2. Reset system's parameters 3. See if the output DC24V is normal and the connection wire is tight, or replace the photoelectric encoder |

| | | |
|---|---|---|
| | <p>is on, its X0. X1 of PLC input spots wink alternately</p> <ol style="list-style-type: none"> See if the upper limit switch of cutter reach the relative position and have signal, or to see if they have been spoiled | <ol style="list-style-type: none"> Adjust the limit position to make it has signal or replace limit switch |
| <p>The cutter doesn't work in manual operation</p> | <ol style="list-style-type: none"> If the start button is on If the button is break If the block touch the cutting upper limit The mini middle relay is broken. | <ol style="list-style-type: none"> Ensure the start button is on Replace the button Ensure the upper limit has signal Change middle relay |
| <p>The real length shown on the screen can't reach the set length in auto producing, and no cutting</p> | <ol style="list-style-type: none"> The loading is too heavy. The speed is too slow when in low speed running The brake speed is too fast when in high speed running | <ol style="list-style-type: none"> Reduce the loading Adjust the Pr6 parameter Adjust the Pr8 parameter |
| <p>POWER indicating lamp isn't light. (Programmable)</p> | <ol style="list-style-type: none"> Check whether the electric voltage is normal. Disconnect the end of programmable controller +24V The condition of fuse | <ol style="list-style-type: none"> Suitable voltage: 100~200V Using DC electricity supply the power Replace the fuse |
| <p>ERROR indicating lamp is light. (Programmable)</p> | <ol style="list-style-type: none"> Failure in controlling the work of CPU, or calculating cycle goes beyond the alarming constant set in D8000. See if there's abnormal noise, or there's foreign substance in the programmable controller. See if the condition of ground connection is suitable. | <ol style="list-style-type: none"> Make sure there's no foreign substance in the programmable controller. Connect the ground separately. |
| <p>Transducer displays E.OC 1</p> | <ol style="list-style-type: none"> See if the accelerating is too fast. Check the circuit and see if it's short circuit or connected to ground. | <p>Increase time for acceleration.</p> |

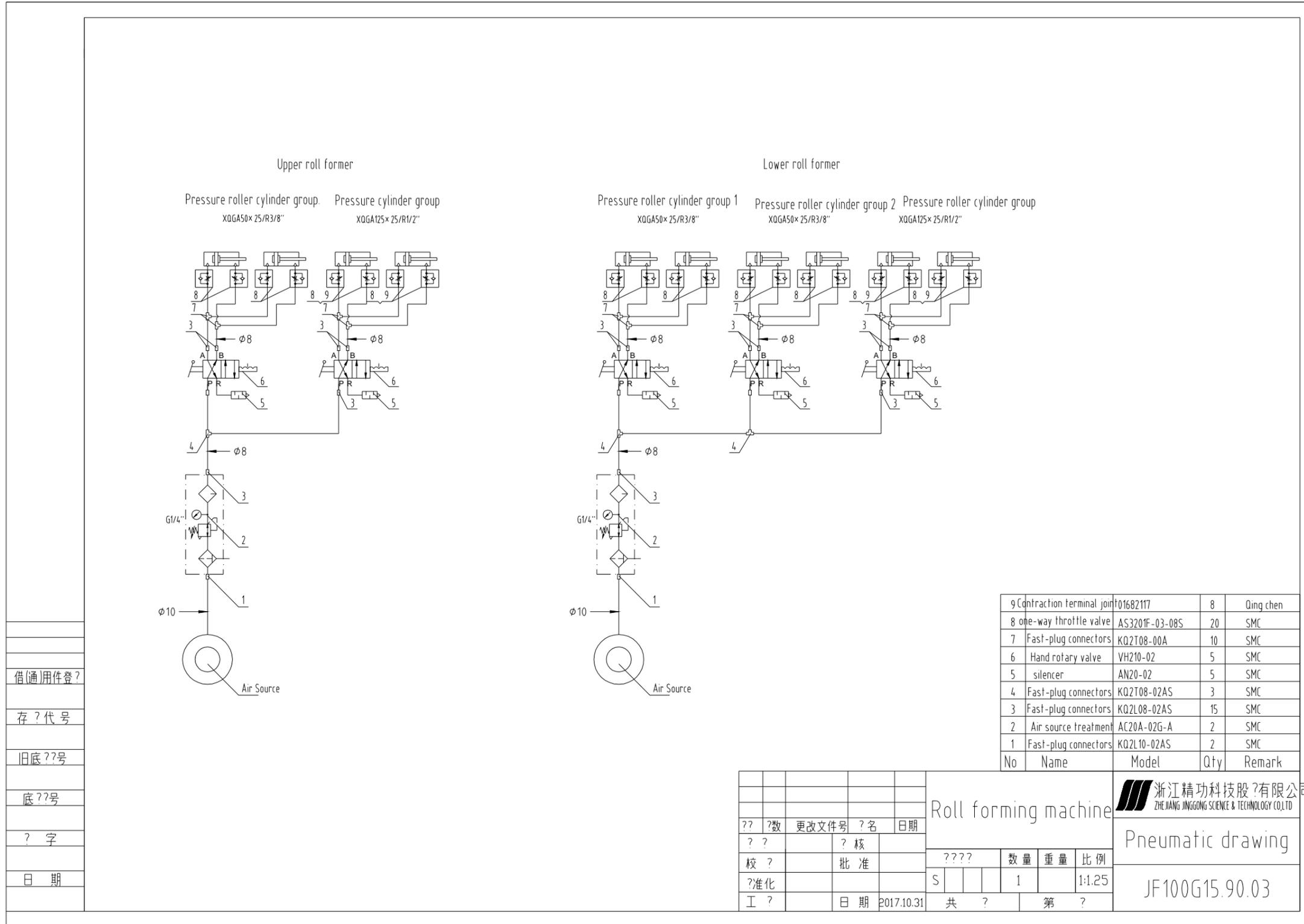
| | | |
|---|--|--|
| <p>Transducer displays E.OC 2</p> | <ol style="list-style-type: none"> 1. See if the charge has changed suddenly. 2. Check the circuit and see if it's short circuit or connected to ground. | <p>Keep the charge stable.</p> |
| <p>Transducer displays E.THM, E.THT</p> | <p>See if the motor is used with overcharge.</p> | <ol style="list-style-type: none"> 1. Decrease the charge. 2. Increase the capacity of transducer and motor. |
| <p>Transducer displays E.GF</p> | <p>See if the motor or cable has fault in connecting the ground.</p> | <p>Solve the problem of ground connection.</p> |

8.8 Pneumatic control parts

Note the following:

- 1、 Compressor pressure should be stable and filter water.
- 2、 The air pressure should be not less than 0.7Mpa, the air flow should be not less than 0.5m³/s;
- 3、 Oil mist lubrication recommended L-FC32 oil, often check the oil, in order to avoid bad lubrication, should be combined with in time after using.

Pneumatic system drawing see the attachment



8.9 Components for roll former hydraulic system

This hydraulic system consists of five components:

Power element:hydraulic pump and motor.

Execution element:hydraulic cylinder and motor.

Control element:Three four-way solenoid valves, hydraulic control one-way valve,speed control valve, etc.

Auxiliary component:Oil pipe, joint, oil tank,oil filter, pressure meter, etc.

Adopt 46# hydraulic oil, the system maximum pressure is 16Mpa.

Testing and note of the hydraulic system

(1) First check the hydraulic oil whether is enough, hydraulic oil filled to 80% of the fuel tank is appropriate, if less please fill it. Next check each connection place and installation place whether correct and fastening through the installation drawing.

(2) Start the oil pump motor, open the pressure gauge switch, adjust the stack overflow valve let the system pressure is 5 Mpa, check valve blocks, oil cylinder, oil pipes, joints whether there is a leak, if yes please tightened or replaced to no leakage. When the installing process, due to the hydraulic oil was full of in pipeline and cylinder that lead to the oil surface in the fuel tank drop, or due to leakage caused oil surface drop, it should be fill the hydraulic oil in time to avoid the oil pump suction air.

(3) Start the oil pump motor, adjust the stack overflow valve let the system pressure is 7 Mpa, run at no-load conditions about 10min, and check each of the electric solenoid whether is good, action whether is correct, if wrong please correct it timely. To ensure that no leakage of the hydraulic system and the action is normal.

(4) One year to replace hydraulic oil at a time, clean the fuel tank inside wall when replace the hydraulic oil, at the same time check the blockage degree of the oil filter be cleaned or replaced.

9. Foaming system accessories

Foaming system accessories mainly consists of sheet transition table, guiding device, etc.

9.1 Upper steel sheet skew roller

One end of upper steel sheet skew roller is fixed on the double belt, the support roller for the upper steel sheet can be raised and lowered in a certain range by adjusting screw rod, facilitate correction on the roller talbe flatness.

9.2 Upper steel sheet skew roller pressing device.

Pressing device is fixed on the upper steel sheet skew roller, press institution swing the press plate through the air cylinder, when the cylinder raise, the press plate loosen, the cylinder goes down, the press plate impact. When the upper steel sheet goes into the double belt, the press plate must impact the upper steel sheet.

9.3 Lower steel sheet horizontal roller

The frame of the Lower horizontal roller is composed of sectional material, it is easy for guide device, tape decoiler insallation. The height of the roller can be adjusted, to correct the level for the whole roller.

9.4 Upper and lower steel sheet guide device

The upper and lower guide device are installed on the upper and lower roller, for guiding the upper and lower steel sheets, make the sheet center and double belt consistent strictly. The guide devices are located on both sides of the roller, the height and width can be adjusted by screw rods, to satisfied the requirement of different profile and panel width.

9.5 Tape and sponge side seal device

Sponge side seal device located on both side of lower steel sheet horizontal roller, its mainly function is to feed into a certain height and width tape or sponge on the side of sandwich panel, to avoid the PU foam paste on the side moulds, and improve the sealing performance of the installed PU panel.

10. Double belt

10.1 Overview

10.1.1 Brief introduction

There have two forms in the PU sandwich panel line: concatenation product and non-concatenation product. In the concatenation product process, with the make sandwich panel to deal with. The double belt conveyor supply stabilizes and reasonable model to the different type panel, and transport the panel with high speed then enter into the cutting machine.

JF100G type PU sandwich panel line is consist of the three parts: material work equipment, insulate heat material product、shaped equipment, panel cutting、stow equipment. The double belt conveyor is consist of the upper and down steel belt, the two belt is consist of about 200 mm wheel plate, this wheel plate is a high strength system.

The solidify time of the insulated heat material(the time of panel rest on the double belt conveyor) is according to raw material and thickness of panel, the thickness of 50mm panel need about 2—3min.The user in according to the product speed and panel thickness to choice the length of the double belt conveyor.

The double belt conveyor have side belt on the each side, the speed is in-phase with speed of the upper and lower belt .the position of the two side belt is through frequency motor to take the four haulm, the device must operate convenient 、 precision is high.

10.1.2 Feature

- a. Rational structure、 beautiful appearance, the loading is strong, calm operate, science economic.
- b. It is simple and convenient to safeguard, the operation expenses are low.
- c. Rational adjustment organization, adopt the electric control hydraulic jack、the frequency conversion motor adjust the thickness ,width of sandwich panel , adjust convenient
- d. Finish machining the upper and lower steel belt, it is very smooth, especial double belt design, it enable the sandwich panel smooth, the thickness is uniformity and difficult to be out of shape.

e. The upper belt、 lower belt、 side belt of the double belt conveyor is adopt the frequency conversion vector technology, the speed is automatic adjust, keep the in-phase with the upper and lower belt.

f. The high precision control temperature system of the double belt conveyor enable the PU foam to froth and solidify is much stabilization, agglutinate the foam and the face of the panel is much fastness, it is reduce the fleck of the foam.

g. The electric adopt the PLC control , on the safe side, the operate is simple.

10.2 Main technical parameters

| | |
|--|--|
| Double belt Efficiency length: | 24 m |
| The height of lower belt: | 1200 mm |
| The width of the double belt: | 1300 mm |
| The stand-alone speed of the double belt: | 2-15 m/min |
| The distance of the upper and lower belt: | 10-370 mm (Without moulds) |
| Motor power of the main drive: | 2×11 kw |
| Hydraulic station motor power: | 7.5 kw |
| The temperature of the double belt: | About 45℃ (PU) , About 70℃ (PIR) |
| Rise temperature time of the chain board 20℃ to 45℃: | About 1~2 hours |
| Heating capacity: | 2×160000 Kcal/hour |
| Cycle air capacity: | 约2×12000 M ³ /hour |
| Power of the fan: | 7.5 kW×2 |
| The uniformity angle of the chain board: | ≤±4℃ |
| Power supply: | Three phases four line 415V 50HZ |
| The condition of the work environment: | The environment temperature≤40℃ Relative humidity≤85% No flammability、explode、corrosivity gas、dust |
| Side belt: | |
| a、 Side belt length: | 19 m |
| b、 Height adjust: | 200 mm |
| c、 Left and right width adjust: | 380 mm (≥75mm) 230(<75mm) |

d、Front and rear width adjust: 200 mm

e、Main motor power: 2×2.2 Kw

They type and specification of the reduce motor:

a、Double belt main drive reduce motor model: 310R4305FZP160B3RA/RO

Power: 11KW Output speed: 4.5 turn/min Reduction ratio: 305

b、Side belt main drive reduce motor model: 305L3 276HCP100 O

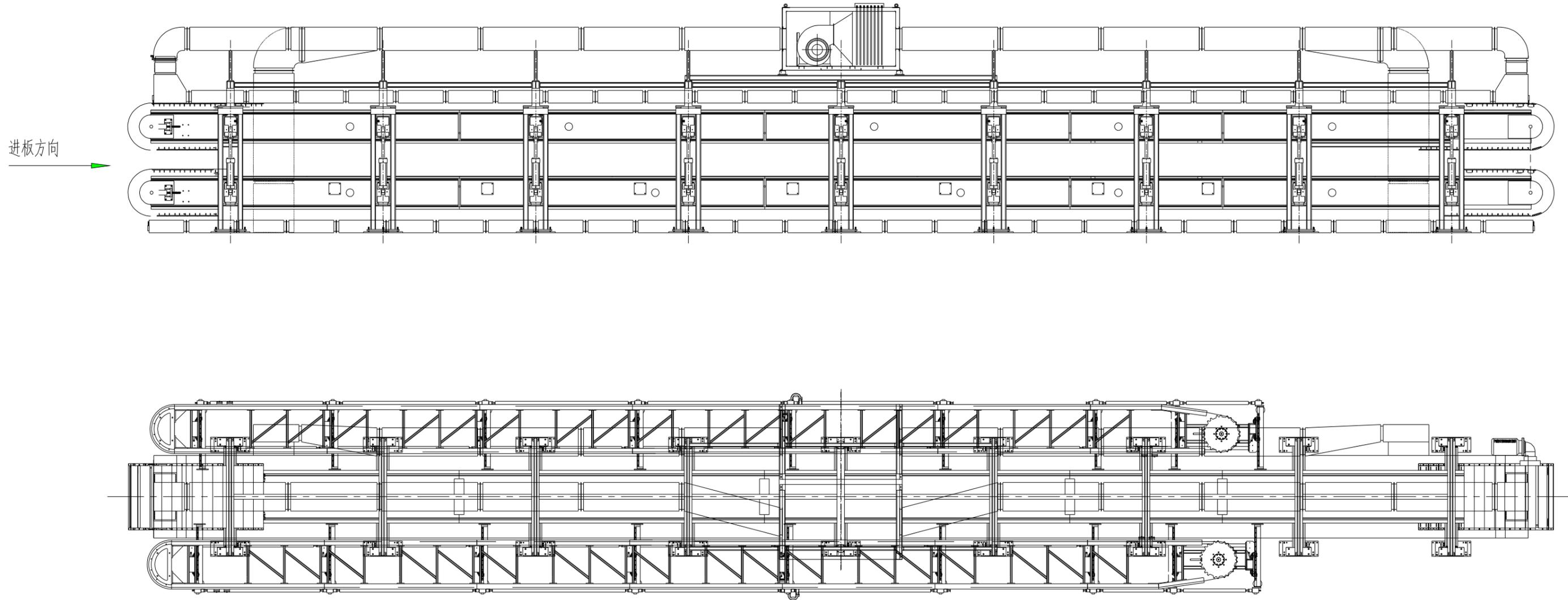
Power: 2.2KW Output speed: 5.1 turn/min Reduction ratio: 276

c、Side belt position adjust reduce motor model: WWJK6315DZV6(B8)

Power: 1.5KW Output speed: 97 turn/min Reduction ratio 15

The dimension of the double belt:

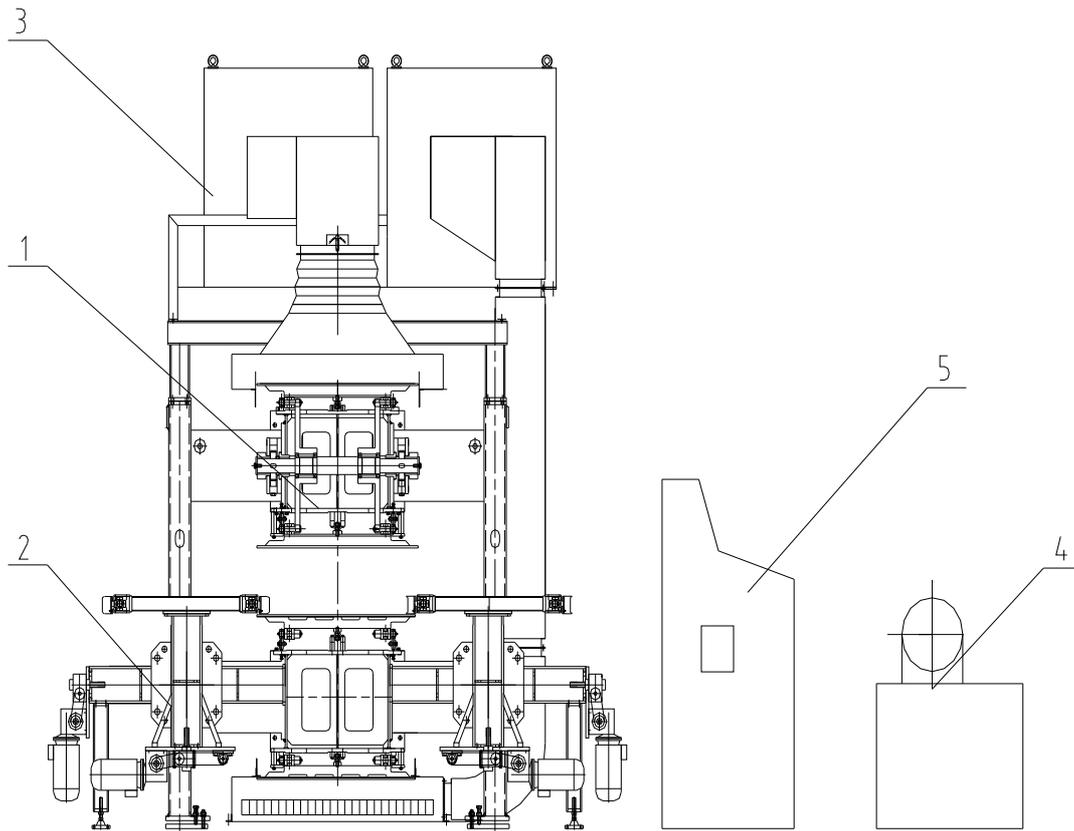
Length×width×height: About 25000 mm×3900 mm×2850 mm (not include heating system)



10.3 Basic structure

10.3.1 Basic compose of the equipment

The double belt conveyor of PU sandwich panel line is consist of the upper and lower belt 、 side belt、 electric control system、 hydraulic system、 temperature control system and so on.



- 1、 Upper and lower pedrail 2、 Side belt 3、 Heating system
4、 Hydraulic system 5、 Electrical control system

10.3.2 Structure of the double belt conveyor upper and lower belt

The double belt conveyor is consist of the upper and lower steel belt, the main body of the upper and down belt is a box shape frame of large specification, the connection of the frame all use the prick to fix, after leave factory to convenient adjust. The two belt is consist of about 200 mm wheel plate, this wheel plate is a high strength system. The double belt conveyor have high quality of design, like this enable the panel have unknit exterior ,equality thickness, not easy transfiguration.

The position fix of down belt on the double belt conveyor, the upper belt is through

the electric control hydraulic jack to adjust the height, and adjust the thickness of panel in the product it is very convenient, The loading of the hydraulic jack is about 200 kPa load, ensure the thickness is invariableness.

The double belt conveyor according to the different type and station of the mould, the mould adopt Able to bear high temperature , corrosion-resistant nylon. The nylon mould fix a magnetism steel and dowel , so fix with the double wheel plate. The disassembly is convenient.

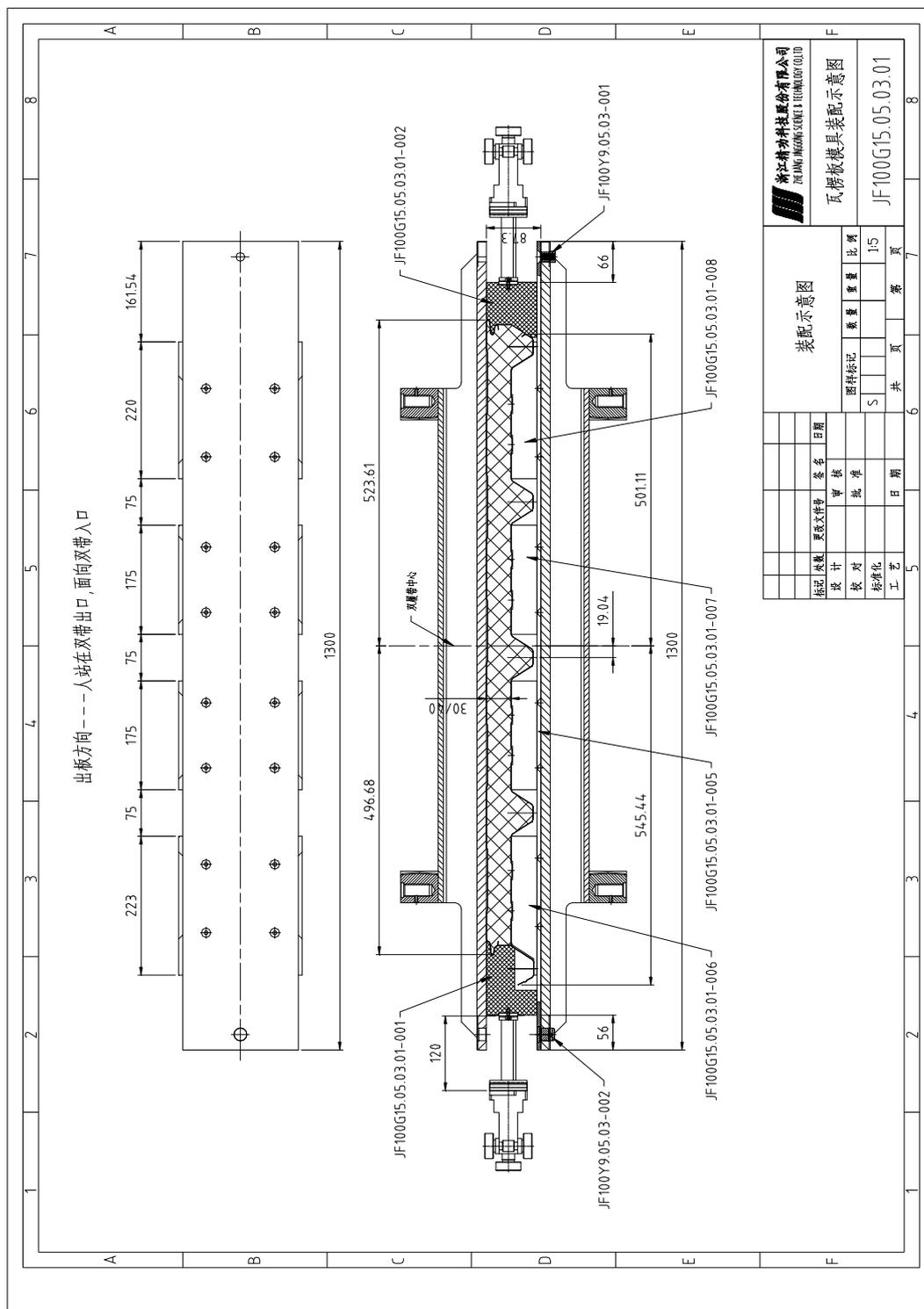
10.3.3 Structure of double belt machine side belt

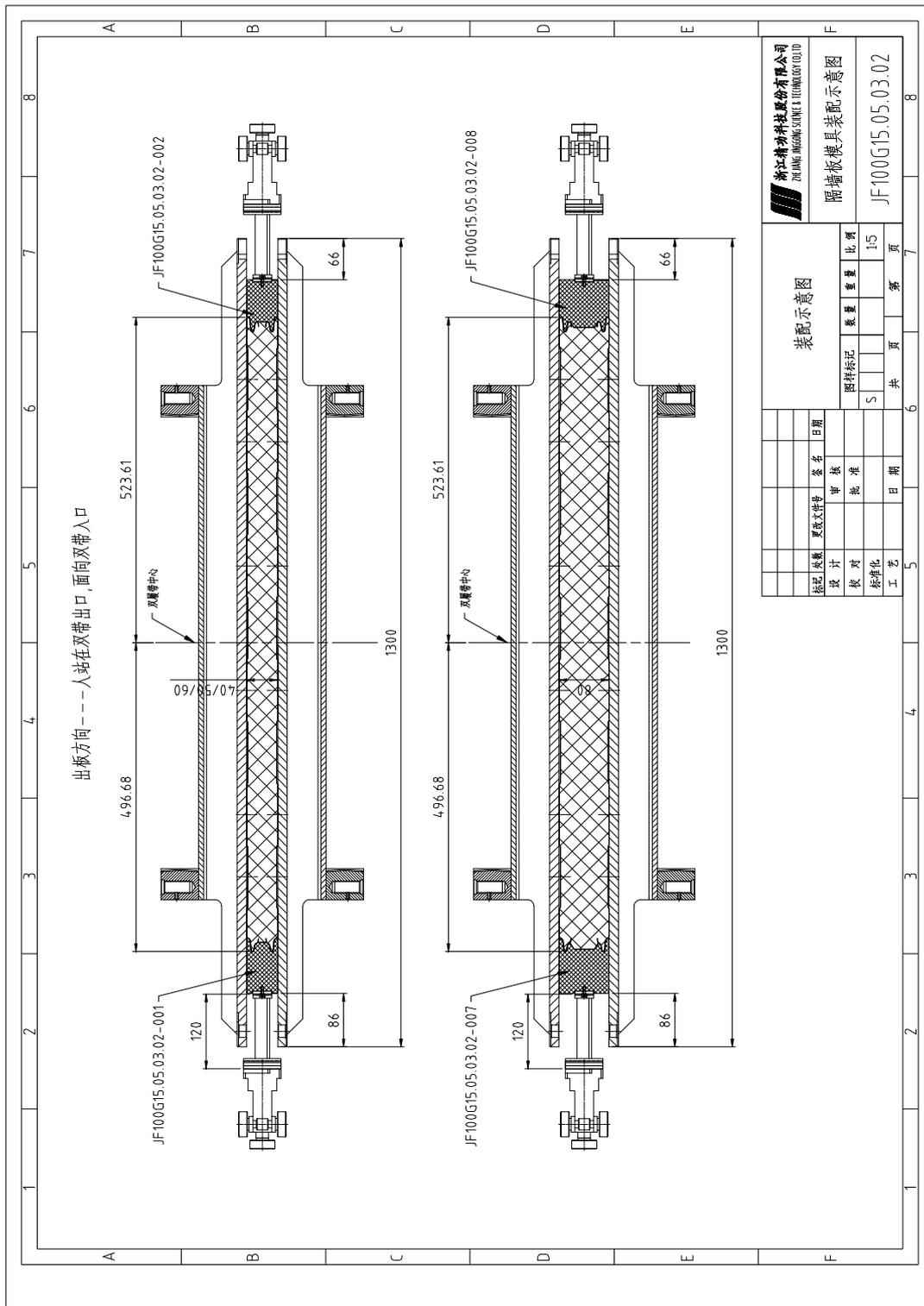
The double belt conveyor have side belt on the each side, the speed is in-phase with speed of the upper and lower belt. The position of the two side belt is through frequency motor to take the four haulm, the device must operate convenient 、 precision is high.

There are moulds on the side belt, the mould is according to the different type, it is different. The position and mould of the side belt is decide the width of the panel, and ensure the width of panel is invariableness, avoid the insulate heat material of panel overflow.

The feet height of side belt can adjust, according to the height of double belt conveyor、 the flatness to adjust the height of the height of side belt , satisfy the request of the assembly line.

10.3.4 Side mould installation and composition drawing for different profiles. Panel output direction (worker standing on the double belt exit, facing the entrance)





40---contour block: equal height+30

10.3.5 Structure of temperature control system

The temperature control system uses hot air cycle heating. Circulation air heated by electric heating device and sent into the heating duct for heating the upper and lower pedrail, through the pedrail to heat the PU panel, so that the polyurethane foam foaming, curing more stable, surface adhesion between the foam and plate are much stronger, reduce the foam spots and air bubbles.

1、 Foam heating device uses channel steel, angle steel as frame, shell uses thin steel. Preheat oven liner, heat exchanger shell and liner, windpipe shell and liner use galvanized steel, it the middle of steel filling the insulation materials. The steel have been dealing with rust-proof, the surface of the box painted by nitro.

2、 Inlet and outlet of foam heating oven equipped with brush seal device.

3、 Heating elements is low surface load of tubular electric heating pipe, heating pipe installed in the heating chamber that can use simultaneously or optional as needed.

4、 Installed four temperature-controlled device, the upper left PXR9 device use for controlling the main temperature of upper foam heating device, at the same time can be used as over-temperature alarm control; Left down XMTA device use for controlling the over-temperature alarm of upper foam heating device; Upper right PXR9 device use for controlling the main temperature of upper foam heating device, at the same time can be used as over-temperature alarm control; Lower right XMTA device use for controlling the over-temperature alarm of upper foam heating device; All control electrical appliances are installed in the control cabinet, easy maintenance.

5、 At the lower right corner of back oven and the chassis of control cabinet are equipped with the grounding screw for using ground protection.

10.4 Work principium

10.4.1 The work principium of double belt conveyer

The drive of machine through the eight frequency conversion decelerate motor, the in-phase control is adopt the DANFOSS VLF5000 transducer, achieve the control the torque, solve the in-phase problem of the product line, and satisfy the request of product.

The thickness of panel is through the 10 hydraulic jack adjust height by electric control, ensure the thickness invariableness. The thickness is decide by side belt ,through

the frequency conversion motor to adjust the left and right position of the side belt, and ensure the position fix together, so the width is invariableness.

10.4.2 The work principium of the heating system

The heating system is cycle aeration, heating equipment of automatic control the constant temperature.

There is Centrifugal air-blower in the heating room. when working , put the heat air in the heating room into the left right side wind of preheating oven, then enter into the working room, change the heat with work piece, then return to the heating room, like this make a cycle aeration.

In the middle position have fix a feel temperature in the foaming heating oven—platinum resistance, when working ,the temperature of platinum resistance change to the signal ,send to the PXR9 process control temperature equipment, through the PID output the signal to the ZAC10 control equipment, then through the ZAC10 touch the solid state relay, control the heating; the return exit fix a platinum resistance in the preheating oven ,the variety of temperature change to the signal ,send to the XMTA1 control equipment, signal will compare with original setting ,make the exceed temperature signal warn, to control warn, send the warn signal, at same time cutting the heating electric source. The steel foaming oven is consisting of upper and down floor, heating two-floor autocephaly.

In the working, when the work temperature is exceeding the original data, PXR9 process control temperature equipment and XMTA control temperature equipment output relay contact signal, through the exceed temperature alarm system, cut off the heating electric source, and emit voice、light alarm signal.

10.5 Electric operate system

10.5.1 Function introduction

- (1) Emergency stop: When meet the urgent accident ,you use this button, make the equipment stop, insure the safe, this equipment is one part of the all line ,do not press at some time ,avoid the line stop and some damage.
- (2) Indicator light of the electric source: the power supply is normal or not
- (3) Open/close: The electric indicator light is usual, open the “open” button gives electric to the system
- (4) Buzzer: when use manual or automatic operate, press this button, warn the person who still

stand near machine.

- (5) Roll forming machine of the upper manual /automatic: on the manual state, you can control by your hand, if on the automatic position, the indicator light will bright ,allow the machine operate.
- (6) Roll forming machine of the lower manual /automatic: on the manual state, you can control by your hand, if on the automatic position, the indicator light will bright ,allow the machine operate.
- (7) Double belt automatic run: keep press the run button for 5 seconds, the double belt can run automatically.
- (8) Double belt automatic stop: press the stop button, the double belt will stop automatically.
- (9) The upper double belt raise/ goes down: only can be adjusted under the manual state, to control the upper double belt raise and down.

10.5.2 Operate process

10.5.2.1 The main screen

Closed all switch of the electric box, closed the door of electric box, closed the switch the indicator light on the panel will bright ,it say the electric is normal, turn the key on the open position, the system have electric, PLC and host computer begin to work, it appear likes the screen one.



Picture 1

10.5.2.2 Run monitoring

Clicking “run monitoring” button at the top of the screen, it will show the monitoring image as picture 2, this picture can monitor the main technological process and running state.

Configuration screen shows the running state for each parts.

Production speed setting: can set up the whole production line speed.

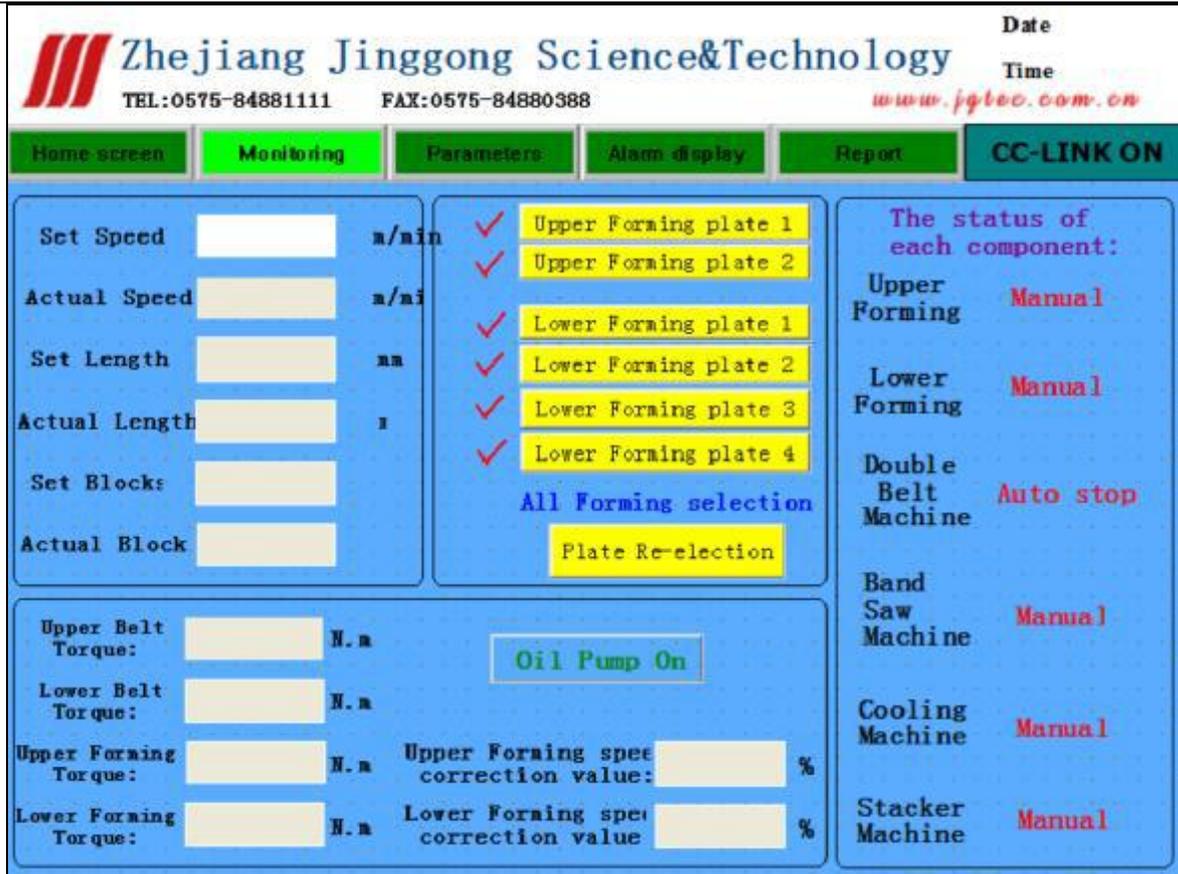
Corrected value: by turning on the potentiometer, change the whole line speed or upper/lower roll forming machine speed, the corrected value shows the changing amount.



tip is the currently selected roll forming machine specification.

In manual state, can operate the upper and lower double belt, left and right side belt rotate, adjust separately. In the auto mode, can not operate separately.

The upper and lower roll forming machine manual/auto state selection through the switch on the operate panel, it is not relevant to the automatic state of the double belt.



Picture 2

10.5.2.3 Parameter setting

Click the “parameters” button, it shows the parameter setting image as the picture 3.



Picture 3

On this page must login password(111) to change the parameters, otherwise can only view the parameters, can't change the parameters.

Note: this operating system is Chinese system, the system dialog box is in Chinese.

In bottom right of the picture 3, there are "Log in" for user login, "write off" for logout, "change password" for modify the password.

The double belt speed set conversion factor: this parameter is used in the production speed and actual speed matching coefficient.

To modify according to the following formula, the double belt speed can be modified by conversion coefficient, until it is accurate, the formula:

$$\text{Revised value(new)} = \text{set speed/actual speed} * \text{revised value(old)} * 100\%$$

(*formula 1)

If the set speed is 5000mm/min, actual speed is 5050m/min, then

$$\text{Revised value(new)} = [5000/5050] * \text{revised value(old)} * 100\%$$

The revised value(old) is the value in the screen which needs to be revised.

The revised value(new) is the value after calculating.

Upper/Lower forming machine speed matching coefficient: used in the automatic production, upper/lower forming machine matching the double belt speed.

To modify according to the following formula, the upper/lower forming machine speed can be modified by conversion coefficient, until it is accurate, the formula:

Revised value(new)= double belt speed/roll forming machine actual speed* revised value(old) *100%

(*formula 2)

Coefficient of actual speed acquisition: used for transforming the encoder rotate speed to the equipment's actual linear velocity.

To modify according to the following formula, can correct the coefficient of actual speed acquisition , until it is accurate, the formula:

Revised value(new)= actual speed/the speed showed on the screen* revised value(old) *100%

(* formula 3)



tips the currently selected roll forming machine specifications.

10.5.2.4 Side belt positioning

Before automatic operating, also need the “side belt positioning” operation.

The side belt adjusting function on the operate station, can process the action “left side belt goes up”, “left side belt goes down”, “left side belt goes inside ”, “left side belt goes upside”, “right side belt goes up”, “right side belt goes down”, “right side belt goes inside ”, “right side belt goes upside”. The moving distance of the side belt can be seen through the magnetic grid ruler on the display.

10.5.2.5 Accident and alarm processing

If there is any accident, press the emergency stop button, or there is alarm, then the screen will popup alarm prompt..



Picture 4

According to the prompt, remove alarm then can do the other operation.

10.5.2.6 Report management

Click the “report” in the picture, it will show as following:



Picture 5

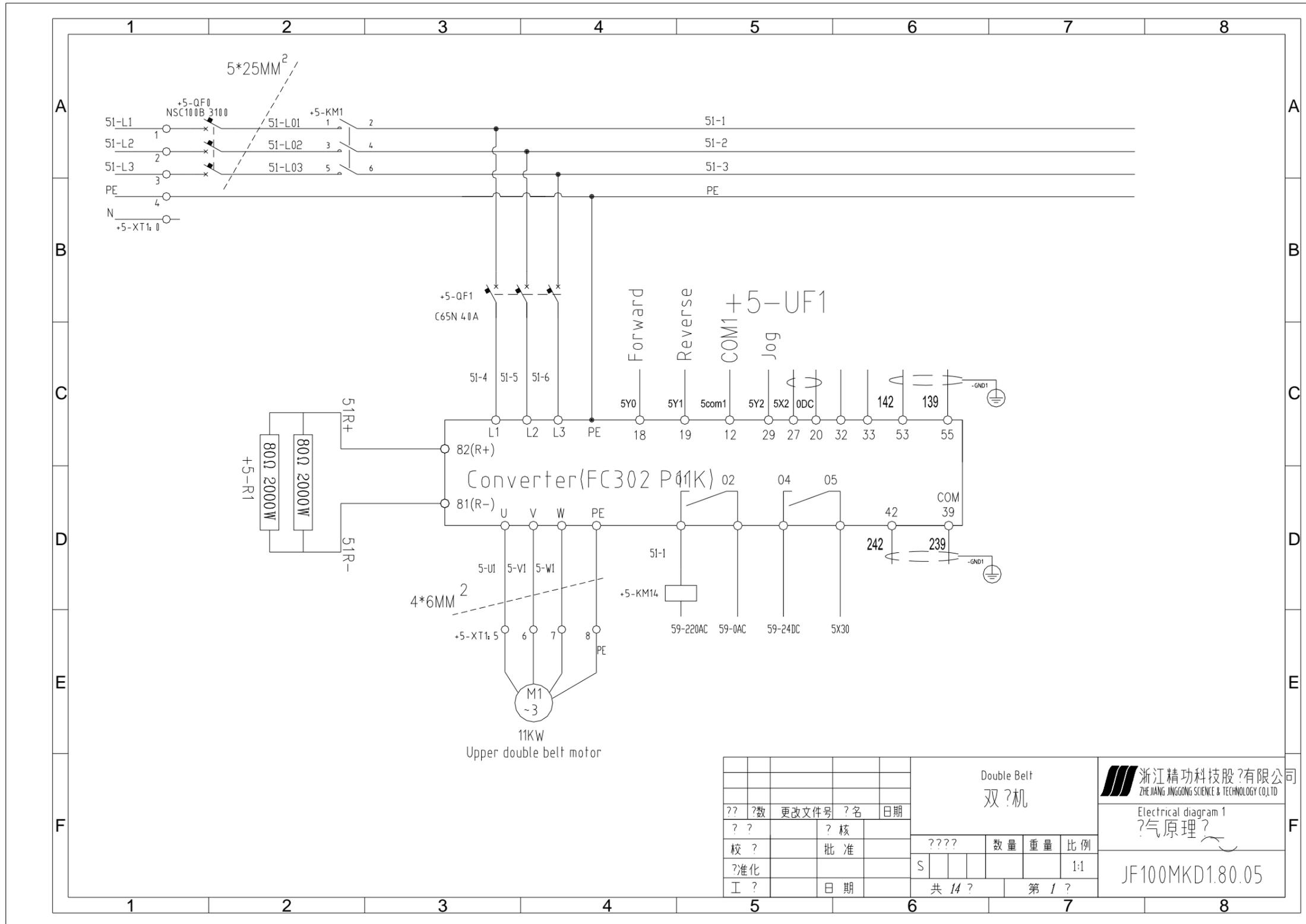
When the bandsaw machine completes the cutting of one batch panels, it will generate a report on the table, can press “inquire” button to inquire records according to the setting time. Press “Delete” to delete report date.

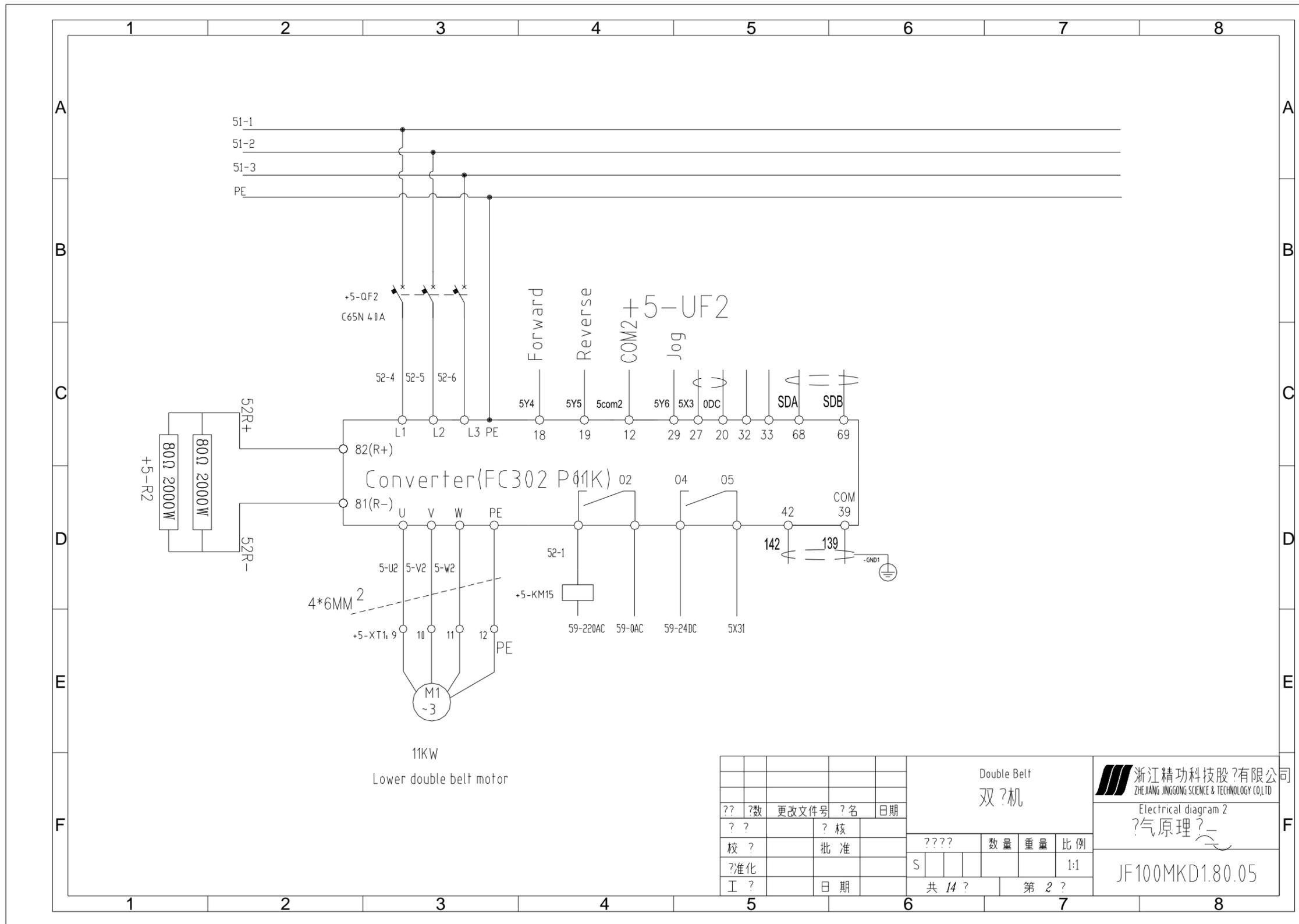
10.5.3 Electrical common faults and processing methods

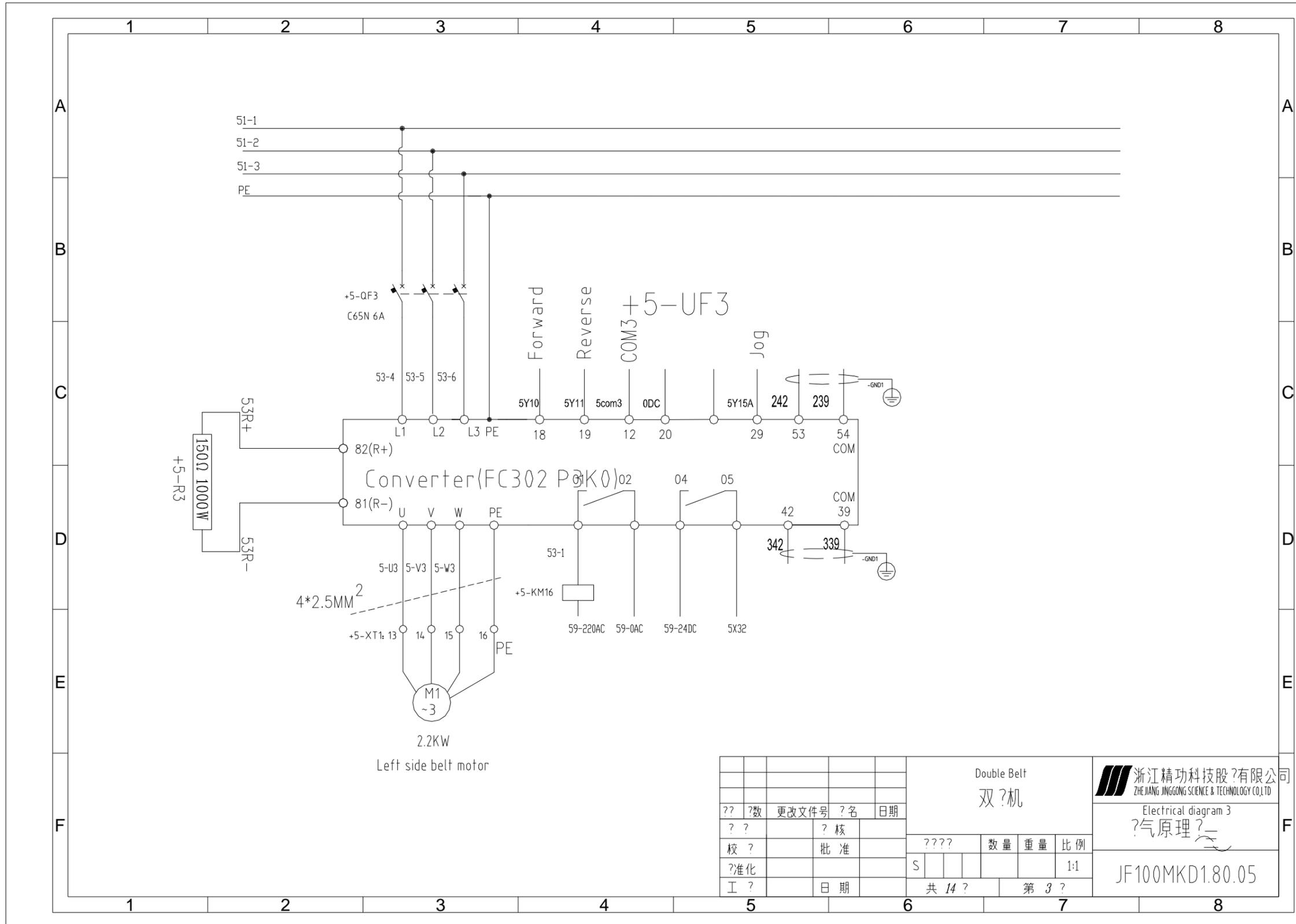
| No. | Problem phenomena | Problem analyses | Sovle means |
|-----|----------------------------|--|--|
| 1 | The oil pump can not start | 1.the pressure of the three box unusual 2.the air switch not closed 3.the button of the oil pump is mangle 4.the signal of PLC is stop 5.the contact equipment is mangle or the loop is burn | 1.the pressure of the three box is AC400V±10% 2.closed the air switch 3.change the button 4.output Y60 5.change the same specification one |

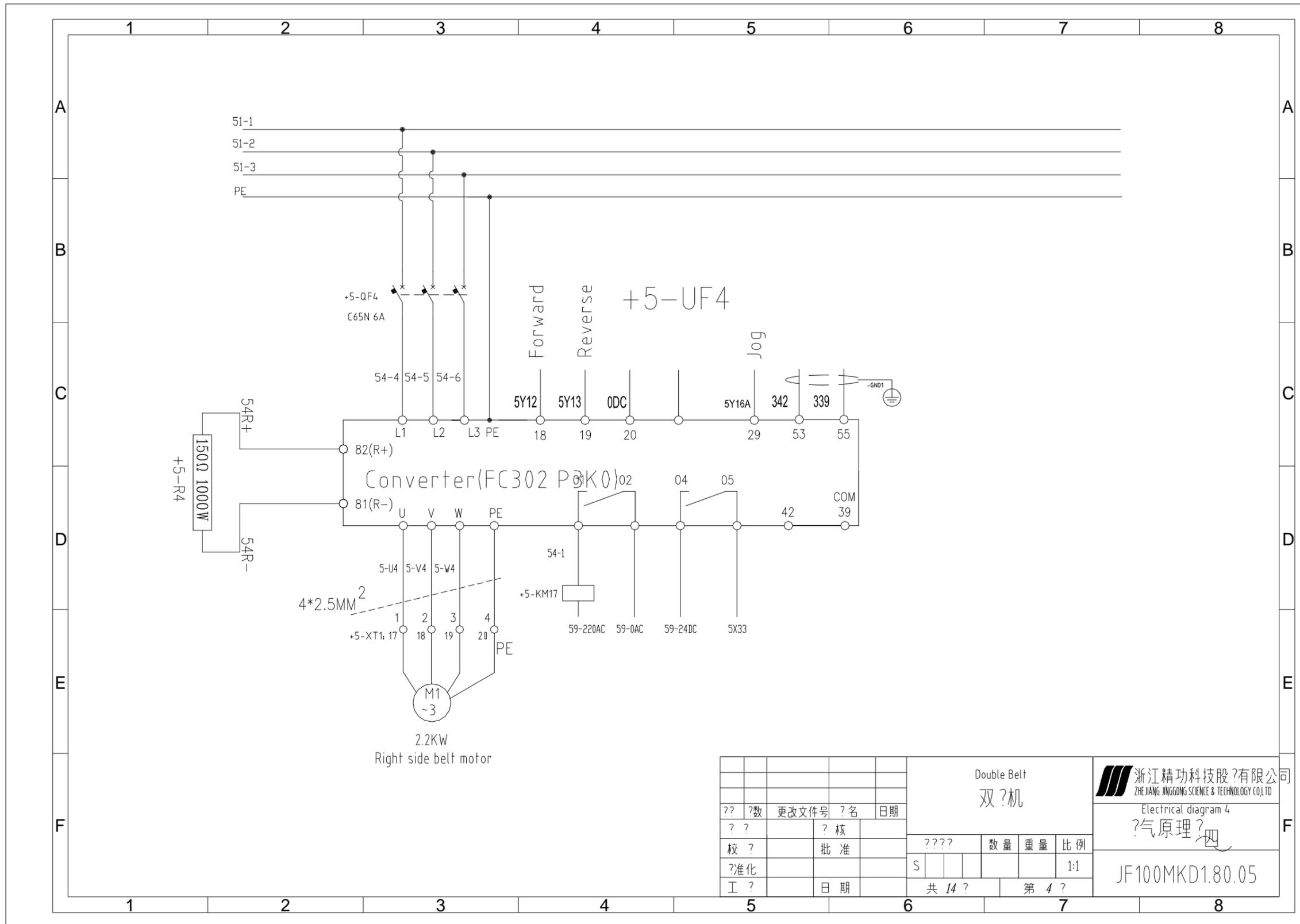
| | | | |
|---|--|---|---|
| 2 | In the manual mode, the side belt can not orientation | <ol style="list-style-type: none"> 1.the position in the automatic 2. The transducer is warn 3.the figure of the electric at the largest position 4. PLC signal of the output is stop 5. .The button is mangle 6. Connection is loose | <ol style="list-style-type: none"> 1.the position in the manual 2.stop electric about one minute then electrify 3.adjust the figure smaller 4. Check PLC output line. Change the button 6. Connect again |
| 3 | The speed of upper belt 、lower belt, left side belt 、 right side belt can not together | <ol style="list-style-type: none"> 1.the practice speed of the measure is wrong 2. The speed scale of the four belt is too big or too small 3. The parameter design of the four belt is wrong 4.D/Amodel is mangle | <ol style="list-style-type: none"> 1.remeasure 2.adjust the scale parameter of four belt 3. Recalculate the speed parameter of the four belt 4.change D/A model |
| 4 | The warn drawing can not return | <ol style="list-style-type: none"> 1.E-stop button can not ravel 2.the cover of the upper and lower machine not closed 3.the band saw is rupture, the neighbor switch is no signal | <ol style="list-style-type: none"> 1. Ravel the E-stop button 2.closed the cover of the upper and lower 3.make the band saw rupture, the neighbor switch have signal |

Double belt electrical drawing see the attachment









10.6 Hydraulic system

10.6.1 The compose of hydraulic system

This hydraulic system consists of five components:

Power element:hydraulic pump and motor.

Execution element:hydraulic cylinder.

Control element:Three four-way solenoid valves, hydraulic control one-way valve,speed control valve, etc.

Auxiliary component:Oil pipe,joint, oil tank,oil filter, pressure meter, etc.

Adopt 46# hydraulic oil, the system maximum pressure is 12Mpa.

10.6.2 Testing and notes for the hydraulic system

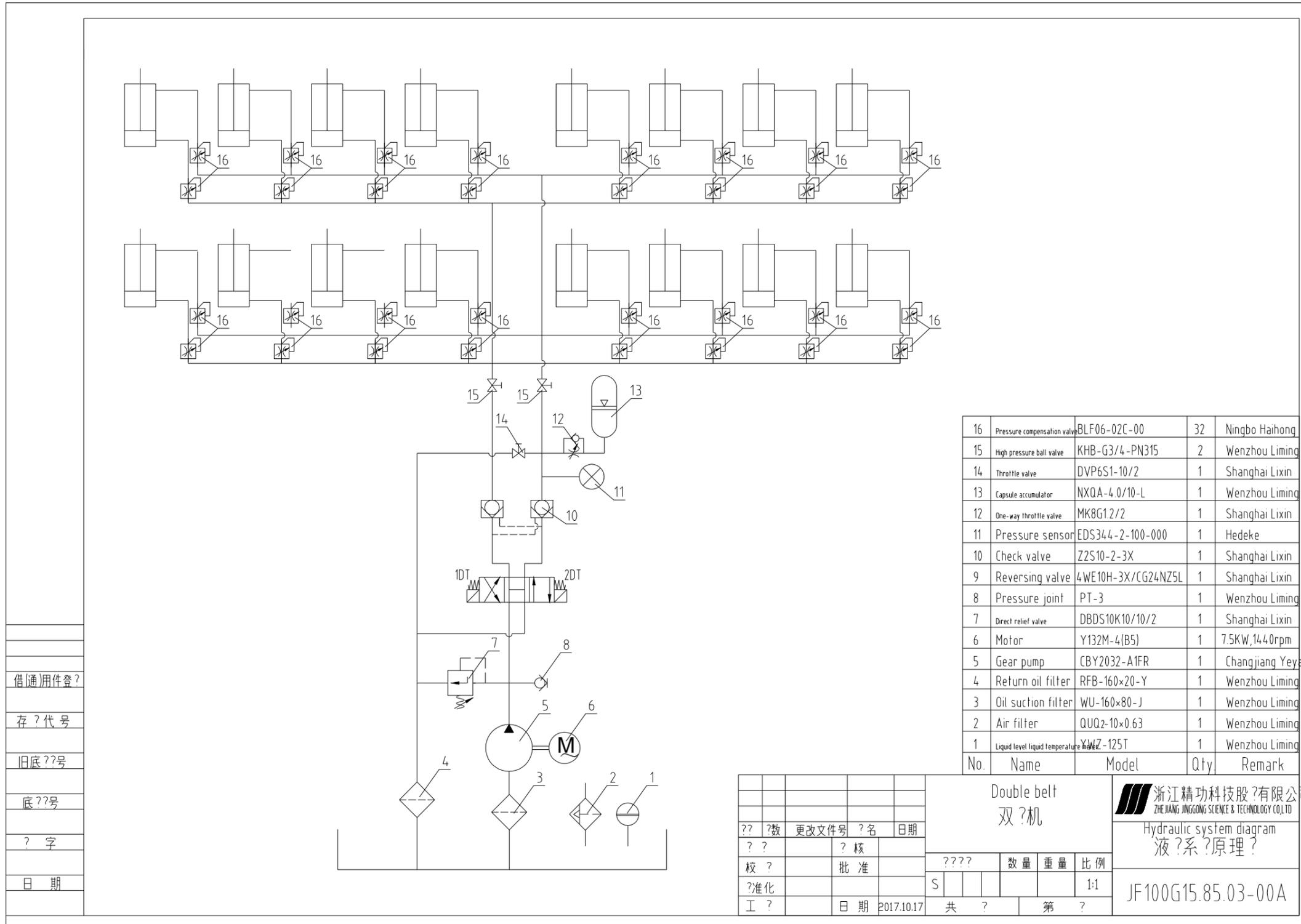
(1) First check the hydraulic oil whether is enough, hydraulic oil filled to 80% of the fuel tank is appropriate, if less please fill it. Next check each connection place and installation place whether correct and fastening through the installation drawing.

(2) Start the oil pump motor, open the pressure gauge switch, adjust the stack overflow valve let the system pressure is 5 Mpa, check valve blocks, oil cylinder, oil pipes, joints whether there is a leak, if yes please tightened or replaced to no leakage. When the installing process, due to the hydraulic oil was full of in pipeline and cylinder that lead to the oil surface in the fuel tank drop, or due to leakage caused oil surface drop, it should be fill the hydraulic oil in time to avoid the oil pump suction air.

(3) Start the oil pump motor, adjust the stack overflow valve let the system pressure is 7 Mpa, run at no-load conditions about10min, and check each of the electric solenoid whether is good, action whether is correct, if wrong please correct it timely. To ensure that no leakage of the hydraulic system and the action is normal.

(4) One year to replace hydraulic oil at a time, clean the fuel tank inside wall when replace the hydraulic oil, at the same time check the blockage degree of the oil filter be cleaned or replaced.

Hydraulic drawing see the attachment



| 16 | Pressure compensation valve | DLF06-02C-00 | 32 | Ningbo Haihong |
|-----|---------------------------------|--------------------|-----|-----------------|
| 15 | High pressure ball valve | KHB-G3/4-PN315 | 2 | Wenzhou Liming |
| 14 | Throttle valve | DVP6S1-10/2 | 1 | Shanghai Lixin |
| 13 | Capsule accumulator | NXQA-4.0/10-L | 1 | Wenzhou Liming |
| 12 | One-way throttle valve | MK8G12/2 | 1 | Shanghai Lixin |
| 11 | Pressure sensor | EDS344-2-100-000 | 1 | Hedeke |
| 10 | Check valve | Z2S10-2-3X | 1 | Shanghai Lixin |
| 9 | Reversing valve | 4WE10H-3X/CG24NZ5L | 1 | Shanghai Lixin |
| 8 | Pressure joint | PT-3 | 1 | Wenzhou Liming |
| 7 | Direct relief valve | DBDS10K10/10/2 | 1 | Shanghai Lixin |
| 6 | Motor | Y132M-4(B5) | 1 | 7.5KW, 1440rpm |
| 5 | Gear pump | CBY2032-A1FR | 1 | Changjiang Yeyu |
| 4 | Return oil filter | RFB-160x20-Y | 1 | Wenzhou Liming |
| 3 | Oil suction filter | WU-160x80-J | 1 | Wenzhou Liming |
| 2 | Air filter | QUQ2-10x0.63 | 1 | Wenzhou Liming |
| 1 | Liquid level liquid temperature | WUZ-125T | 1 | Wenzhou Liming |
| No. | Name | Model | Qty | Remark |

| |
|---------|
| 借(通)用件? |
| 存?代号 |
| 旧底??号 |
| 底??号 |
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| ?? ?数 | | | | 更改文件号 | | | | ?名 | | | | 日期 | | | |
| ?? | | | | ?核 | | | | 批准 | | | | ???? | | | |
| 校? | | | | 批准 | | | | S | | | | 数量 重量 比例 | | | |
| ?准化 | | | | 日期 | | | | 2017.10.17 | | | | 共? 第? | | | |
| Double belt | | | | | | | | 双?机 | | | | | | | |
| 浙江精工科技股?有限公司 | | | | | | | | ZHEJIANG JINGGONG SCIENCE & TECHNOLOGY CO., LTD. | | | | | | | |
| Hydraulic system diagram | | | | | | | | 液?系?原理? | | | | | | | |
| JF100G15.85.03-00A | | | | | | | | | | | | | | | |

10.7 Installation, debugging

1. Before fixing please check the parts of the product.
2. When the double belt conveyor debugging, adjust the lower belt at first, pull line is adjust well at the middle position, adjust the height right. Then fix the upper belt and side belt, fix the heating system at last.
3. After debug the machine, the customer never adjust commonly.

10.8 Safety

This machine is certified eligible and permitted to be delivered. In the load and unload process, it must adopt the hang tools, for example drive a vehicle, the hangs or other hanging machines. Use the firm cord hitch two side of the frame, like that it can safe hang ,and easy to load and transport. Under the hang machine can not stand the person, it prevent the problem. And in the transport process, it should use the flexible material to protect the exterior, put the machine and the fittings should fastness、safe、tidiness, avoid knock exterior in the transport process.

Notice before operate this machine please closed the door of the defend rail, avoid by all means can not open door at will, avoid the accident.

Before product, it should add the lubricating oil to the drive equipment and the feeding place, reduce the fray, and add the oil between the chain and the gear, the decelerate machine add the oil about half month.

This equipment must touch the ground by oneself.

All the electric element and machine parts must keep clean, and cleaning each month.

10.9 Attention

- 1、The steel froth heating kiln is use to workpiece of the explore gas which is bake heating, it should assure the gas deepness smaller than upper limit 1/4of this gas by strict operate measure.
- 2、The equipment must be grounding connected.
- 3、The foaming heating oven must put into the room, on the level and dry concrete ground, leave the wall can not small 1m.do not put a lot of the goods near the door and stand person.
- 4、After the foaming heating oven leave factory, it is checked by technology, All structure

can't be altered at will.

- 5、 The user must inspect the working state of the electric elements and drive parts and exhaust clique, change the old element in time, the drive parts should add the lubricant in the according time.
- 6、 Before open the machine. It must inspect the machine、 electric 、 liquid、 gas system, after sure then open the machine.
- 7、 This equipment is adopt the AC415V three posture 50HZ electric source, the control line is AC220V, the solenoid valve is AC220V, the indicator light is AC24V, the customer can vindicate according to the electric elements drawing and correlation list .
- 8、 The equipment must touch the ground.
- 9、 All the electric element must keep the cleanliness, clean and inspect insulated of each electric element and join tighten circs in according time.
- 10、 Before open the machine ,it should inspect the oil box, fill the about the 80% oil is better, the hydraulic oil is adopt the NO. L-HM46.
- 11、 When debugging is finish, bring the oil face is drop because of the oil fill the all pipeline, it should complement at once, avoid the oil pump is absorbed empty; at same time, advert the leak oil phenomena of the joint、 pipeline、 clique and between the clique.
- 12、 The hydraulic oil must change year by year, before change the oil must clean the wall of the oil box, change the oil strain core of the straining device every half year.

11. Bandsaw machine

11.1 Main usage and feature

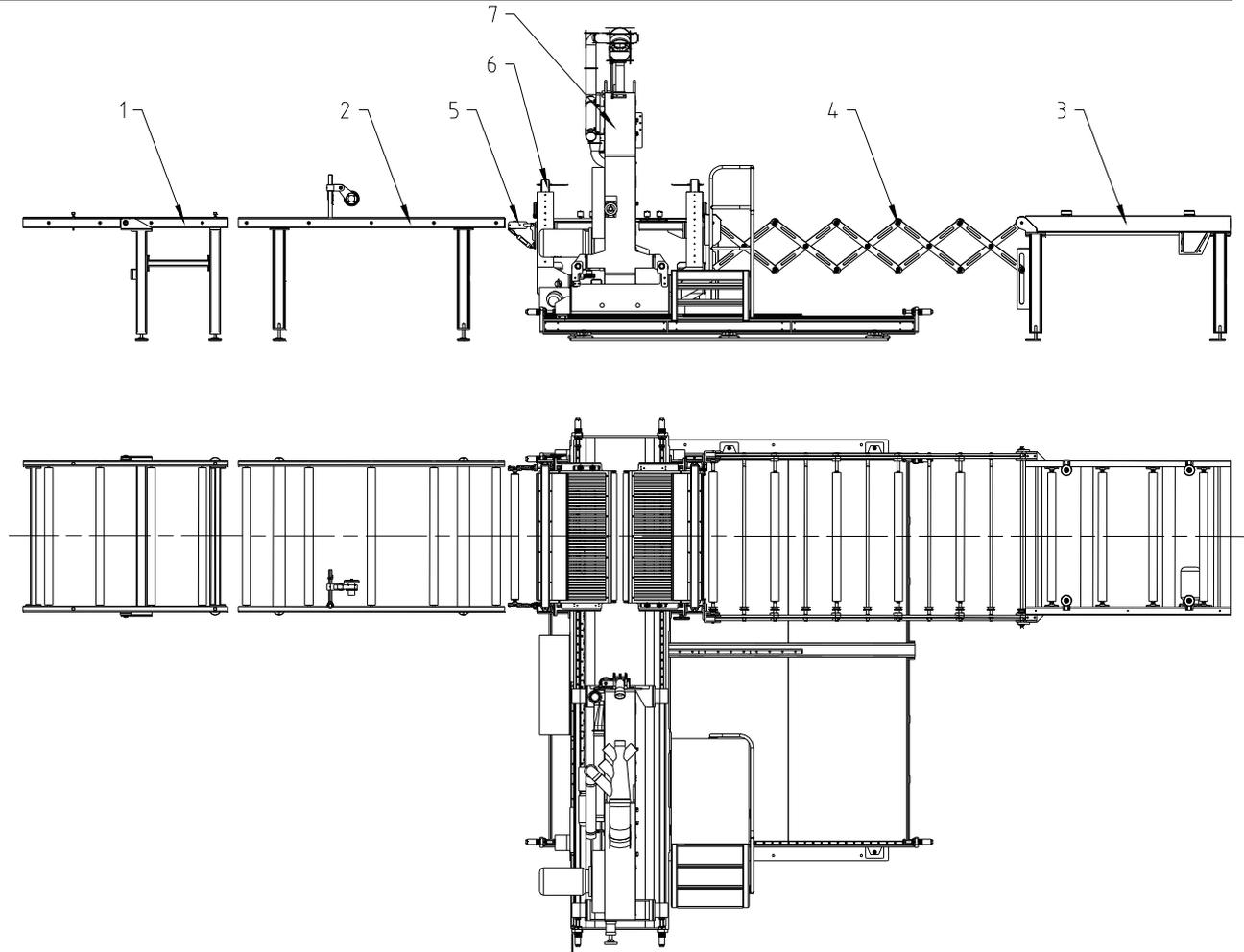
(1) Bandsaw machine is the important compose equipment of the PU foam product line, Main function of it according to board long parameter of need, through count long encoder go on definitely long to is it break to saw, fluting function while still having panel to join. Product are as the roof panel and wall panel of the large civil building of medium-scale industry, for example factory、warehouse、exhibition center、hangar、theatre、gymnasium and so on.

(2) Bandsaw machine includes the following parts: band saw、absorb dirt、left and right notch、press frame plate、cutting hydraulic parts、gas act , front back roll transport, electric control. Have high speed cutting function, the cutting speed is 7m/min; the tighten manner of band saw is adopt the oil crock, operator read from the pressure watch, when band saw use in the long time ,the operator can adjust the screw of the oil crock to keep the original tighten pressure ,the adjustment is convenient ,the pressure is correct; there have two sharp knife fix on the PU sandwich panel line, with the saw blade action, clean the burr, because of the transport or hang and so on limit ,some time the panel need to connect at locale, this equipment fix tray saw on each side, and cutting exterior panel; this equipment is also fix a large power dusting equipment, absorb the powder, the transport roller of the belt cutting equipment is adopt the frequency conversion control, enable the speed with the double belt conveyer.

(3) The control system is include the following part: FR-A540 type frequency conversion、FX1N—60MR programme control equipment、F940-GOT touch screen 、low pressure electric equipment and mini type relay、connect end, is choice the coder measure, cut off long automatically definitely, performance is reliable, it is simple to operate.

11.2 Main specifications and parameters

11.2.1 Machine appearance figure



- | | | | |
|--------------------------|---------------------------|------------------------|---------------------------|
| 1、 Turn table | 2、 Interface table | 3、 Rear table | 4、 Flexible roller |
| 5、 Feeding roller | 6、 Press foot | 7、 Main machine | |

11.2.2 Technical parameters

| | |
|------------------------------|--|
| Band saw motor power: | 5.5 kw |
| Min. cutting length: | 2 m (according to different production line speed) |
| Bandsaw walking motor power: | 1.5 kw |
| Cutting panel thickness: | Max.150 mm |
| Cutting panel width: | Max.1200 mm |
| Disc saw motor power: | 1.5 kw |
| Dust collection fan power: | 7.5 kw |
| Machine total power: | 25 kw |

11.3 Safety and notice

- (1) Before open the machine, if you find the machine tool in the alarm state, please check the urgent stop outside and inside is flip or not.
- (2) At ordinary times, cutting PU panel by manual, ensure the press leg cylinder is tighten on the table, and the cutted panel must bigger than 2500mm.
- (3) Before working, please check the pressure and oil pressure, check the every motor by manual is normal or not.。
- (4) When the machine tool is working, please do not put the head and hand into the working area, or open the saw blade cover board. Please do not stand obverse of the saw blade.
- (5) After off duty ,clean once, clean the rail facade, prevent clip.
- (6) Check the saw tooth of saw blade at every turn, prevent happen the accident.

11.4 The mechanical transimission system

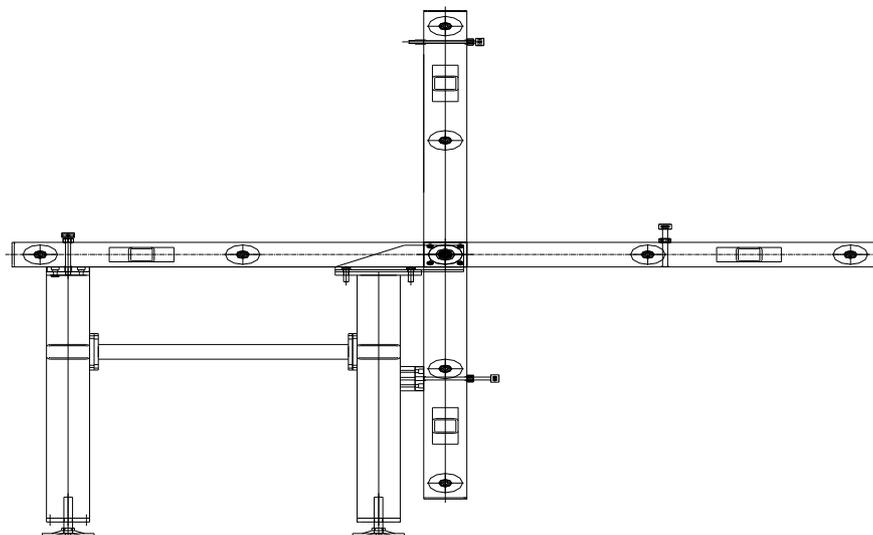
The mechanical transimission system includes interface table, turn table, rear table parts, base, work table, semi gantry, saw blade guide device, dusting device, flexible roller.

11.4.1 Interface table

It consists of the end screw, notch steel frame, rubber idler wheel。 Adjust feet screw, enable exterior of idler wheel and worktable of double belt conveyor ,the height is same, each idler wheel is parallel with the double belt conveyor.

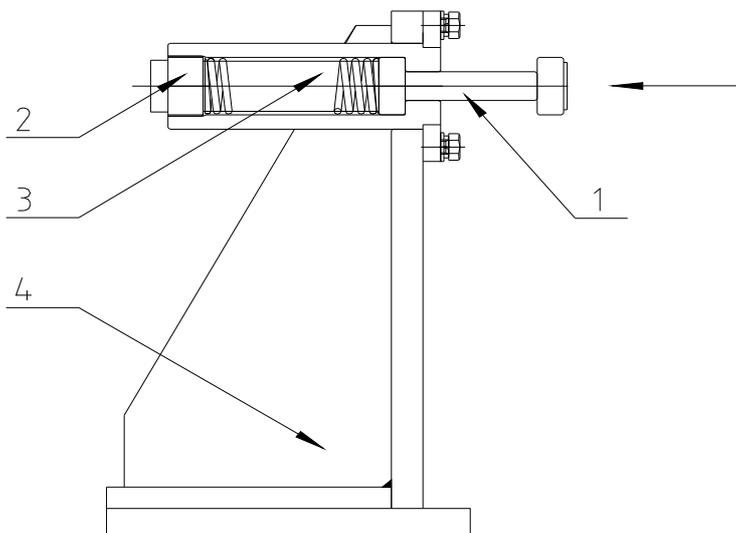
11.4.2 Turn table

When the operater need to pass on both sides of the production line, can loosen the screw and flip the table.



11.4.3 Base

It consists of the two parallel guide rail、 front back amortize washer of table, main cylinder.



1、 Bump

2、 Adjust bolt

3、 Press reed

4、 Supporter

The drawing is amortize device of band saw, it can dispel libration, will influence life of machine and precision of work.

Adjust manner: when use long time, the spring press, the spring force is more and move smaller, the concussion of work table on the belt cutting equipment become big, at this time the adjust bolt move to compress spring. After adjust walk some times, look at the concussion is reduce or not, but not adjust too big, the table and block not connect, influence orientation precision.

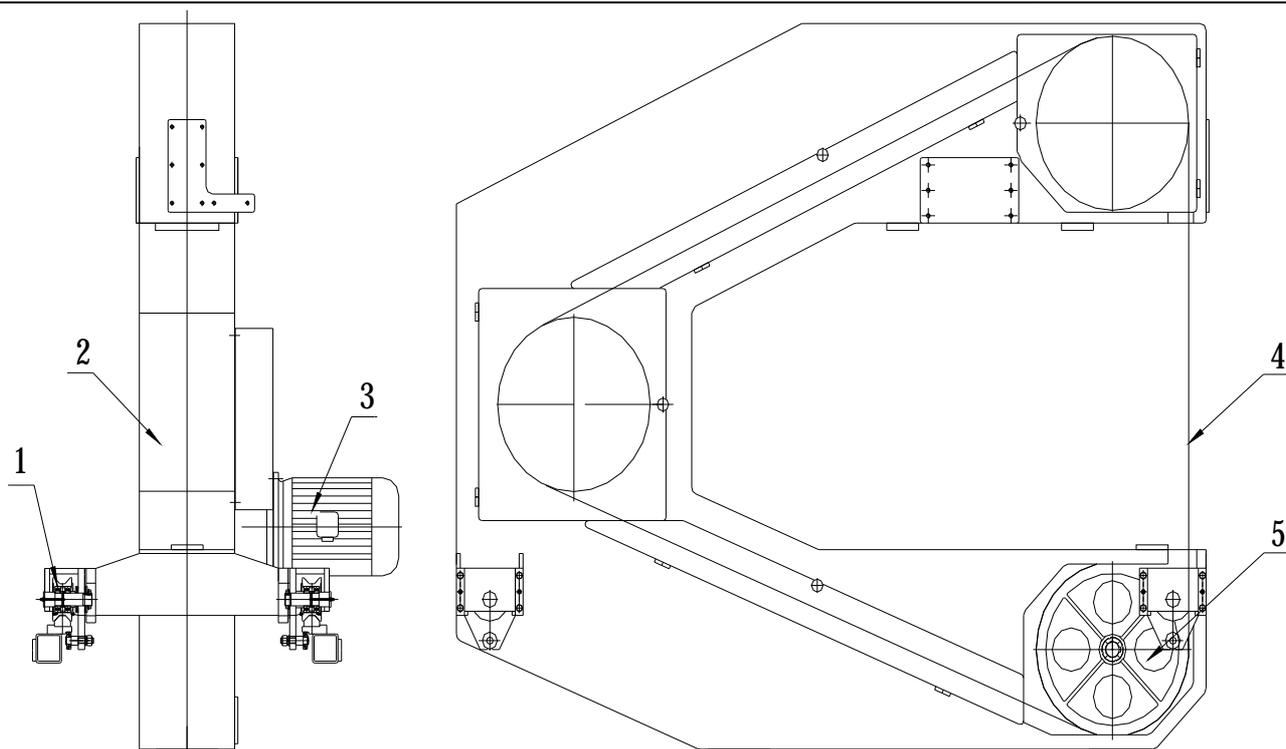
Notice: clean the exterior guide rail of the supporting, avoid jam.

11.4.4 Work table

A. Feeding roller: on the two cylinder rise and fall, when end cylinder rise ,the feeding roller rise, the head of the panel can not touch the work table; the work table in the return zero process, the end plate not attrition with work table.

B. Press material frame: have front and back, act with the two cylinder, through the gear of the side to down press in-phase.

11.4.5 Semi gantry



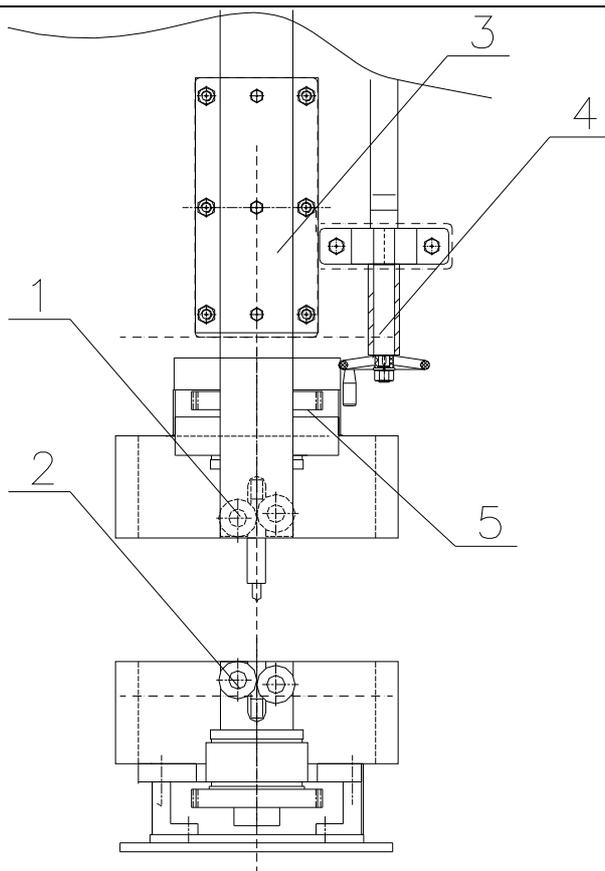
1、Trolley 2、Semi gantry frame 3、Drive motor 4、Band saw 5、Belt wheel

Notice:

(1) When find the semi gantry frame is swag, it should clean the sundries of the trolley exterior, check the supporting gear and guide plate is tighten or not .

(2) When fix or change the saw blade ,at first loose the hydraulic tighten oil crock of dragon frame, open the side cover board and dismantle dusting pipe of same side, the saw blade fix the middle of the wheel, and put it to the guide wheel, gear face outside, tine of tooth shape go up. Then the hydraulic oil crock tighten until 6Mpa, and close the cover board and screw down .

11.4.6 Saw balde guide device



- 1. Band saw upper guide wheel 2. Band saw lower guide wheel 3. Guide rod**
4. Adjust screw 5. Drive gear

As drawing, the band saw up guide wheel and band saw up guide wheel single side is make the eccentricity shaft, when use with long time ,the clearance will become big , it need to adjust again, this time just adjust one of the eccentricity shaft with the saw blade, not remain clearance.

According to different thickness of the panel, through the adjust screw 4 to adjust the height of the guide staff. Enable the distance between guide wheel and panel is the smallest, improve the quality of cutting.

After a long time running, need to add lubricating oil to the drive gear and regularly clean the gear.

11.4.7 **Dusting device**

After cutting ,it will product the a lot of flour, influence the capability of environment and machine tool, adopt the high-power dusting device to clean the flour. The idiographic means is fix a absorb wind mouth on the band saw and tray saw, then three wind mouth is collect one, connect the enter wind mouth , the exit wind bind collect the flour, and deal with together.

Notice:

- (1) When discover the absorb wind is not good or librate, it should clean the dirt of the pipe and dirt of the fan motor.
- (2) Clean the dirt in the hop-pocket in time.

11.5 Lubricate and maintain

- (1) Add the butter for each pulley bearing seat, once every week.



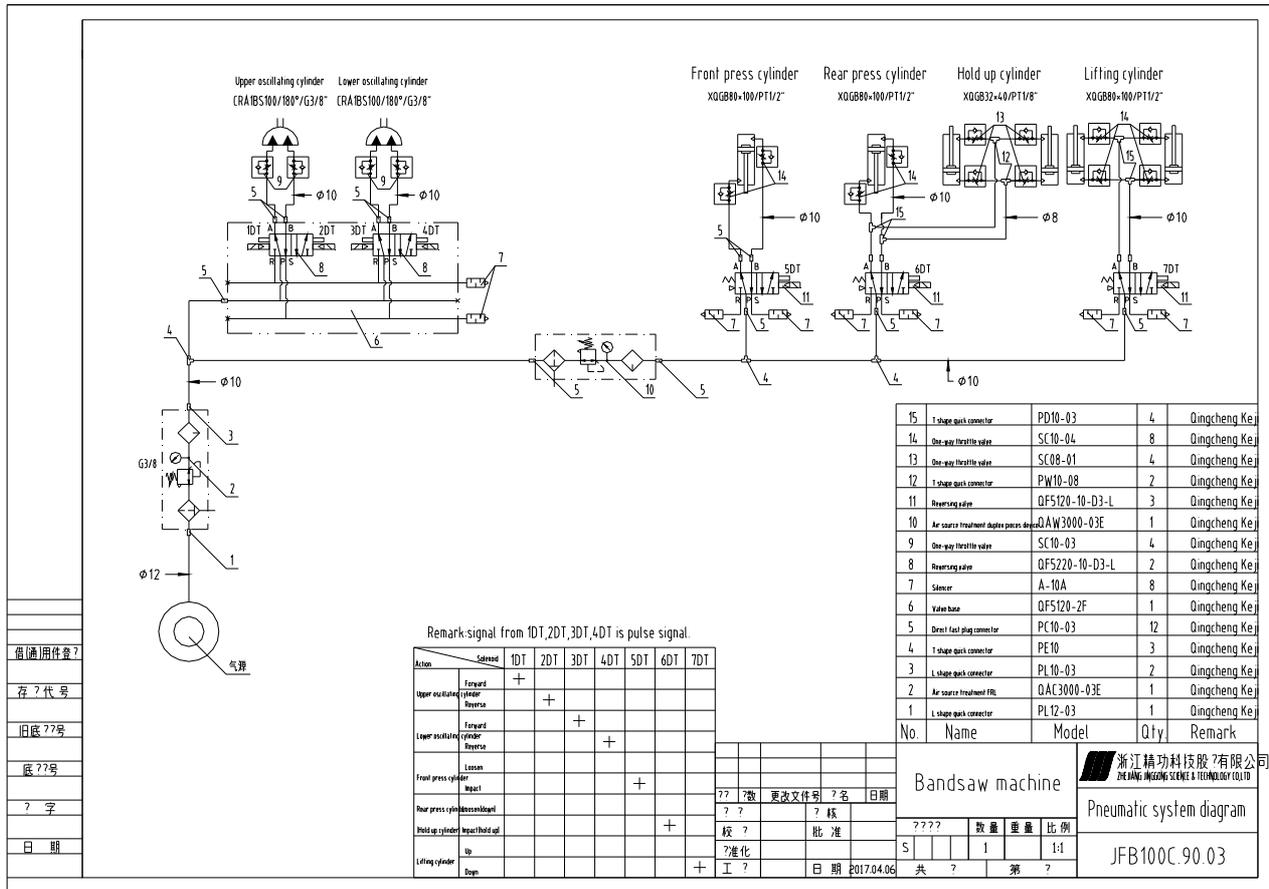
- (2) Clean the dust on the Pulley and the saw blade, once every week.
- (3) Clean the dust on the suction fan arm and the internal of fan, once every month.
- (4) Before off duty every day, wipe the running rail surface and the working table.

11.6 Pneumatic system

Notes:

- 1、 Compressor pressure should be stable and filter water.
- 2、 The air pressure should be not less than 0.7Mpa, the air flow should be not less than 0.5m³/s;
- 3、 Oil mist lubrication recommended L-FC32 oil, often check the oil, in order to avoid bad lubrication, should be combined with in time after using.

Pneumatic drawing see the attachment.



11.7 Electrical operate system

This system realize the automatic control through electrical system such as PLC and touch screen. Equipment and the whole production line through the CC - LINK network connection, convenient data and information transmission, allow the operator to achieve effective monitoring and control.

11.7.1 Function introduction

- (1) Emergency stop: If any emergency incident, press the emergency stop button, to stop the equipment ensure personal and equipment safety. This equipment is one part of the whole production line, do not press the emergency stop button casually, to avoid the unnecessary loss.
- (2) Power indicator: to indicate the external power supply is normal or not.
- (3) On/off: after the power indicator lighten, turn to “on” position, to power the system separately. Otherwise need to start double belt main power.
- (4) Manual/auto: Auto mode-usually work in the normal production line, and should set the batch length, pieces. Manual mode-work in the single equipment or during the debugging.
- (5) Pressing plate impact/loosen: in manual mode, control the pressing plate impact and loosen.
- (6) Band saw forward/reverse: in manual mode, control the band saw forward and reverse, there is no action for the band saw.
- (7) Conveyor forward/reverse: in manual mode, control the conveyor forward and reverse.
- (8) Tracking trolley forward/reverse: in manual mode, control the trolley forward and reverse.
- (9) Swing cylinder forward/ reverse: in manual mode, control the swing cylinder forward and reverse.
- (10) Semi automatic cutting start: in automatic mode, the bandsaw complete one cutting action, and main motor has action too. This cutting start button is mainly used for the cutting of off-gauge panel during the automatic production(the panel head and panel end cutting). During the automatic production, turn to the manual postion, press cut start button, after cutting completed turn to auto again, it won't affect on the next panel cutting.
- (11) Cutting stop: in manual mode, when start the cutting, it can stop the cutting action.

11.7.2 Operation steps

11.7.2.1 Manual operate

Close all the air switch in the electrical box, close the electrical box door, the power indicator on the operate panel will be lightened, the power supply is normal. Start the double belt main power, PLC and touch screen start to work, it will show the picture 5.

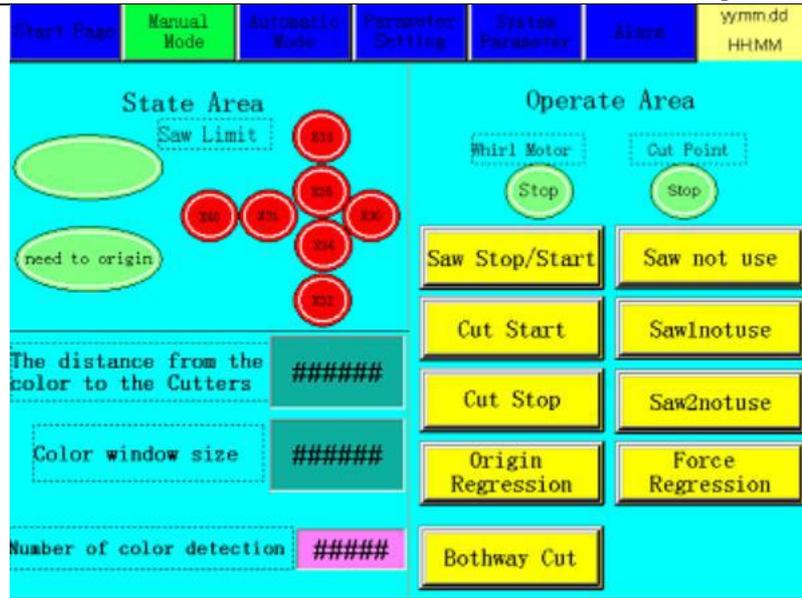


Picture 5

After completed all the above steps, first check the air value, then check whether the band saw move or not, operate the bandsaw machine to the original position. (note: when operating the bandsaw machine, in the range of the stroke of tracking motor and at side of the bandsaw, it is forbidden for anyone standing there.)

Start “Manual” and “Automatic” operation. In “Manual mode”, could operate “conveyor forward/reverse”, “Swing cylinder forward/reverse”, “tracking motor forward/reverse”, “band saw forward/reverse”, “pressing plate impact/loosen”, “cutting start/stop” actions.

In manual mode, press the “manual operation” in the screen, it will show the picture 6.

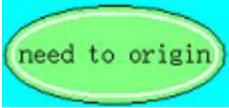


Picture 6

In the touch screen, operate “bandsaw motor start/stop” , “cutting start/stop” , actual length return to zero, tracking trolley return to original point, disk saw1,2 use or not use, select cutting mode, monitor the double belt speed and the double belt in “manual” or “automatic” state. In bandsaw limit switch, could monitor the limit switch state.

Everything the bandsaw power cut off, must have the original point return in the manual page.

Note: This operation must be done after power on, otherwise the production line can not

run normally. When this operation not complete, it will show  , after this

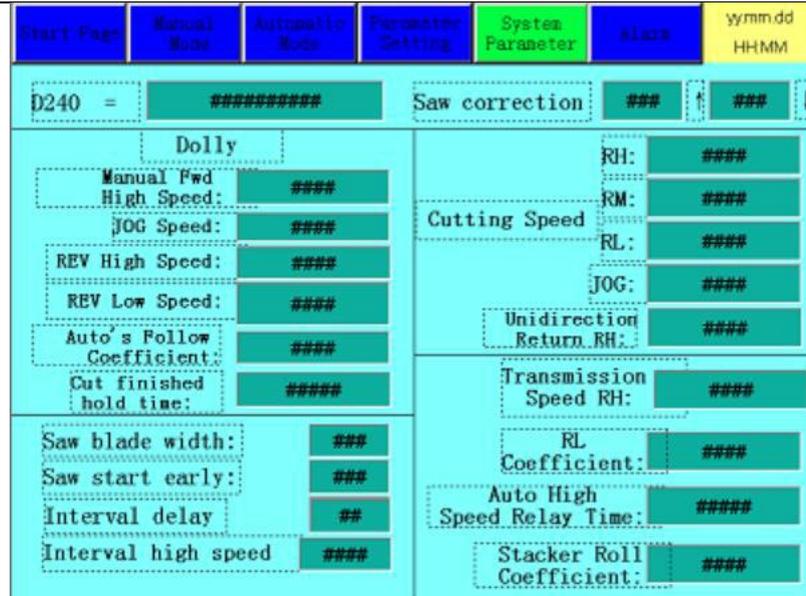
operation, it will show  . When return to the original point, if the trolley

dosen’ t move or the trolley is in the original position, it shows  . When

the trolley move forward, press  could make the trolley move fast to the original position.

11.7.2.2 System parameter revise

To process the automatic operation need two steps, the first step is “revise system parameter” , press “system date” button and goes into picture 7.



Picture 7

The “D240” in the picture is the number of pulses sent by the encoder for every 10m PU panel, to set a correct “D240” can ensure the accuracy of PU panel length . First preset a data, about “20300” . In the manual mode, after a certain length, measue the actual length, and read the actual length on the screen (same as the setting length in the formula), revise the length until the length reach to a correct value:

$$D240 \text{ (new)} = [\text{Setting length} / \text{Actual length}] * D240(\text{old}) * 100\%$$

For example, setting length is 5000mm, actual length is 4900mm, then,

$$D240 \text{ (new)} = [5000 / 4900] * D240(\text{old}) * 100\%$$

The D240(old) is the D240 value on the screen, D240 (new) is the value after calculating.

11.7.2.3 Date set

Before automatic operation, need to operate “date set”, press “date set”button, it shows picture 8.

| Start Page | Manual Mode | Automatic Mode | Parameter Setting | System Parameter | Alarm | yy.mm.dd HH:MM |
|------------|-------------|----------------|-------------------|------------------|--------|-------------------|
| No. | Length | Pieces | No. | Length | Pieces | |
| 1 | ##### | ### | 6 | ##### | ### | |
| 2 | ##### | ### | 7 | ##### | ### | |
| 3 | ##### | ### | 8 | ##### | ### | |
| 4 | ##### | ### | 9 | ##### | ### | |
| 5 | ##### | ### | 10 | ##### | ### | |

Picture 8

In the picture 8, could set 10 batch of panel length and pieces.

11.7.2.4 Automatic operation

Turn “Manual” switch to “Automatic” position, press “Automatic operate” in the screen, goes into picture 9

Picture 9

When processing the automatic operation, should ensure the each action of the bandsaw already in the original position, reach one bandsaw forward/reverse limit, bandsaw manual/auto switch turn to auto position and double belt in auto run state, then could continue the operation, and reset the parameters in picture 8.

- 1) Here the two green lights shows the saw blade turnover state.

2) In automatic mode, when reach the cutting value, first give a wait synchronization signal, after the synchronization completed, then start the cutting.

3) Inverter completes the synchronization and give synchronization signal command.

4) The command for the trolley in original position.

5) The command whether need to have original point return operation.

6)  encoder count means the cutting length is according to the encoder value, press this button means the cutting length will according to the panel head external sensor. The hard surface panel must select the encode length cutting.

7) Press plate cylinder depress time, if the cylinder doesn't press in advance it means after the inverter completes the synchronization and then depress. If the cylinder action in advance then the palte depress when reach the length.

8) It can clear the cumulative length.

9) It can clear the date in the date setting page, press reset button won't clear the date.

10) It can change the actual pieces.

11) It can indicate the total cutting time.

12) It can show the inveter synochronization time.

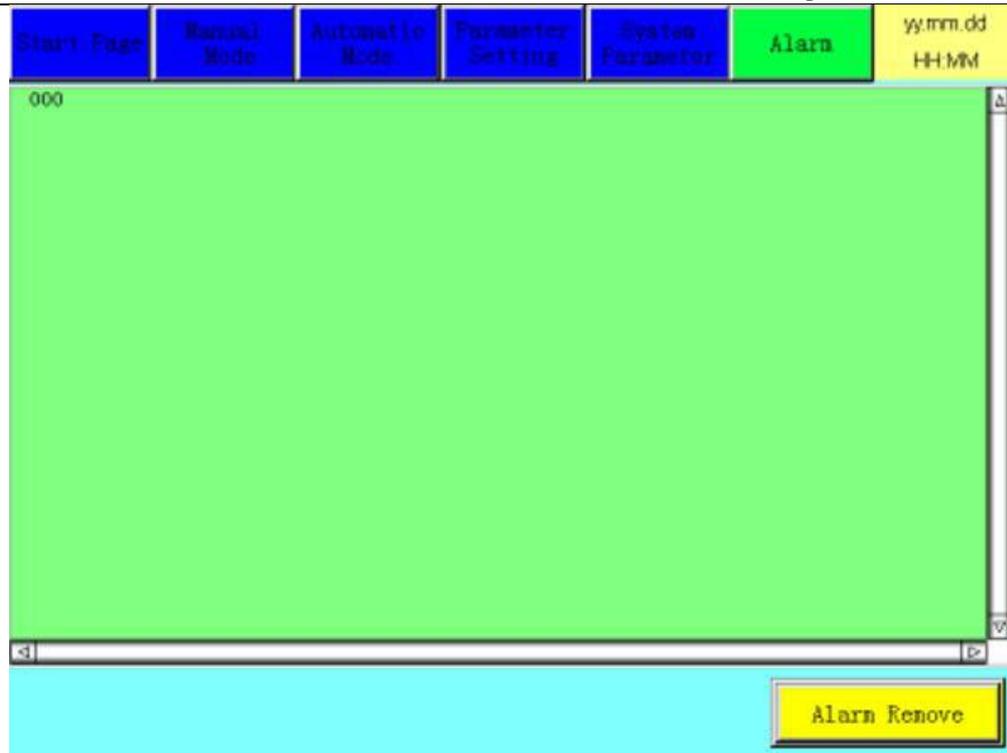
Set the cutting start time, 0 means start cutting after synochronization, if set 10, then it will cost 1s to cutting after synochronization.

After complete the above steps, could process automatic operation.

How to remove the panel head: when cutting the first waste panel automatically, should set the first panel length and pieces in the picture8, usually set the first batch length 1=1500mm, picec 1=1, from the second batch to set the normal parameter. When the PU panel goes through the enconder roller, put the roller on the panel in the certain postion, then can remove the panel head.

11.7.2.5 Alarm records

Press "Alarm records" button in the screen, goes into picture 10.



Picture 10

Alarm content as following:

| | |
|-----------------------------------|---------------------------------------|
| M900: CRC error | M911: Benchmark limit 3 |
| M901: timeout error | M912: Benchmark limit 4 |
| M902: link not performed | M913: Stacker doesn't run |
| M903: Double belt PLC doesn't run | M914: Double belt power doesn't start |
| M904: Double belt PLC error | M915: Bandsaw emergency stop2 |
| M905: Bandsaw emergency stop1 | M916: Bandsaw power doesn't start |
| M906: Tracking inverter alarm | |
| M907: Double belt emergency stop | |
| M908: Stacker emergency stop | |
| M909: Benchmark limit 1 | |
| M910: Benchmark limit 2 | |

11.7.3 Synchronous parameter setting

33-10 Master station synchronous factor Initial value 150256

33-11 Slave station synchronous factor Initial value 40930

The trolley synchronous parameter is 33-10 and 33-11, when need to adjust, can change 33-11, the parameter is relevant to the trolley speed. Usually, if the mechanical parts don't chage, don't need to change these parameters.



- 1) This parameter shows double belt motor encoder frequency, if the change is very big, more than 1000 should consider whether the encoder has failure.
- 2) When in automatic cutting, observe the inverter panel, the value should be around 2.0Nm. It is normal between 0.2-4.5, if the value change is big, even more than 10, should consider to check the bandsaw motor's encoder and coupler. The bandsaw trolley alarm problem, more than 80% is caused by the coupler damage.
- 3) This is the actual position of the trolley, the value becomes bigger when the trolley goes forward, the value becomes smaller when the trolley goes back, the value return to 0 if the trolley return to the zero point.
- 4) The frequency of the trolley inverter.
- 5) The tracking error, the error of the trolley and the double belt synchronization, 380 pulse means about 1mm.

11.7.4 Trolley main inverter failure

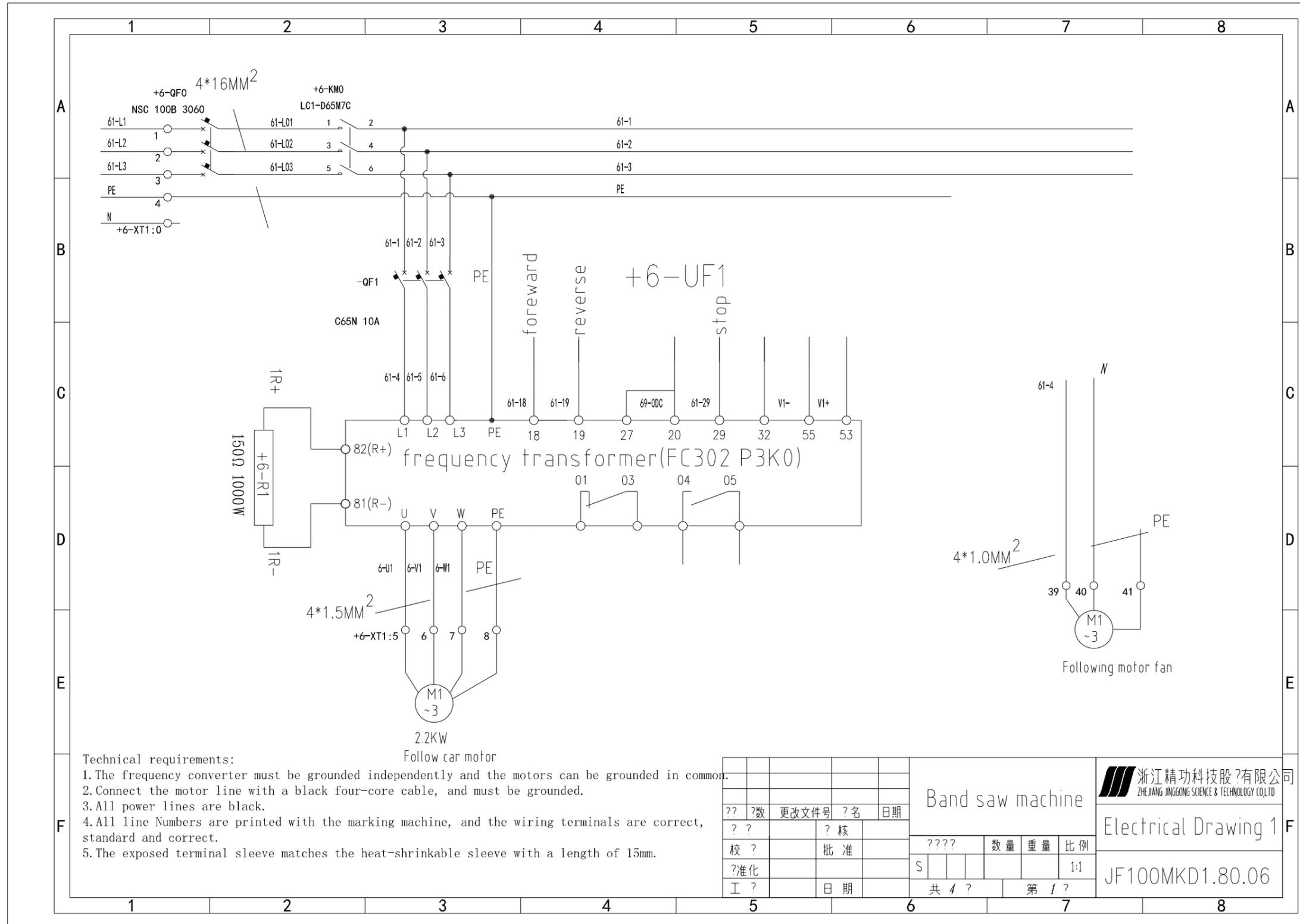
- 1) Tracking error or position error, check the encoder and coupler.
- 2) W113FC doesn't enabled, whether the panel is on OFF position, press auto on to start the inverter, or press reset button on the operation station.
- 3) Main power phase loss, this failure need to check the inverter power supply L1, L2, L3. Then check the motor encoder and coupler.
- 4) If the panel after cutting is trapezoidal, it means the bandsaw and double belt is not sync, should revise the 33-11 parameter. When the panel after cutting is parallelogram, it is possible that the bandsaw bottom frame is misplaced. If the panel after cutting is rectangle, then need to revise D240 parameter.

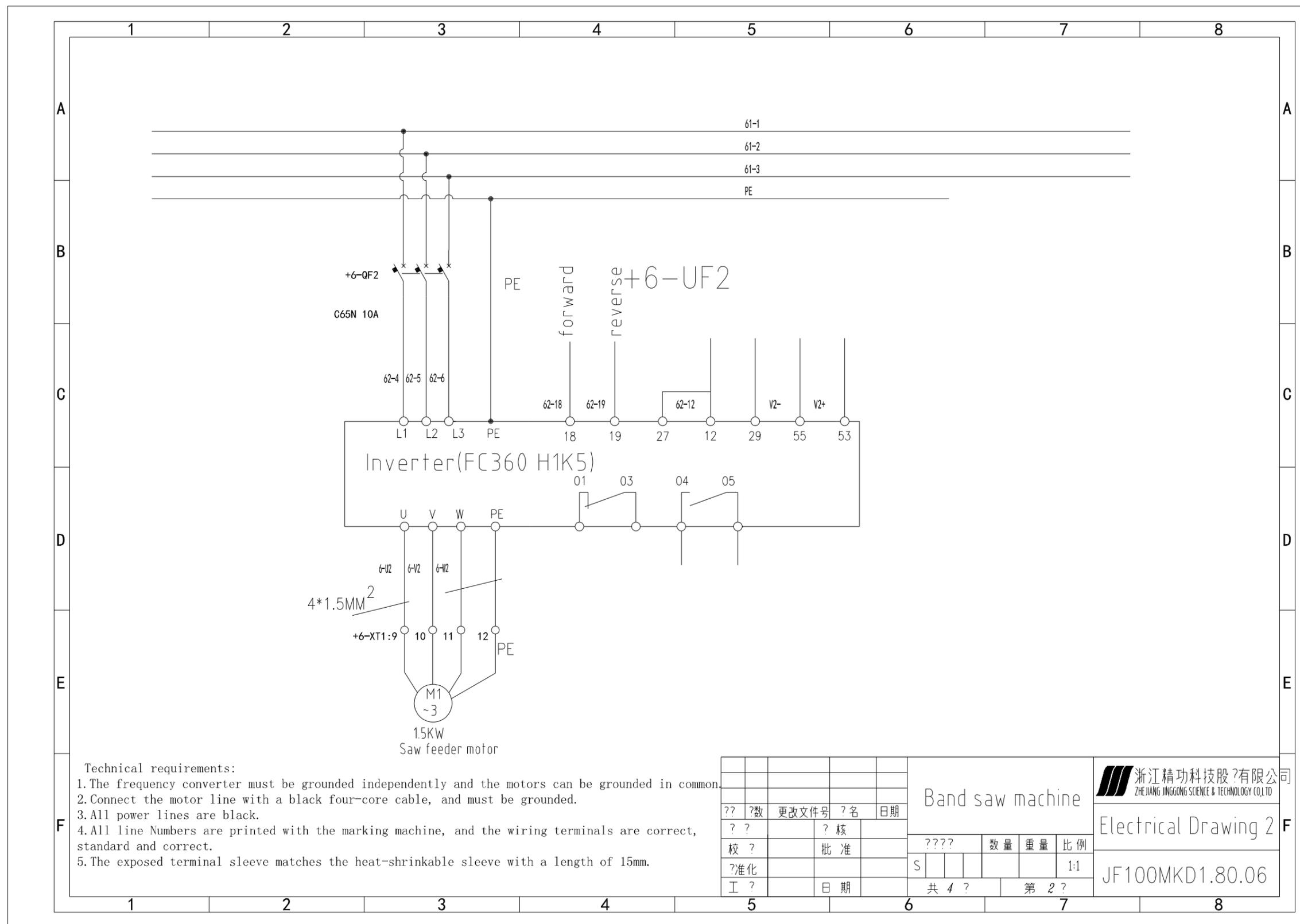
11.7.5 Electrical faults and processing methods

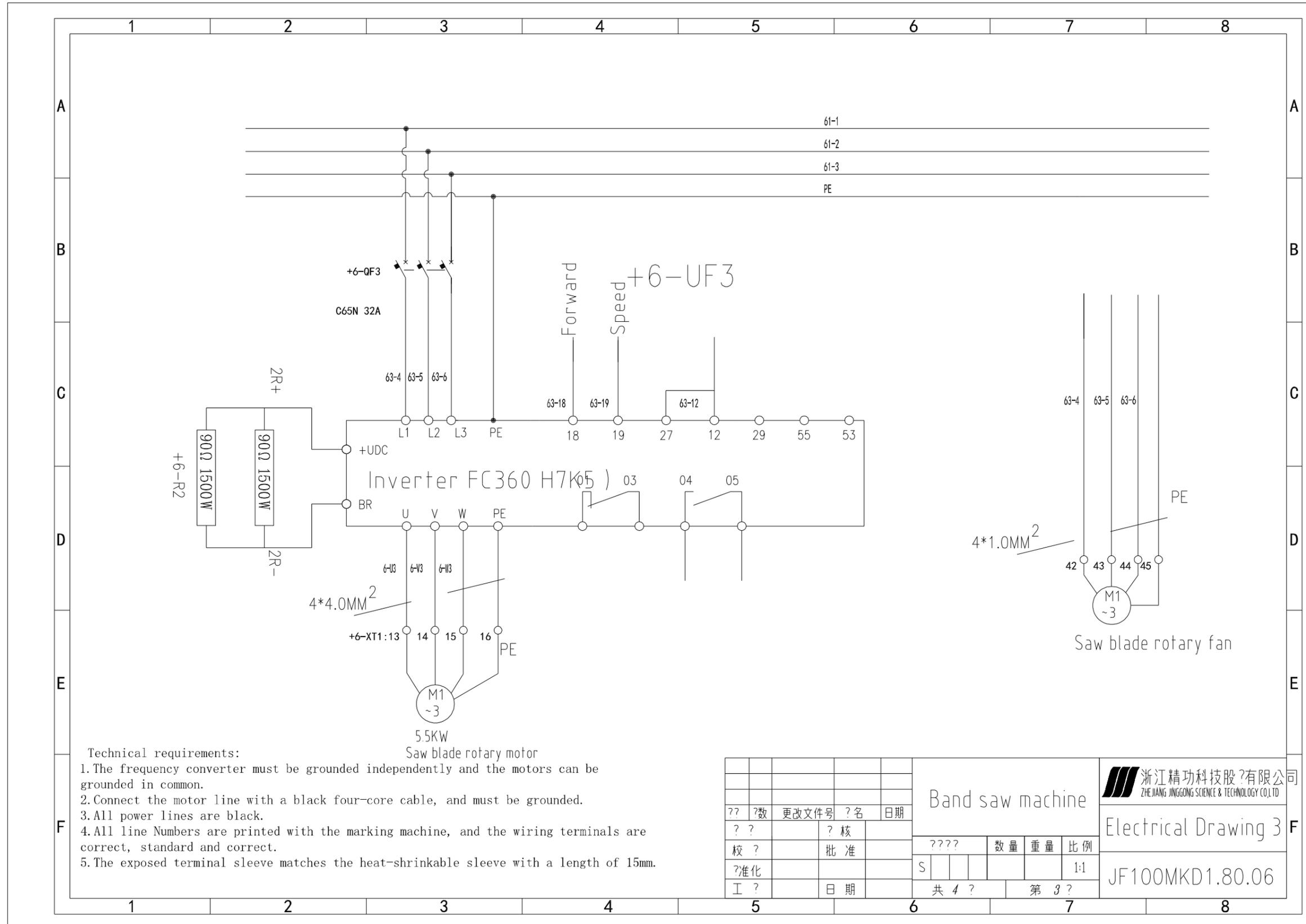
| No. | Fault phenomenon | Failure analysis | solutions |
|-----|--|---|---|
| 1 | In manual mode, the conveyor doesn't work | 1.Inverter alarm 2.PLC output signal error 3.No signal input for conveyor forward or reverse 4.Button broken | 1.Cut the power 1 minute and restart again. 2.Output Y24、 Y25 3.Forward signalX24 、 Reverse signal X25 4.Change the button |
| 2 | In manual mode, tracking motor doesn't move | 1.Inverter alarm 2.PLC output signal error 3.No manual signal input 4.Button broken | 1.Cut the power 1 minute and restart again 2.Output Y10、 Y11 3.Manual signal X13,X14 4.Change the button |
| 3 | In manual mode, can cut | 1.Manual/auto switch hasn't turn to corret position 2.Inverter alarm 3.Screen alarm 4.No manual cut signal input 5.Relay coil burn out 6.Press cylinder doesn't cmpact | 1.Turn the switch to the manual position 2.Cut the power 1 minute and restart again 3.Check according to the alarm prompt 4.Manual cut signalX6 5.Change relay 6.Chech the pneumatic parts |
| 4 | Manual mode is ok, but automatic mode dosen't work | 1.No setting for the panel length, pieces 2.The length parameter be cleared 3.The length encoder doesn't work or broken 4.Press plate limit switch doesn't work or don't have signal | 1. Set the panel length and pieces 2.Set the length parameter 3.Check if there is DC24V power for the encoder or change the encoder. 4.Adjust the press plate limit switch and ensure the signal |
| 5 | There is a big length error on the panel | 1.The encoder coupler loosen or broken 2.The encoder press roller doesn't touch the panel 3. The length parameter was revised | 1.Change the coupler 2. Reinstall the encoder roller 3.Revise the system parameterD240 |

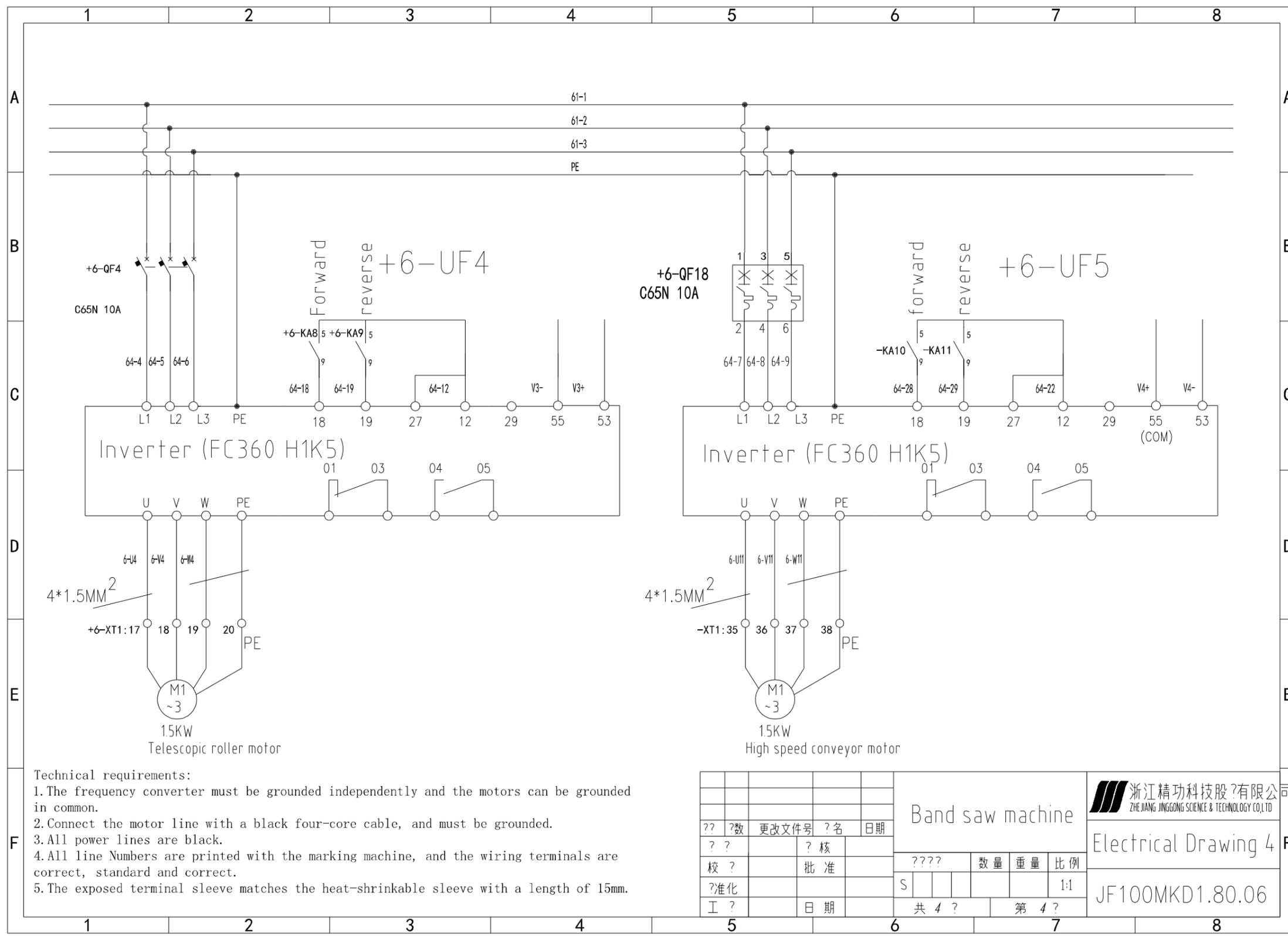
Input and output table see the attachment

Electrical diagram see the attachment









Technical requirements:
 1. The frequency converter must be grounded independently and the motors can be grounded in common.
 2. Connect the motor line with a black four-core cable, and must be grounded.
 3. All power lines are black.
 4. All line Numbers are printed with the marking machine, and the wiring terminals are correct, standard and correct.
 5. The exposed terminal sleeve matches the heat-shrinkable sleeve with a length of 15mm.

| | | | | | | | | | |
|----|----|----|-------|------------------|----|-----|----------------------|--|--|
| | | | | Band saw machine | | | | 浙江精工科技股份有限公司 ZHEJIANG JINGGONG SCIENCE & TECHNOLOGY CO., LTD. | |
| ?? | ?? | 数 | 更改文件号 | ?? | 名 | 日期 | Electrical Drawing 4 | | |
| ?? | ?? | 核 | 批准 | ??? | 数量 | 重量 | 比例 | | |
| ?? | 准化 | 日期 | 共 4 ? | 第 4 ? | | 1:1 | | | |
| | | | | JF100MKD1.80.06 | | | | | |

12. Preheating oven

12.1 Usage

The steel plate foaming heating oven is specially used for steel plate foaming. If the user use it for heating, solidification of flammable, explosive gas may be produced artifacts or specimen, should be in strict operation technology measures to ensure that the organic gas concentrations less than a quarter of the gas explosion lower limit.

12.2 Basic parameter

| | |
|---|--------------------------------------|
| Power supply: | Three phase four wire 415V 50HZ |
| Double belt chain plate working temperature: | Around 45°C (PU) , Around 70°C (PIR) |
| Chain plate (indoor temperature) reach to working temperature time: | About 2hour |
| Heating capacity: | 2×160000 Therm/hour |
| Circulation fan air volume: | About 2×12000 M ³ /hour |
| Blower motor power: | 7.5 kW×2 |
| Temperature difference: | ≤±3°C |
| Heating power: | 60kW |

12.2.1 Work environment condition

Environment temperature ≤40°C

Relative humidity ≤85%

No flammability、explode、corrosively gas ,dust.

12.2.2 Work principle

This preheating is cycle, aeration, auto control temperature and heating equipment.

In the middle there have centrifugal air-blower in the heating room. In the working, it put the heat air which in the heating room beat into the left and right path, then enter into the working room, heat change with workpiece, from the return wind ora to the heating room, like that ,make cycle aeration.

The middle device fix a feel temperature component----platinum resistance in the preheating oven, when working, the platinum resistance put the change of temperature turn to the telecommunication, send to PXR9 process control temperature equipment, the received

telecommunication compare with the original enactment by PXR9 process control temperature equipment,

In the working time, when working temperature is exceed the original, PXR9 proceeding control temperature equipment and control temperature equipment output the relay feel signal, through the exceed temperature warn system, cutting off the heating electric source, and utter the voice and the warn signal.

12.2.3 Structure features

- 1) The heating oven use channel steel, angle steel for framework, the shell is made of steel plate, the preheating furnace tank, heat exchanger, the tank and air pipe shell, the tank are all made by galvanized steel plate, in the middle filled with heat preservation materials.
- 2) The inlet and outlet equipped with brush seal device
- 3) The back of oven and bottom of control panel are equipped with grounding screw, provide good protection.

12.2.4 Use method

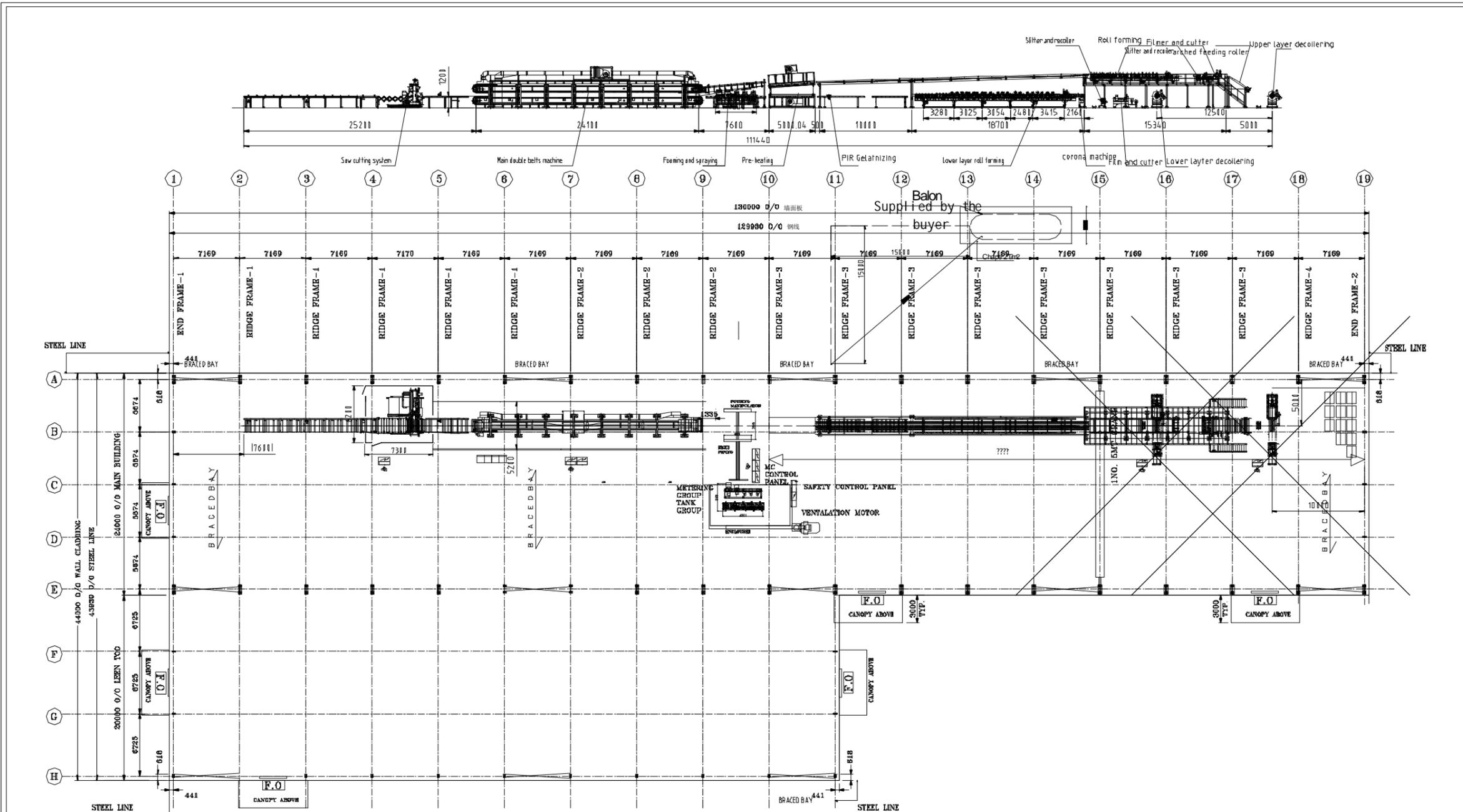
- 1) Installed a special load switch according to the heating power.
- 2) Close the load switch, press “power on” button, the white power indicator light, then press “air blow I on ” button, about one minute later, press “air blow I off ” button, check the blower running direction. Check the air blower II in the same way.
- 3) Adjust the temperature control meter PXR9, usually the alarm temperature is 10~15℃ higher than the operating temperature.
- 4) Start “power on”, the green light indicated, then turn the air blower switch to “on” position, set the PXR working temperature according to the requirement, the heating oven starts to work normally. When the temperature exceeds the set alarm temperature, there will be signal for sound and light alarm
- 5) After using, press “air blow I off”, “air blow II off”, “power off” button, then cut the main power supply.

13. Drawing

1. Wearing parts list
2. 《Production line layout drawing》
3. 《Production line foundation drawing》

Wearing parts list

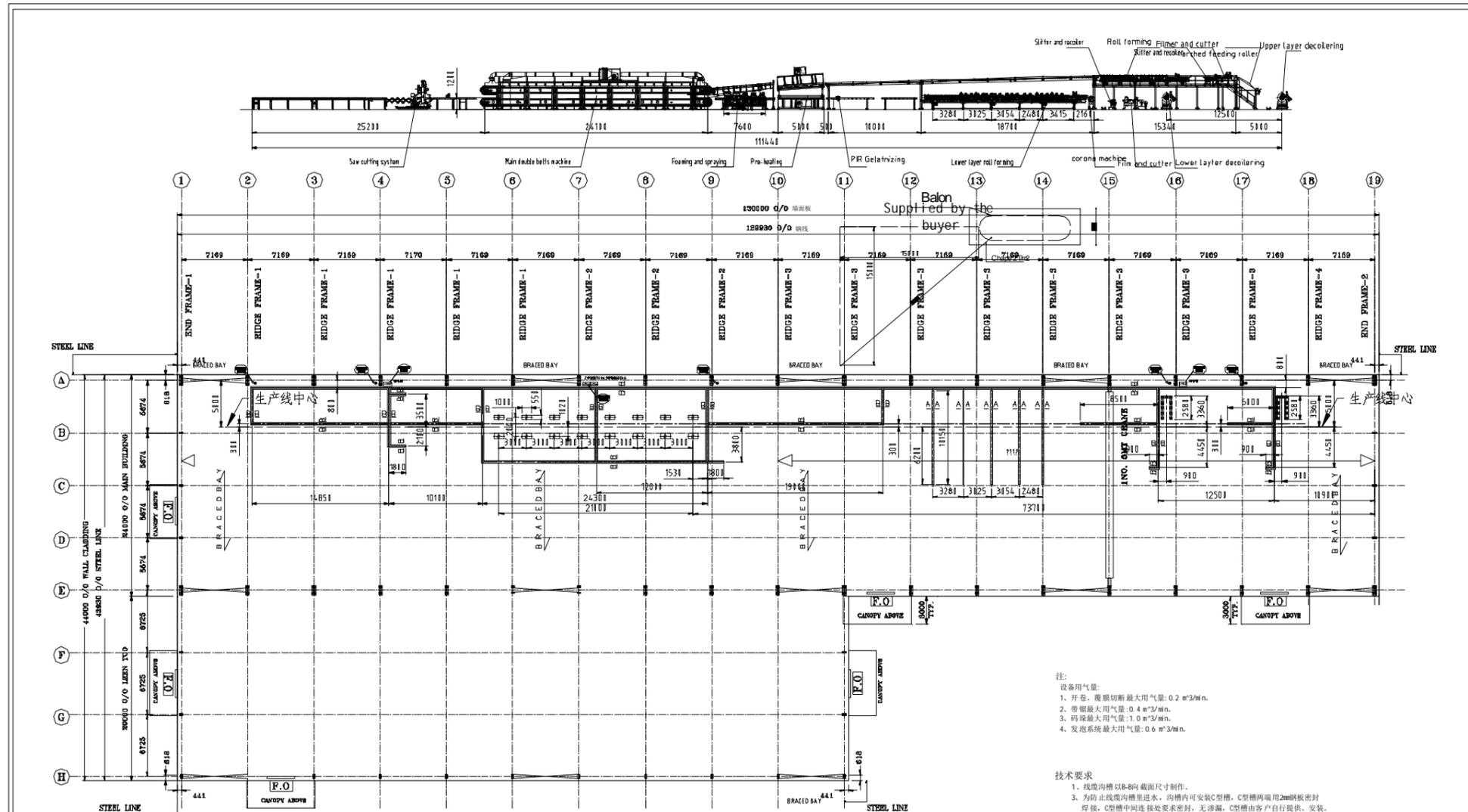
| No. | Item | remark |
|-----|--|-------------------|
| 1 | Sliding bearing | JC10-019 |
| 2 | Sliding bearing | JC10-020 |
| 3 | blade | 500000236 |
| 4 | Corrugation panel side mould, bottom mould | |
| 5 | Wall panel side mould, bottom mould | |
| 6 | Running pulley | JF100.05.02-023 |
| 7 | Bearing | JF100.05.01-048 |
| 8 | Roller bearing(INA) | LR5205-2RS |
| 9 | Oilless bearing | SF-1 2530 |
| 10 | Metal cutting double metal band saw blade | 6650×20×0.9×12.7P |



LAYOUT PLAN

- Remark:
1. The equipment walls and necessary buildings are provided by the buyer.
 2. The dimensioning of the registered size is only for reference and shall be determined according to the layout of the user's workshop.

| | | | | | |
|--|-------------|----------------|-------------|-------------|------------------|
| | PROJECT NO- | Drawing Title: | Drawn by: | Checked by: | Date: 07.05.2017 |
| | 1012 | | | | Scale: N.T.S |
| | | | LAYOUT PLAN | Dwg No: | |

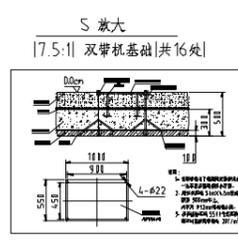
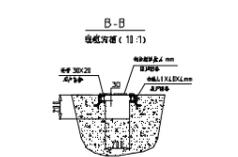
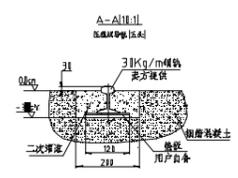
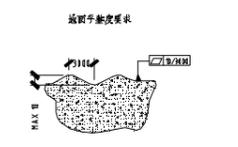


LAYOUT PLAN

- 注:
- 设备用气量:
 - 开卷、覆膜切最大用气量: 0.2 m³/min.
 - 带锯最大用气量: 0.4 m³/min.
 - 码垛最大用气量: 1.0 m³/min.
 - 发泡系统最大用气量: 0.6 m³/min.

- 技术要求
1. 线槽沟槽以B-B向截面尺寸制作。
 2. 为防止线槽沟槽里进水, 沟槽内可安装C型钢, C型钢两端用2mm钢板密封焊接, C型钢中间连接处要求密封, 无渗漏, C型钢由客户自行提供、安装。
 3. 沟槽上所有用到厚度为6mm花纹板, 由客户自行提供。
 4. 生产线其余基础按承压能力10T/m²设计, 开卷机、双带机、冷却机地基础承载荷载约为20T/m²。
 5. 土壤疏松的土质应当增大基础尺寸或用螺纹钢加固。
 6. 压缩空气压力8-10bar。
 7. 线槽沟槽分布有台阶时, 其底面应斜面过渡。
 8. 基础凝固期不低于20天, 二次灌浆凝固期不低于10天。
 9. 压缩空气气源、配电箱由用户自备。
 10. 成型机行走导轨基础需二次灌浆, 预埋板由卖方制作, 螺栓现场焊接。
 11. 电缆沟、原料沟入口等, 安装完成后, 用户自行掩盖防护。

| 序号 | 名称 | 规格 | 数量 | 备注 |
|----|------|-------|----|----------|
| 1 | 开卷机 | Y 110 | 1 | 1.5m 300 |
| 2 | 覆膜机 | Y 110 | 1 | 1.5m 300 |
| 3 | 带锯 | Y 110 | 1 | 1.5m 300 |
| 4 | 码垛机 | Y 110 | 1 | 1.5m 300 |
| 5 | 发泡系统 | Y 110 | 1 | 1.5m 300 |
| 6 | 冷却机 | Y 110 | 1 | 1.5m 300 |
| 7 | 双带机 | Y 110 | 1 | 1.5m 300 |
| 8 | 成型机 | Y 110 | 1 | 1.5m 300 |
| 9 | 行走导轨 | Y 110 | 1 | 1.5m 300 |
| 10 | 配电箱 | Y 110 | 1 | 1.5m 300 |
| 11 | 预埋板 | Y 110 | 1 | 1.5m 300 |
| 12 | 螺栓 | Y 110 | 1 | 1.5m 300 |
| 13 | 密封胶 | Y 110 | 1 | 1.5m 300 |
| 14 | 钢板 | Y 110 | 1 | 1.5m 300 |
| 15 | 花纹板 | Y 110 | 1 | 1.5m 300 |
| 16 | 螺纹钢 | Y 110 | 1 | 1.5m 300 |
| 17 | 其他材料 | Y 110 | 1 | 1.5m 300 |



| | | | | |
|---------------------|-------------------------------|-----------|-------------|----------------------|
| PROJECT NO- 1012 | Drawing Title: LAYOUT PLAN | Drawn by: | Checked by: | Date: 07.05.2017 |
| | | Dwg No: | | Scale: N.T.S Rev. |

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|----------|----|----|----|------------|
| 审核 | 设计 | 制图 | 校对 | 日期 |
| | | | | 07.05.2017 |
| JF100G15 | | | | |