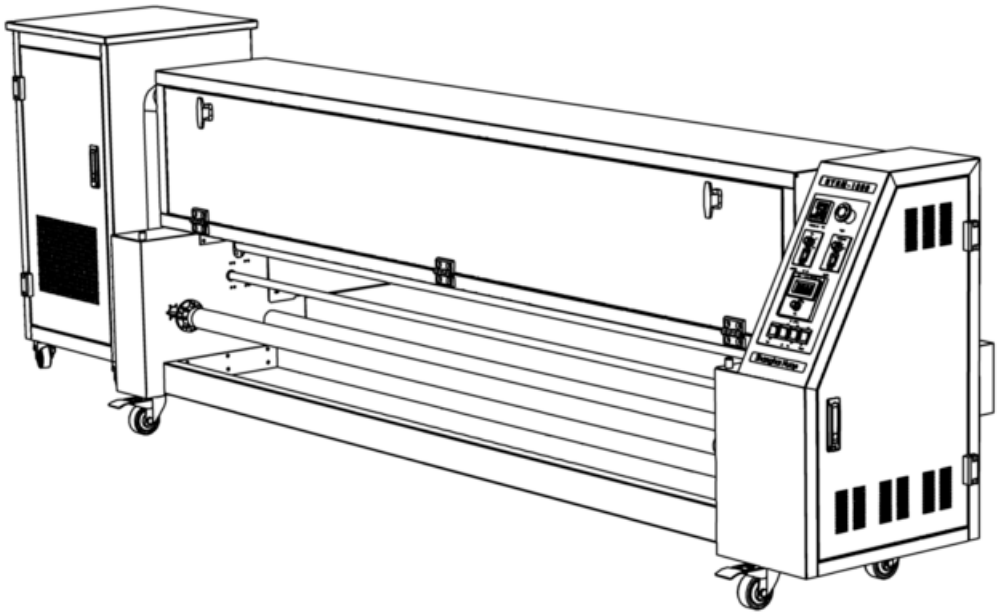
Saer Heat Transfer Machine

SHM-1800

OPERATION MANUAL



Read This Manual Before Using The Equipment.

1 SAFETY INSTRUCTIONS

2 UNPACKING

3 ASSEMBLY

4 PRODUCT OVERVIEW

5 Electrical diagram and parts list

6 HANDLING SHM-1800

7 MAINTENANCE

8 SUPPORTS

1 SAFETY INSTRUCTIONS

1.1 introductions

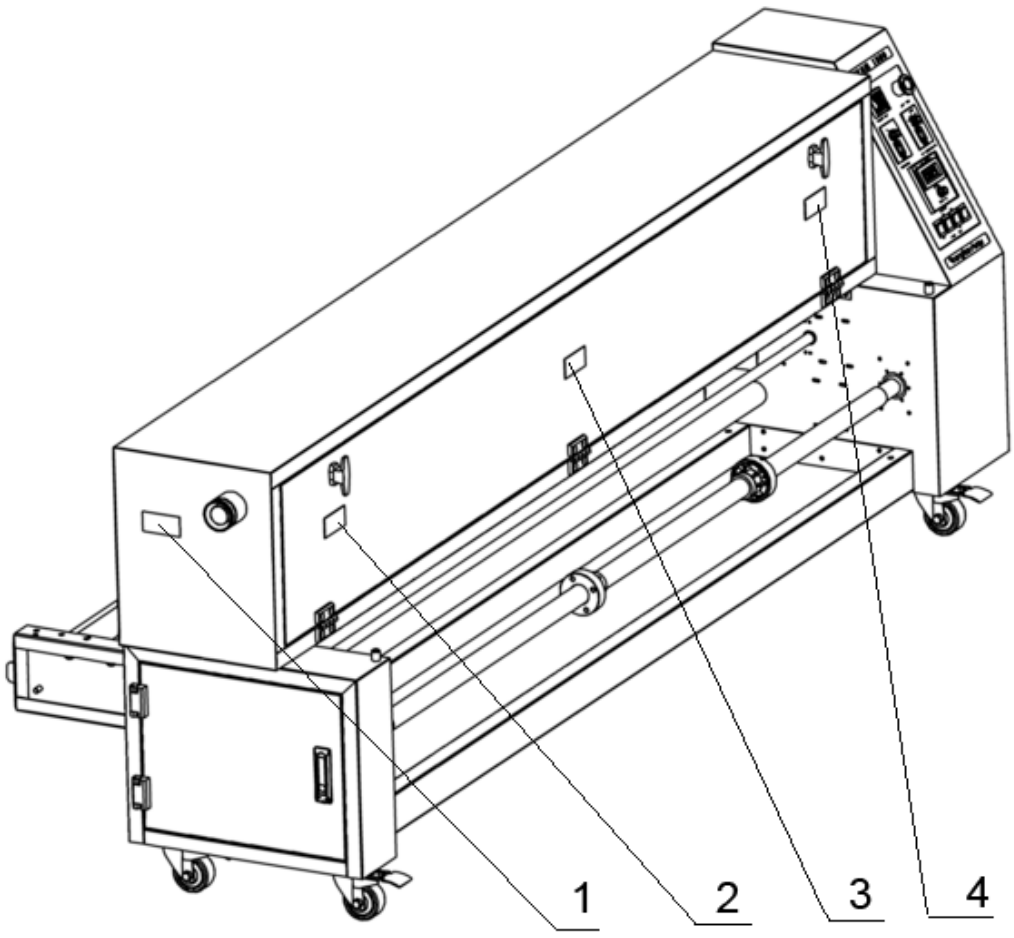
This chapter explains the notices about using the SHM-1800.

WARNING

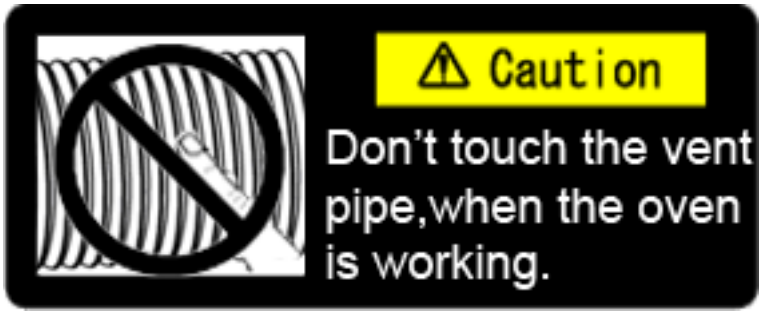
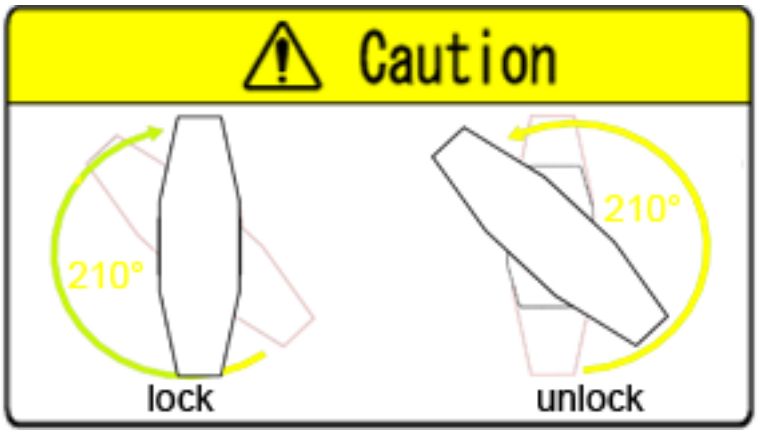
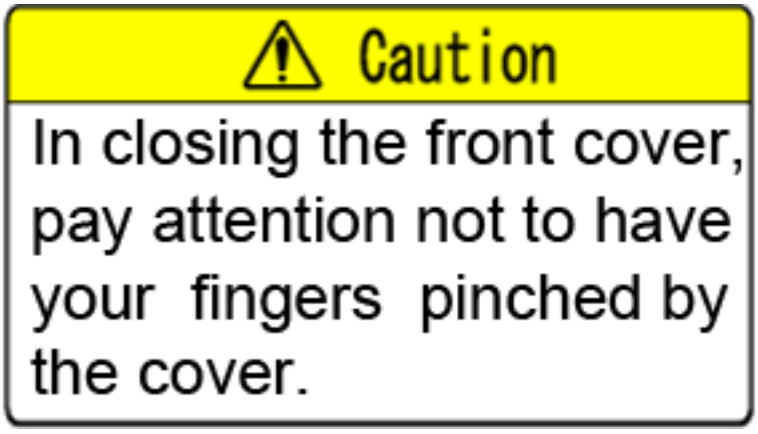
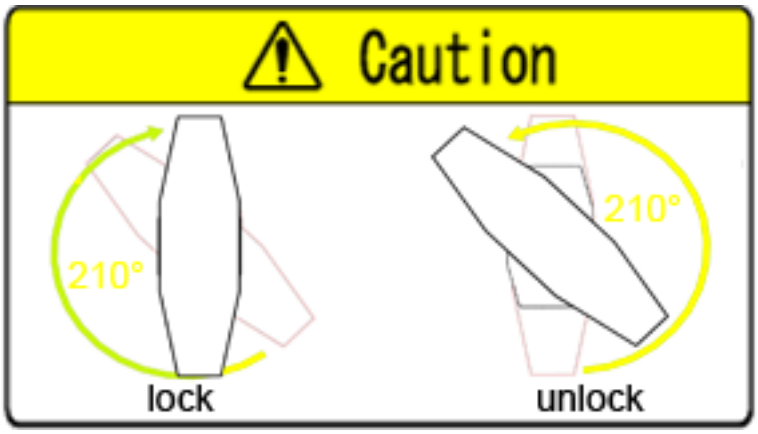
before using the machine , be sure the protective packaging material inside the machine has been moved out.

1.2 Locations and types of warning labels

Pasting locations of the warning label is shown in the following figure.



No.	Types of warning label

1	
2	
3	
4	

1.3 Before using the machine

A、Read the manual before using the machine . Before unpacking, assembly and handling of the machine, first understand the contents and directions in this manual.

B、Be sure the power supply is satisfied.

1.4 Using the machine

A、When the machine is working, don’t open the front door.

B、When the machine is working, don’t touch the electrical installations.

C、Don’t reach for heating area.

D、When the machine is working, avoid to change the setting.

1.5 After used the machine

A、Make the feeding roll at the lowest position.

B、Put all switches off.

C、Disconnection the power cable.

D、Cleaning and maintenance the machine oftentimes.

F、Cover the machine by protection sheet.

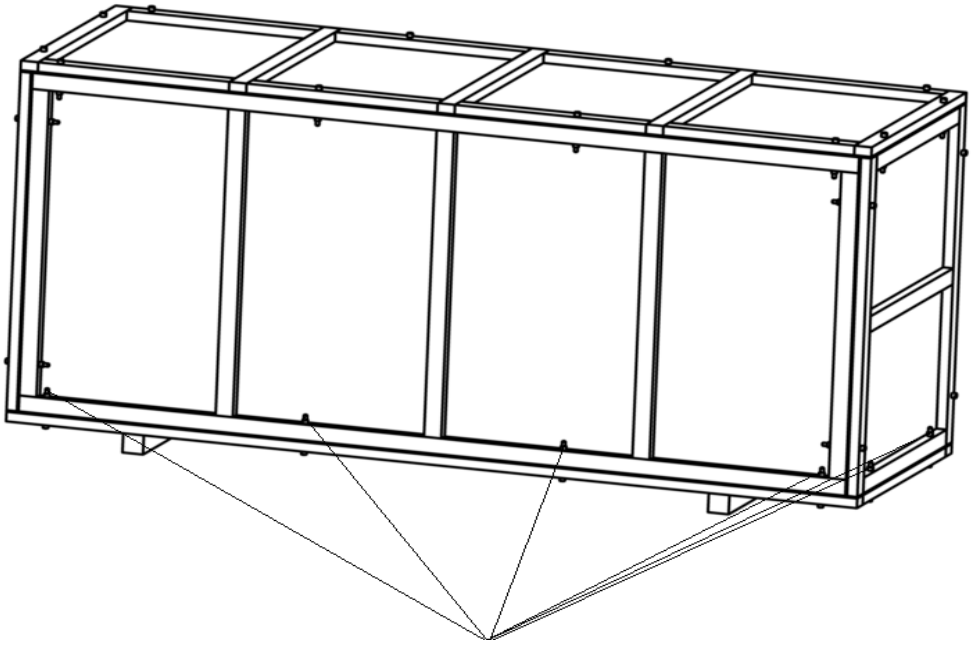
2 Unpacking

2.1 Unpacking procedure

Unpack the package according the following procedure.

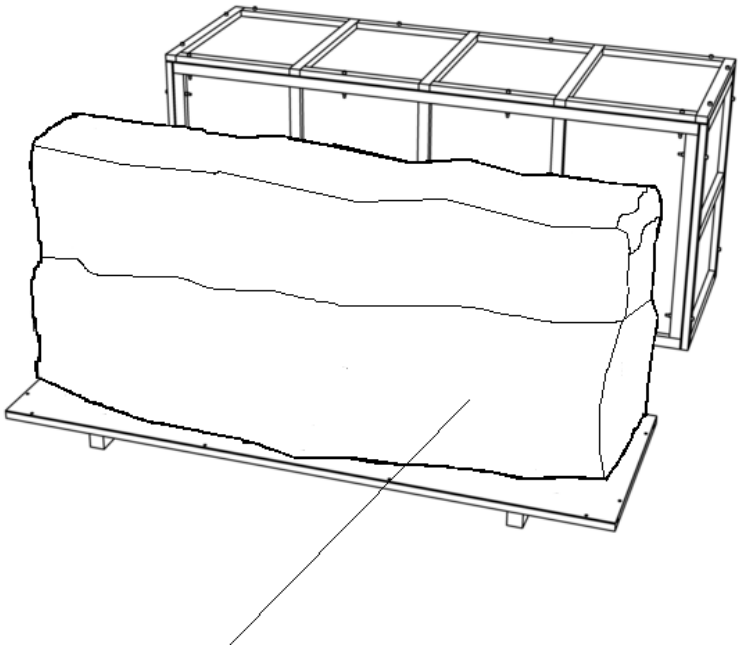
A、Move the packaging to the location to unpack.

B、Unscrew the screw for connecting the box and the palette.



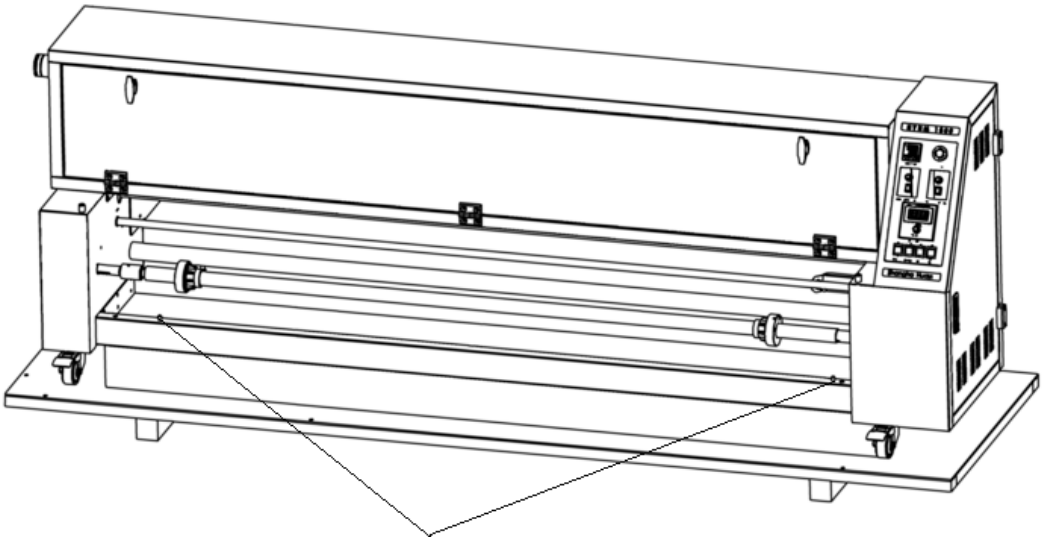
Screw for connecting the box and the palette

C、Remove the box.



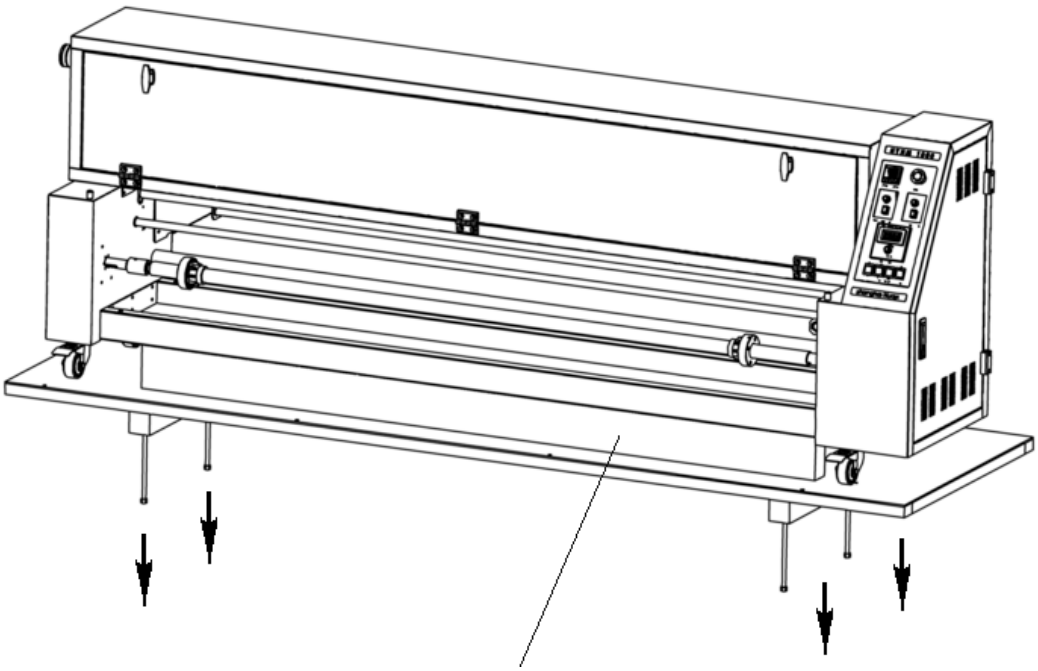
Product protection sheet

D、Remove the product protection sheet.



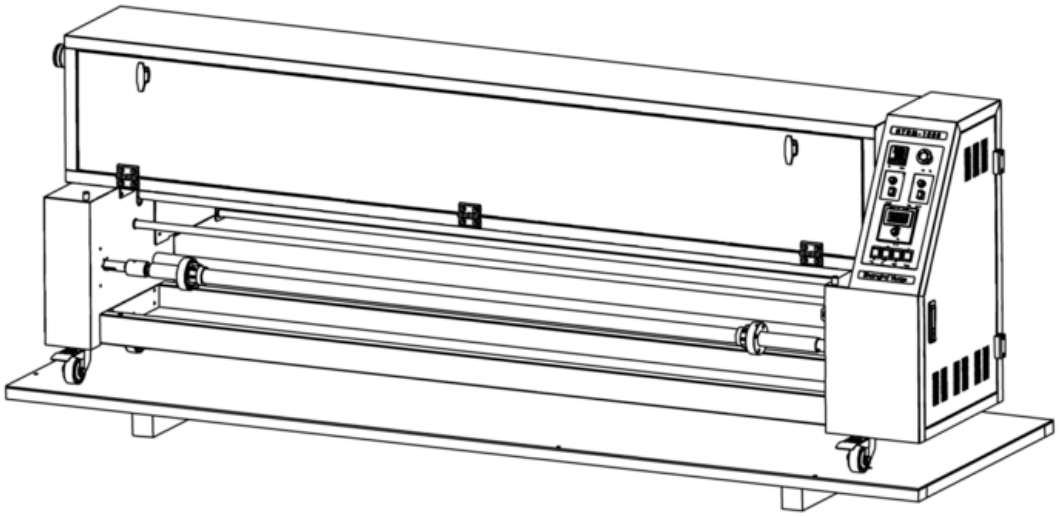
Screw for connecting the main unit and the palette

E、Unscrew the screw for connecting the main unit and the palette, and move out the screw.

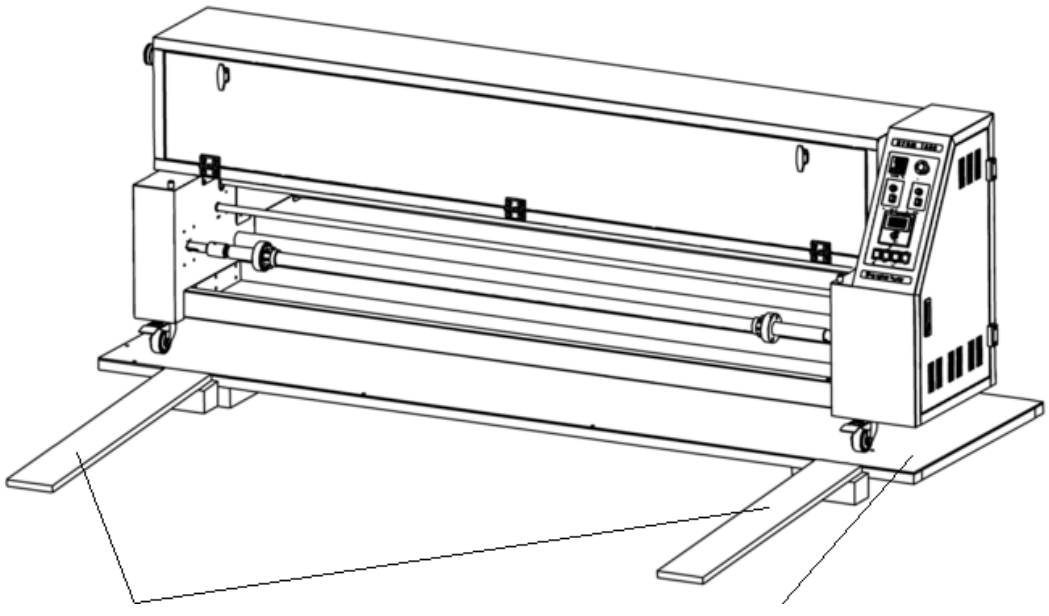


Stand support material

F、Remove the stand support material.



G、Attach the slope to the front side of the palette. Using the slope, lower the machine from the palette.



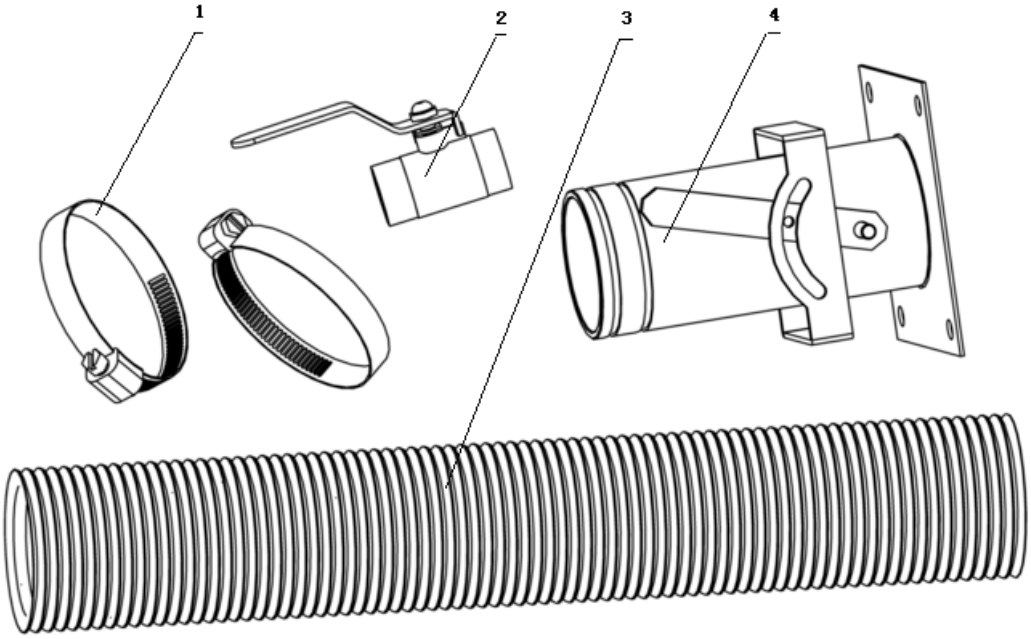
Slope **palette**

2.2 Verification of packaged items

After unpacking the packaging box, inspect to make sure that the unit is not damaged,

and that all necessary parts are present.

2.2.1 contents of accessories



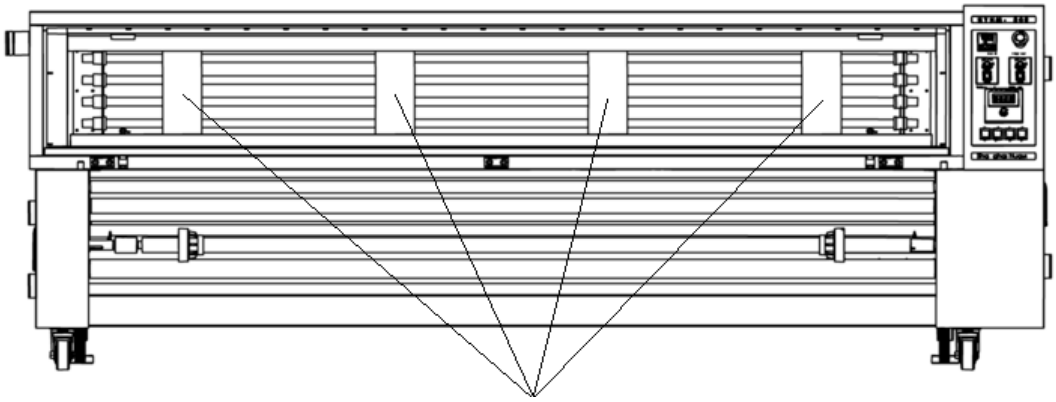
No.	Parts Name	Quantity	Function
1	Anchor ear	2	Fixing the aluminum foil steel wire telescopic vent pipe
2	Waste Water Valve	1	Discharge the waste water from the filter.
3	Aluminum Foil Steel Wire Telescopic Vent Pipe	1	Connecting the machine and the filter.
4	Blast volume controller	1	Vacuum regulation

2.2.2 spare parts

One temperature sensor is present.

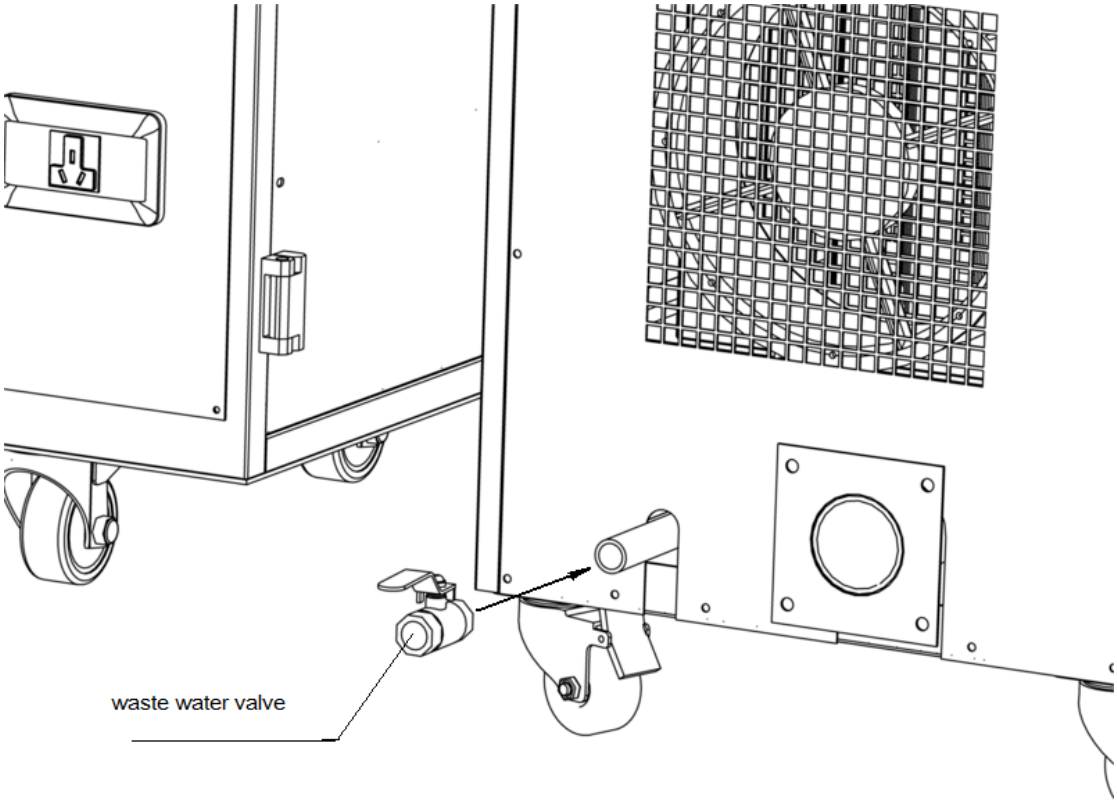
3 ASSEMBLY

3.1 Removal of protective packaging material.

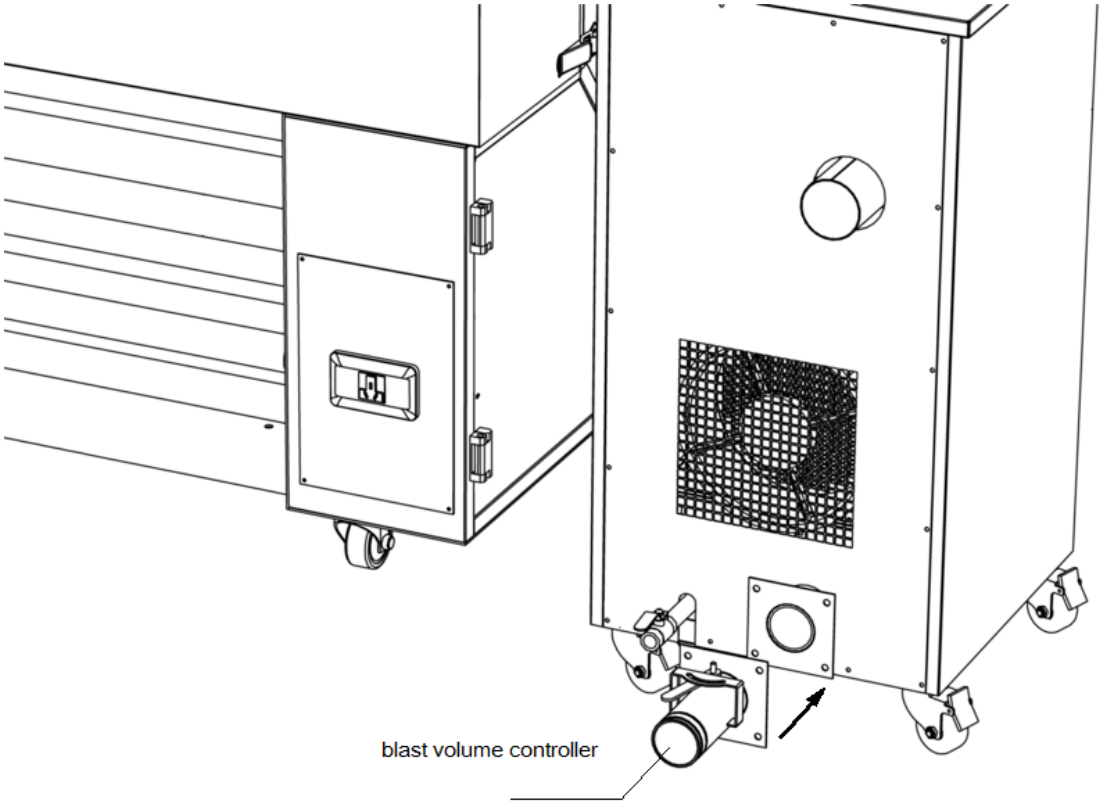


Protective packaging material

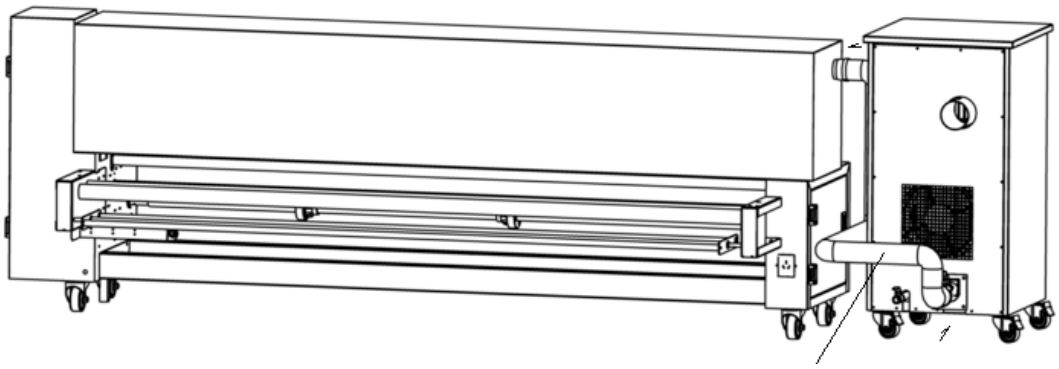
3.2 Installing the waste water valve.



3.3 Installing the blast volume controller



3.4 Installing the aluminum foil steel wire telescopic vent pipe.



aluminum foil steel wire telescopic vent pipe

4 PRODUCT OVERVIEW

4.1 Introduction

SHM-1800 is a machine which can transfer vivid color to media with high color fastness and high light fastness by heating.

4.2 Features

The features are described below：

a、 Far Infrared Blackbody Tube Radiation Electrothermal Heating

b、Intelligent Digital Display Temperature Controller Is Used

c、 Digital Tension Control

d、 Feeding Speed and Taking up Speed Are Controllable

e、 Vacuum Fan Delivery Is Controllable

f、 Quick Tail Gas Treatment

g、 Easy to maintenance

h、 Easy to operation

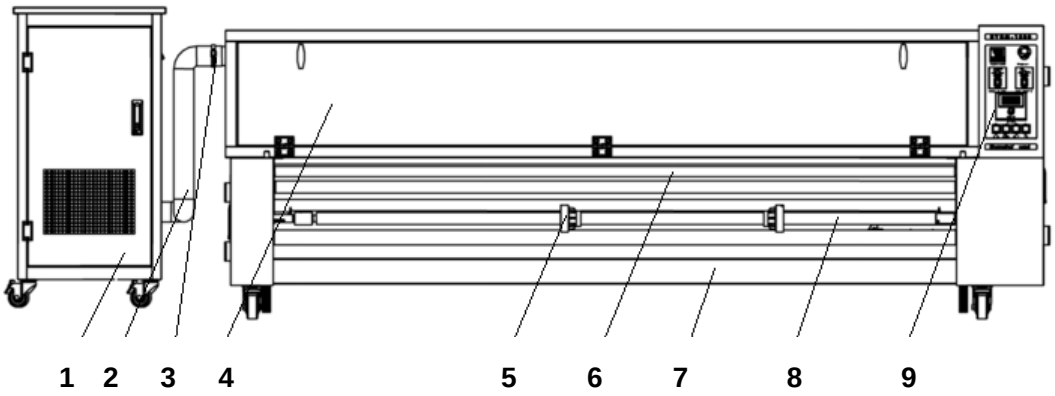
4.3 Specification SHM-1800

Power	4kw	
Working Width	1800mm	
Blackbody Tube Dimension	2120mm	
Temperature	0~400℃	
Tension	0~1.2kg	
Power supply	AC220~240V、50Hz	
Dimension	2715mmL*860mmW*920mmH	
Weight	320kg	

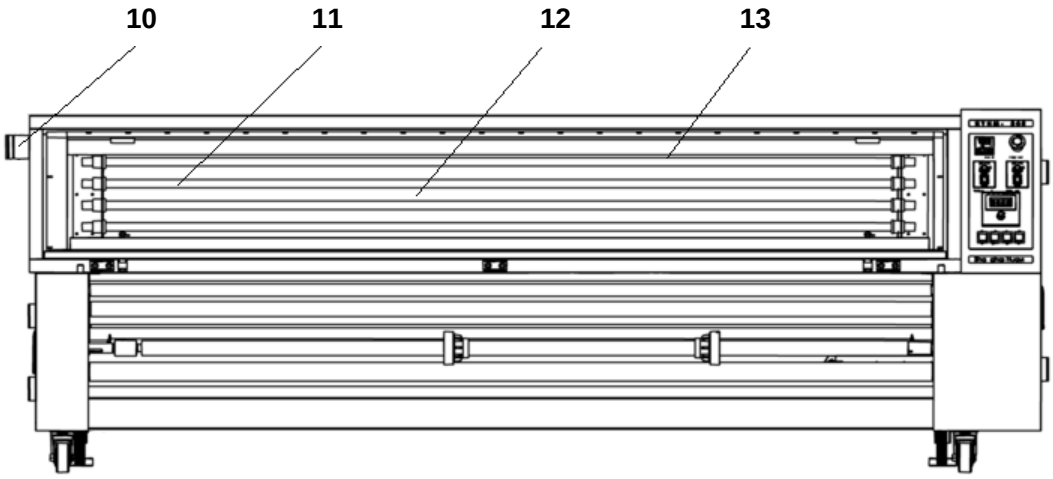
4.4 Part names and functions

Names and functions of each part are explained.

4.4.1 front section

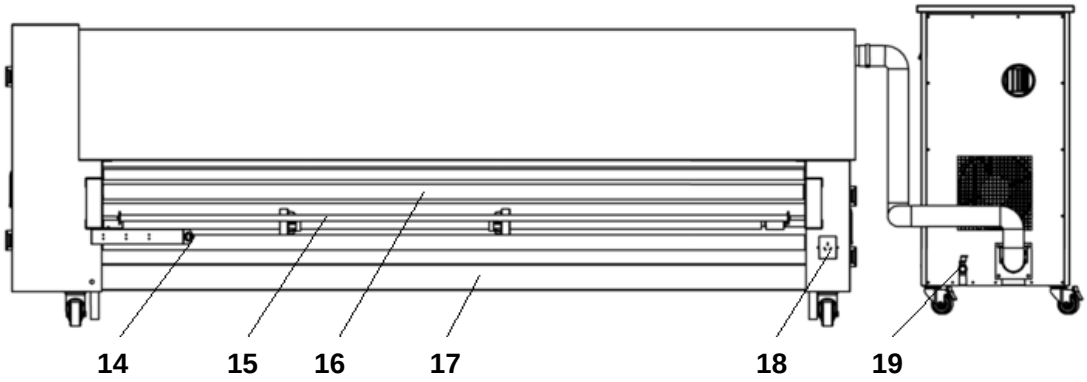


No.	Name	Function
1	filter	For tail gas treatment.
2	Aluminum Foil Steel Wire Telescopic Vent Pipe	Connecting the machine and the filter.
3	Anchor ear	Fixing the aluminum foil steel wire telescopic vent pipe.
4	Front door	For checking and maintenance.
5	Media positive stop	Controlling the media position.
6	Feeding roll	Feeding media to the heating area.
7	Base beam	For moving the machine by carrying implement.
8	Taking up roll	Taking up the finished media.
9	Operation panel	For operation and controlling the machine.



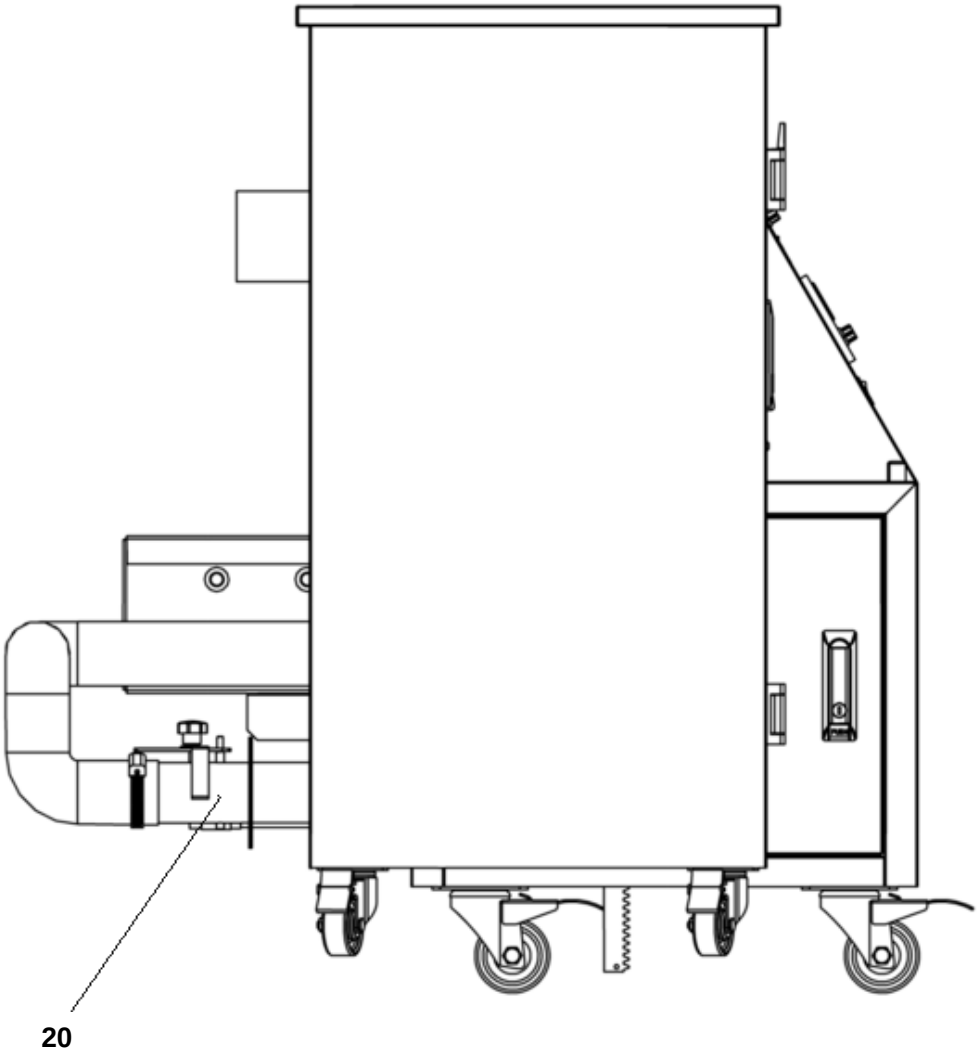
No.	Name	Function
10	Exhaust tube	For exhausting the tail gas from the heating area.
11	Blackbody tube	For heating.
12	Reflector	Reflecting heat
13	Temperature sensor	Transfer the temperature data to the temperature controller.

4.4.2 Rear section



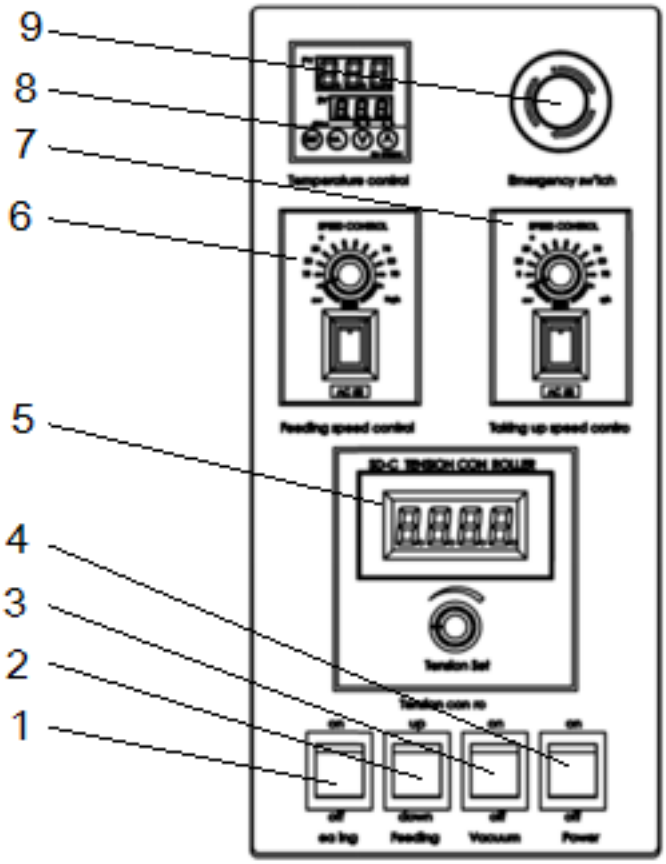
No.	Name	Function
14	Photo-electric proximity switche	Transfer media signal to taking up controller.
15	Tension roller	Tensing the media.
16	Media support roll	Support media.
17	Base beam	For moving the machine by carrying implement.
18	Socket power	Supply power to filter.
19	Waste water valve	Discharge the waste water from the filter.

4.4.3 Left section



No.	name	Function
20	Blast volume controller	It is used for controlling the vacuum volume.

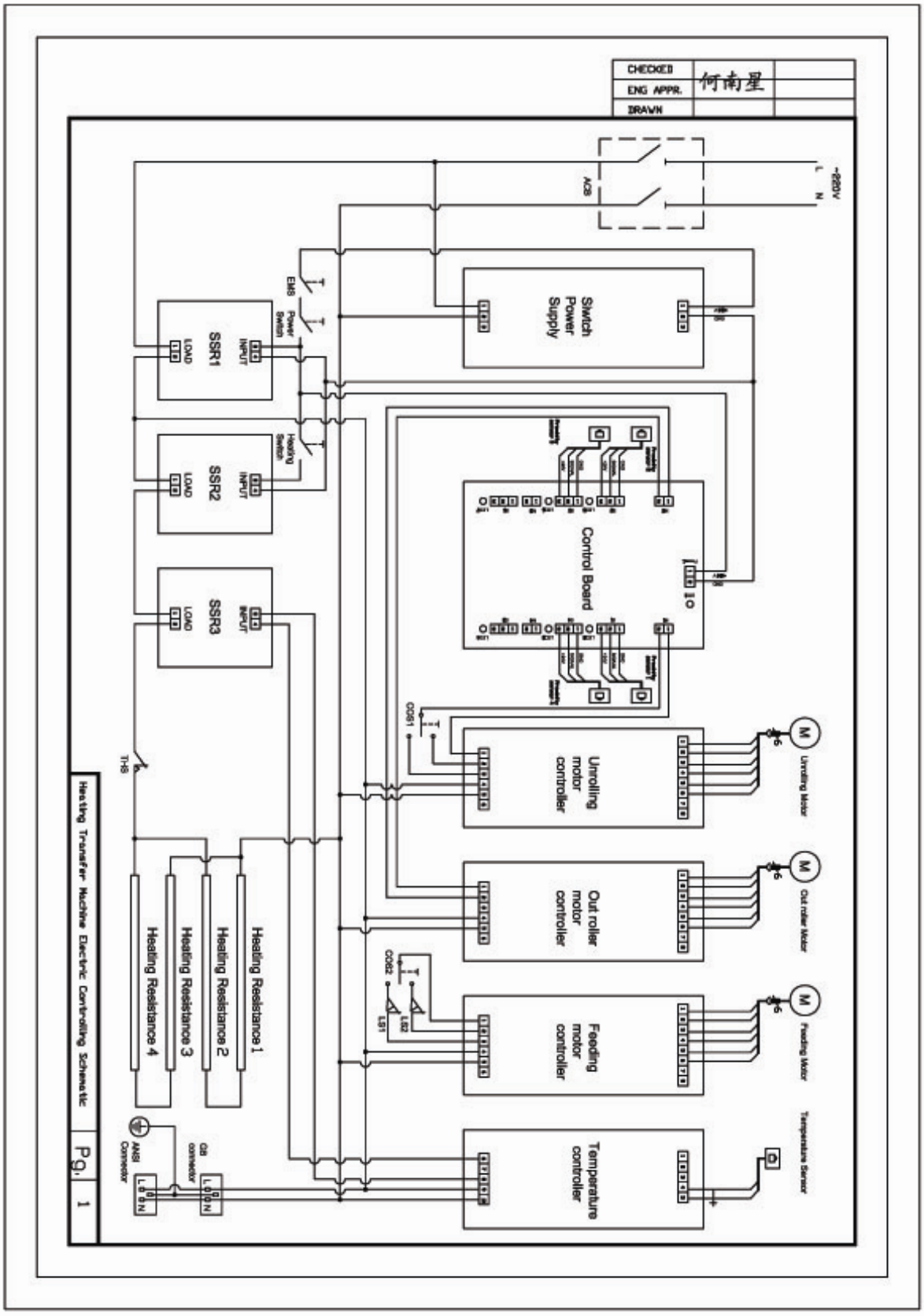
4.4.4 Operation panel



No.	Name	Function
1	Heating switch	Start heating
2	Feeding switch	Start feeding roller moving(up or down)
3	Vacuum switch	Start vacuum
4	Power switch	Sart the machine
5	Tension controller	Controlling the tension of taking up.
6	Feeding speed controller	Controlling the feeding roller(up &down) speed
7	Taking up speed controller	Controlling the taking up speed
8	Temperature controller	Controlling the heating temperature.
9	Emergency stop	Stop the machine when emergency situations are happening

5 Electrical diagram and parts list

5.1 Electrical diagram



5.2 electrical parts list

No.	Name	Type	Q'ty	Manufacturer	
1	Circuit-Breaker	DZ47-60 C20	1	CHNT	
2	Switch power supply	CL-A-15-24	1	CHENGLIAN	
3	Proximity sensor	TL-Q5WC1	4	OMRON	
4	Chang-over switch	TYPE 13322	1	OMRON	
5	Emergency stop switch	Y090LAY7	1	ZHIMING	
6	Button switch	KCD7-2211N	2	PINYI	
7	Button switch	KCD_2 15A	1	HQDKQJC	
8	Limit switch	V-153-1C25	2	OMRON	
9	Thermal switch	KSD 301	1	FD	
10	Solid state relay	SSR-25 DA	3	YANGJI	
11	Thermocouples	K	1	YUYAO	
12	Temperature controller	XMTG-8511	1	YUYAO	
13	ANSI Electrical outlet	SS-6B	1	RONG FENG	
14	GB Electrical outlet	RA-03	1	RICH BAY	
15	Motor	3IK15GN-C(R)-180 K	3	LONGDIAN	
16	Blackbody tube	220V 3200W	4	FUXIANG	
17	Exhaust fan	150FLJ2WYD4-2	1	GUOHEN	
18	Exhaust fan	GH20060HA2BL	1	GUOHEN	
19	Circuit-Breaker	DZ47-60 C3	1	CHNT	
20	Power connector	GNT-16	1	GONGNIU	
21	Power connector	GNT-10	1	GONGNIU	

6 Handling SHM-1800

6.1 Introduction

This chapter explains how to handle the XMT-1000 temperature controller、the speed controller and the tension controller，how to install media，how to operate the machine.

6.2 Handling the XMT-1000 temperature controller

Before using the controller, please carefully read the following detail for its correct use. In addition, after reading the following detail keep it available easily anytime.

OPERATION PRECAUTIONS

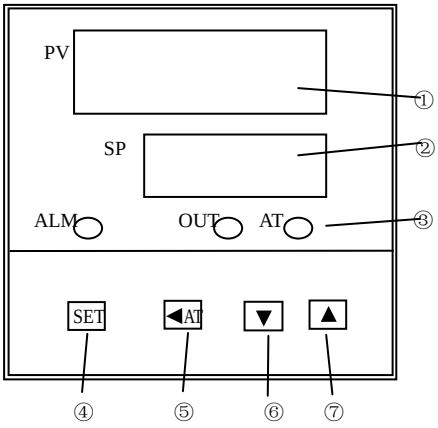
Before cleaning the instrument, check that the power is turned off.

Remove stains on the display unit using a soft cloth or tissue paper.

As the display unit is easily scratched, do not scrub or touch it with a hard object.

Do not operate the front key with a pointed object such as a ballpoint pen or screwdriver, as this may scratch or damage the key.

6.2.1 XMT-1000 Configuration of the Instrument Panel



①Measured value (PV)display unit (Red)
- Displays measured value (PV).
- Displays various characters depending on the instrument.

②Set value (SV)display unit (Green)
- Displays set value (SV)
- Displays various each parameter set value depending on the instrument.

③Indication lamps
- Auto-tuning(AT)lamp [Green]. Flashes during auto-tuning execution.
- Control output lamps [Green]（OUT）turned on when outputs operate
- Alarm output lamp (ALM)[Red] turned on when output operate

④ Function key
- Used for displaying the change and confirm of the parameters

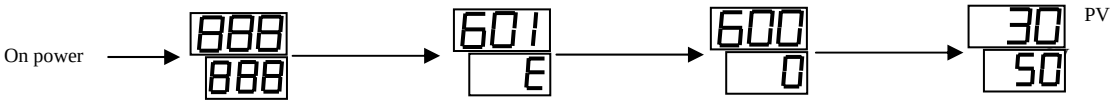
⑤ Shift Key
- Used for Adjusting key to change the digital code and/or the key to express entering the auto-tuning state

⑥，⑦ Adjusting key to change the digital
- . Used for adjusting the digital code displayed

6.2.2 XMT-1000 Operation

6.2.2.1 Have the electricity to show:

Belonging to the display and indicator lamp to light after being set up an electric circuit, then show the type and graduation number , then upper and lower limit Cheng of showing etc., the first three status display enter routine measurement value after the one second respectively / the establishing value show that put into and control running.



All displays lighting　The type of the instrument and calibration　The range of measurement　Measureing and establishing value display

Caution: The calibration code of the instrument inputing : E: Thermocouple, K: Thermocouple, EA2: Thermocouple
CU50: Thermo-resistance PT100: Thermo-resistance

6.2.2.2 Establish temperature value：

Press " X" or "▲" "▼" both can enter the state of establishing, If below row displays " SP " (establishing value code); Press "▲" "▼" can add and subtract the temperature of establishing one by one: Press ▲/AT can select figure number revised to want , make it glimmer , press "▲" "▼" can make it glimmer location choose a number value needed from 0 to 9 。After modifying the establishing value , press a key approve and withdraw the setting for value not to set for the state to revise。

the method of establishing negative temperature：

Establish temperature value first , press "▲/AT"establish high position most , press "▼" make it reduce to " 0 " ， continue according to appear" -"Number。

6.2.2.3 P、I、D parameter Auto-tuning

After the machine is set up an electric circuit, establish temperature at first, press "▲/AT" greater than ten seconds , " AT " indicator lamp show instrument enter course of auto-turning , after two shake cycle system to glimmer, the auto-turning ends, " AT" light put out, instrument at this moment get one control parameter that group optimizes and keep for a long time.

CAUTION:

1 When the systematic operating mode changes bigger, should since exactly fix once again , in order to meet the new systematic parameter

2 it will withdraw from the state of auto-turning while losing electrical power，it's parameter does not change。

Following table lists the function parameters

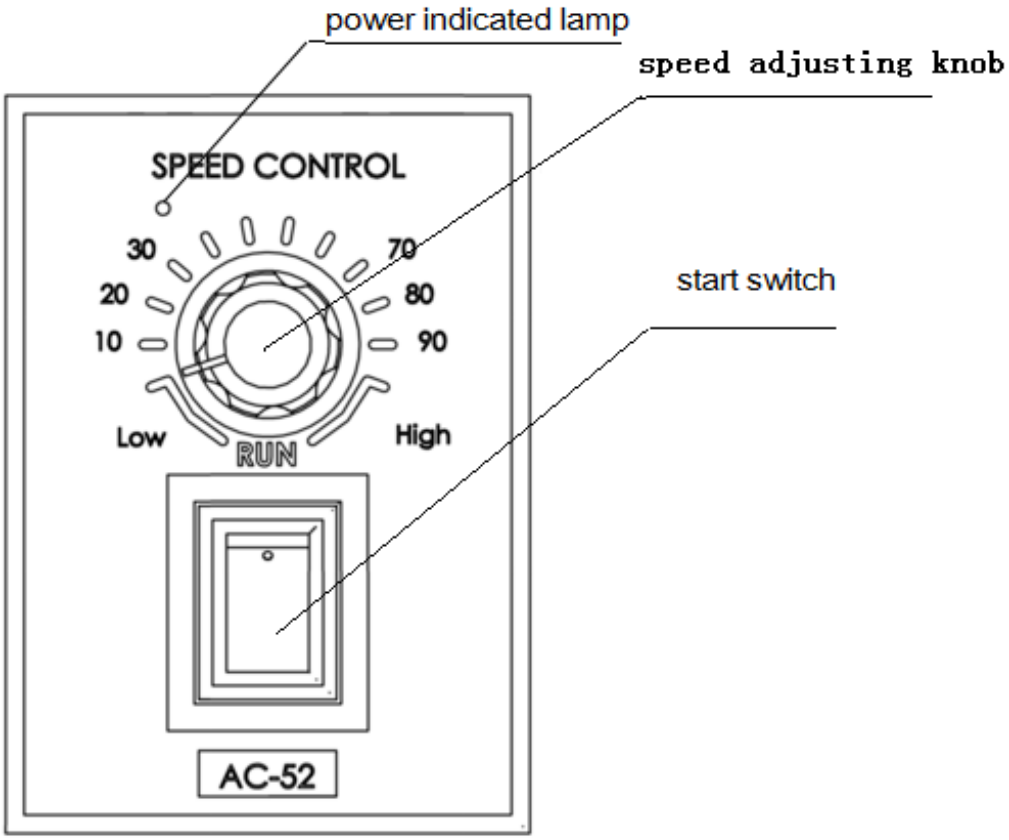
The first step	Press " X" + "▼" ≧10s can enter the state of establishing parameter				
The second step: Show each parameter in the order with pressing " X"。If revise the shown parameters,please press " ▲/AT " and select figure number that will be revised , and make it glimmer , press "▲" "▼" can change to glimmer in the location . Press	**Order**	**Type of Display**	**Represent the content**	**Number value meaning**	**Initial value setting at factory**
	1	db	Db：Difference switched over	Dead band for on-off control and Alarm. For on-off controller, On-off control and alarm adopted Same value.	0.5
	2	Ub	Ub：The time proportion is established again	The time proportion is established again, dispel the quiet and bad power of maintaining(0~90%).Only used for adjusting the quiet difference of the proportion controller	5%
	3	P	Proportional Band	When "P" is large, the proportional Action is small. Only used for heating Side. P=0,On-off Control	15.0
	4	rI	Integral Time	(Re-setting time) When "I" is large, the integral action Is small. I=0,PD Control	180
	5	rd	Differential Time	(Pre-setting) When "D" is large the derivative Action in large. D=0,PI Control	70
	6	t	Control Period	1 Contact type：The electric heater of general machinery is fetched for 20-30 seconds, Fetch the large capacity oven heater for 30-120 seconds 2 Contactless type：fetch for 3-10 seconds	20s 4s

" X" to confirm and keep after finishing revising	7	Ctr	Control mode	Ctr=0/4; Routine control; Ctr=1/5; avoid high shoot; Ctr=2/6: have cable avoid overshoot only, later controlled according to routine PID	2
	8	AH AL AE	Warning value of upper limit , the warning value of lower limit, the warning value of the deviation	Ctr=0~2 is AH or AL; Ctr=4~6 is AE	Lower limit of the span/ Upper limit of the span
	9	SA	Amplitude limiting of establishing value	establishing value≤SA	Lower limit of the span
	10	SC	The sensor revising	Revise the error of the sensor, revise the range as 0-12.7 ℃	0
	11	LCK	Set data Lock	Lck fetches 123, the parameter can be changed, then the parameter can't be revised to fetch other value.	1234
The third step	Press " X" and withdraw from the state of establishing parameter				

6.3 Handling the speed controller

Two speed controllers are installed in SHM-1800，one for controlling the taking up speed , which is installed on the operation panel，another for controlling feeding speed , which is installed in the right box.

6.3.1 Configuration of the Instrument Panel



6.3.2 Operation the speed controller

When the power indicated lamp lights ， operation below .

A、turn the speed adjusting knob to low position.

B、put on start switch.

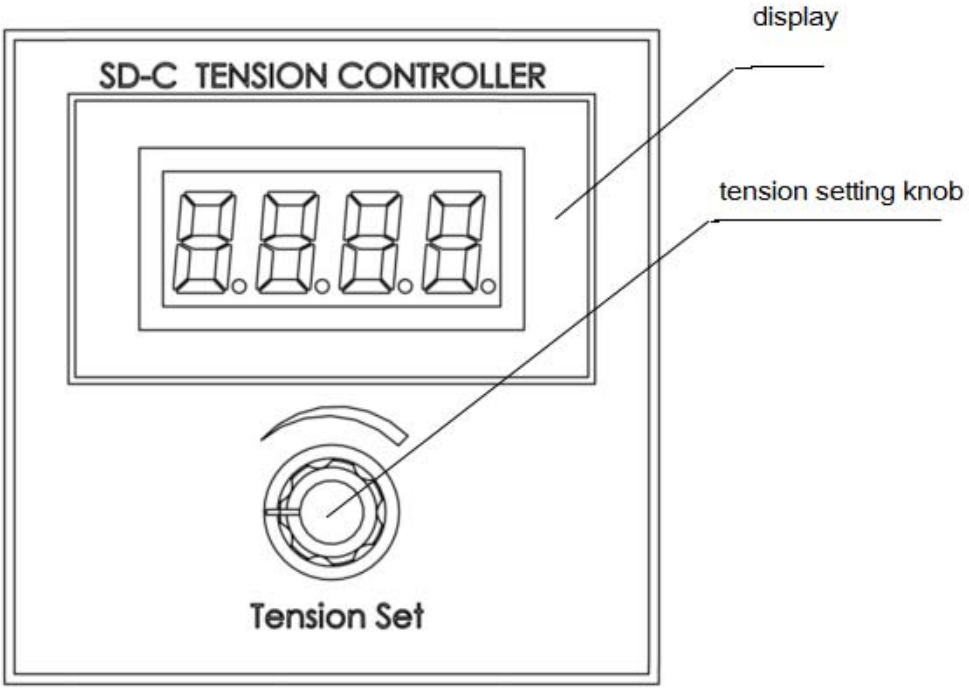
C、turn the speed adjusting knob to a appropriate position.

（Note：taking up speed adjusting by necessary working speed, And feeding speed controller ‘s speed adjusting knob position recommend 20%~40%）

6.4 Handling the tension controller

The tension controller in SHM-1800 is used for controlling the taking up tension.

6.4.1 Configuration of the Instrument Panel



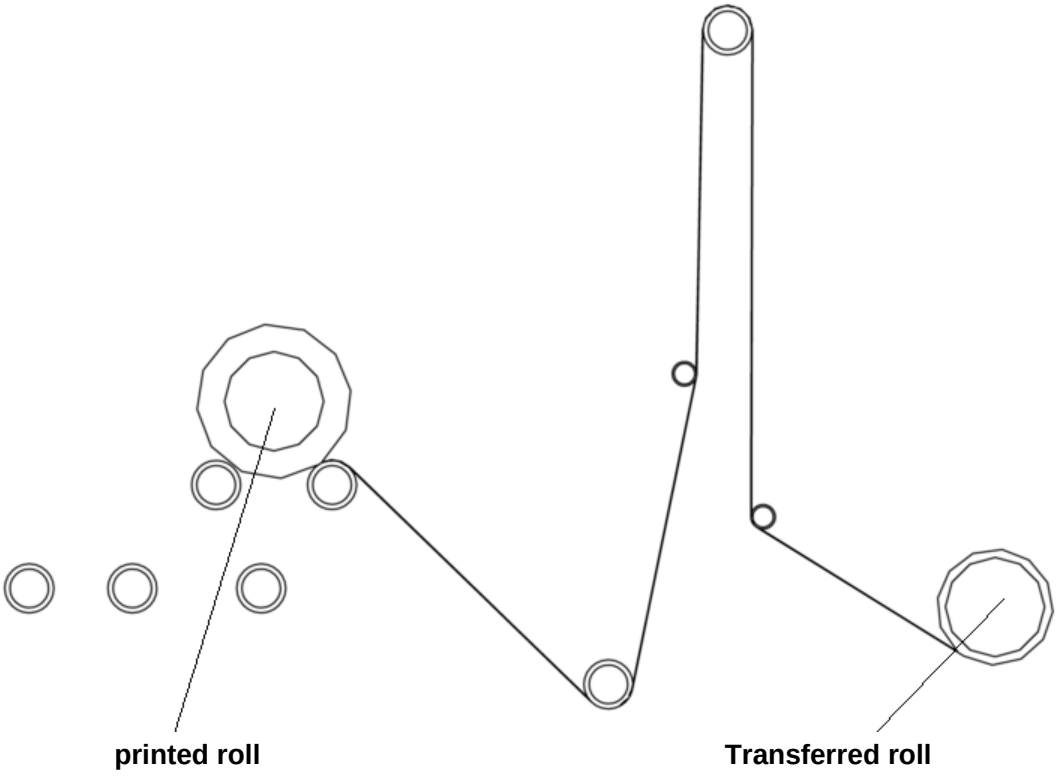
6.4.2 Operation the tension controller

Circumgyrating the tension setting knob clockwise , setting the tension value.

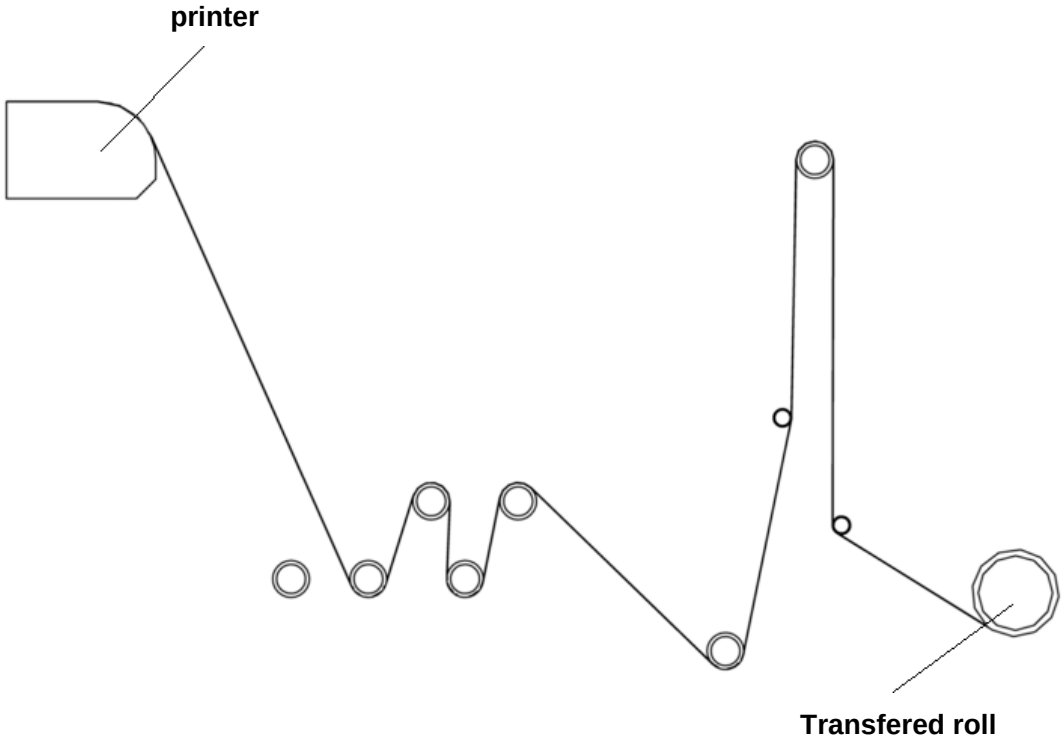
6.5 Installing media

Install the media according to the following figure.

6.5.1 Transferring after printed



6.5.2 As printing as transfer.



6.6 Handling procedure

The first step，checking the assembly, be sure every thing is in order(Note: if the machine is used first time, be sure the protective packaging materials has moved out.).

The second step，connecting the power cable. **The third step**，put on the two switches that are in the electrical box . put on the speed controller(that is in the right box) switch and turning the speed adjusting knob to 20~40%。**The fourth step**，checking feeding system, taking up system and vacuum one by one , be sure they work normal. **The fifth step**， installing media . **The sixth step**，set all points control，begin to preheating . **The seventh step**，when the temperature reaches the range of set value , begin to feeding and taking up , the machine is normal working . **The eighth step**，according to the machine's working result, corrected the set points control. Regulation the blast volume controller, make the oven keeping a constant working temperature.

7 maintenance

7.1 introductions

This chapter explains cleaning the machine, daily maintenance and exchanging the blackbody tube.

7.2 cleaning the machine

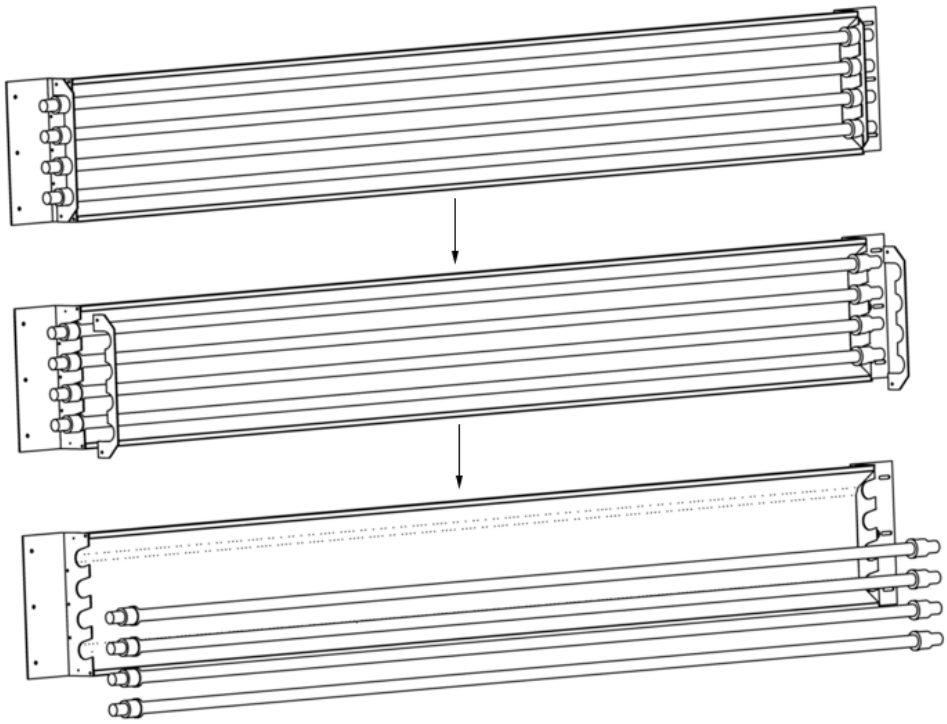
Cleaning the machine oftentimes, especially heating area.

7.3 daily maintenance

A、Apply oil for gear and bearing.
B、Checking the bolt, and screw up all of loose bolt.
C、Checking the temperature sensor.
D、Checking the contact between the black body tube and the resist heat cable.

7.4 Exchange the blackbody tube.

Procedure of exchanging the blackbody tube .



8 supports

telephone：
web site：
MSN on line：