

YCY-215D LAMINATOR
USER'S MANUAL
(2006)

BEIJING YC DIGITTECH LTD.
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WITH gratitude:

We thank you for your choice of YCY-215D Laminator and you are our client who will achieve all round and good service from us.

Attention:

Before you carry out installing, adjusting and operating, please take some time to read the user's manual carefully. It will let you feel more easier and also to be sure that machine runs normally.

YCY-215D Laminator control system

BYCD ® YCY-215D V1.00, 2003

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7.1 Spares and tools along with machine

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1 Safety directions

1.1 Safety prompt

Design of the machine is in accord with safety rules for factory, the safety units installed are in a position to protect the operators of machine and prevent any danger by accident from machine itself. The operators should not just count on these safety units and also have to read and understand the safety preventive measures mentioned in the safety chapters of manual, then can start to run machine.

Note: unsuitable operation might harm to people and other equipments around the machine.

1.2 Safety points before machine in operation

1.2.1 Confirmation before turn on power supply

- a. Make sure to do routine inspection well as required in the safety chapters of manual.
- b. Make sure that all safety doors of machine have been closed completely.
- c. Make sure that all operating switches of machine are at correct operating position.

1.2.2 Turn on power supply

- a. Make sure that the rotation of the motor of oil pump is in a correct direction. Look into it from the rear of the motor of low pressure oil pump, a clockwise rotation is correct. Look into it from the rear of the motor of high pressure oil pump, a counter clockwise rotation is correct.
- b. Make sure that the indicate lights are normal.
- c. Make sure that all safety units of machine, for example, the protectors, a switch of safety door, an emergency stop button and grounding wires, all are set correctly.

1.3 Safety points for operating machine

The machine contains some heating parts, hydraulic press parts and high voltage, therefore if the operator does not follow the safety points below, the machine might have some potential dangerous situations.

1.3.1 Operators have to be trained and carefully read the safety points below as well as make sure to be acquainted with all means of operation.

- a. The operator has to know about means of operation of the machine well.
- b. Do not take off the safety units, protectors, emergency stop button and grounding wires of the machine.
- c. Must know that how to stop machine in an emergency.
- d. Do not try to stop the running machine with an article or your hands, in particular heating parts.
- e. More than 2 people together run the machine at the same time to be definitely prohibited.

1.3.2 Only the qualified technician can do maintenance of electric system, hydraulic system and mechanical system

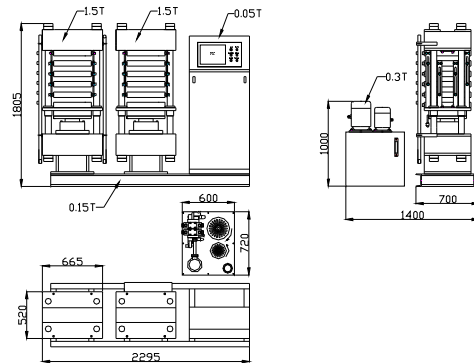
- a. Turn off the power supply before opening the door of electric cabinet.
- b. Make sure that all of power sources are off, before taking off and changing the electric parts.
- c. Use the insulation tools in working.
- d. Neither using a fuse that is beyond designed limit nor other metal wires.
- e. When changing any wire, be sure to use as the same specification and color as original.
- f. Be sure that nobody runs the machine, before turn on the power supply.
- g. Do not put anything on the control box or operating place, for example, water and food.
- h. Do not touch the switches of machine or any electric parts with wet hands.

1.4 Prevent from seriously harm to body

- a. Face to the machine to operate the panel in regular procedure.
- b. Do not let your hand or any parts of body stretching into the running machine when you bend down.
- c. When the motor is rotating, don't let other people be close to the machine from behind or beside.
- d. When the motor is rotating, don't let your hand or any parts of body reach into the domain of moving mould plate.
- e. Follow the instruction to operate and maintain machines.
- f. Do not examine and repair the mould plate when the motor is rotating and heating.
- g. Whenever leaving or having any adjustment of machine, be sure to turn off the power supply.
- h. If the machine is in abnormal condition, please inform to your chief or instructor so that doing repair.

2 Specification

2.1 Appearance of machine



2.2 Major technical parameter

Applicable material:	PVC or other plastic materials
Laminate layout:	4×8 or 4×6 or 5×5 or 3×5
The number of mould plates:	6 each of cool and heat
Size of mould plates:	420×520 mm
Interval between mould plates:	50mm
Material layers (Max.):	15
Working pressure:	1~15MPa adjustable
Pressure precision:	±0.5MPa
Heat temperature:	≤160℃
Temp. control:	±1.5℃
Cylinder travel:	280mm
Hydraulic tank volume:	320 litre
Power supply:	AC380V 50/60Hz 5-phase
Power:	21kW
Productivity (cards):	2400 cards per cycle at layout 4 x 8
Dimension:	L2300×W700×H1800mm
Weight:	appr.3500 kg

3 Installation

3.1 Environment of install

3.1.1 Install place The place should be far away from inflammables, there is no combustible air in workshop, do not stack any goods behind the machine.

3.1.2 Ground requirement the machine should be installed inside a standard industry factory building. The installed ground should be smooth and solid. A depth of concrete pad will not be less than 200mm. If an installation is at second floor or above, have to be sure that the bearing of floor meets requirements.

3.1.3 Environment of install the workshop should be airtight, dustless and have the ventilation installation.

3.1.4 The requirement of Power source Power supply is as AC380V/50Hz, 5 wires in 3-phase, ground wire is grounded reliably. Ground resistance < 0.1 Ω. Ground wire > 4 mm²

3.2 Load and unload machine

Select lifting place based on the mark of gravity center. Keep the machine in equilibrium throughout lifting. When using a crane to lift, need to select the suitable sling rope. The rope should be pulled straight and try first to slide down. Do not let the rope damage the outside and any parts of the machine.

3.3 Unpack and lay down machine

3.3.1 Check on the outer package of machine, if there is any damage, please inform supplier. Otherwise unpack the package.

3.3.2 Level off body of machine with a level. If a floor is not smooth, try to put some pads until making the machine level.

3.3.3 Open a cap of oil tank then fully pouring oil. Using a hydraulic wear oil of 46 #.

Note: Hydraulic oil must be accorded with the standards and make sure that the oil is clean. An improper use or unclean oil could speed up the wear of oil tank and hydraulic system.

3.4 Connection between machine and main power supply

Caution: Only qualified technician can make a connection of main power supply. A voltage of power supply for machine is as AC380V, if get an electric shock, it would cause some damages of machine or might lead to injuries and deaths on people.

Must be in accordance to a circuit diagram to connect a power supply of machine on an assigned wiring position. The machine must be in safety grounding.

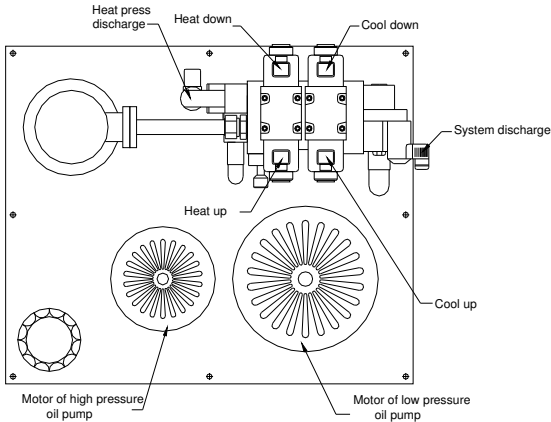
Ground wire	U (red)	V (red)	W (red)	Zero N (blue)
Electrical board	1	2	3	N

Caution: never share a single ground wire by two machines or more.

3.5 Connect motor and electromagnet with control cabinet

Caution: Only qualified technician can make a connection of main power supply. A voltage of power supply for machine is as AC380V, if get an electric shock, it would cause some damages of machine or might lead to injuries and deaths on people.

3.5.1 Connect motor and electromagnet with control cabinet according to below diagram.



	Zero wire	Motor of low pressure oil pump			Motor of high pressure oil pump			Heat up	Heat down	Cool up	Cool down	Heat press discharge	System discharge
Definitio	N blue	U red	V red	W red	U red	V red	W red	L	L	L	L	L	L
Wire	N	019	020	021	19	20	21	54	55	56	57		
Tip		1	2	3	4	5	6	1	2	3	4		

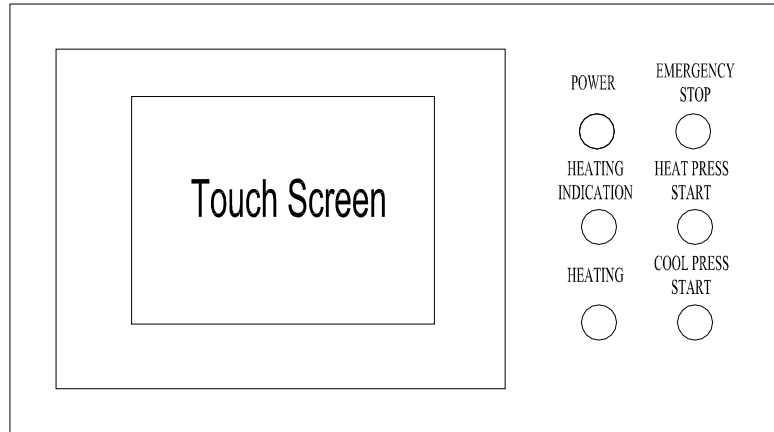
3.5.2 After connecting motor and electromagnet with control cabinet, then checking a rotation of motor of oil pump, the rotary direction should be as the same direction as the arrow point. The way to check the rotary direction of motor: Press the start button of pump, then pressing the stop button at once. See if the rotary direction is correct, if it is not, swap the places of 2 input power wires of AC380V. Repeat doing as indicated above. Make sure that the rotary direction of motor is correct. The motor of high pressure oil pump is counter clockwise rotation, the motor of low pressure pump rotates clockwise.

Caution: Be sure never let the motor rotate on incorrect direction more than one minute.

4 Operation

4.1 Directions of operation panel

4.1.1 Illustration of operation panel



4.1.2 Function of push buttons

(1) **Power switch** (knob switch) Power switch is mounted on the right side of control cabinet. When the switch points at the position 1, the power supply is connected through, the system is power on and the power indicator lights; points at the position 0 to cut off power, the indicator off.

a. When power is on, all of electrical equipments and hydraulic system are in a state of stand-by.

b. When need to stop the machine, usually just turn the knob to the position 0; if no work for a long time, pull off the power plug.

c. Only this switch is at the position 1, all of electrical equipment and hydraulic system are able to work.

(2) **Heating button**(self-lock button) Press the button, the heat press plates start heating and the heating indicator is lighting; press again (reset) to stop heating and the heating indicator light is off. Auto/man all are effective.

Note: it can heat only in selecting work, otherwise PLC alarms. If PLC alarms, cut off power then restarting.

(3) **Heat press start button** (return button) Under automatic mode, press down this button for **1 second**, auto-cycle starts; automatically finishes one work cycle based on the set pressure and set time. Press once again to start second cycle. It is effective at automatic mode.

(4) **Cool press start button** (return button) Under automatic mode, press down this button for **1 second**, cool press auto-cycle starts; automatically finishes one work cycle based on the set pressure and set time. Press once again to start second cycle. It is effective at automatic mode.

Note: when the heat press system compensates press, or heat press plates are going up/down, cool press action does not start until heat press action is finished. When cool press is acting, if heat press compensates press or up/down, the action of cool press will be suspended, after the action of heat press is finished, the action of cool press acts continuously.

(5) **Emergency Stop button** In an emergency situation, can press the button to cut off heating and the motor of oil pump.

a. If there is any abnormal status in works, press this button immediately to stop the machine, so that find out the reason caused the abnormal status.

b. After eliminating fault, turn the button in clockwise. When the spring clicks springing back, stop turning and release the button. It is relieved of emergency stop, self-lock resets.

c. After terminating an emergency stop, press the start button to restart operating.

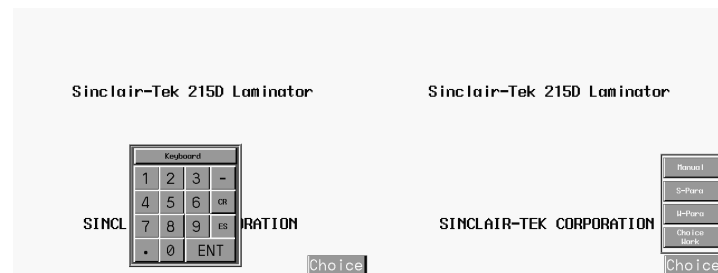
4.2 Touch screen display and function select

4.2.1 Initial display

Turn the power switch, after power supply is on, a display is showed as below:

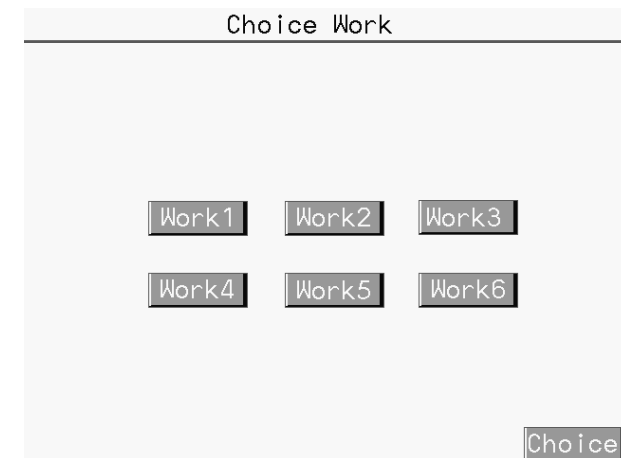


Touch **Choice** to pop up a number keyboard, enter secret code 2222, then popping up 4 selection menus:



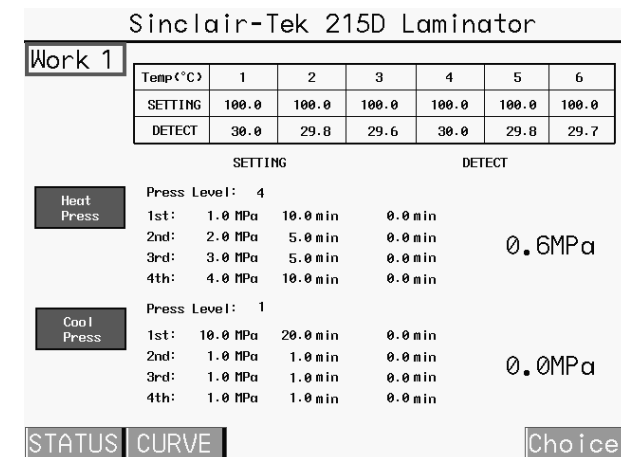
Touch **Choice Work** to show a selection work display:

4.2.2 Selection work display



Touch **Work 1** to go into the work 1 display.

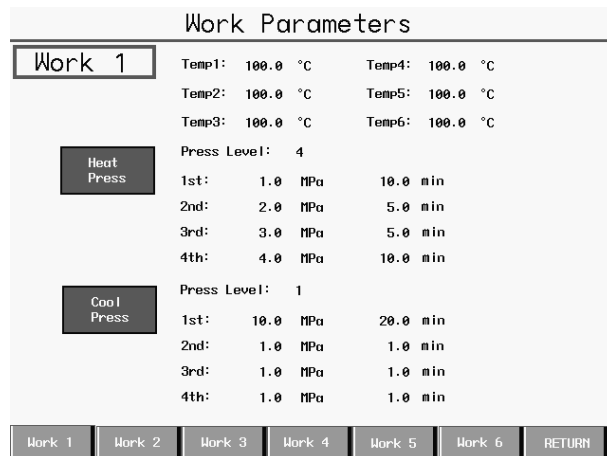
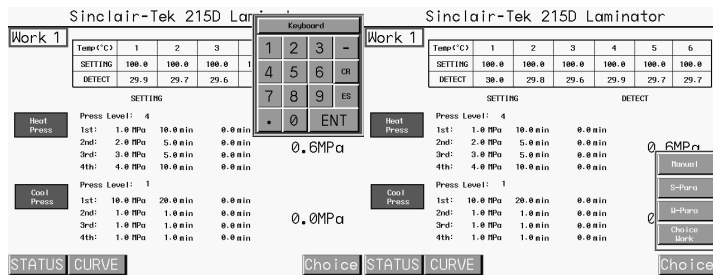
4.2.3 Work display



4.2.4 Amend work parameter

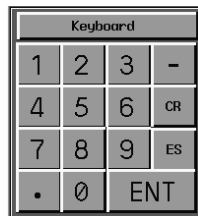
Work parameters include heat temperature, the number of pressure level, pressure and holding time of each pressure level. Touch **Choice** to open

the number keyboard, then after entering the secret code, pop up 4 selection menus. Touch **W-Para** to go into the display of amend work parameter:



Select work No. first when amending parameters, work 1 is selected as above display, then doing as below procedure:

a To amend temperature setting: after touching temperature value (100.0), pop up the number keyboard as below fig.:



Touch relevant number, then touching ENT to confirm input and the number keyboard is closed.

Note: temperature range is as 0.0 – 160.0

Operation of number keyboard:

Amend: CR, touch CR to delete entered number.

Cancel: ES, touch ES to close the number keyboard

Confirm: ENT, touch ENT to confirm entered number, the keyboard is closed.

Move keyboard: at first touch top of board then touching a position moved to, the keyboard is going to be moved to the position second touched.

b To amend the number of pressure level: touch value (4) of pressure level to pop up the number keyboard, then touch relevant number, last touch ENT to confirm input, the keyboard is closed.

Note: the number of pressure level range is among 1 – 4.

c To amend pressure setting: touch value (1.0) of pressure setting to pop up the number keyboard, then touch relevant number, at last touch ENT to confirm input meanwhile the keyboard is closed.

Note: pressure setting range is: 0.0 – 15.0 as well as 1st pressure level < 2nd pressure level < 3rd pressure level < 4th pressure level; 1st pressure level > pressure precision +0.3.

d To amend time setting: touch value (10.0) of time setting to pop up the number keyboard, next touch relevant number, then touching ENT to confirm input, the keyboard is closed.

Note: time setting range is as 0.0 – 99.9.

e After finishing amend and confirm it is correct then touching **RETURN** to go back the work selection display.

Note: the work parameters are only effective at this work.

4.2.5 Amend system parameters

The system parameters include pressure coefficient, pressure precision and temperature control parameter. Touch **Choice** to pop up the number keyboard, then enter secret code, pop up a menu of 4 selections, touch **S-Para** to enter into a display of system amendment:

System Parameters		System Parameters	
Heat Pressure Parameters		Cool Pressure Parameters	
0.0-1.0 MPa: 0.00	8.1-9.0 MPa: 0.00	0.0-1.0 MPa: 1.00	8.1-9.0 MPa: 0.00
1.1-2.0 MPa: 0.00	9.1-10.0 MPa: 0.00	1.1-2.0 MPa: 0.00	9.1-10.0 MPa: 0.00
2.1-3.0 MPa: 0.00	10.1-11.0 MPa: 0.00	2.1-3.0 MPa: 0.00	10.1-11.0 MPa: 0.00
3.1-4.0 MPa: 0.00	11.1-12.0 MPa: 0.00	3.1-4.0 MPa: 0.00	11.1-12.0 MPa: 0.00
4.1-5.0 MPa: 0.00	12.1-13.0 MPa: 0.00	4.1-5.0 MPa: 0.00	12.1-13.0 MPa: 0.00
5.1-6.0 MPa: 1.00	13.1-14.0 MPa: 0.00	5.1-6.0 MPa: 0.00	13.1-14.0 MPa: 0.00
6.1-7.0 MPa: 2.00	14.1-15.0 MPa: 0.00	6.1-7.0 MPa: 1.00	14.1-15.0 MPa: 0.00
7.1-8.0 MPa: 1.00	15.1-16.0 MPa: 0.00	7.1-8.0 MPa: 0.00	15.1-16.0 MPa: 0.00
Pressure Precision: 0.0 MPa		Pressure Precision: 0.0 MPa	
T-Para	C-Para	T-Para	H-Para

a To amend pressure parameter: eliminate an appearance of pressure overdoing by amending pressure parameter, normally set this parameter among 0.80 – 1.00, the increased or decreased value of each amending is not bigger than 0.02. This value is already set at factory and do not change it rashly. If the value is bigger, pressure may overdo, otherwise if smaller, pressure may not reach to the setting value. It is ordinary better to adjust pressure by 0.3MPa higher than setting.

Note: pressure parameter range is 0.80 – 1.00.

b To amend pressure precision: to determine the pressure at starting compensating pressure by amend pressure precision, ordinary set the value as 0.3 – 0.5. For example, set pressure to 5.0MPa and pressure precision as 0.3, when pressure is down to 4.7MPa, the hydraulic system will automatically concentrate pressure to 5.0MPa. The hydraulic system will be easy to vibrate when this value is smaller than 0.3. Recommend to set the value as 0.3.

Note: pressure precision range as: 0.3 – 0.5.

c To amend temperature control parameter: to change rising speed and control precision of temperature by amending temperature control parameter. Touch T-Para to enter into the display of amending temperature control parameter.

Temperature control parameters have Kp, Ti and Td. Kp affect speed of temperature rising, Ti affect temperature precision and Td affect time of taking by temperature curve approaching setting value. Increase Kp, decrease Ti and Td will quicken response, otherwise decrease Kp, increase Ti and Td will slow down response. It should be around 10% by each adjusting, then making amendment according to curve variation. Kp, Ti, Td have been set at factory, do not amend it without PID experience. Maintenance person must take Kp, Ti and Td on record.

Note: do not amend temperature control parameters rashly.

System Parameters			
Temperature Control Parameters			
	Kp	Ti	Td
Temp 1	218.0	500.0	226.0
Temp 2	220.0	500.0	225.0
Temp 3	216.0	500.0	226.0
Temp 4	220.0	500.0	224.0
Temp 5	224.0	500.0	224.0
Temp 6	218.0	500.0	226.0

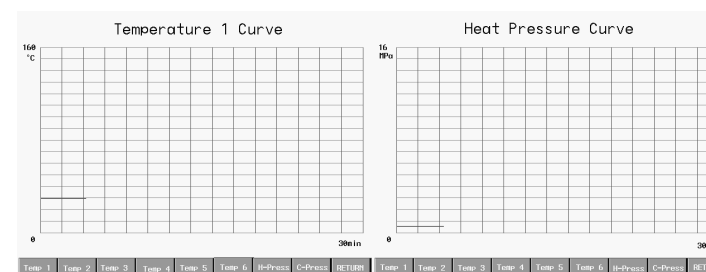
H-Para C-Para RETURN

e After amending and confirm it is correct then touching RETURN to go back the work selection display.

Note: system parameters are effective on all of works.

4.2.6 Curve

Touch CURVE to show the immediate pressure and temperature system detected in the form of curve.



Abscissas show time, ordinates show pressure or temperature, data in last 30 minutes are held.

Touch RETURN to return to work display.

4.2.7 Detect status

Touch **STATUS** to display the status and data of input and output detected by system.

Detect Status			
Temp1: 0.83 U	Temp2: 0.82 U	Temp3: 0.82 U	
Temp4: 0.83 U	Temp5: 0.82 U	Temp6: 0.82 U	
Heat Press: 0.15 U	Cool Press: 0.00 U	Emergency: 1	
Heat Start: 0	Cool Start: 0	Heat: 0	
Heat Switch: 0	Cool Switch: 0	Heat Up: 0	
Heat Down: 0	Cool Up: 0	Cool Down: 0	
Heat Fast: 0	Cool Fast: 0	Low Pr Pump: 0	
Heat 1: 0	Heat 2: 0	Heat 3: 0	
Heat 4: 0	Heat 5: 0	Heat 6: 0	
H-High Pump: 0	C-High Pump: 0	Unload: 0	
H-Photo SW: 0	C-Photo SW: 0		

RETURN

Correspondence relation between voltage and temperature:

Voltage (v)	0	2	2.8	3	3.1	3.3	3.6	3.8	3.9	4.2	5
Temp.(°C)	0	72	100	108	110	120	130	135	140	150	180

Correspondence relation between voltage and pressure:

Voltage(v)	0	0.25	0.50	0.75	1.00	1.25	1.50	2.00	2.50	3.75	5
Pressure (MPa)	0	1	2	3	4	5	6	8	10	15	20

Input and output status:

	Emergency stop	Start	Heat	Lower limit	Oil pump	Up	Down	Quick	Heat 1 - heat 6
0	Emergency stop	Stop	Stop	Stop	Stop	Off	Off	Quick	Off
1	Run	Running	Heat	Running	Run	Up	Down	Slow	Heat

Touch **RETURN**, system returns to work display

4.2.8 Manual

Touch **Choice**, then pop up the number keyboard, enter secret code, pop up 4 selection menus, touch **MANUAL**, goes into manual display:

Manual Mode		
Heat 1	Heat 2	Heat 3
Heat 4	Heat 5	Heat 6
Heat Up	Heat Dn	Heat Ft
Cool Up	Cool Dn	Cool Ft
Lw Pump	H-H-Pum	C-H-Pum
	Unload	
STATUS		RETURN

a It will stop automatic circulation that shift running to manual mode, it is necessary to press the start button again for doing work if return to running from manual mode.

b Touching keys are holding keys, touch once to work, touch once more to stop.

c To move the mould plates up by manual operation, need to touch **H-H-Pum** and **Heat Up** simultaneously. It is the same at down move.

At this time, the plates slow up or down.

d Touch **Heat Ft**, the heat pressure plates will move quickly. It is same for cool pressure.

e Touch **STATUS** to shift system into select status, so that observe about input information. At this time from the display of select status return back, it still go back to manual display, not work display.

f Touch **RETURN**, the system returns to work display

4.3 Operate machine

4.3.1 Automatic operation

a Push down “Power” button, power indicator is on, system is electrified and an initial display is showed.

b Touch “Choice” to enter work display.

c Touch W-Para key to enter parameter setting display, separately set temperature, pressure and time then touching Return key to return to work display.

d Select work number of heat pressure, check parameter and see if correct.

e **Heat** Push down Heat button, heating indicator is on and start to heat.

To stop heating, press Heat button again, heating stops, a heating indicator is off.

Note: to shorten heat time, can move up plates to heat.

Attention: only after selecting work, then in a position to heat, otherwise PLC alarms. After PLC alarms, turn power off then re-electrifying.

f **Heat pressure** when temperature reaches at setting, place materials, push down Heating button, the plates move up, pressing and compensating press. When setting time is up, the plates automatically move down, a single cycle of heat pressure is finished.

g **Cool pressure** check whether the parameters are correct. Place materials, press down Cooling button, the mould plates move up, pressing and compensating press. When setting time is up, the plates automatically move down. A single cycle of cool pressure is finished.

h If on accident, press Emergency stop button to exit.

Note: Before starting lamination, should adjust a position of photoswitch. When the mould plates move up at this position, the move speed will slow down to ensure slowly pressing. It is better to normally adjust a gap between the material on top layer and plate above it to 5 mm. If materials' depth is changed, need to readjust the position of photoswitch. Cool press and heat press are the same.

4.3.2 Manual operation

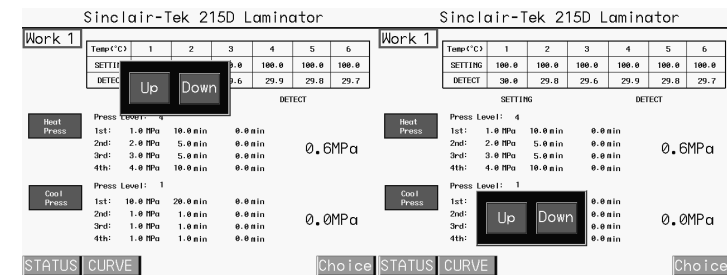
(1) When doing machine adjustment, all of start/stop of motor of oil pump, the mould plates up, the mould plates down, start/stop of motor of water pump and heating of plate of each level are able to operate independently. Above actions can be done through “Manual” interface

(2) When the machine is running, heat press is in working, if need to manually

operate plates to move up or down, can touch Heat Press or Cool press

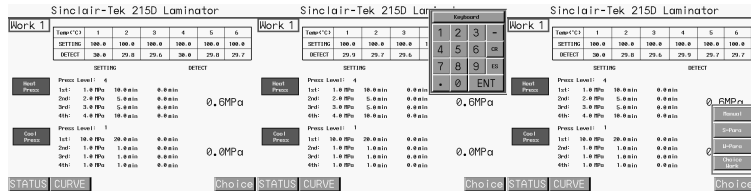
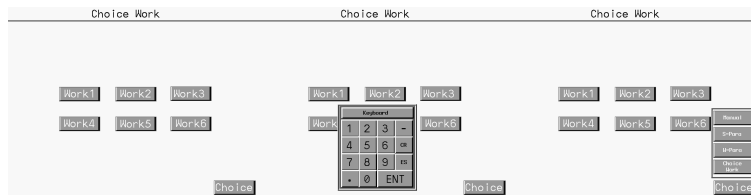
area to pop up the up or down button, so that achieve the plates up or down

through manual operation.

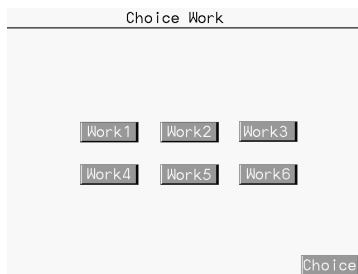


At any time to select Work No., amend Work Para, amend System Para and carry out Manual operation, all of these need to touch Choice to go into the relevant display, then enter secret code 2222, pop up 4 selection menus.





All of them need to return to the work selection display:

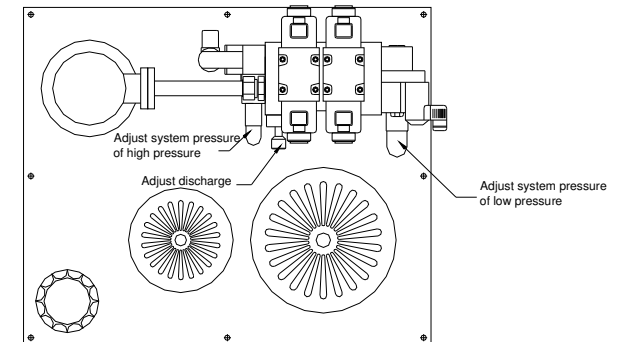


5 Adjust, maintenance and eliminate faults on machine

5.1 Adjusting of system pressure

Note: adjusting work of system pressure done by hydraulic engineer.

5.1.1 System pressure is divided into the system pressure of high pressure and the system pressure of low pressure, the adjusting of each of system pressure is to be done by adjusting the pressure-regulating valve of relative system. It has been done well before shipment, no touch in an ordinary situation. Regulate value of system pressure of high pressure is 15MPa. Regulate value of system pressure of low pressure is 2.5MPa. If need to adjust, do it with reference to below figure.



5.1.2 Adjust system pressure of high pressure:

- loose the jam nut of handle of pressure regulating valve;
- turn the handle of regulating valve clockwise to increase pressure, turn counter clockwise to reduce pressure;
- be suspended for a moment on every adjustment of rising by 2 –3 MPa, when pressure is stable, go on to adjust;
- adjusting to 15 MPa then tightening the jam nut, adjusting is completed.

5.1.3 Adjust system pressure of low pressure: First adjust system pressure of high pressure to 0, then in accordance with the above-mentioned steps to adjust system pressure of low pressure to 2.5MPa.

5.2 Adjust discharge

Discharge has been adjusted right at the factory. Do not adjust in general condition. If it is necessary to adjust, do it refer to the above diagram. Turn the handle in the direction indicated by fig. on it. After finishing adjust, tighten the jam nut.

5.3 Maintenance of machine

Item	Substance and manner of maintenance	Period
1	Machine must keep clean and dry, regularly clear and clean various positions of mechanism,	1/wk
2	It is necessary to clear and lubricate various movable parts (various guide pillars) regularly.	1/wk
3	Check electrothermic tubes whether have some damage, for this to survey the value of resistance at side of contactor. If abnormal, change.	1/wk
4	Check various screws and nuts of connecting and tight to see if loosed, in the light of conditions to tighten or change.	1/2wks
5	Check various connection of wires to see if loosen or cracked, then reconnecting or changing wires.	1/month
6	Overall check all of hold-down bolts, see their conditions to tighten or change.	1/6months
7	Environment around the machine must be clean, dry and no pollution.	Long term
8	Often observe the altitude of surface of hydraulic oil, when lower than 3/4, fill up promptly.	Often
9	Often observe the temperature of hydraulic oil, it should not be higher than 60℃	Often
10	After the machine runs for 1 year, should change hydraulic oil, which grade is as 46# wear hydraulic oil.	1/year

5.4 Eliminate faults

Appearance of faults		Elimination ways
Appearance1	Laminator can not hold pressure	1.Check various positions of oil pipes and connectors of pipes between hydraulic cylinder and integrated unit, if there is any oil leakage, then changing pipes, combined gaskets or “O” sealing washers that are damaged. 2.Change hydraulic lock. 3.Check the position between pressure gauge and integrated unit, if there is any oil leakage, make a correspondent treatment. 4.If there is no problem on what above mentioned, check inner sealing washers of cylinder to see if damaged and make a correspondent treatment. 5.Hydraulic oil is unclean, refilter it.
Appearance2	Pressure of hydraulic system	1.As appearance 1. 2.Check the conjunctions of various valves and integrated unit, if there is any leakage, treat correspondently. 3.Check the pipe and joint between the outage of oil cylinder and integrated unit, if there is any leakage, treat correspondently. 4. See if oil in the tank is enough and treat it correspondently. 5.If no trouble on the appearances above mentioned, then changing hydraulic pump.
Appearance3	Temperature rising of heat	1.Check electrothermal tubes to see if there is short or broken circuit, treat correspondently. 2.Check temp. sensor to see if work correctly. 3.Check contactor and circuit, treat correspondently.
Appearance4	Detected temp. are abnormal.	1. If temp. indicates 180℃ or minus or deviates from indoor temp., check thermistor, if damaged, change it. 2. Check connection wire of temp. transmitter. 3. If transmitter is damaged, change connection wire to stand-by contact, when changing connection, care about the contact of sensor must be correct; output tip of transmitter are changed correspondently. 3. Change the transmitter.

5.5 List of sealing parts of hydraulic system

5.5.1 Sealing of hydraulic pressure cylinder

No.	Name	Code	Material	Specification	Qty.
1	Support ring	GB1235-76	poly-formaldehyde	D=220×2.5×25	2
2	Support ring	GB1235-76	poly-formaldehyde	D=165×2.5×25	2
3	O Sealing washer	GB 1235-76	Rubber I-4	120×5.7	1
4	O Sealing washer	GB 1235-76	Rubber I-4	220×5.7	1
5	Piston sealing	OK0220 00701	polyurethane	220×199×8	1
6	Dust ring	A5G030 N3587	polyurethane	160×199×8	1
7	Rod sealing	OD1600	polyurethane	160×175.5×6.3	1
8	Rod sealing	BSG085 P5008	polyurethane	160×185×18.2	1

5.5.2 Hydraulic station

No.	Name	Code	Material	Specification	Qty.
1	Combined sealing gasket	JB982-77	Combined part	Gasket 16	2
2	Combined sealing gasket	JB982-77	Combined part	Gasket 20	1
3	Combined sealing gasket	JB982-77	Combined part	Gasket 22	16
4	Combined sealing gasket	JB982-77	Combined part	Gasket 33	4
5	Combined sealing gasket	JB982-77	Combined part	Gasket 14	10
6	Combined sealing gasket	JB982-77	Combined part	Gasket 42	2
7	Combined sealing gasket	JB982-77	Combined part	Gasket 18	12
8	O Sealing washer	GB1235-76	Rubber	20×2.4	6
9	O Sealing washer	GB1235-76	Rubber	35×3.1	1
10	O Sealing washer	TUO	Rubber	12×2	4
11	O Sealing washer	GB1235-76	Rubber	16×2.4	10

5.5.3 Sealing of pipe

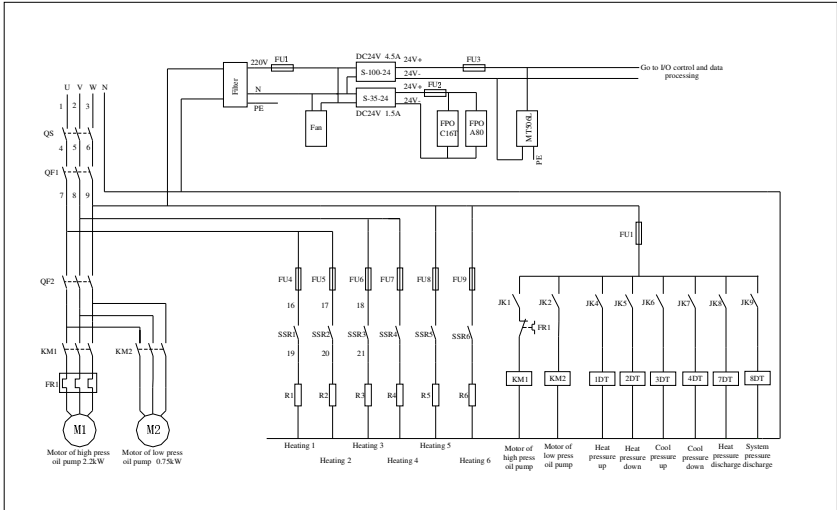
No.	Name	Code	Material	Specification	Qty.
1	O Sealing washer	GB1235-76	Rubber I-4	16×2.4	8

5.5.4 Sealing of meter pipe

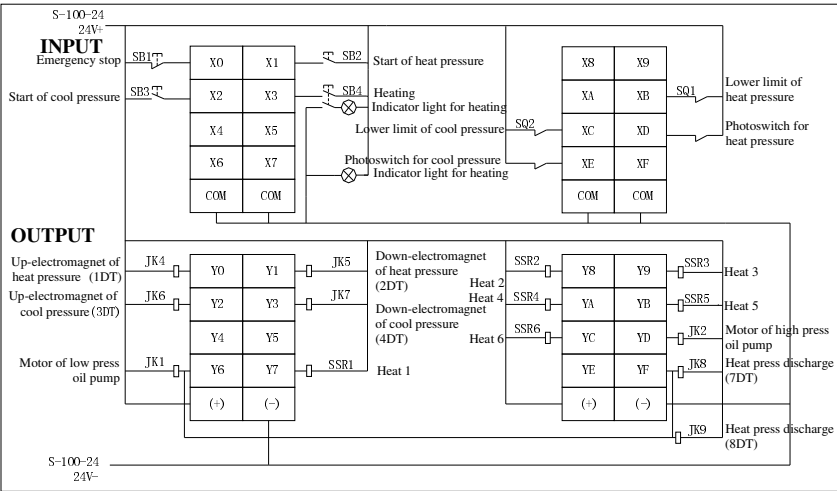
No.	Name	Code	Material	Specification	Qty.
1	O Sealing washer	GB1235-76	Rubber I-4	6×1.9	2

6 Electrical material

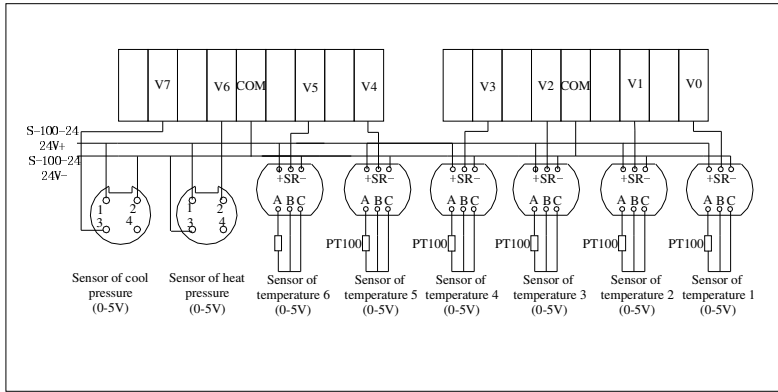
6.1 Main circuit diagram



6.2 I/O control diagram



6.3 Data collect



6.4 List of electric detail

Code	Name	Use	Code	Name	Use
M1	Motor	Motor of high pressure oil pump	FU2	Fuse	Control circuit 24V3A
M2	Motor	Motor of low pressure oil pump	FU3	Fuse	Detect circuit 24V3A
QF1	Air switch	Control main power	FU4	Fuse	Firs floor heat 220V20A
QF2	Air switch	Control power of oil pump motor	FU5	Fuse	Second floor heat 220V20A
QS	Turning switch	Control main power	FU6	Fuse	Third floor heat 220V20A
KM1	Contactor	Control start of oil pump motor	FU7	Fuse	Forth floor heat 220V20A
KM2	Contactor	Control start of oil pump motor	FU8	Fuse	Fifth floor heat 220V20A
RF	Thermal relay	Control oil pump motor	FU9	Fuse	Sixth floor heat 220V20A
FU1	Fuse	Control and detect circuit 220V6A			

Code	Name	Use	Code	Name	Use
JK1	Relay	Control start of motor of low pressure oil pump	SSR1	Solid-state relay	First floor heat 220V45A
JK2	Relay	Control start of motor of high pressure oil pump	SSR2	Solid-state relay	Second floor heat 220V45A
JK4	Relay	Control up-electromagnet of heat pressure	SSR3	Solid-state relay	Second floor heat 220V45A
JK5	Relay	Control down-electromagnet of heat pressure	SSR4	Solid-state relay	Forth floor heat 220V45A
JK6	Relay	Control up-electromagnet of cool pressure	SSR5	Solid-state relay	Fifty floor heat 220V45A
JK7	Relay	Control down-electromagnet of cool pressure	SSR6	Solid-state relay	Sixth floor heat 220V45A
JK8	Relay	Control discharge electromagnet of heat pressure	SQ1	Limit switch	Lower limit of heat pressure
JK9	Relay	Control system discharge electromagnet	SQ2	Limit switch	Lower limit of cool pressure
1DT	Electromagnet	Up-electromagnet of heat pressure	SB1	Emergency button	Emergency stop
2DT	Electromagnet	Down-electromagnet of heat pressure	SB2	Reset button	Start of heat pressure
3DT	Electromagnet	Up-electromagnet of cool pressure	SB3	Reset button	Start of cool pressure
4DT	Electromagnet	Down-electromagnet of cool pressure	SB4	Hold button	Heating
7DT	Electromagnet	Discharge electromagnet of heat pressure		Photoswitch	
8DT	Electromagnet	System discharge electromagnet		Photoswitch	

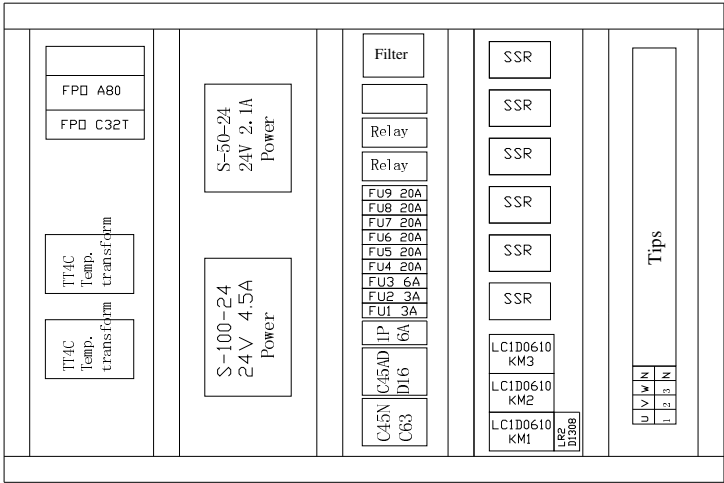
6.5 Table of tips definition

Tips No.	1	2	3	4
Line No.	1	2	3	N
Definition	U	V	W	N

Tips No.	1	2	3	4	5	6	7	8	9	10	11	12
Line No.	019	020	021	19	20	21	32	34	36	38	40	42
Definition	Motor of low pressure oil pump		Motor of high pressure oil pump				Heat 1	Heat 2	Heat 3	Heat 4	Heat 5	Heat 6

Tips No.	1	2	3	4	5	6	7	8	9	10	11	12
Line No.	54	55	56	57				X11	X12	X13	X14	24V
Definition	Heat up	Heat down	Cool up	Cool down		Heat pressure	System discharge	Heat down limit	Cool down limit	Heat up limit	Cool up limit	

6.6 Position diagram of electric parts



7 Spares, tools and material along with machine

7.1 Spares and tools along with machine

Electrothermal tube:	6 pcs.
Sealing parts:	1 set
Wrench (100-110):	1 pc.
Hex wrench 14:	1 pc.

7.2 Material along with machine

- a. User's manual
- b. Certificate of quality
- c. Packing list