LABORATORY CONTINUOUS DYEING RANGES

PAD-THERMOSOL DYEING RANGE

OPERATION MANUAL

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OPERATION MANUAL			
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I. UNPACKING

- (1) Upon arrival of the machine, make sure the packing with no damages.
- (2) Please select a place with enough space to locate machine for further maintenance and place the machine on the platform surface.
- (3) It is advised to place the package as near to the intended location as possible for easier transportation.
- (4) After unpacking, you will see 3 main parts of the machine:
 - a. Infra-Red Pre-Heater and its support.
 - b. Control Panel.
 - c. Main Body.

II. MOUNTING / INSTALLATION

- (1) The main body has been pre-assembled in work and it is advised that no part should be dismantled. Especially the Conveyor Chains which are temporarily fixed at both ends and at this fixed position that it should not be changed.
- (2) The Control Panel should be suitably placed and then be bolted to ground surface as recommended. The wirings have been done complete with the corresponding connections and should not be changed or disconnected whatsoever. Please also make sure that the connection to Earth is ready.

- (3) The principles of arranging the Infra-Red Pre-Heater:
 - a. Place the Pre-Heater with the nameplate facing front of the machine. Use the screws to fix the Pre-Heater onto the position.
 - b. Fixing of the Conveyor Chains.
 - c. At this moment, it is still advised not to remove fixing positions of the Chains and should be done only after the complete Conveyor Chains are connected ready. The connecting parts (Chain Elements) are put in the paper box which in the Fabric Receiver **[FIG-5-9]**. They enable you to connect the two chains which are hanging on the top of roller and main body.
 - d. To ensure the Conveyor Chains are fixed at the correct position, and please adjust by slightly moving the bearing assemblies on the top of the Pre-Heater.
 - e. Connect electricity to the Infra-Red Heaters.
 - f. To adjust the tension of the Conveyor Chains, see the figure as below:



III. PREPARTION FOR OPERATION

- Check again if the temporary supports are removed after the Conveyor Chains are released.
- (2) Remove cover for the Main Drive Motor [see FIG-2] by hand. Turn the V-Belt pulley to make sure that the Conveyor Chains now run smoothly. After that, place the cover back.
- (3) Connect the electricity with using non-fuse breakers ON/OFF switches and make sure that the machine is connected to Earth.

Make sure that it is connected to the correct 3-phase voltage as specified and total power requirement is 34kw.

Connect Padder to Compressed Air Supply through the air filter provided.

Maximum inlet pressure: 5kg/cm2.

(4) Fix the splashguard of the Fluid Bed of the Padder.

IV. INSTRUCTION FOR OPERATION

- (1) Switch on the Main Drive Motor
 - a. Firstly, make sure that the machine is connected to the correct 3-phase voltage, by operating Inch ON/OFF to see if the Conveyor Chains is running in right direction. If not, changing the wiring connection to the Motor will correct this situation.
 - b. Then test again by operating Inch ON/OFF to make sure the machine is running smoothly.
 - c. After ensuring the stable running of the machine, you may accelerate or decrease the chain speed by operating the Speed Control Knob.
- (2) Operate the Padder
 - a. Make sure the rotating direction of the Padding Rollers is correct.
 - b. Check if the Diaphragm Valves work in correct way.
- (3) The Infra-Red Pre-Heater can be operated at full or half-load (6 Heaters) capacity. Make sure that all Ray Heaters are switched on and work normally.
- (4) The Intermediate Dryer can be operation :
 - a. After ensuring the rotation of the Fan motor is correct, then switched the Fan on.
 - c. The electric Heaters are switched on with a preset temperature (Max. temperature: 210° C)
- (5) The operation of Thermosoling Zone is the same as above. And its maximum temperature is 250°C)

V. ADJUSTMENT FOR USE

As below, our recommendation will enable you to supply the Laboratory Thermosol Range to obtain the best and similar results comparing to the pilot plant as well as to give you the most precise reproducibility.

- (1) For pick-up evaluation of the Padder:
 - a. Due to the fact that different test fabric(s) will obtain various pick-up percentage evaluation results, even if under the same nip pressure. It is advised that Padding curves(s) are to be set up from 0.8/1/2/3/4/5kg/sq.cm corresponding to pick-up percentage obtained.
 - b. In regard to pick-up percentage evaluated from the pilot plant will be much affected by those circumstances above, you need to follow and to apply the same pressure in order to control the correct pick-up percentage obtained.
 Note: After having adjusted the roller nip pressure each time, it will be advisable to actuate the Padder ON/OFF several times to ensure that the indication on the Pressure Guages are correct.

(2) Infra-Red Pre-Heater

- a. The distance of radiation of the Infra-Red Ray Heaters is adjustable. It is recommended to determine according to the corresponding speed of the Conveyor Chains with holding the test fabrics passing through.
- b. At the same time, it will be necessary to determine full or half-load capacity of the Ray Heaters with applying on different type(s) of fabric samples.

(3) Intermediate Dryer

- a. It is necessary to determine the speed of the Conveyor Chains corresponding to the intended dwell time inside the Drying Chamber.
- b. First to set the speed of the machine.
- c. Then to adjust to correct temperature. (Max. temperature: $210^{\circ}C$)
- d. Finally consider the volume of the incoming air. The velocity of the incoming air from the fan motor can be adjusted by the Knob of Inverter [FIG-5-12].
- (4) Thermosoling

The operation procedure is the same as Intermediate Dryer above. However, the Thermosoling Zone offers maximum temperature up to 250° C.

VI. OPERATION

(1) To decide the dyeing process:

- a. To determine if a complete thermosol process is required as below:
 Padding → Infra-Red Pre-Heater → Intermediate Dryer → Thermosoling
- b. If complete thermosoling process is not required,

Padding → Infra-Red Pre-Heater → Intermediate Dryer

Please fix the fabric-detaching device [see FIG-2] behind the Intermediate Dryer

Fig-4



(2) Setting for use:

- Set correct working pressure of the Padder corresponding to the desired pick-up percentage.
- b. Check the Main Control Panel:
 - Speed of the Conveyor Chains.
 - Full or half-load capacity of the Infra-Red Ray Heater
 - Speed of the Fan Motor, setting temperature of the Intermediate Dryer and temperature of the Thermosoling Zone.
- c. Preparation of the test sample(s)
- d. Preparation of the dye liquor.
- e. Padding
 - Pour dye liquor into the fluid-bed dyeing vat.
 - Impregnate the test fabric sample with dye liquor.
 - Place the stainless steel rod provided onto the test fabric or use press handle for better exhaustion.
 - Squeeze through the Padding Rollers.
 - Fix the test sample(s) onto the Conveyor Chains using clip-bar/fabric holding stick
 - Pick up the test sample(s) from the detaching box either after the
 Intermediate Dryer and/or the Thermosoling Zone [FIG-5-8&9].
 - It is now ready for the next process.

Note: If temperature readings appear to be very unstable, adjust it by firstly re-setting the desired temperature then resetting afterward ON/OFF switches of the Main Heaters. Otherwise speed of temperature rise will automatically slow down.

MAIN CONTROL PANEL DESCRIPTION

Temperature Controller [FIG-5-20&23]

The temperature controller controls the Heater & have the connection with Fan ON/OFF switch **[FIG-5-19&22]** & Heat ON/OFF switch **[FIG-5-18&21]**.

[FIG-5-20] is the Intermediate Dryer's temperature controller. **[FIG-5-23]** is the Thermosoling Zone's temperature controller.

Heat Switch [FIG-5-18&21]

We have disized the electric wire to heating up the Intermediate Dryer. But if the Fan is not working, you can not heat up the Intermediate Drying and Thermosoling Zone.

Heating Stage:

- 1. Firstly, set the temp. controller and then turn on the heat switch
- 2. Heating load is 10KW (high load)

Maintain Stage:

Maintain stage is only at Intermediate Drying Zone.

- 1. When the temperature is heating up to desired value, it will be stable and remain the situation during the preset period.
- 2. Heating load is 1KW (low load)

Note: If you cool down the machine then heating up the machine again, or only heat up temperature higher than now, please reset the Heat Switch **[FIG-5-18]** from ON position to OFF position and turn to ON position again. Otherwise, the machine at maintain stage at that condition the rise speed will be very slowly.

Fan System [FIG-5-19&22]

There are two fans. One is for Intermediate Dryer and the other is for Thermosoling Zone. Each fan is drived by a motor. The motor has the connection with vari-speed frequency inverter, and the frequency is controlled by the switchs. The vari-speed is available to adjust by a knob **[FIG-5-12&14]**.

Main Chain Motor

The main chain motor has the connection with the vari-speed frequency inverter that is controlled by motor ON/OFF switch **[FIG-5-10]**. The vari-speed is available to adjust by a knob **[FIG-5-11]**

Infra-Red Heater

Infra-Red Heater is controller by a switch **[FIG-5-17]**. It has three stages: "Full load", "OFF" and "Half load".

- 1. Full load stage is that all heaters are turned on.
- 2. Off stage is not heating at all.
- 3. Half load stage is only half loading.

There are two indicate lamps: Full load **[FIG-16]** & Half load **[FIG-28]**

TEMPERATURE CONTROLLER SETTING

SETTING PROCEDURE :

- 1 Press SET button to enter temp setting mode.
- 2 Press ≤ button you see SV digit blinking which means you can start to set temp. required.
- Set SV value from right side to left direction for instance if you need 170°C. Then set value as 170.0 will do. First press ≤ then the first digit form right will blink, you can choose desired figure by pushing
 for higher,
 for lower figure. Repeat same procedure to second
 third
 fourth digit to get required set value.
- 4 After completing the setting, press **SET** button to enter all settings to controller back to PV / SV mode.

MAINTAINANCE

- (1) Daily required
 - a. Take several average and popular fabrics test samples and evaluate pick-up percentage.
 - b. Check that clip(s) on the Conveyor Chains are fit for the various type sample holders. And also check whether the U type clip is loose.
- (2) Weekly required
 - a. Clean the Filters at the entry of the Drying Chamber
 - b. Use the correct lubricant for the Conveyor Chains.
 - c. Use accurate thermometer to check if temperature setting are accurate in the Intermediate Dryer and/or the Thermosoling Zone.
 - d. Check also tension of the Conveyor Chains and adjust if necessary.
 - e. Check spring clips which on the Conveyor Chains.
- (3) Others
 - a. Change oil in the speed reducers of the main drive motor and of the Padder every 500 hours after commencing use, then change every 2000 hours.
 - b. Use the correct high temperature lubricant for the fan shaft bearing every 500 hours.











ELEMENTS DECRIPTION

01	電氣控制箱	MAIN CONTROL CABINET
02	壓吸裝置	HORIZONTAL PADDING MANGLE
03	試驗布	TEST FABRIC
04	紅外線預乾	INFRA-RED PRE-HEATER
05	烘箱	INTERMEDIATE DYEING ZONE
06	熱固色箱	THERMOSOLING ZONE
07	鏈條	CLIP CHAIN
08	烘箱區落布槽	FABRIC RECEIVER/DETACHING BOX AFTER DRYING
09	熱固色區落布槽	FABRIC RECEIVER AFTER THERMOSOLING
10	主傳動馬達開關	MAIN DRIVE MOTOR CONTROL
11	傳動馬達速度控制旋鈕	MAIN DRIVE MOTOR SPEED CONTROL KNOB
12	烘乾區風速控制旋鈕	DRYING MOTOR SPEED CONTROL KNOB
13	烘乾區風速指示表	SPEED INDICATOR FOR DRYING MOTOR
14	熱固色箱風速控制旋鈕	THERMOSOLING MOTOR CONTROL KNOB
15	熱固色箱風速指示表	SPEED INDICATOR FOR THERMOSOLING MOTOR
16	紅外線全加熱指示燈	FULL LOAD HEATING INDICATOR
17	紅外線加熱控制旋鈕	INFRA-RED HEATING CONTROL
18	烘箱加熱開關	HEAT SWITCH FOR DRYING
19	烘箱風速開關	FAN SWITCH FOR DRYING
20	烘箱溫度控制器	TEMPERATURE CONTROLLER FOR DYRING
21	熱固色箱加熱開關	HEAT SWITCH FOR THERMOSOLING
22	熱固色箱風速開關	FAN SWITCH FOR THERMOSOLING
23	熱固色箱溫度控制器	TEMPERATURE CONTROLLER FOR THERMOSOLING
24	羅拉壓開	PAD ON
25	羅拉壓關	PAD OFF
26	羅拉馬達開	MOTOR ON FOR PADDER
27	羅拉馬達關	MOTOR OFF FOR PADDER
28	紅外線半加熱指示燈	HALF LOAD HEATING INDOCATOR
29	左羅拉壓力調整閥	LEFT ROLLER REGULATOR
30	右羅拉壓力調整閥	RIGHT ROLLER REGULATOR
31	大頭急停按鈕開關	EMERGENCY BUTTON

ELECTRICAL DIAGRAM











