Semi-automatic Thermal Sealer

Cat. No. BT1901

Thanks for choosing BT Lab Systems' Semi-automatic Thermal Sealer. This operation manual describes the function and operation of the instrument. In order to use the instrument properly, please read this manual carefully.

IMPORTANT SAFETY INFORMATION

Users should understand how to use the instrument properly before operating it. Please read this operation manual carefully before using the instrument.

The operation, maintenance and repair of the instrument should comply with the basic guidelines and warnings below. Ignoring these instructions will affect the life of the instrument and safety precautions.

- This product is an indoor Instrument.
- These units are designed for laboratory use by persons knowledgeable in safe laboratory practices.
- The operator should never open or repair the instrument. Opening or repairing the instrument will void the guarantee and can cause accidents.
- The power plug should safeguard against an electric shock. The 3-pin plug supplied with the instrument should be matched with a suitable grounded socket.
- Make sure the outlet voltage complies with the voltage required. Make sure there is nothing else plugged into the same outlet. Hold the plug when pulling out the power line. Do not plug the cord in where it is a tripping hazard.
- The temperature of the metal block will be very high during the normal operation. This will produce scalding or boiling liquid. Do not touch any part of the body to the instrument to avoid scalding.
- The instrument should be used in an area with low temperature, little dust, no water, no sunshine or hard light and with good air circulation. Do not use where there is corrosive gas or a strong magnetic field. Keep far away from central heating, camp stove and other hot sources. Do not put the instrument in a wet and dusty area. The vent on the instrument is designed for aeration. Do not wall up or cover the vent. The distance between each device should be more than 100cm when there is more than one instrument.
- Power off when not in use. If the instrument will not be used for a long period, unplug, and cover with a piece of cloth to protect it from dust.
- In case of the following, unplug the instrument at once and contact BT Lab Systems.
    - The instrument comes into contact with liquid
    - The instrument gets soaked or burned
    - The instrument emits an abnormal sound or smell
    - The instrument is dropped or the outer shell damaged
    - The instrument functions abnormally.

MAINTENANCE

The well in the block should be cleaned with a cloth dampened by alcohol to assure good heat conduction between the block and the test tube. If there are smudges on the instrument, clean it with a dry cloth. Power off when cleaning the instrument. Do not drop the cleaning fluid in the well. Do not use corrosive cleaning fluid.

INTRODUCTION

The Semi-automatic Thermal Sealer prevents sample loss and space cross infection in the process of testing of micro plates (PCR plate, deep well storage plate, Elisa plate and cell culture plate) by sealing various kinds of heat sealing films. With simple appearance and adjustable sealing pressure settings of sealing platen, it is easy to operate and accepts a wide range of plates, including standard plates and deep well plates. With variable temperature, time settings and rapid heating, its real temperature displays simultaneously. The instrument is applied to ordinary adhesive films, heat sealing films, optical heat sealing films (quantitative PCR) and permanent heat sealing films. Automated sealing operation ensures seal platen is firm. The uniform pressure ensures consistent results.

KEY FEATURES

- Simple and elegant appearance, compactly designed, simple operation.
- LED display screen, energy-saving and eco-friendly.
- Adjustable Sealing platen temperature: 80~200°C, real temperature displays, rapid heating, reaching 170°C in seconds, rapid cooling down with fan cooling.
- Sealing platen pressure can be adjusted, works with various kinds of micro plates and heat sealing films.
- The microprocessor controls the temperature with good accuracy. The ingenious uniform structure of the heat sealing platen ensures consistent sealing results.
- With variable temperature and time settings for accurate optimization. Temperature can be precisely set in increments of 1.0°C, and time in increments of 0.1 seconds.
- Advanced ceramics platen heating technology avoids adhesion of sealing films due to excessive high temperature.
- Two sides of the body is equipped with windows, which is convenient to clean and maintain the heating platen.
- When the unit is left idle more than 60 minutes, it automatically switches into stand-by mode during which time the temperature of the heating element is reduced to 60°C to save energy.
- When the unit is left idle more than 120 minutes, it switches off automatically for added safety. It switches off the display and heating. With slight current provided for central element, the sealer will restart when pressing any button.
- If a hand or object blocks the drawer when it is moving, the drawer motor will automatically reverse. This feature prevents injury to the user and unit.

NORMAL OPERATING CONDITIONS

Ambient Temperature: 10°C ~35°C

Relative Humidity: ≤70%

Power: 110V

TECHNICAL SPECIFICATIONS

Sealing Temperature Range	80 °C to 200 °C, (increments of1.0°C)
Temperature Accuracy	±1°C
Temperature Uniformity	±1°C
Sealing Time Range	0.5 ~ 10 sec. （increments of 0.1 sec）
Sealing pressure range	1-5 grades
Compatible Plate Materials	PP(Polypropylene)/PS(Polystyrene)/PE (Polyethylene)
Compatible Plate Types	Standard Micro plate Plates: PCR plate (skirted, semi-skirted, non-skirted), Deep-Well storage, Plates, Elisa Plates.
Sealing Plate Height	9mm ~ 48mm
Compatible Sealing Plate Film:	-Foil Polypropylene material -Transparent polyester fiber- Polypropylene material -transparent polymer material -Thin layer transparent polymer material -lamellar material
Front Panel Material:	Fireproof ABS
Sealing Platen Material:	Ceramics
Voltage	AC 110V, 50/60Hz
Maximum Power:	300W
Dimension (W×D×H)	W.180×D.350×H.380mm
Net Weight	12kgs

This section mainly describes the instrument's mechanical structure, the keyboard and functions of each key. Please learn this section well before the instrument is operated for the first time.
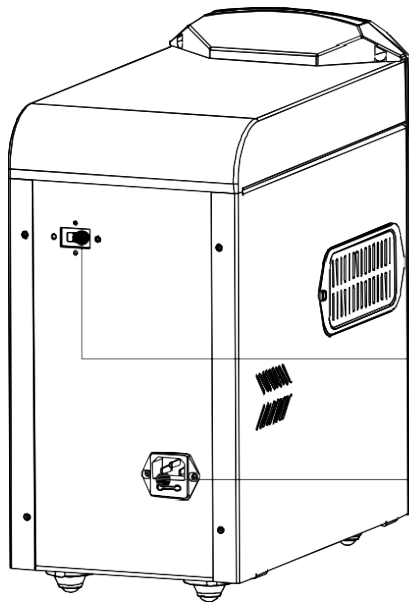
EQUIPMENT OVERVIEW
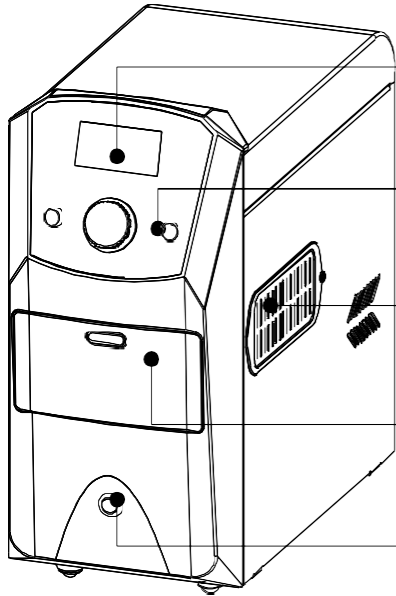
Display screen

Operation panel

Cleaning window

Cabin door

Power switch

AC110V transfer switch

Power socket

KEY FUNCTION

OPEN Key for opening and closing the cabin door. Press it when the door is closed, the door will be open. Press it when the door is open, the door will be closed.

RUN Sealing key. Press the key when the temperature arrives at the setting temperature, the drawer automatically closes and sealing process automatically starts.

Key for setting parameters. Rotate to change the parameter value and press to switch the setting target.

Sealing Temperature Setting

Turn on the power switch right under the machine. Press "PUSH TO SET" for 3 seconds, the temperature will flicker. Rotate the "PUSH TO SET" key to set sealing temperature, rotate counterclockwise to reduce the temperature value, rotate clockwise to increase temperature value. Temperature setting range is from 80°C to 200°C.

Sealing Time setting

After sealing temperature is set, then press "PUSH TO SET", time will flicker, rotate "PUSH TO SET", to set sealing time. Rotate counterclockwise to reduce the time, rotate clockwise to increase time. Timing range is 0.5 seconds to 10 seconds*.*

Pressure Function Setting

Adjust the sealing pressure according to sealing imprint on the sealed plate. If the imprint is light, increase the sealing pressure. If the imprint is deep, reduce the sealing pressure.

After sealing time is set, press key "PUSH TO SET", temperature will flicker, rotate button "PUSH TO SET", to adjust sealing pressure. Rotate counterclockwise to reduce the pressure, rotate clockwise to increase pressure. Pressure setting range has 1-5 grades. The minimum pressure is 1, the maximum pressure is 5. Factory setting is 3.

Sleep Time Setting

On pressure setting screen, press "PUSH TO SET", this starts the sleep time setting and hour value flickering, rotate "PUSH TO SET", to set hour value. Rotate counterclockwise to reduce value, rotate clockwise to increase value. Then press key "PUSH TO SET", minute value will flicker. Rotate "PUSH TO SET" to adjust minute value. Sleep time of factory reset is 1 hour.

Then press key "PUSH TO SET" again, the deep sleep time setting starts. Operation is the same as sleep time setting. Factory reset of deep sleep time is 2 hours.

Attention: While deep sleep time setting value is less than sleep time setting value, the deep sleep time will be automatically set as sleep time value and 1 hour.

It will automatically confirm as the current setting value if no operation is chosen within 5 seconds.
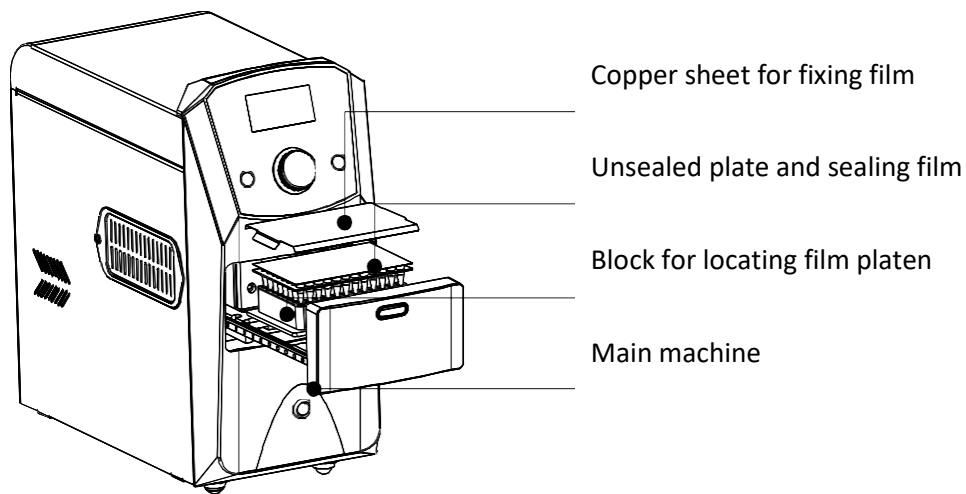
General sealing film temperature and time setting

Sequence	Name	Sealing Condition Setting	Sequence	Name	Sealing Condition Setting
1	clear-seal	170°C, 2.5S	3	pierce-seal	180°C, 4S
2	peel-seal	175°C, 3S	4	Alfoil-seal	180°C, 4S

The above parameter is just for reference. Adjust according to need.

Sealing Operation

When sealing condition is set, start sealing operation. See picture below:

Copper sheet for fixing film

Unsealed plate and sealing film

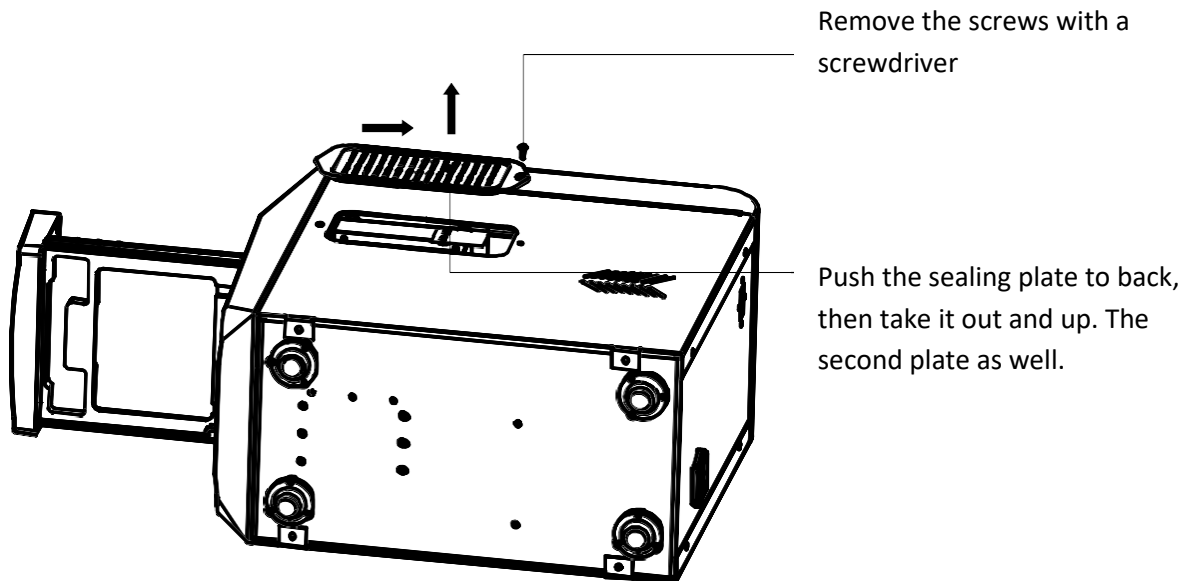Block for locating film platen

Main machine

1. Press "OPEN", slip open the drawer, load the adapter, unsealed plate, sealing film and copper sheet for fixing film.

2. After the temperature displayed on the screen increases to target setting temperature, then press "RUN", the drawer slips into the machine to seal. After sealing is finished, the drawer will automatically slip open for next sealing.

   Attention: When the temperature displayed is not up to target temperature, pressing "RUN" doesn't work for sealing.

3. After sealing operation is complete, press "OPEN", the drawer slips into the machine, and turn off the power switch right under the machine.

Heating plate clearance

1. *When the heating plate has leftover sealing film or it is on sealing plate due to improper operation, please clean the heating plate according to the steps as below.*

2. *Press "OPEN" to open the drawer, turn off the power, and pull out the plug.*

3. *Take out the two plates as the illustration shows*

Remove the screws with a screwdriver

Push the sealing plate to back, then take it out and up. The second plate as well.

4. When the plate temperature is close to room temperature, use napkin or towel to clean the residue.

Attention: Don't use solid tools to wipe the heating plate, which will damage the heating plate and affect sealing.

Heating plate
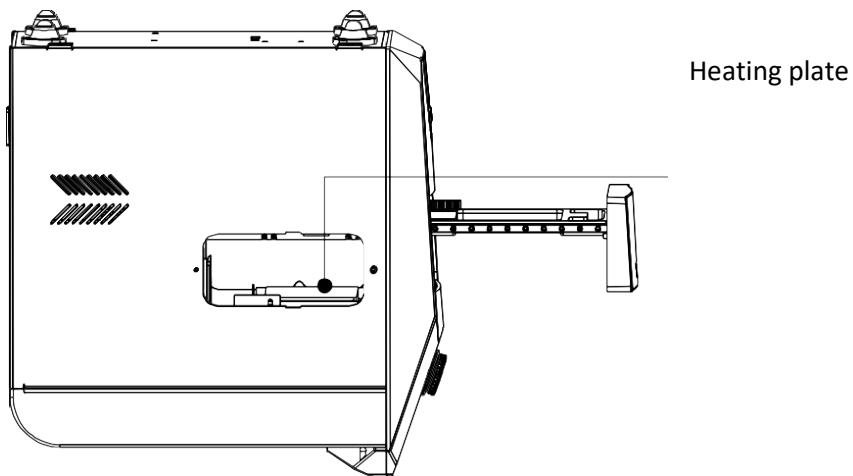
5. After clearing, install the sealing plate back as in step 3 on two sides.

"No Plate " Alert Function

When performing a sealing operation, if there is no unsealed plate in the machine, then drawer will automatically slip open, showing "No plate".

Standby Function

When the unit is left idle for 30 minutes, it automatically switches into standby mode, during which the temperature of the heating element is reduced to 60°C to save energy. Press any key, the unit will recover the previous temperature setting.

When the unit is left idle for 120 minutes, it automatically switches into "Deep sleep"

mode, turns off the screen and powers off the heating element. With slight current provided for central element, the sealer will restart once any button is pressed.

User can set sleep time and deep sleep time as needed.

Power off protection function

When power is shut off to the unit during operation, the electric motor stops. Don't adjust the moving element by hand. When power is turned on, the moving element will automatically reset.

Automatic counting function

The counter on the screen will automatically add one after every sealing operation. Press "OPEN+RUN" at the same time for more than 30 seconds, the counter will be cleared.

Contact BT Lab Systems

TROUBLE SHOOTING

Issue	Possible Causes	Solution
No signal on the display when powered on.	No power	Check the power
	Broken fuse	Exchange fuse（250V 3A
	Broken switch	Exchange the switch
	Others	Contact BT Lab Systems
The actual and displayed temperatures are different.	Temperature sensor is broken	Contact BT Lab Systems
"ERR001" in the display with the beep alarm.	Overheated	Contact BT Lab Systems
"ERR005, ERR006" in the display with beep alarm.	Temperature sensor is broken	Contact BT Lab Systems
"ERR601" in the display with the beep alarm.	Motor blocked	Contact BT Lab Systems
Button not working	Broken Button	Contact BT Lab Systems
"ERR412" in the display with beep alarm.	Underneath photoelectric switch broken	Contact BT Lab Systems
"ERR411" in the display with beep alarm.	Photoelectric switch above broken	Contact BT Lab Systems
"ERR402" in the display with beep alarm.	Photoelectric switch outside broken	Contact BT Lab Systems
"ERR401" in the display with beep alarm.	Photoelectric switch inside broken	Contact BT Lab Systems
"NO plate" in the display with beep alarm	No plate or incorrect placement	Reposition sealing plate

WARRANTY

The instrument is warranted against defects in materials and workmanship for 1 year. If any defects occur in the instrument or accessories during this warranty period, BT Lab Systems will repair or replace the defective parts at its discretion without charge.

The above warranty is not valid if the instrument has had improper maintenance, damage caused by unauthorized repair or modification.

For any inquiry or request for repair service, contact your local BT Lab Systems office. Inform BT Lab Systems of the model and serial number of your instrument.

TECHNICAL SUPPORT

BT Lab Systems offers technical support for all of its products. If you have any questions about the product's use or, operation, please contact BT Lab Systems at the following:

E-Mail: info@BTLabSystems.com