ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

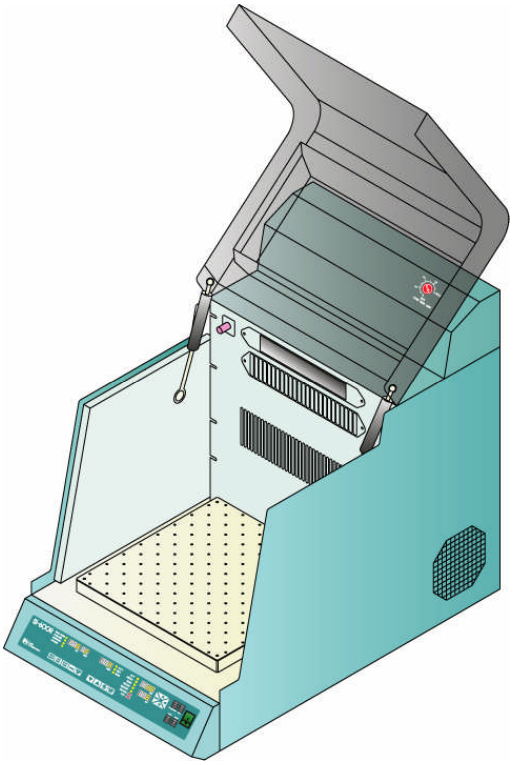
Find the *Lab Companion SI-300R* at our website: ***Click HERE***

OPERATING INSTRUCTION

[SHAKING INCUBATOR]

Model : SI-300/300R/600/600R

Manual No: 00HAA0001134 (Version : 5.0)



This operating instruction describes the important subjects to maintain the product's functions and to use it safely. Especially, be sure to read <Safety Precaution> carefully before you use this equipment. Please keep this instruction close to the equipment to use it after reading through it once. Please place it where the new user can find it easily for the safety use when you hand over or lend the equipment to others.

JEIO TECH

■ Introduction

Thank you for purchasing Jeio Tech's product.

This operating instruction forms a definition of warning marks according to the level of importance and danger in order to use the product safely and correctly and prevent the users from accidents or injuries. Hence, please use the product in accordance with the instructions.

Caution about the operating instruction

1. Always keep this instruction near to the instrument.
2. All users must read this operating instruction carefully to operate the product properly.
3. This operation describes the detailed function of the product so the above exclusions may not apply to you.
4. Copying and distributing part or the whole of this the operating instruction with no permission are prohibited with the law.
5. The operating instruction promised perfection but please ask an agent or us if you have any question about insufficient points, error and omission on the operating instruction.

Warning mark of the product

1. This operating instruction uses the warning Signal Word for safe operation to prevent the users from accidents or damage beforehand.
2. It defines warning marks according to the level of importance and danger in order to use the product safely and correctly.
3.

⚠ WARNING	"Warning" means that the user may have serious damage and even die by improper handling on this unit.
⚠ CAUTION	"Caution" means that the user may have minor damage and unit may have physical damage by improper handling on this unit.
⏚	Protective Ground Terminal It marks the terminal must be connected Ground prior to operating the product.
? NOTE	It marks additional information on the operation and features of the product.

4. Be fully aware of the warning contents during operation.
5. The most important thing of warning is a warning label attached to the product. It is located in front of the door.
6. Please exchange original label to the new warning label when it is unreadable from warning out. ☞ Please request the new label to an agent or us.

Caution for safe operation and reorganization of the product

1. In order to protect the product and system, please use the product in accordance with the instructions.
2. We shall not be responsible for any incidental or abnormal operation for breach of any express or implied warranty on this product or any part thereof.
3. It forbids reorganization of Inside of the product or adds.
4. Do not assemble, repair, modify by entities than Jeio Tech's representatives. It becomes the cause of electric shocks, fires and improper operations.
5. Please contact the agent or us in case of the component and the consumable parts of the product will be replaced.
6. Do not give a strong shock to the product. It becomes the cause of product damage and wrong operations.

Disclaimer

1. In no event will Jeio Tech industries be liable for any incidental or consequential damages for breach of any implied warranty relating to the product.
2. Any special indirect or consequential property or commercial damage of any nature whatsoever. Some cases do not allow the exclusion of incidental or consequential damages, so the above limitation may apply to you.

■ Confirmation of transport

Please follow the direction to handle the unit.

1. Confirmation of a unit

1. Check the front and rear sides of the unit under packed condition.
2. Carefully unpack the package.
3. Check with care any damage during the transportation of the unit
4. Check the parts (i.e. accessories) of the unit.

2. Dealing with a damaged unit

1. If the unit is damaged, contact the delivery service company immediately.
2. Keep the condition as it delivered and wait for the confirmation by the carrier.
3. Within 15 days, submit an application be made in writing to the delivery service company.

3. Compensation regulation of transport

1. Any damage that is occurred during the transport is responsible to the delivery service company.
2. Except for all damage from the transport, we Jeio Tech will service or refund.
3. If Jeio Tech or our authorized dealers do not deliver the unit, Jeio Tech disclaims all the responsibility for the damage.

■ Components of SI-300/300R/600/600R

After unpacking the unit, check the following components.
In addition, check the features and electric condition.

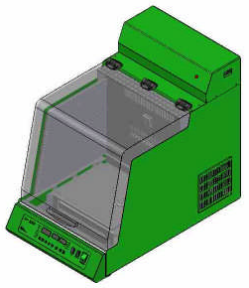
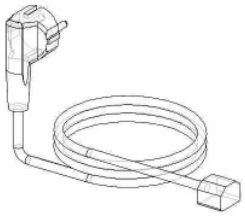
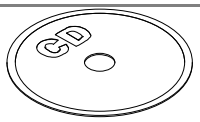
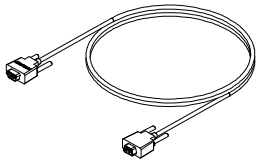
Components	EA	Components	EA
 unit	1	 Power Cord	1
 Operating instruction	1	 Fuse	2
 Software CD for communication	1	 Spacer	4
 Cable for communication	1		

Table of Contents

◆ Introduction ---- 2

◆ Confirmation of transport ---- 4

OPERATING MANUAL

1. Warning for safe operation ---- 7

2. Caution for safe operation ---- 9

3. Safety alert definitions ---- 10

4. System composition of SI-300R,600R ---- 11

5. Introduction ---- 13

6. Controller instruction ---- 16

7. How to change the orbital motion and reciprocation motion ---- 38

8. Accessories ---- 39

9. Cause of malfunction and its repairs ---- 46

10. Inspection cycle ---- 49

11. Maintenance and cleaning ---- 50

12. Specification ---- 51

13. Warranty standard ---- 52

14. How to waste ---- 53

15. Warranty ---- 54

16. Setting monitoring program ---- 55

17. Operating monitoring program ---- 56

1. Warning for safe operation

⚠ WARNING	Warning means that failure to follow this safety statement could result in serious personal injury, or death.

1. Please check the voltage, phase and capacity of power supply and connect properly.
   ☞ Abnormal connection causes fire or electronic shock.
   ☞ Power cord must be plugged into a wall outlet with grounded terminal.

2. Do not insert a lot of plug into the outlet at once.
   ☞ Using of unreasonable electronic power causes electric shock and fire.
   ☞ Must use a separate electronic wiring for the Temp & Humidity Chamber.

3. Power supply must be properly grounded.
   ☞ Abnormal grounded connection causes serious damage. Grounded connection must not be on the water pipe and gas pipe.

4. Please check the power supply and frequency on the ID plate before installation.
   ☞ The unit requires an independent line (100V, 120V, 230V, single phase), a grounded and polarized.
   (100V, 120V:16AWG,12A,1.25SQ ; 230V:18AWG,10A,0.75SQ)

5. Do not install the product in the place that the gas could leak out.

6. Do not use in the place that has the industrial oil smoke and the metallic dust.
   ☞ It causes fire or electric shock.

7. Unplug, when there is strange sound, smell and smoke from the product.
   ☞ Please request the service.
   ☞ It causes fire or electric shock.

8. Keep out of the direct sunlight.
   ☞ It may cause fire and abnormal operation.
   ☞ When use in the direct sunlight, please set up a proper interception to make shade.

9. Do not use in the place that has the industrial oil smoke and the metallic dust. Keep in the dry place.
   ☞ It may cause fire and makes the product does not work well.
   ☞ Request service, if the product is flooded.

10. Do not assemble, repair, modify on your own.
    ☞ It may cause fire and electric shock.
    ☞ The product may not work well and fall off in the efficiency of the product.
    ☞ Please do not use with the exception of the origin purpose.

11. Do not use or keep the inflammables near by the product.
    - ☞ Inflammable gas or dust may cause fire.
    - ☞ It may cause fire or explosion.
    - ☞ Do not operate the product in a dangerous article area.

12. Never put inflammables and explosives in the product.
    - ☞ A sample may explode in the chamber at a high temperature. The explosives are acetic acid, ester, nitro compounds etc. and the inflammables are peroxides, inorganic peroxides, acetate, and organic solvent.
    - ☞ This product was not designed to prevent from any explosion.

2. Caution for safe operation

⚠ CAUTION	Warning means that failure to follow this safety statement could result in serious personal injury, or death.

1. Do not pour water or put liquid on the top of the product when cleaning.
   ☞ It causes abnormal operation or trouble.
   ☞ Please intercept the main power immediately and request the service when water may be in the product.

2. Do not let the product take any strong shock or vibration.
   ☞ It causes abnormal operation or trouble.
   ☞ It may deteriorate the ability of the product and not obtain correct results.

3. Do not put a heavy object on the main cord or let the cord be pressed down by the product.
   ☞ It may take off the wire coating and causes the electric shock.

4. Do not touch it with wet hands and put the main plug correctly.
   ☞ Abnormal connection may cause fire,
   ☞ It may cause the electric shock or injuries.

5. Do not sprinkle insecticide or flammable spray on the product.
   ☞ It may cause trouble, the electric shock or fire.

6. Do not clean it with a strong cleanser (like solvent type) and use a soft cloth.
   ☞ It may cause fire or modification of the product.
   ☞ Clean it with a soft cloth dipping in neutral detergent.

Warnings and confirmations when operating the product

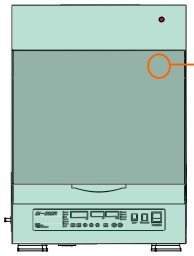
1. Insure a enough space because the cover is opened up to 70° .
2. Do not pull down the product and give a shock. Operate it on a flat place.
3. Please leave space between lighting fixtures (1.5m), wall (20cm) from the product.
4. Please maintain the horizontality of the product on a flat place to prevent unusual vibration and sound.
5. Please set the product in a place which maintains the normal temperature and humidity (less than 30° C, 80%RH), far from a heat source like a heater.
6. Please pay attention in transportation with propel equipment because it is heavy.

Confirmations after operating the product

1. Please check all wires have been operated accurately.
2. Please check the ground wire has been grounded accurately.
3. Please insure a enough space to operate.
4. Connect a hose to the Drain Hose Nipple. (Refer to Page 18, #20)
5. After considering the safety regulations fully, use the product.

3. Safety alert definitions

The safety alerts, attaching on the product, provide information of danger and safety about it. All users must read this operating instruction carefully to operate the product properly. The safety alerts should be attached in the same place below until disusing the product. If the safety alerts are damaged, please request new labels to an agent or us.





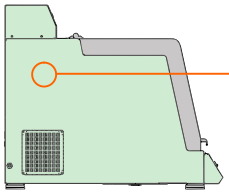
*** Caution**

It shows the caution when opening and shutting the inner class door and the out door.



*** Warning**

It is to forbid putting inflammables and explosives inside of the product.





*** Caution**

If the air filter is being stopped up, refrigeration efficiency would be decreased and correct temperature controlling would be impossible.

4. System composition of SI-300R, 600R

CLS (Custom Logical Safe)-Control System

The CLS-Control system (Patent no.0328729) is our enhanced safety controller developed by our engineers. Designed to allow our equipment to be operated in environments that require perfect thermal safety-including areas where flammable chemicals are used.

In most cases with other brands of lab equipment, the CPU comprises both control and safety features together. In the event of the CPU failing, the logic controlling the safety features will often be compromised.
Jeio Tech has separated these two important elements and now has an independent safety system running alongside the performance controller.
When any risk factors are sensed (ex: voltage peaks, short circuit, over temperature etc.) the machine will go into a recoverable safety mode as follows.

- The power supply to individual components is isolated by a magnetic switch, leaving only the earth in circuit.
- Details of the fault are displayed (indicator codes)
- Audio and visual alarms are set off to alert the user and remain on until attended.

Shaking System

■ Stop the one regular position

The automatic system with Brake function allows the shakers can always stop at the same position.

■ Turn Right and Left both ways

Our original Auto Reverse function allows it turns right and left both ways, in addition to control the each turning time period by setting with the timer.

■ Speed recovery

The motor often check the set rpm and memorize the speed value. If there is any outside interruption, it can recover the set speed.

■ Auto-control

To control speed and stop the one regular position accurately, it can memorize the settle parameter value automatically.

■ Wide working range

From minimum 10 rpm to maximum 300 rpm, it works very stably.

■ Prompt acceleration and deceleration

It can accelerate/ decelerate promptly with the speed recovery function and the brake function at once minimizing Over shoot/ Under shoot.

Uniform temperature control

- If the cover is opened, fan and heater will be stopped immediately to keep away meeting inner air with outer air.
- We use a cross type fan to make good uniformity.

Prevention against inner air leakage

- To prevent against inner air leakage, external chamber is treated with heat insulators and the open cover is stuck to the body unit with Packing.
- To observe inside of chamber without opening the open cover, we are using a translucent acrylic cover and setting a lamp up.

Programmed auto-run function

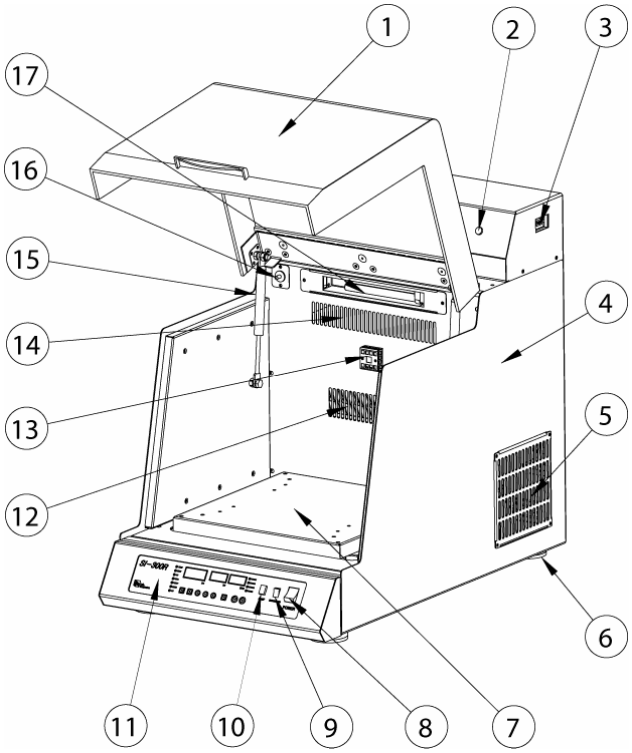
- Our integrated controller allows controlling the inner circulating fan speed on three steps. The 9-Step Programmed Control system can make to auto-run on nine different temperatures and times (Max. 99hr. 59min.) and maximum 200 times for each time.

Safety device

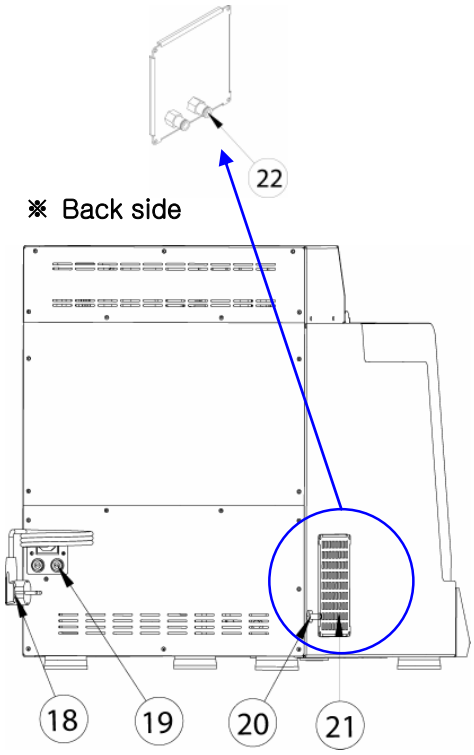
- Independent IC logic detects and intercepts electronic interference before the main control board to give added safety to both user and product.
- Built in Over Temp. protector warns (beep and LED lighted) and shuts off the heater in the event of overheating problems.

5. Introduction

※ SI-300R/600R



※ SI-300/600



(1) Cover

Easy to observe the sample through Acrylid.

(2) Over Temp. limit

This the safety device which is independent of the circuit.
The Heater reaches over the setting value, the controller shutdown of the main power
Completely. the over temp. LED illuminates with audible Beep sound.
When the power is shut down, Please set the Knob over 15% than the setting value.
Press the Start/Stop switch, and then Check the Temp LED illumination.

(3) Communication Port

The serial interface RS-232 can connect the PC through COM1 or COM2 port.
It's allow to check the condition of the unit and the setting value.
This interface can restore the data and then print out.

(4) Body

(5) Compressor Cover
The cover for the refrigeration System A/S.

(6) Foot
The foot for protected the unit from the dust..

(7) Shaking table
The shaking table relates to the shaking system. This can be installed the Universal Platform, Spring wire wrack and other accessories.

(8) Main switch
Turn power on / off switch to unit

(9) Shaker I/O Switch
Turn On / Off switch to Shaker

(10) Lamp Switch
Turn on / Off for the inner chamber.

(11) Controller
- Shaking Control
  Shaking Control can be set the left, right, pause function and each motion.
- Temp. Control
  Temp Control has the Microprocessor(CPU) can be performed Digital PID Auto tuning.

(12) Chamber Air Out
Inner air is out to go through the heater or Evaporator.

(13) Temperature Sensor
With Thin Film PT-100Ω

(14) Blower(Inner)
Blower for the temperature uniformity.

(15) Gas Spring
Gas spring is for changing the sample conveniently.

(16) Door Switch
There is door limit switch between door and the appliances mainframe upper parts, and discontinuance gets operation of Shaking unit, Blower and Heater done by the Logic IC which received an open signal if it opens Door. And Door LED is turned on. (within five minutes)
Door LED twinkles for warning ventilation of a user after a door opened if a user does not shut a door so that five minutes pass, and an alarm sound continuously rings.

And it blocks off the power to be authorized with a power switch, and Off gets a power switch done and all blocks off 2 phase of the power supplied with to an each part of appliances, and configuration does the safe state that only a Ground part is connected. At this time light is effective on Temp LED if closes a door again and presses a Button.

(17) Lamp

Lamp is for observing the inside.

(18) Power Code

(19) Fuse

Fuse is for protecting the unit from the momentary overpower.
When exchanging the Fuse, check the main power.

Model	Electric requirements	Fuse	Quantity	Remarks
SI-300/600	100V, 50/60Hz	AC 250V, 10A Slow-blow	2 EA	
	120V, 60Hz		2 EA	
	230V, 50Hz	AC 250V, 5A Slow-blow	2 EA	
SI-300R/600R	100V, 50/60Hz	AC 250V, 12A Slow-blow	2 EA	
	120V, 60Hz		2 EA	
	230V, 50Hz	AC 250V, 8A Slow-blow	2 EA	

(20) Drain Hose Nipple

Drain hose nipple is for draining the moisture in evaporator.

(21) Filter

Filter by outboard is protecting the condenser from the dust.

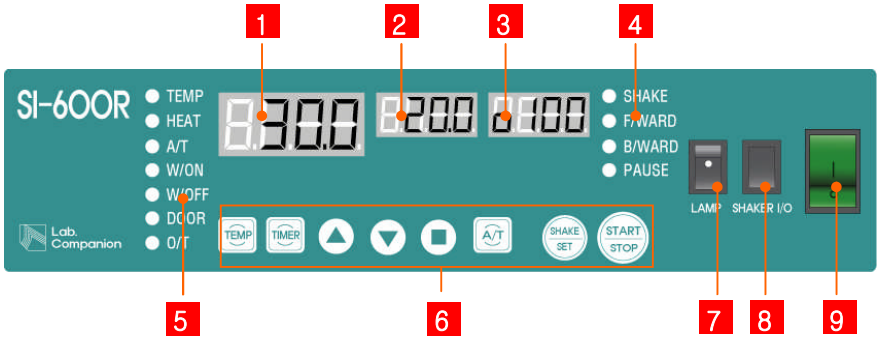
(22) Hose Coupling(SI-300/600)

Circulating the heating medium in Evaporator when decreasing the inner temperature.

6. Controller instruction

Planning for the shaking incubator

- This controller is divided into the Temp LED and shaking LED.
- Once setting the controller, the operator can use the Temp & shaking function simultaneously.
- Know well the operator to perform functions like temp, shaking, programmed all on the controller in right process.



PV Display

1. PV Display

	Indicates the present value.

SV Display

2. SV Display

	Indicates the set value or remaining time of the timer

rpm Display

3. rpm Display

	Indicates the actual rpm or rotation direction.

Shaker LED

4. Shaker LED

● SHAKE	**Shake LED** Illuminates When setting the time. Flashes during the timer mode.
● F/WARD	**F/Ward** Illuminates when settting the clockwise timer. Flashes during the timer mode or anti clockwise mode.
● B/WARD	**B/Ward** Illuminates when setting the anti clockwise timer. Flashes during the timer or clockwise timer
● PAUSE	**Pause LED** Illuminates when setting the pause timer. Flashes during the timer mode or pause mode.

Temperature LED

5. Temperature LED

● TEMP	**Temp LED** Set the temperature using of the TEMP Button, Illuminates when pressing the START/STOP Button.
● HEAT	**Heater LED** Indicates the heater output.
● A/T	**Auto-tune LED** Flahses during Auto-tune function.
● W/ON	**Wait on timer LED** After setting time,indicates starting point of the unit. Illuminates while operating.
● W/OFF	**Wait off timer LED** After setting time, indicates the unit stops.Flashing the timer LED during operation. The timer LED is lit, the timer is standing by.
● DOOR	**Door LED** When opening the door, shaking table, heater,circulation fan stops operation. After 5minutes, break the mainpower then Door LED is flashing with audible Beep sound.
● O/T	**Over temp. LED** When the inner temp is over the over temp. limit, the unit stops then, flahsing the Over temp LED with audible Beep sound.

Button

6. Entering button for the setting value

	**Temp Button** Setlects for the temp
	**Timer Button** Selects for the timer.
	**Up Button** Increases the set value.
	**Down Button** Decreases the set value.
	**Enter Button** After setting the value, store the set value using of Enter button.
	**Auto-tune Button** Auto-tune Function operates while pressing the button for a second.
	**SHAKE/SET Button** For Checkng the setting and present rpm and entering the new rpm value
	**START/STOP Button** Starts and Stops the unit. When the unit stops operating, user can remove the beep sound and flashing LED with Start/Stop Button.

Lamp

7. Lamp Button

	Turns On / Off the inner Lamp.

Shaker I/O

8. Shaker I/O Button

	**Shaker I/O Buton** **Starts/ Stops the shaking table.**

Power Switch

9. Power switch

	**Power switch** Turns On / Off the Power to shaker.

The unit Operation

- Before using the unit, Make sure the shaking direction to protect the unit from the dust
- Position the appropriate accessaries on the shaking table and toghten securely.
- If using the temp function, the unit should be operated 5minutes before.After maintaining the temp uniformity, install the vessels and accessarries on the shaker table.
- Select the desired value, Starts the operation

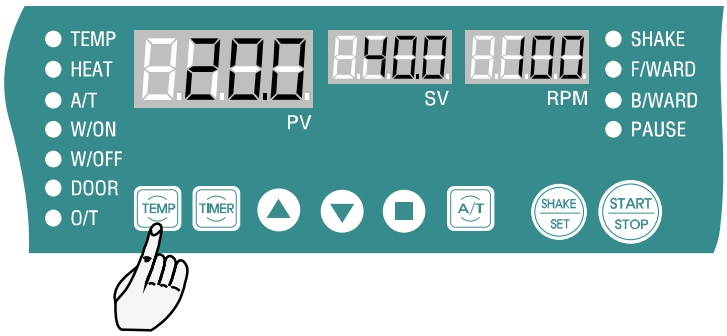
Internal Temp Control

Control of the Temperature

This control is for the chamber of the inner temp. Controlling the temp, other function and programming temp using of the Temp button.

Setting Temp

Method of the setting temp



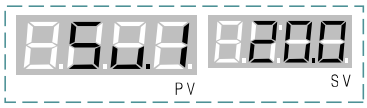
If not setting the temp for 10seconds, the display will be back in the main.

① Turns on the power switch and wait for the unit stabilized.
② Press Temp button.
③ Flashing the number activated on the SV display.
④ Set the desired temp with Up button and Down button
⑤ Press Enter button to finish setting.
⑥ After pressing the Start/Stop butoon, the unit operates following the setting temp.

Additional Function

Additional Function of Temp Button

Restoration the Set value
This function can restore Three frequently used temparatrue Each SV1,SV2,SV3 mode.
Press the TEMP button,SV display will be activated.
Press the Temp button again,SV1 will appear on the PV display.



① Select the desired temp using of Up button and Down button. Press Enter button to finish setting



② Select the temp can be restored in CPU. The PV temp will be changed.



③ Press Temp button once,SV2 is displayed on the PV display. Set the desired temp same as No.1

④ Press Temp button one

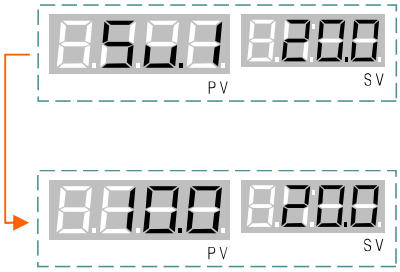


If the unit operates related to the set temp, Press START/STOP button

The example of the set temp

1. The method of the set temp in SV1 to operate

In case of the main screen, Press TEMP button twice.



① Dispalayed SV1 on the PV display and Set temp on the SV display.

② Press Enter button.

③ Press START/STOP to reoperate the controller.

2. The moethod of using set temp on SV2

In case of the main screen, Press the TEMP button twice.



① Press Enter button once to display SV2 on the PV display



② After checking the SV 2 temp, Press Enter button.

③ Press START/STOP button to reoperate the controller

3. The method of Restoring set temp to operate

In case of the main screen, Press the TEMP button twice.



① Press Enter button once to display SV3 On the PV display..



② After checking the SV 2 temp, Press Enter button

③ Press START/STOP button to reoperate the controller

Temp Unit

The temp unit changing function

This function is for changing the temp unit

In case of the main screen, press five times continuousluy, The display changed.



Based with the Celcius setted.

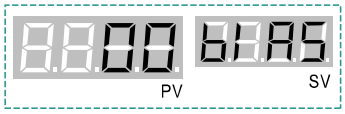
Use Up button and Down button to change the temp unit displayed by turns.

Press Enter button to finish the mode.

BIAS

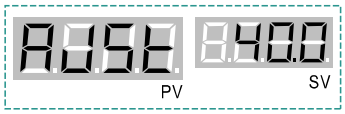
BIAS Function

This function is for revising the temp diffrence caused by the temp sensor or other sources.
Press Temp button for six times to move the bias function.



Displayed the revised value on the PV display and Bias on the SV display.

① Use UP button and Down button to move the BIAS value display. Displayed the PV on the SV display. Set the temp measured by the thermometer.



② Press Enter button to complete the BIAS function. The value can be checked on the BIAS display.

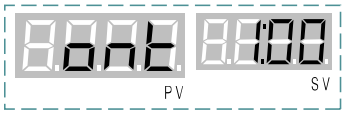
③ Press Enter button once, the unit starts controlling the temp by set value.

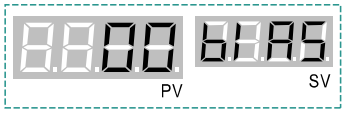
Use the thermometer approved. When the temp revision is not done, Contact the service department.

Timer set function

On Timer

On Timer Set







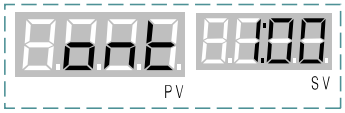
(Illuminates W/ON LED after setting)

In case of the main screen, Press the Timer button once.
Displayed Timer on the PV display and Time on the SV display.

① Press Up bbutton and Down button
to set the desired time.
Press Enter button to finish.
② Illuminates W/ON LED with Beep sound after setting.
③ Press Timer button once,
Off TIMER can be set.

Off Timer

Off Timer Set



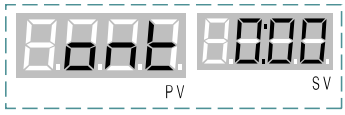
(After setting, W/OFF is on)

In case of the main screen, Press Timer button twice.
Off Timer can be set.

① Press Up button and Down button to set the desired time. Press button to finish.
② Illuminates W/ON LED with Beep sound after setting.

Timer Cancellation

Cancellation of Wait On/Off Timer



Wait on Cancellation



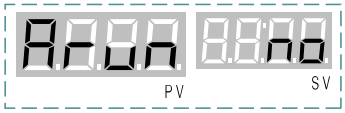
Wait off Cancellation

① Press timer button once displayed Wait on Timer.
Press timer button twice displayed Wiat Off Timer.
② Press Up button and Down button to make the value “0(zero)”.
Press Enter button to finish the mode.
③ Press Enter button only, The time mode can be cancelled.

Auto Run

Auto Run Function

Press the Timer button three times, Auto run function displayed



① This function is for compensation form the power interruption. When the power is out, the unit starts operation automatically after power is on..

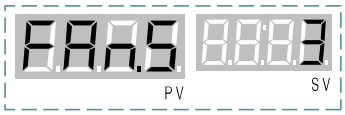
② Use Up button Dwon button,Select “YES” or “NO”.

③ When setting “YES”, the unit starts operation after power is on..

Fan Speed

Fan speed controller function.

Press TIMER Button four times, displayed Fan speed function.

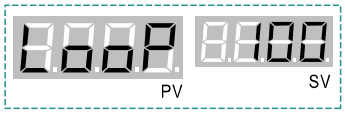


This function is for controlling the inner fan speed. When the fan speed is slow, the temperature uniformity is not sutible. Recommend uisng the NO.3.

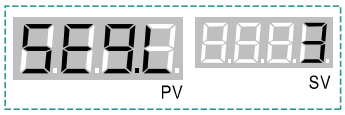
Programed Control

Program Control Function of Timer Button

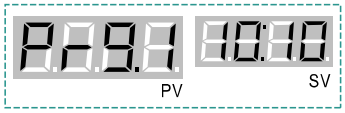
9-steps Prgramed Control serve to operate each 9deffrent temperatrue and time (99hours 59minutes, max).
Possible to repeate the operation from one to 200 cycles.
Press Timer Button 5times, the Prgrammed Control Function is displayed



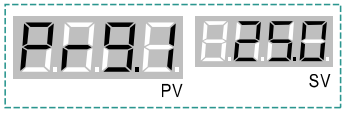
①The repeating total step number is displayed. If Loop 100, the unit operates 100 cycles repeately.
If input over 1 cycle, the next screen will appears.
If not operating the program, Input No.0.
Press Up button and Down button to select the desired value.
Press Enter button to finish the menu.



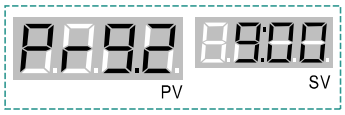
②SEg.L is for deviding the segment. If input 3, NO.3 Prgram will repeate from the second segment.
Press Up button and Dwon button to select the desired value.
Press Enter button to finish the set.



③ Prg.1 is for inputing the maintenance time for the first stpe.
Press Up button and Dwon button to select the desired value.
Press Enter button to finish the set

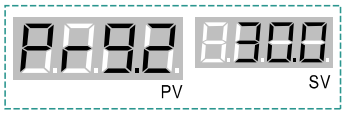


④ The second step is for inpputing the temp to maintain. (4℃~60℃)
Press Up button and Down button to select the desired value.
Press Enter buttonto finish the set.



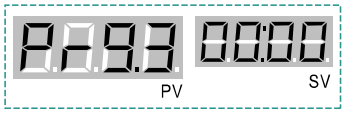
⑤ The Prg2.will appear on the display.

Use Up button and Dwon button to select the desired segment.



Press Enter button to finish the set.From selection of ③ ~ ⑤, 9step prgram will be set.

In Prg2, Time 2 and Temp 2 be set and In Prg3, Time 3 and Temp 3 be set. This program function can be set till Prg 9.

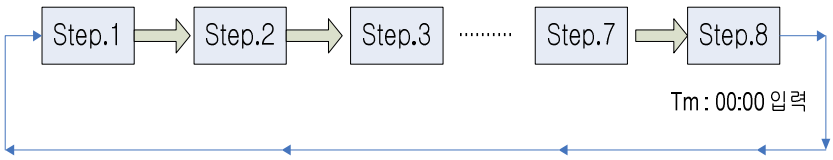


⑥ If input the time 00:00 in Prg3, the program is finished

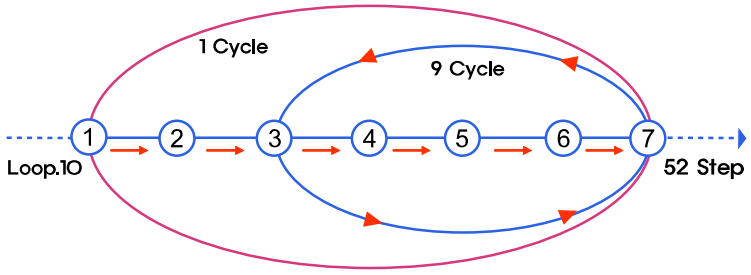
The program will be operated until Prg2 and step 2.

Example of Prgrammed Control Input in Timer Button

① The maximum step is 9.
If input the time 00:00, the step has been input until step 7.



② If the Loop is 10 and Seg.L is 3, The step operates total 52cycles.



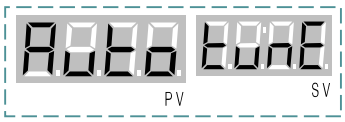
Total Step:(Step.1 ~ Step.7) → 1 Cycle
: (Step.3 ~ Step.7) → 9 Cycle
Total : 52 Step

Auto Tune

Auto Tune function

Auto Tunning is for more accurate and fast temp control.

After Tuning, PID value will be stored automatically.



① Press the Temp button and select the desired temp.

② Press the A/T Button for a second, Auto Tune is displayed with illuminating A/T LED.

While operating the unit, Pres A/T button for a second. Auto Tune will be displayed.

③ Press START/STOP butoon, illuminating Run LED.
Auto Tunie will operate with flashing A/T LED

④ Auto tune time will be different depends on the circumtance. After finishing the Auto tune, The temp will be controled by Auto tune value.

NOTE

Auto Tuning must operate in the first step. Please operate the Auto tuning, When the temp is changed because of a long-term use.

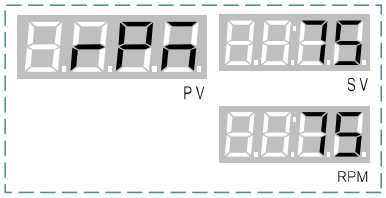
Shaking Control

rpm Set

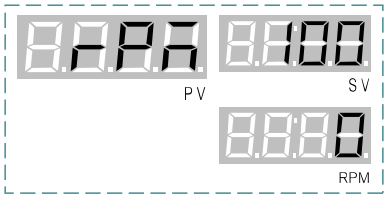
Shaking Control Function

rpm Set

RPM indicates the rotation of motor. RPM is the same as 1cycle of the shaking table. Please check the proper rotational.
Avaiilable rotation is 10~300RPM.
Able to set the value when the unit stops or rotate without the timer mode.

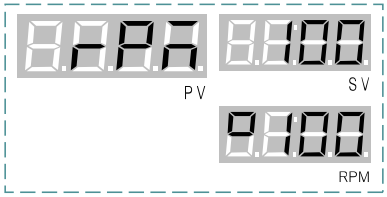


① Press SHAKE/SET button, “RPM” displayed on the PV, the previous rpm value displayed on the SV.



② Use Up button and Down button to select the desired rpm.
Press Enter button to finish the mode.

③ Press START/STOP button or Shake I/O button to operate a shaker in stop position.
Or, Press Enter button to start a shaker in working position.



If not selecting the rpm for 10seconds, The display will be back in the main.

.

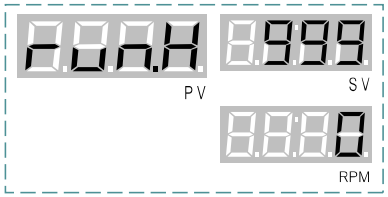
Timer Set

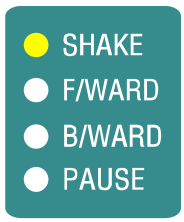
Timer set Function

The operator can set time/clock/anti clock mode whatever wants or select the one mode.

Whole Time

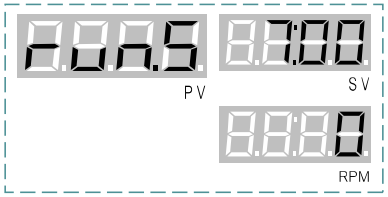
Whole time set(HHH) : Set the hour in timer mode.





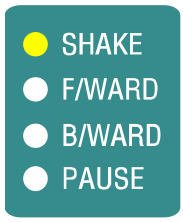
Press SHAKE/SET button twice, “run.H” appeared on the PV display. The earlier time appeared on the SV display.
Set the time with Up button and Down button. Press Enter button to finish the mode.
(Maximum Input time: 1 ~ 999 hours)

Whole time (MM:SS)set : Set the minute and seconds



Press SHAKE/SET button three times, “run.S” will be appeared on PV display.
The previous time will be displayed on the SV.

Use Up button and Down button
To set the time then, Press Entr button.
The shake LED illuminates

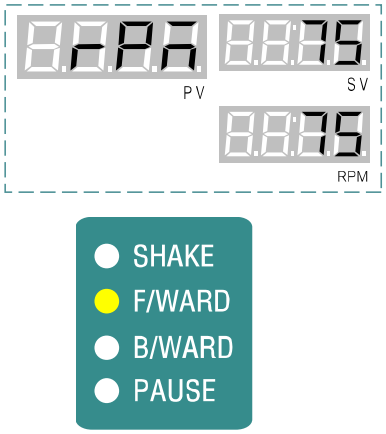


(Maximum Input time: 10seconds ~ 59minutes 59seconds)

☞ The whole timer is total time of HH set and MM:SS set.
If select the one mode, the SHAKE LED illuminates.

Forward Time

Forward time(MM:SS) Set



Press SHAKE/SET button four times," For.S" will be appeared on PV display.The previous time will be displayed on the SV.

Use Up button and Dwon button

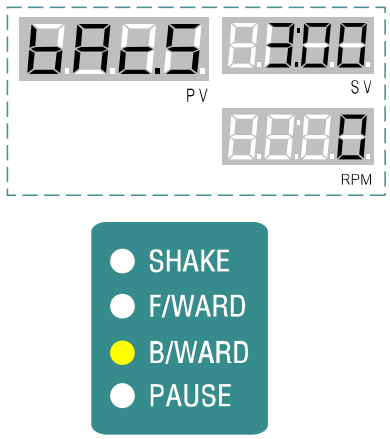
To set the time then, Press Enter button.

The F/WARD LED illuminates

(Maximum Input time: 10seconds ~ 59minutes 59seconds)

Backward Time

Backward time(MM:SS) SET



Press SHAKE/SET button five times, "bAc.S" will be appeared on PV display.The previous time will be displayed on the SV.

Use Up button and Dwon button

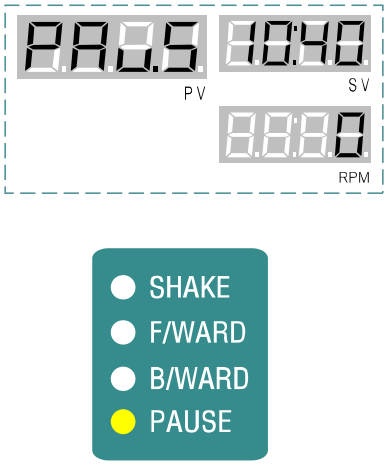
To set the time then, Press Button.

TheB/WARD LED illuminates

(Maximum Input time: 10seconds ~ 59minutes 59seconds)

Pause Time

Pause time(MM:SS) SET



Press SHAKE/SET button six times,pAu.S" will be appeared on PV display.

The previous time will be displayed on the SV.

Use Up button and Down button

To set the time then, Press Enter bu tton.

The PAUSE LED illuminates.

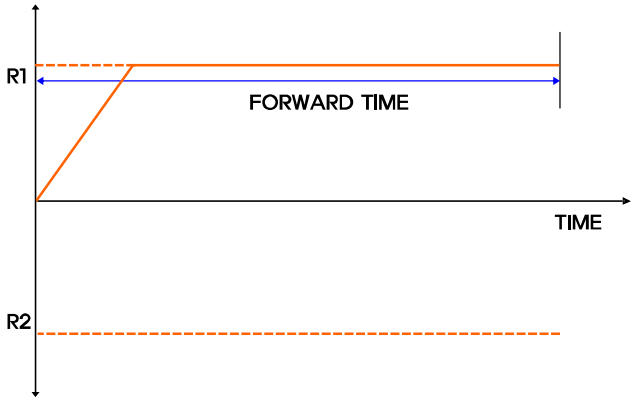
(Maximum Input time: 10seconds ~ 59minutes 59seconds)

The example of Timer function

Non Timer

When not using the Timer function

(All Shaker LED are out)

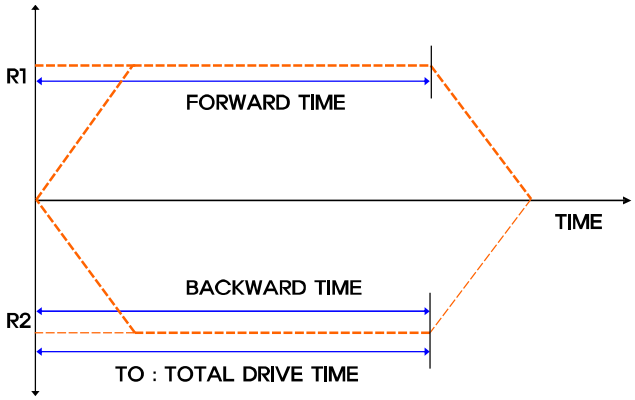


After input the desired rpm, Press the START/STOP button.
The shaker operates forward.
If the user stops the shaker, press the START/STOP button or The Shaker I/O button.

Whole Time
+
Forward OR Backward

The whole time set + Forward or Backward Action

(SHAKE LED illumination + Forward LED or Backward LED illumination)



Select the hour or minutes in the whole time set,Press Enter button to iluminate Shake LED.

After setting the forward or backward, Press Enter button to iluuminate F/WARD LED or B/WARD LED.

The shaker starts operating until setting time (Run, H+Run.S).

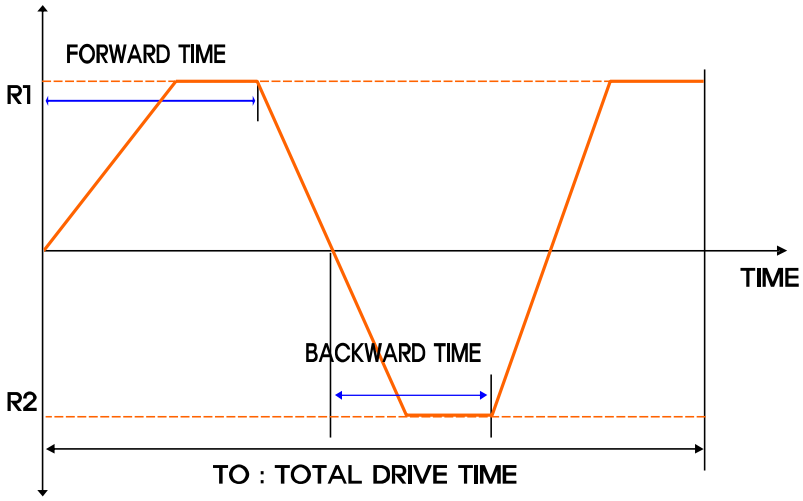
Whole Time

+

Forward & Backward

The whole time Set + Forward and Backward Action

(SHAKE LED illumination + Forward LED and Backward LED illumination)



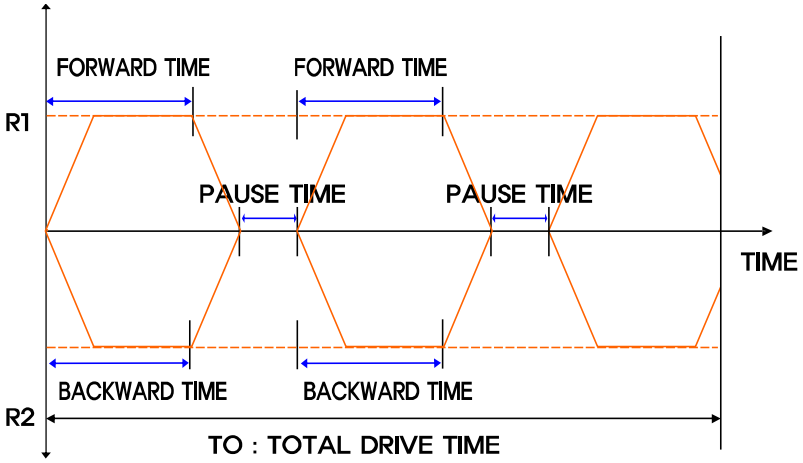
1. Select the hour or minutes in the whole time set, Press Enter button to iluminate Shake LED.
2. After setting the forward time, Press Enter button to iluuminate F/WARD LED.
3. After setting the backward time, Press Enter button to iluuminate F/WARD LED or B/WARD LED.
4. Press the START/STOP button, the shkae operates the forward direction. When the speed is a little slow, the shaker operates following the set time in backward direction.
5. The shaker operates the forward and backward direction following the whole time function.

   ☞ When setting the F/WARD or B/WARD in 3minutes and the whole time is 35minutes, the shaker operates each 10cycles repeately.

Whole Time
+
Forward + Pause
OR
Backward + Pause

The wholetime set + Forward + PAUSE or Backward + PAUSE

(SHAKE LED illuminnation + Forward LED and Backward LED illumination + PAUSE LED illumination)

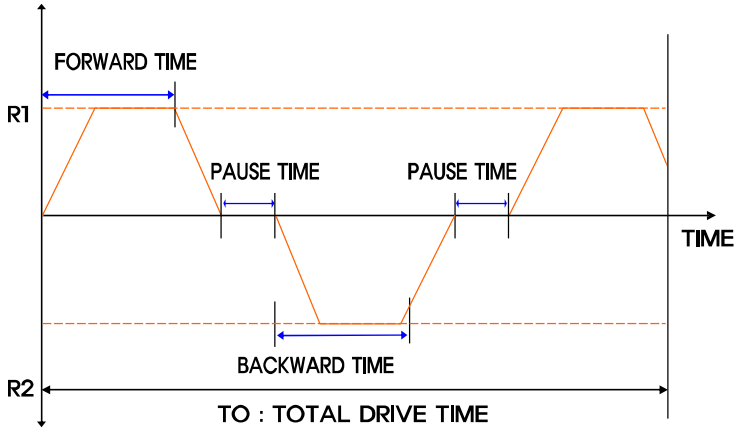


1. Select the hour or minutes in the whole time set, Press button to iluminate Shake LED.
2. After setting the forward time(orB/WARD), Press Enter button to iluuminate F/WARD LED (or B/WARD LED).
3. After setting the pause time, Press Enter button to iluuminate PAUSE LED.
4. Press the START/STOP button, the shaker operates the forward (or backward) direction. When the speed is getting slow, the shaker pause.
5. After the pause time, the shaker operates the forward and backward direction during set time.
6. The forward and backward time continues operating following the whole time set.

Whole Time
+
Forward + Pause
AND
Backward

Whole time set + Forward + PAUSE + Backward operation

(SHAKELED/Forward LED/Backward LED/PAUSELED all illumination)



1. After seting the whole time, Press Enter button to illuinate SHAKE LED.
2. After setting the backward and forward, Press Enter button to illuminate F/WARD LED and B/WARD LED.
3. After setting the puase time,. Press Enter button to illuminate the PAUSE LED.
4. When pressing the START/STOP button, the shaker is loosing the speed until the desired time moving forward, then the shkaer puases.
5. Passing thorugh the puase time, the shaker starts operaiing from backward direction.
6. The shaker repeates the operatoin until the set time

The caution of the Timer Function

① When using the Timer fuction, set each set value, then must press Enter button to illuminate Display LED.
② Even if illuminate SHAKE LED, the shaker doesn't operate When not illuminating the FORWARD LED or BACKWARD LED.
③ The shaker doesn't operate even if illuminating SHAKE LED and PAUSE LED.
④ If not setting the time,the shaker operates, the shaker repeates operation until pressing the START/STOP button.
⑤ Without insetting the set value by turns,illuminates the SHAKER LED. Press the button, the timer starts operating only the set value.
⑥ When pressing the button during the timer operation, able to reinput in the TIMER set time. Press Enter button, the shaker stops operating slowly and restarts following with the latest value.
⑦ If the shaker operates the whole time and FORWARD,

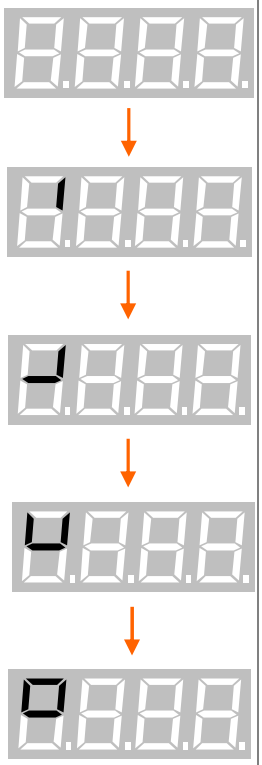
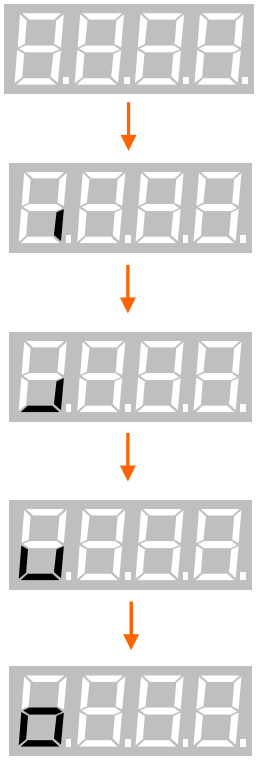
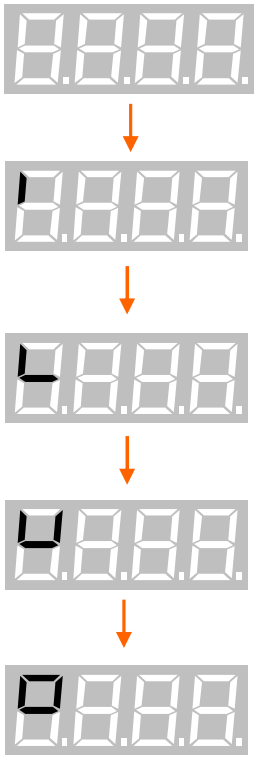
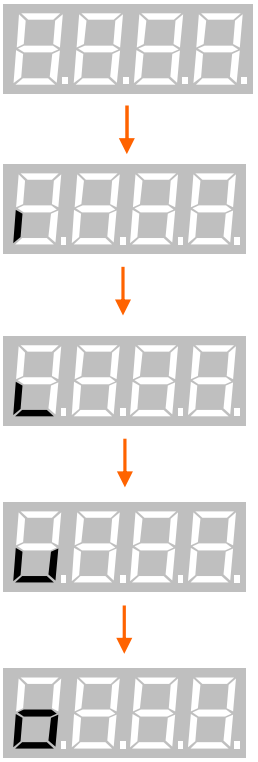
Movement Display

SHAKER Movement display Function

This Function is for displaying the presnt shaking table.

When maintaing rpm, the display starts a circular movement.

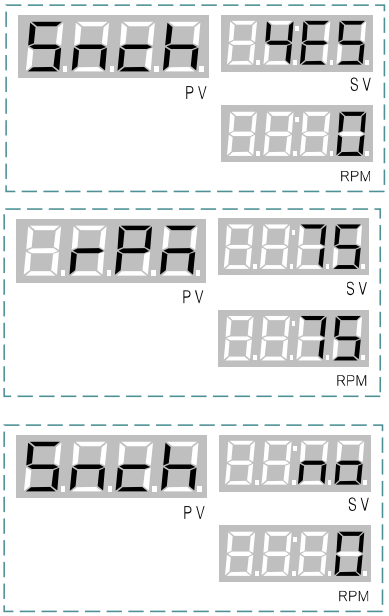
.

Forward(accelation)	Forward(deceleration)	Backward(accelation)	Backward(deceleration)
			

Shaker/Incubator Control Choices

Shaker/Incubator Control Choices

In a case of the unit stops, the previous rpm, Temp,Timer funcion can be used with slecting shaking and temp at the same time



Press the START/SET button for seven times.” Snch” will be appeared on PV display and “on the SV.

Use Up button and Down button to set “YES” or “NO”

Press Enter button to finish the mode.

Able to check the set value modification by reoperation.

☞ When pressing START/STOP Button with “YES”on the SV display, the Shaker/ Incubator operates at the same time.
Set “No” on the SV display, The shaker doesn’t operate.

☞ Even if setting “YES” on the SV display, the Shaker function can be On/OFF with Shaker I/O Switch.

☞ Even if setting “No” on the SV display, the Shaker function can be On/OFF with Shaker I/O Switch.

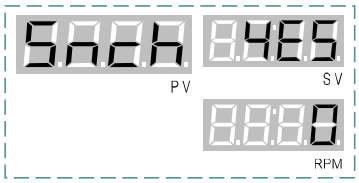
Shaker I/O Switch

Shaker I/O Switch

This Switch is for controlling the Shaker On/Off without the set value on the SV display. When pressing the switch once, The shaker is on/off repeatedly once pressing the switch.

Shaker AND Incubator

Example of using Shaker/Incubator at once



① Select “Yes” on SV display

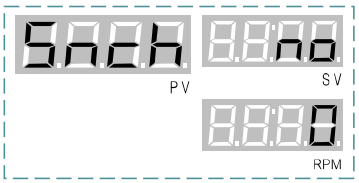
② Set the desired temp with pressing the Temp button. (Refrence Page 22)

Select the desired rpm with Shake/Set button(Reference Page 22)

③ Press SHAKE/SET button,the shaking table and incubator operates together.

Shaker OR Incubator

Temp Controller (Incubator only)



① Select “No” on SV display

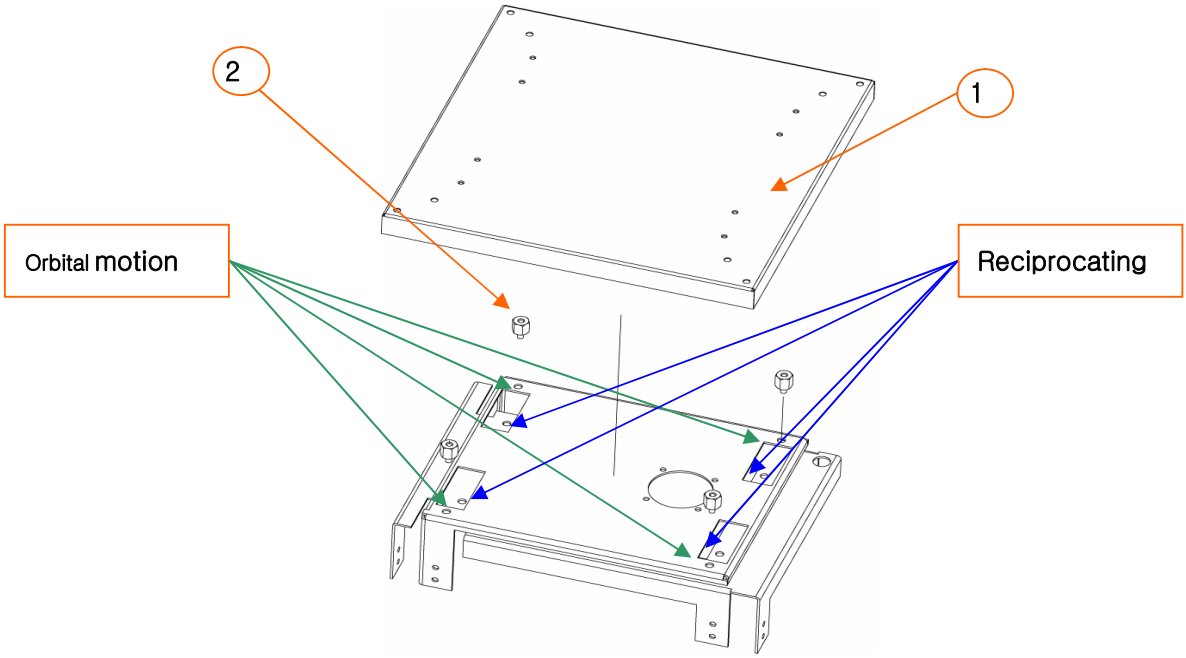
② Press Temp button to set the desired Temp.

③ Press START/STOP button, the incubator operates only.

☞ Incubator Temp Controler : START/STOP Button

Shaker Movement Controller : START/STOP or Shaker I/O Switch

7. How to change the orbital motion and reciprocating motion



① Carefully remove the Shaking Table(Part 1) after loosing 4pieces of 5mm Wrench Bolt.

② Remove 4pieces of the Spacer(SI-300/300R : M5X23, SI-600/600R : M5X28) fixed on the Vibration Frame.

③ Connect the Spacer (referred Page 6) to the Vibrating Frame for linear motion

④ Position the Shaking Table on the Spacer, tight 4 pieces of 5mm Wrench Bolt.

⑤ The basic usage is the same as the orbital motion.

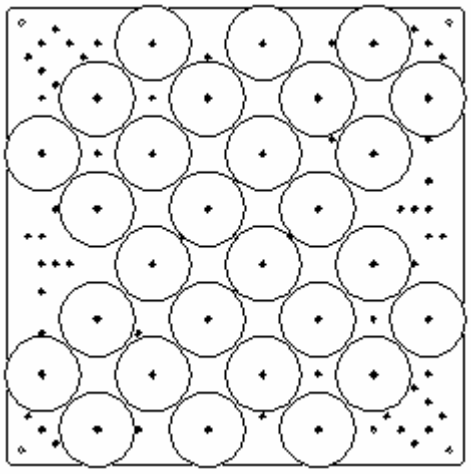
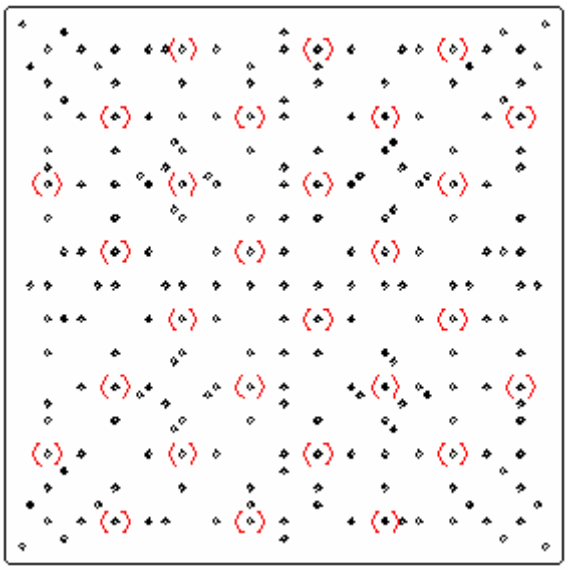
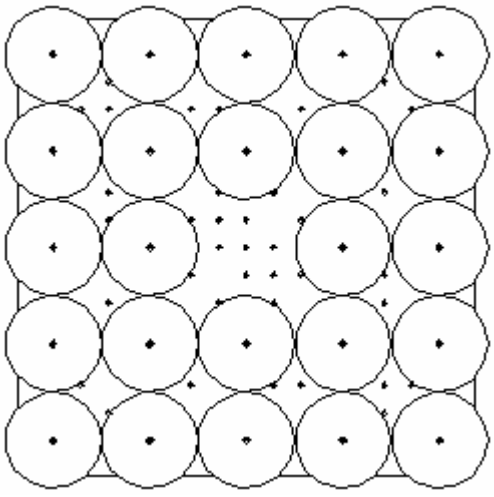
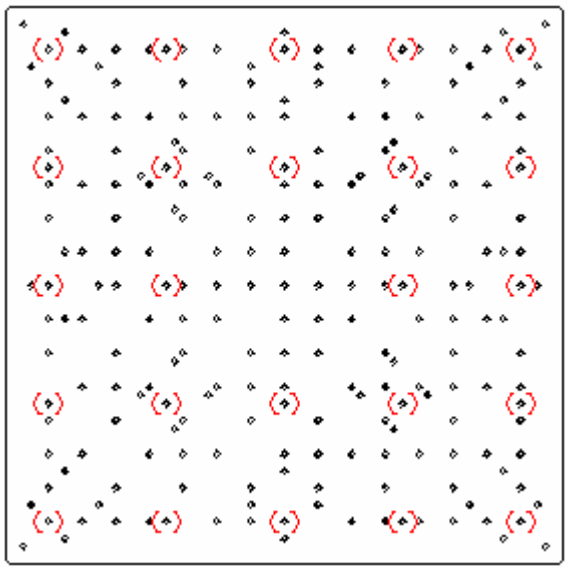
⑥ When changing the Orbital motion or Reciprocating motion. Must change the Spacer.

→ The operator can use the Orbital motion or Reciprocating motion whatever wants.

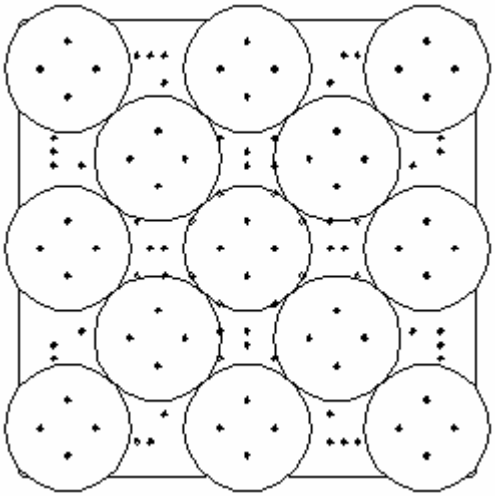
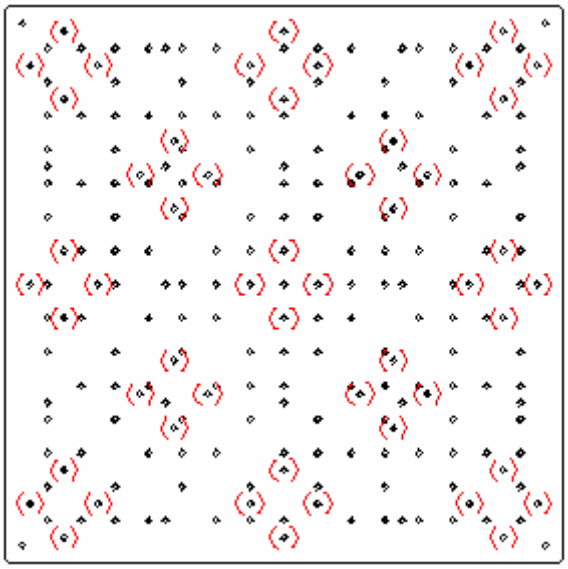
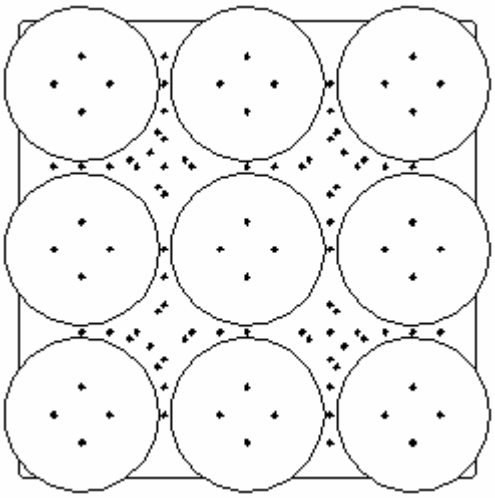
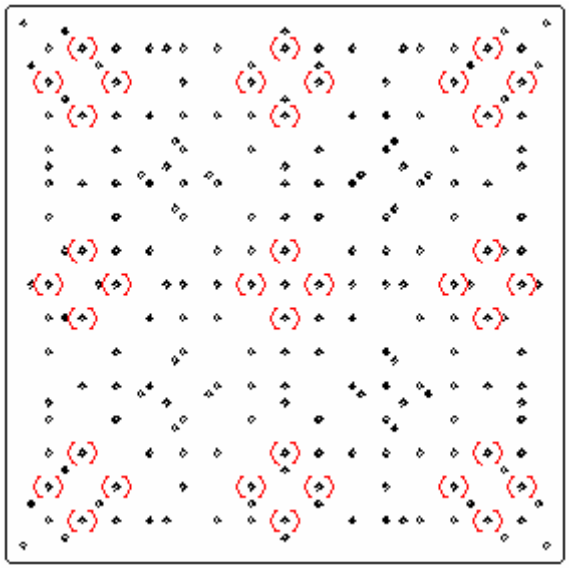
8. Accessaries

1. Flask Clamp installed Capacities and Drawings

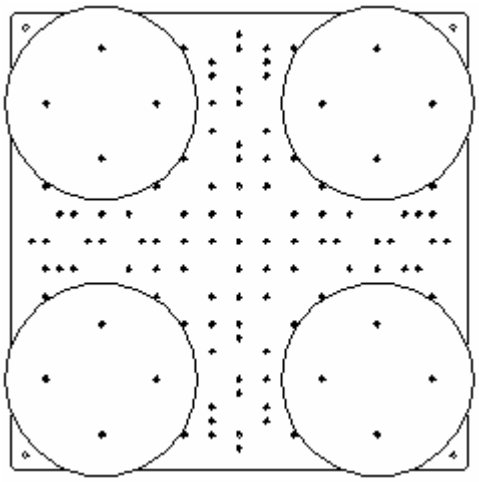
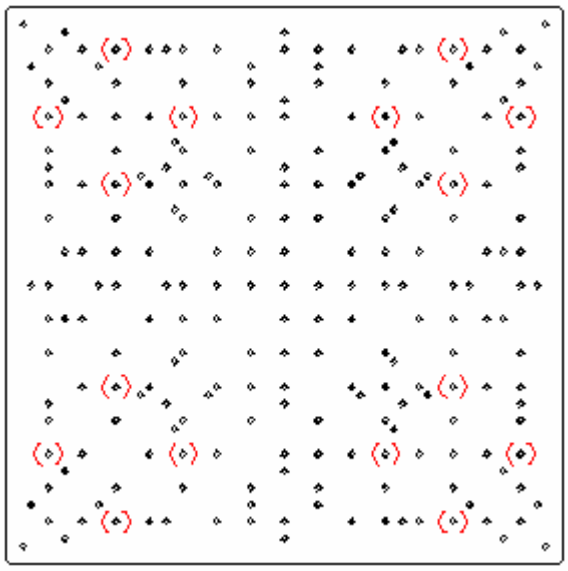
Model : SI-300/300R

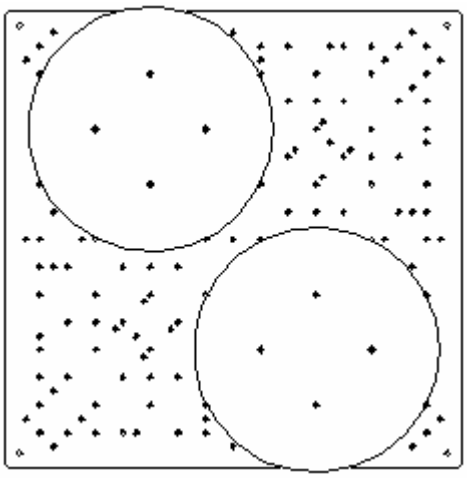
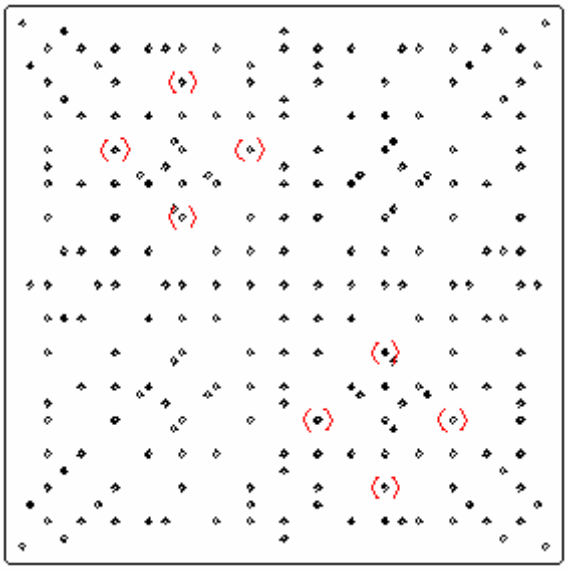
50 ㎖ Flask + Flask Clamp	Location of fixed holes
	
Maximum fixed numbers: 28 EA	
100 ㎖ Flask + Flask Clamp	Location of fixed holes
	
Maximum fixed numbers: 24 EA	

Model : SI-300/300R

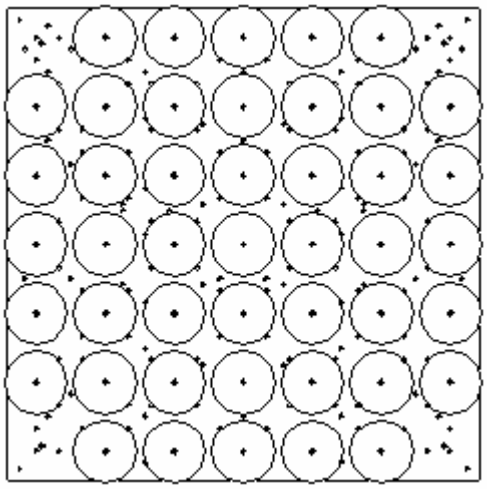
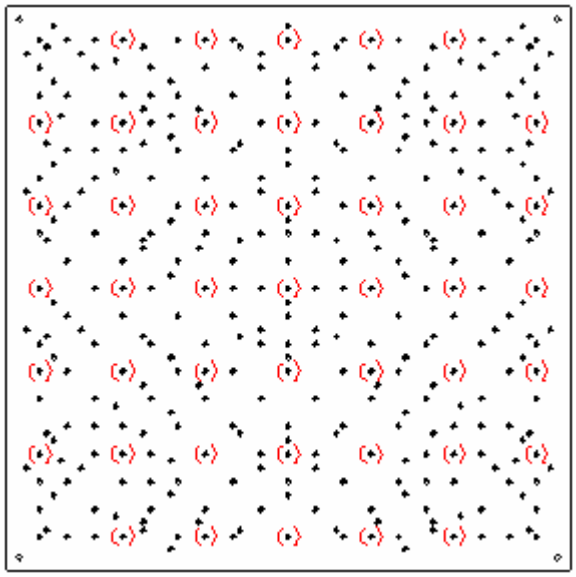
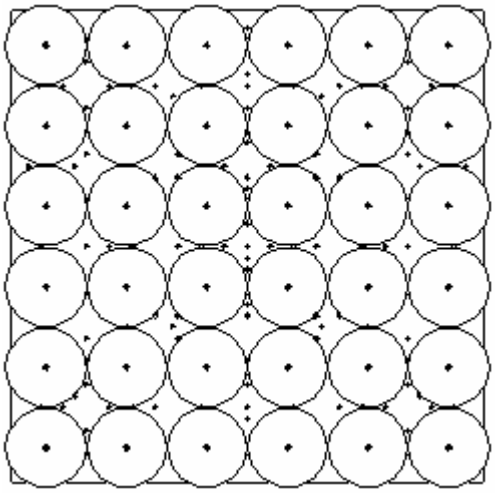
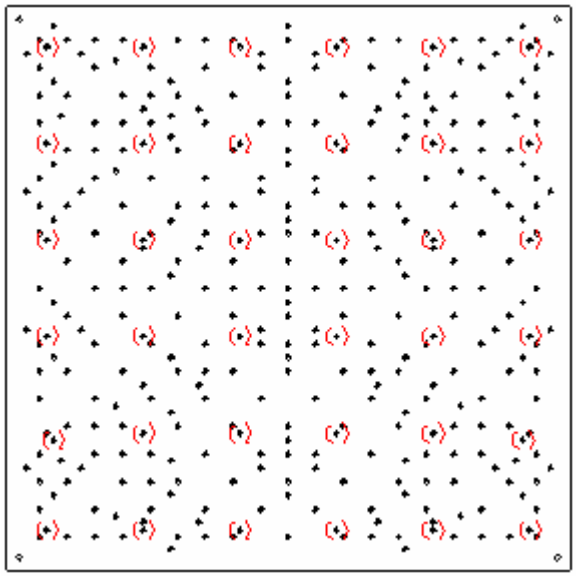
250 ㎖ Flask + Flask Clamp	Location of fixed holes
	
Maximum fixed numbers: 13 EA	
500 ㎖ Flask + Flask Clamp	Location of fixed holes
	
Maximum fixed numbers: 9 EA	

Model : SI-300/300R

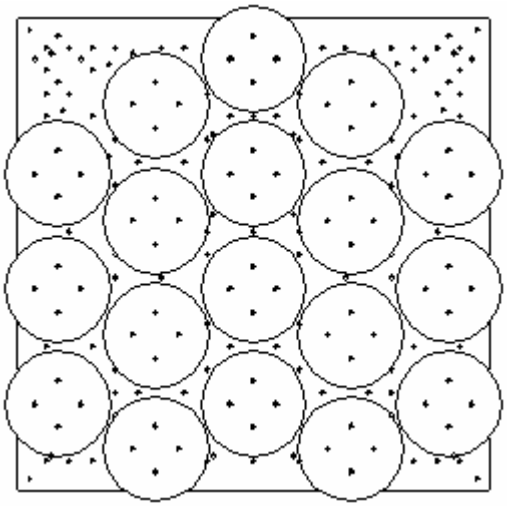
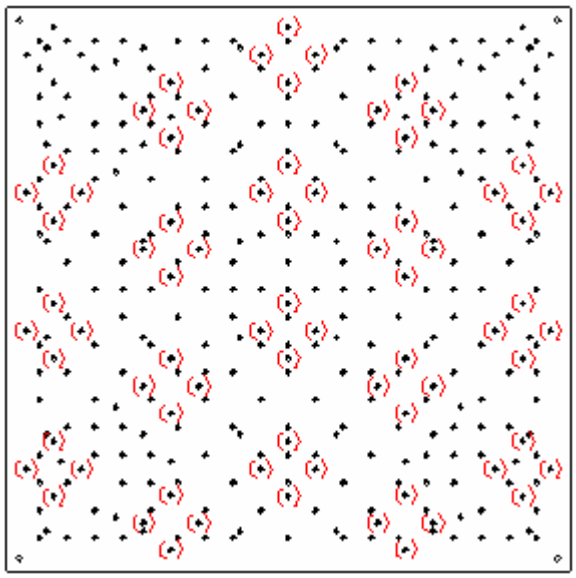
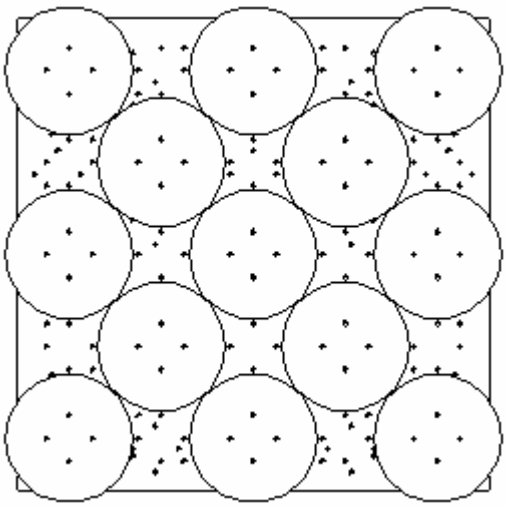
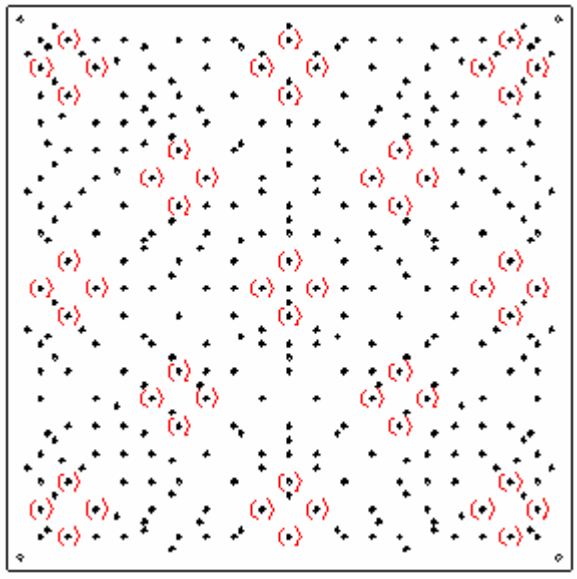
1,000 ㎖ Flask + Flask Clamp	Location of fixed holes
	
Maximum fixed numbers: 4 EA	

2,000 ㎖ Flask + Flask Clamp	Location of fixed holes
	
Maximum fixed numbers: 2 EA	

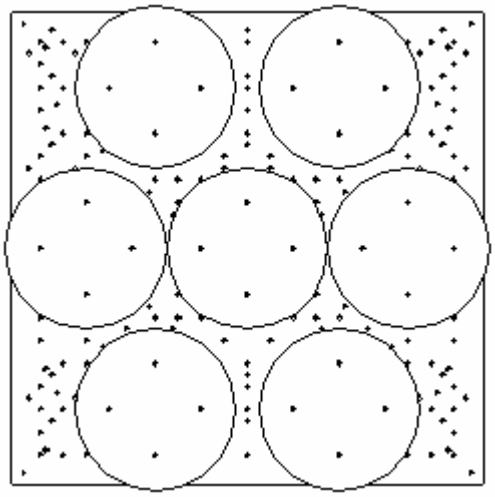
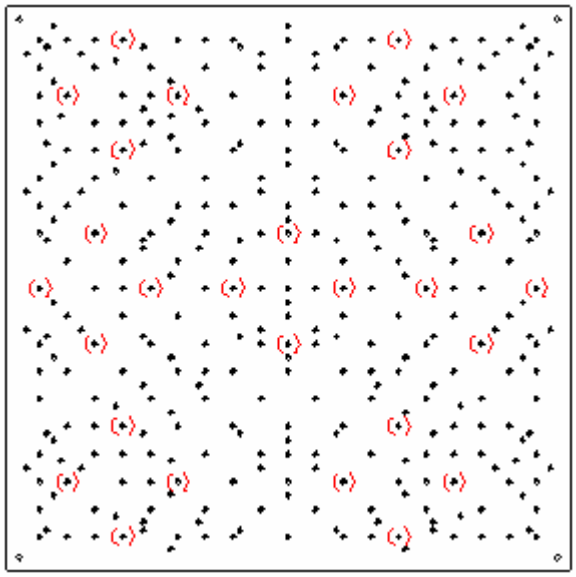
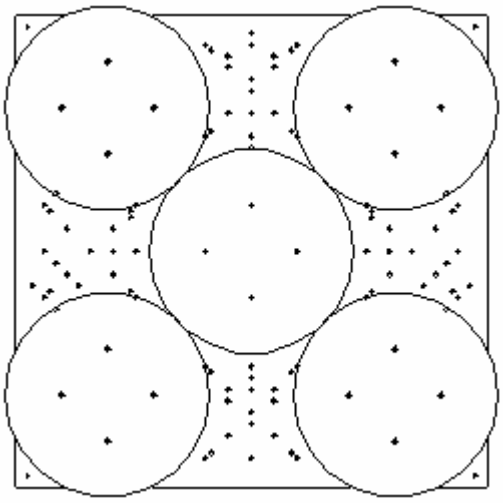
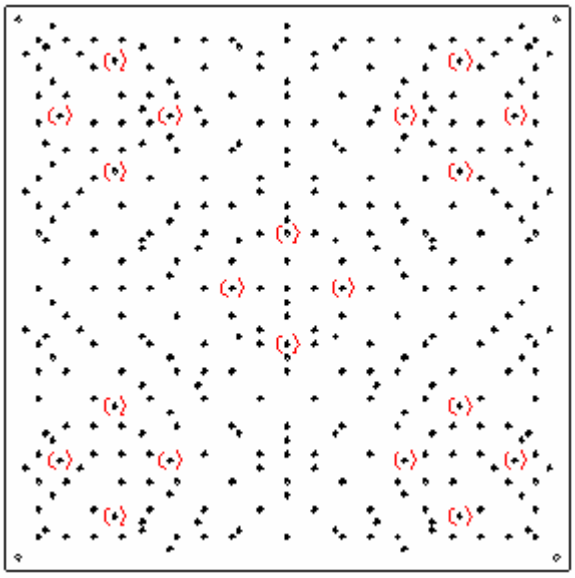
Model : SI-600/600R

50 ㎖ Flask + Flask Clamp	Location of fixed holes
	
Maximum fixed numbers: 45 EA	
100 ㎖ Flask + Flask Clamp	Location of fixed holes
	
Maximum fixed numbers: 36 EA	

Model : SI-600/600R

250 ㎖ Flask + Flask Clamp	Location of fixed holes
	
Maximum fixed numbers: 18 EA	
500 ㎖ Flask + Flask Clamp	Location of fixed holes
	
Maximum fixed numbers: 13 EA	

Model : SI-600/600R

1,000 ㎖ Flask + Flask Clamp	Location of fixed holes
	
Maximum fixed numbers: 7 EA	
2,000 ㎖ Flask + Flask Clamp	Location of fixed holes
	
Maximum fixed numbers: 5 EA	

2. Spring Wire Rack

Easy to fix the vessels or Test tube through the Spring Wire Wrack.

SI-300/300R

Flask	Max Capacities (EA)	Flask	Max Capacities (EA)
50 ㎖	16 EA	500 ㎖	4 EA
100 ㎖	9 EA	1000 ㎖	2 EA
250 ㎖	4 EA	2000 ㎖	1 EA

SI-600/600R

Flask	Max Capacities (EA)	Flask	Max Capacities (EA)
50 ㎖	25 EA	500 ㎖	5 EA
100 ㎖	16 EA	1000 ㎖	4 EA
250 ㎖	9 EA	2000 ㎖	2 EA

3. Test tube rack

Setting angle / Model	0 °	60 °	Platform size
SI-300R	2 EA	1 EA	330 X 330 (mm)
SI-600R	4 EA	2 EA	410 X 410 (mm)

Rack size : 262 X 100 X 185 mm(0 °)

262 X 163 X 208 mm(60 °)

4. Separate funnel clamp

250 ㎖, 500 ㎖, 1000 ㎖

5. Rubber mat

Use for the flat vessels like Petri dish.

9. Causes of malfunction and its repairs

1. When the unit stops running

Troubleshooting	Check point and Settlement
When the unit stops running	① Check the main power. ② Check the Fuse.. ③ Check the RUN Led display is off. ④ If the unit is off, Press the START/STOP button to operate.. ⑤ Check the Electric break.

2. Settlement Details

(1) The refrigeration

Phenomenon	Check Point	Settlement
The temperature doesn't decrease.	Check the TEMP LED is illuminated	Press the START/STOP Button.
	Check the W/ON LED is illuminated	Release the Timer mode
	Check the dust on the Condenser.	Clean the filter opened the Condenser cover.
	Check the inner circulation fan speed is too low..	Adjust the fan speed high.
The temp is unstable.	Check the PID value.	Operates the Auto Tuning. (Reference page 27)
Discrepancy between Displayed temp and present temp.	Check the Blower speed.	Adjust the Blower fan speed high .(Reference page 24)
	Check the sample is too much inside the chamber.	Remove the sample to flow the air.
	Check the revision value.	Revise the discrepancy between Displayed temp and present temp.. (Reference :Page 22)

(2) Electricity

Phenomenon	Check point	Settlement
Even if Power Switch ON, OFF promptly..	Leak.	Stops a driving immediately and contacts a reseller
Even if Power Switch ON, an indication does not work in Display Panel.	A power plug being Disconnected from an outlet.	Leaves Power Switch OFF, and please put a power plug in an outlet.
	Fuse Problem	Exchange the fuse positioned backside.
If temperature does not rise	Confirms whether Temp Led is turned on	If Temp Led is out, press Start/Stop button.
If a machine stops operation by Over Temp.	1 O/T LED is turned on with red, 2. confirms whether a Beep sound rings successively	1 If attributes red Knob of Over Temp. Limit to a (-) driver clockwise and presses one time of Start/Stop button after currently adjusting than temperature (PV) higher than 15%, red of O/T Led disappears, and a Beep sound disappears. 2. While Run LED and Heater LED are on if they press one time of Start/Stop button more, a machine operates again.
If the unit stops operation by Door Limit Switch	1. Door Led is turned on with red 2. Confirms whether a Beep sound rings	1 Check whether Door LED is flickering due to opened door 2. Confirms whether light reaches RUN LED after having pressed one time of START/STOP button.
Stops total control without an indication except the above statement or button operation.	1.Being affected by strong Noise in a power line 2. confirms whether the high frequency welder which strong high frequency Noise occurs in around appliances, mass SCR Controller became installation at hand receive correct acceptance.	Moves equipment to be the cause of, or a change holds an Incubator installation situation.

(3) Shaker

Phenomenon	Check point	Settlement
If the shaker stops operation by START/STOP	Check Sync Parameter is no. (Reference Page 36 ~ 37)	Select Sync Parameter is “yes” or Press Shaker I/O Switch to operate.
When the shaker speed is up or down, the display has any symptoms. .	Check the unit location and Power.	Provide the main volt.

10. Inspection Cycle

Classification	Day	Week	Month	Year	Remark
Clean Condition		○			
Connection Condition		○			
Shaker Noise		○			
Air Filter Cleaning		○			
Vibration			○		

⚠ CAUTION

① Be sure to maintain the unit frequently by a person authorized.

② Make no attempt to service or repair the unit when the power is on.
Be danger of

⚠ WARNING

③ Do not dismantle the unit.

④ If dismantling the unit may cause the personal injury or damage to the unit.

11. Maintenance and Cleaning

1. Maintenance

If the unit will not be used for a long time, maintain as follows.

1. Please turn off the power switch
2. Disconnect the power cord.
3. Clean the inside and outside of the unit. Maintain the unit with packing.

2. Cleaning the exterior for the unit

1. Wipe the exterior surface with a clean sponge or a soft fabric using a detergent..
2. Rinse off with a dry fabric using a tepid water.
3. Clean the controller Panel with a dry fabric.

⚠CAUTION

- Do not use sulfuric acid, hydrochloric acid and organic solvent.
- Solvent will damage the unit.
- If the interior unit become contaminated by a toxic chemical, wash the areas completely using a dry fabric with wearing safety gloves and mask
- Not recommending cleaning the other method without manufacturer’ s direction.

12. Specification

MODEL		SI-300	SI-300R	SI-600	SI-600R
Chamber volume		53L		83L	
Permissible environmental condition		Temperature 5℃ to 40℃, Maximum relative humidity 80%, Altitude up to 2,000m			
Controller		Digital PID Auto Tuning, 9step programmed control 200cycle			
Temperature	Range	Amb.+5℃~60℃	+15℃~60℃	Amb.+5℃~60℃	+15℃~60℃
	Accuracy	±0.1℃ at 38℃ (at room temp. 25℃)			
	Uniformity	±1.0℃ at 38℃ (at room temp. 25℃)			
	Timer	Wait on time, Wait off time(Max. 99hr 59min, Min. 1min)			
	Sensor Type	Pt 100Ω			
Shaking	Motion	Orbital(forward, backward, pause):Standard, Reciprocating : Option			
	Frequency	10 to 300rpm			
	Amplitude	20, 30, 40mm Available(30mm standard)			
	Accuracy	±1 at 100rpm			
	Timer	Run time(999hr 59min 59sec) Pause, Forward, Backward(Max. 59min 59sec, Min. 10sec)			
	Driving System	Brushless DC motor with feedback control			
Material	Internal	Stainless Steel, 1.0t			
	External	Steel, 3.2t & 2.0t, powder coating			
	Platform	Anodized aluminum plate, 4.0t			
	Insulation	Nonflammable polystyrene			
	Lid	With semitransparent acryl cover and supported by gas spring			
	Heater	Incoloy, Fin Type 400W X 2EA			
	Refrigerator	-	1/8 HBP	-	1/8 HBP
Safety Device		CLS(Custom Logical Safe)-control system			
Over Temp. Limit		Hydraulic over temp. limit			
Print Interface		RS232			
Size (WXDXH)	Internal	410 X 410 X 320mm		510 X 510 X 320mm	
	External	420 X 740 X 622mm		540 X 842 X 622mm	
	Platform	330 X 330mm		410 X 410mm	
Electric requirements		AC100V, 50,60Hz/AC120V,60Hz/AC230V,50Hz			
Power consumption	AC100V	9.0 A	11.7 A	9.0 A	11.7 A
	AC120V	7.5 A	10.1 A	7.5 A	10.1 A
	AC230V	4.0 A	5.5 A	4.0 A	5.5 A
Weight(net)		74 kg	85 kg	91 kg	102 kg

13. Warranty standard

1. Service under Warranty period

If trouble occurs during product use, User can get free service for one year from the date of purchase.

2. Exceptional cases even during under warranty period

User can not be created by warranty in case of as below.

① If the machine is broken due to the Act's of God.

② If the machine is broken due to overuse of voltage

③ If there is some shock to the machine.

④ If the outer part is damaged by solvent

⑤ If the machine is broken without taking care of the "Notice" alerted on the manual

⑥ If persons who are not under the authority of service of Jeiotech fixed or changed parts of the machine

⑦ If the broken machine is due to customer's fault

14. How to waste

To waste main parts

Configuration Parts	Model	Gross Weight(kg)	External dimension(mm) (W x D x H)	How to waste
Main body	SI-300	74kg	420 x 740 x 622	Contact a company which is dealing with waste parts.
Main body	SI-300R	85kg	420 x 740 x 622	
Main body	SI-600	91kg	540 x 842 x 622	
Main body	SI-600R	102kg	540 x 842 x 622	

15. Warranty

General matter

① The term of guarantee about responsibility on manufacture is one year from purchase work under.

Purchase date
Serial number
A trouble part and trouble state
Equipments use environment

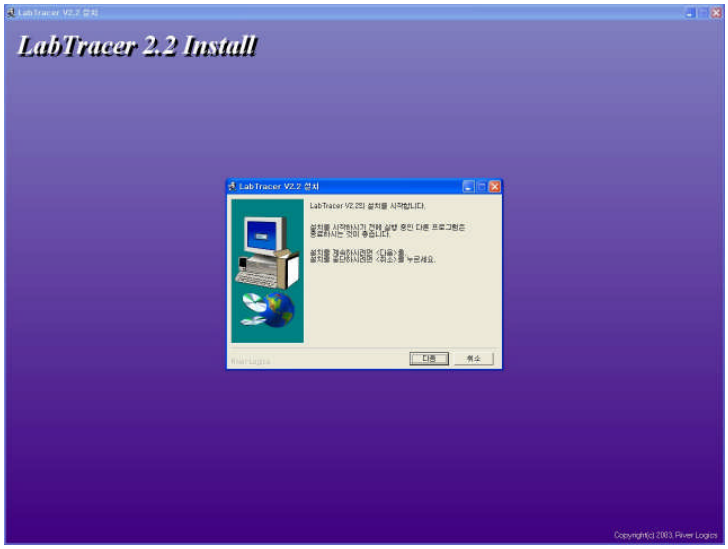
Guarantee exception

Charge within the term of guarantee if as follows.

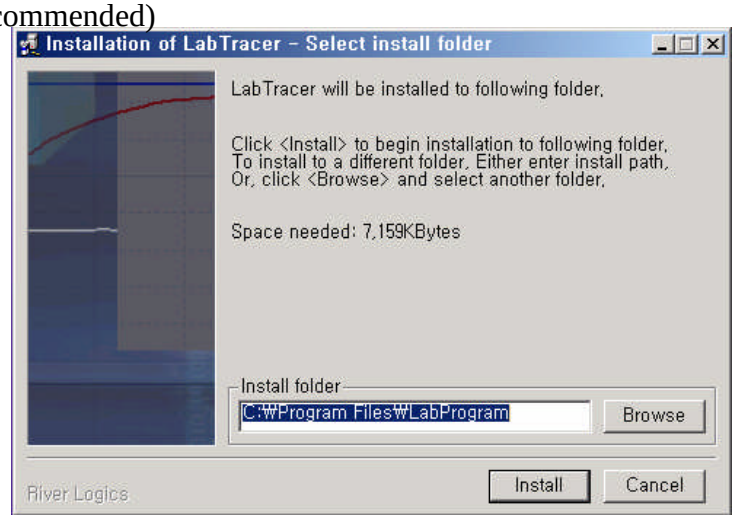
A use mistake of a user
A mistake of treatment of a user and custody
Unfair change of usage, remodeling of a machine and acceptance
It is trouble by acts of God such as a fire, a brilliant
trouble by the use that it did not keep operation manual

16. Setting Monitoring Program

1. Insert an installation CD, and then the software starts installation automatically.
   (In case of no automatic running, run “SETUP.exe” file in CD.)



2. Click Next” button to choose destination of installation. (Default folder recommended)



3. Click “ Install” to start installation.
4. Lab Tracer icon will be created on the desktop after successful installation.
5. To start Lab Tracer, double click the icon.

Standard	**Recommend**
Beyond Microsoft Windows 98	Microsoft Windows 2000, XP
CPU : Beyond P-II 233	PU : Beyond P-III 300
RAM : Beyond 32M Byte	RAM : Beyond 64M Byte

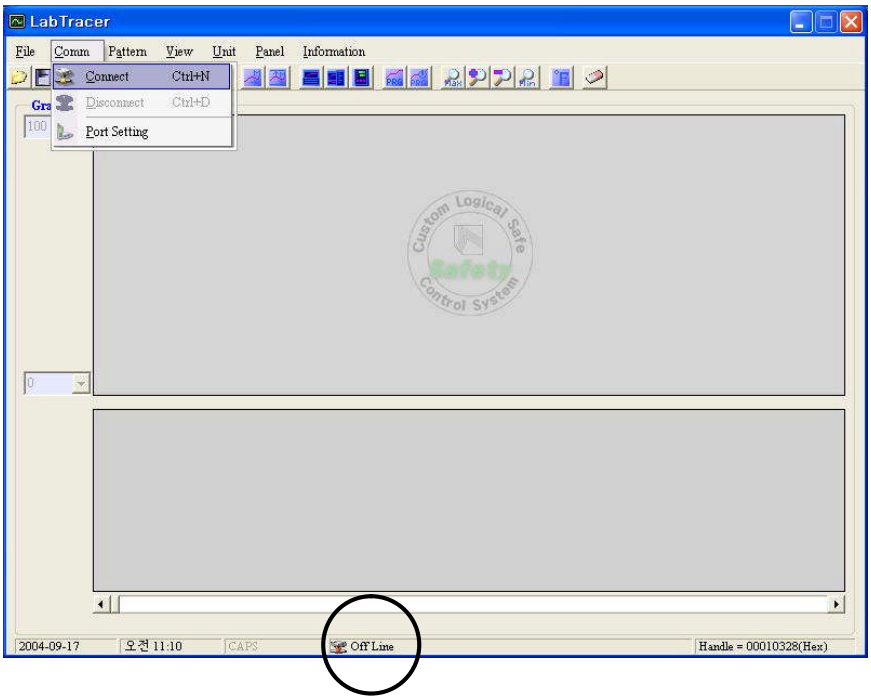
Caution: If Windows 95 or 98 OS system is installed, measured time can have some errors.

17. Operating Monitoring Program

1) Connection for communication

Click **Comm → Connect** and your PC and equipment will be connected to RS-232 communication.

(In case of no connection, click **Comm → Port** and try other ports.)

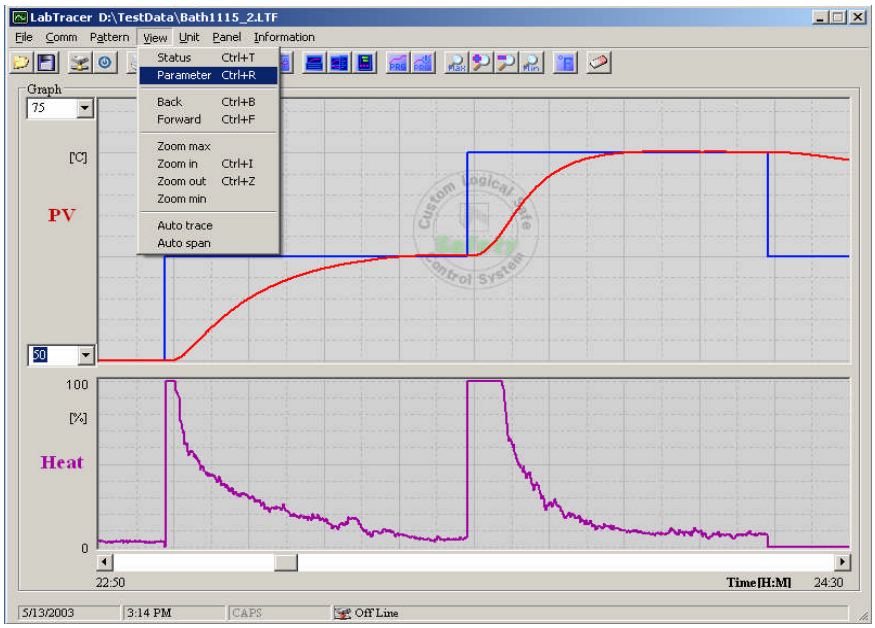


" On Line" displays on the bottom of the software once communication is connected successfully. The window consists of 2 separate windows. Window on the top displays set temperatures and actual temperatures, and window on the bottom displays output value of heating in a graph mode.

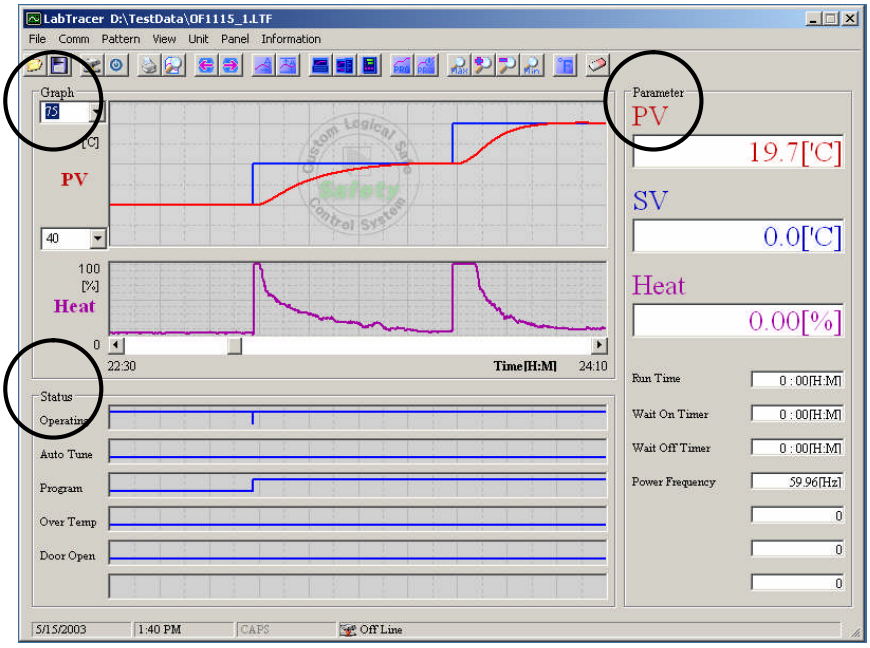
2) View menu

2.1. If you click **View → Parameter,** window displays actual temperatures, set temperatures and output of heating by a graph and figures.

2.2. If you click **View → Status,** additional separated window appears below the window showing actual temperatures and set temperatures. Operating, Auto Tune, Program, Over Temp., Level, and etc display on this window.



The picture above is a monitoring window after choosing Status and Parameter in View menu.



User can monitor operating process through three divided windows. (Graph, Parameter, Status)

2.2.1. **Graph** displays;

Actual temperatures (Red line) and set temperatures (Blue line) on the top of the graph windows.

2.2.2. **Status** displays;

1. **Operating** represents the unit is running.
   - If blue line is high, the unit is on (operating). If blue line is low, the unit is off.
2. **Auto Tune** displays whether the unit performs Auto Tuning or not.
3. **Program** displays whether the unit is in programmable mode or not.
4. **Over Temp**. displays whether the unit is overheated or not.
5. **Water Low** displays whether water level is high or low.
   - If water level is low, blue line is low position. Low position is under the normal condition.
6. **Cooling** displays whether compressor works or not.

2.2.3. **Parameter** displays;

1. **PV** is an actual (present) temperature.
2. **SV** is a set temperature.
3. **Heat** is an output value of heating element.
4. **Run Time** indicates operating time after you press 

button.
5. **Wait On Timer, Wait Off Timer** displays remaining time from a set time.
6. **Power Frequency** displays frequency of a current power.

3) Menu icon



① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬

① File Open (Ctrl + O)
- To open saved graph.

② File Save (Ctrl + S)
- To save proceeding graph.

③ Connect (Ctrl + C)
- To connect unit and PC via RS-232 communication.

④ Disconnect (Ctrl + D)
- To disconnect RS-232 communication.

⑤ Exit (Ctrl + X)
- To terminate Lab Tracer.

⑥ Print (Ctrl + P)
- To print saved graph or proceeding graph. (refer to p30)

⑦ Preview
- To preview before printing.

⑧⑨ Scroll icon

- To scroll graph.

⑩⑪ Auto Trace On/Off

- If you want to fix and monitor the end point of graph on the center of windows, Click Auto Trace.

⑫⑬ Auto Span On/Off

- Set Y axis (temperature range) of graph manually or automatically. You can put values of range if you choose manual.



⑭ To display Status window. **(Ctrl + T)**

⑮ To display Parameter window. **(Ctrl + R)**

⑯ Panel View

- When you click Panel View, the same appearance of displayed panel of unit pops up and you can control the unit by the pop-up window.

⑰ Set Pattern of Program Run

- Set Pattern of Program Run and makes unit in a programmable operation.
- Maximum number of pattern is 100 during 99 hours.

⑱ Program Run

Program Run must be set in the main unit.

⚠CAUTION	**Program function can be controlled only by PC.**

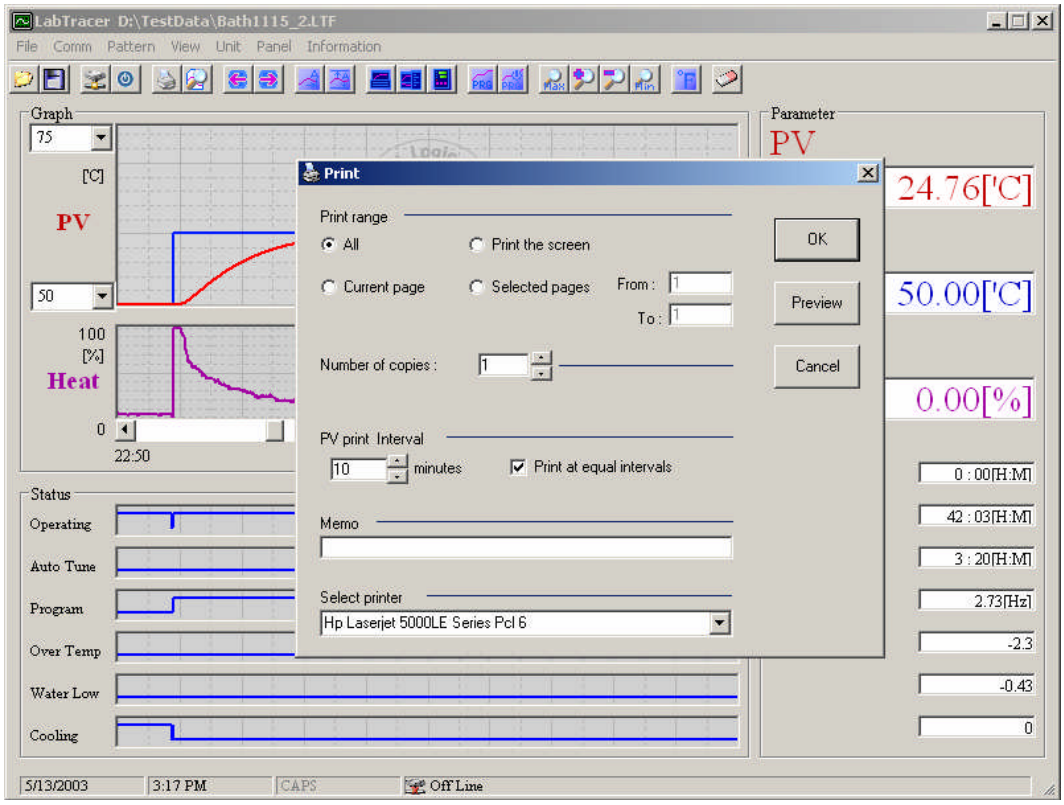
⑲ ~ ㉒ Zoom In/Out

㉓ ~ ㉔ Icons to convert the unit of temperature from ℃ to °F or vice versa.

(Note: Unit of temperature of main body is not changed even though you convert the unit from Lab Tracer. To change the unit of temperature of main body, you must change it using the controller in main body.)

㉕ To erase the graph.

※ Printing operation



① Print range

- All: Print total pages.
- Print the screen: Print the current screen. (Graph, Status, Parameter Frame will be printed when they are on the main screen. If not, they will not be printed.)
  - Current page: Print a page on the current main screen.
  - Selected pages: Print selected page(s).

② Number of copies

- Maximum number of copies is 100 by pressing up and down button.

③ PV print interval

- If you choose this option, PV and SV will be printed in text mode.

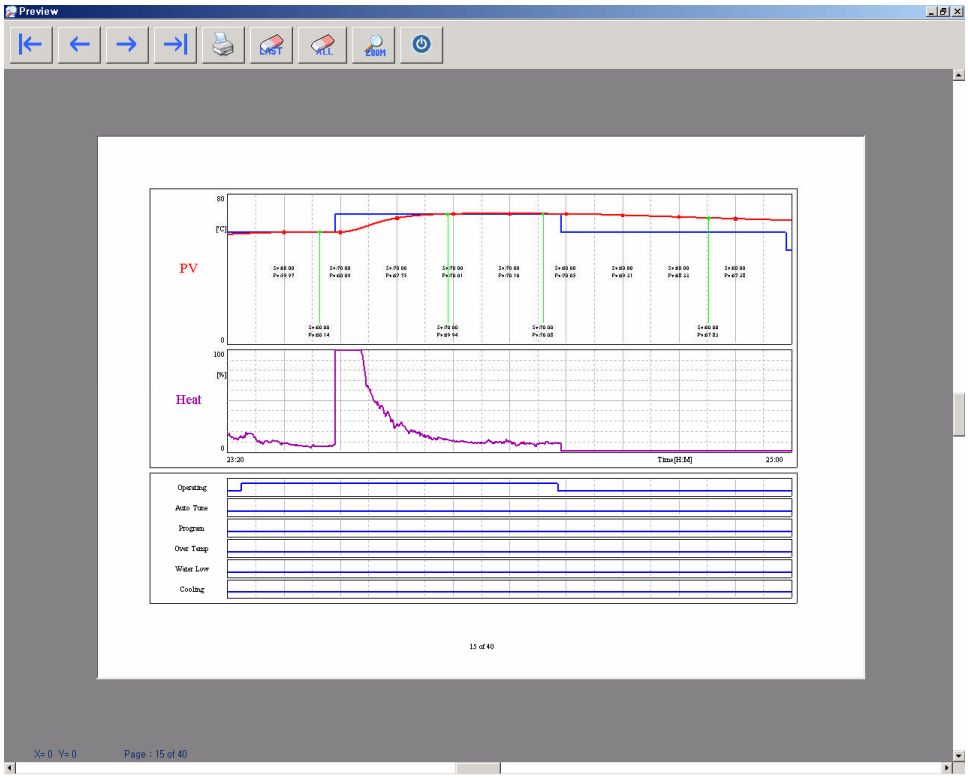
④ Memo

- Can write a brief memo on print with maximum 60 characters.

⑤ Select Print

- Can choose a printer.

※ Preview and print



When print at equal intervals is checked, PV and SV are printed in a regular interval like the preview above. If user wants to check a certain point, move curser to the point and click. Green line with PV and SV will be printed on the copies. (see above)

① Last Point Delete 

- Delete the last set point.

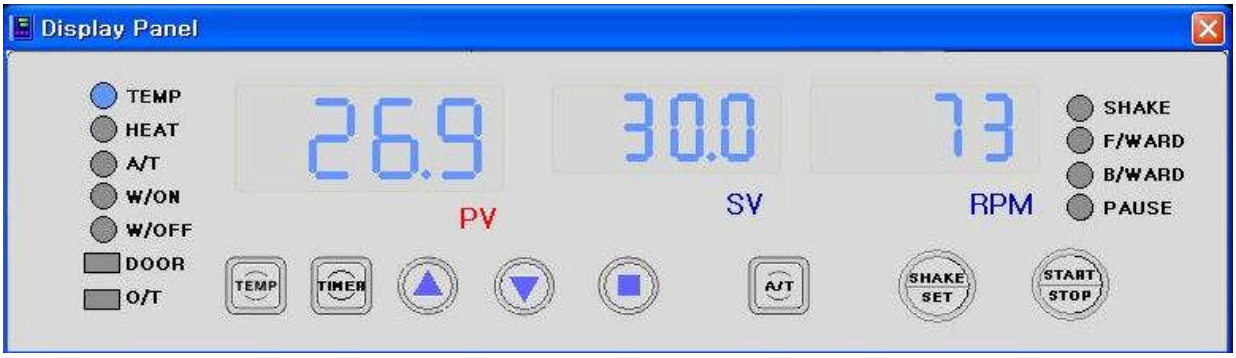
② All Point Delete 

- Delete all set points.

③ Zoom in / out 

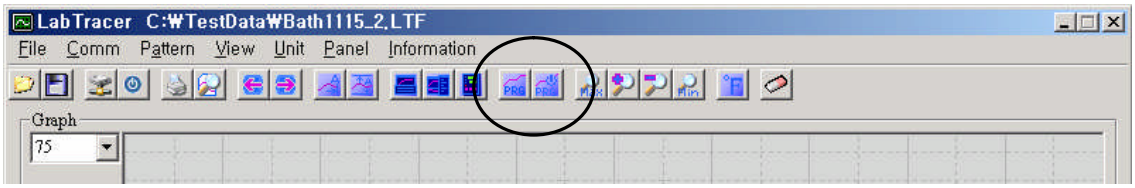
- Zoom in or Zoom out.

※ Display

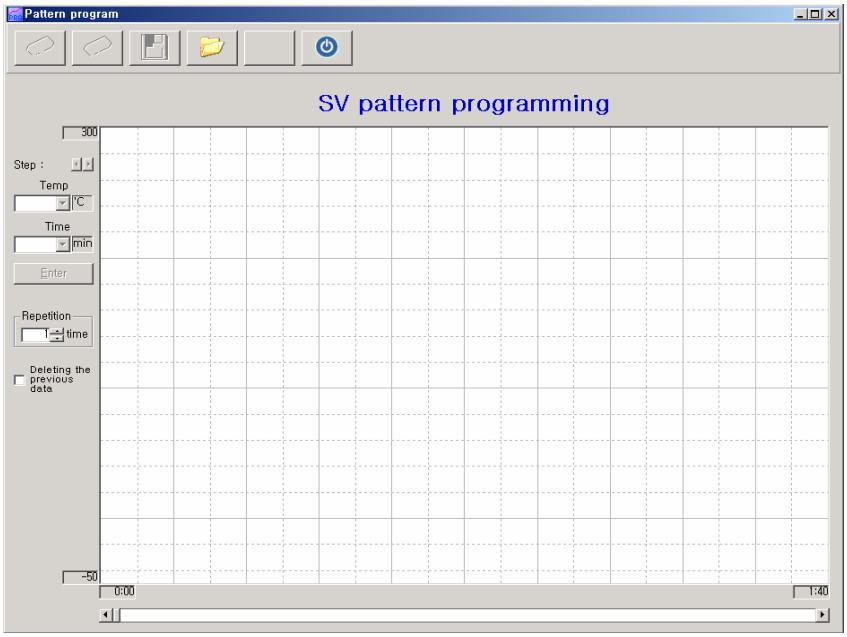


All the functions of display window are same as those of main display panel. If communication via RS-232 between PC and main body is connected, user can control main body with your PC at a distance.

※ Pattern Program

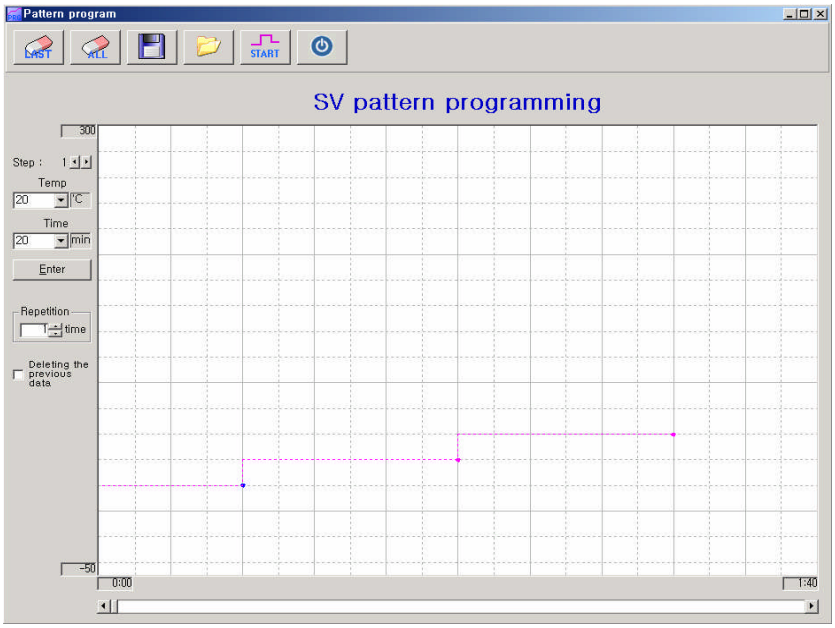


The following window will be open when you click PRG icon or Pattern -> Pattern settings in menu.



Pic 2. Pattern Program

When you move a mouse and click a certain point like pic 3., a set temperature, time, and step number will display on the left side of window.



Pic 3. SV Pattern after clicking a certain point of window.

IF you want to edit the selected point, Drag & Drop the selected step (blue color).

It is very convenient to use short-keys when you want to change temperature and time because temperature can be adjusted by 1 degree, and time can be adjusted by one minute.

① Short-key

↑ : Increase temperature by 1 degree.

↓ : Decrease temperature by 1 degree.

← : Decrease time by 1 minute.

→ : Increase time by 1 minute.

Alt + ↑ : Move an edited point to the right (the following step)

Alt + ↓ : Move an edited point to the left (a previous step)

Alt + ← : Move an edited point to the left (a previous step)

Alt + → : Move an edited point to the right (the following step)

② Last step delete 

- Delete the last set step.

③ All step delete 

- Delete all set steps.

④ Pattern save 

- Save programmed pattern.
- File extension is PIT.
- Choose a folder and write a file name. Then, click save button.

⑤ Pattern open 

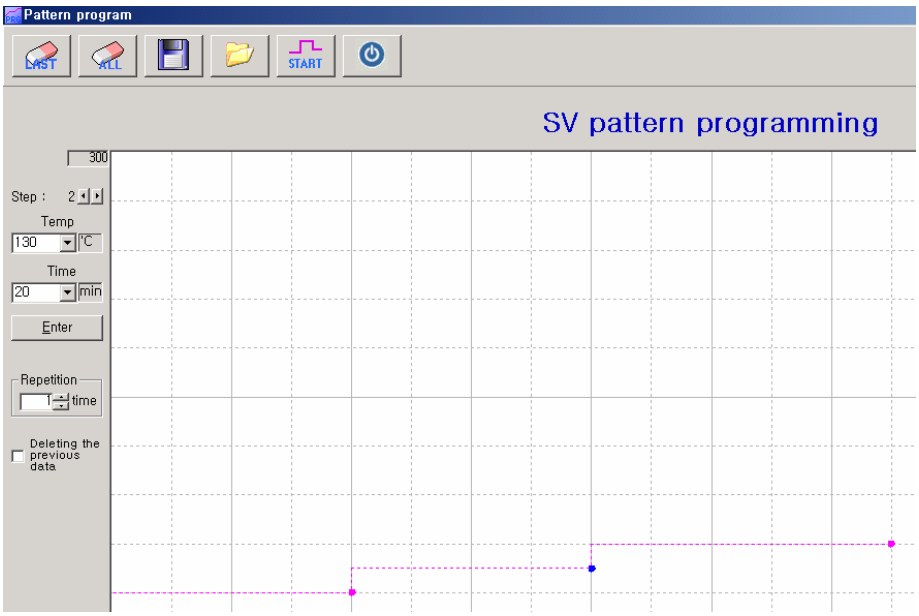
- Choose a pattern file and click open.

⑥ Start 

- Click the START icon to operate the equipment after pattern is set.

Note: i) If the main body is under abnormal condition such as Door Open, Over Temp. and etc, the main unit will not operate.

ii) The main body must be set as a Con.P mode. To convert to Con.P mode, press and hold the lock button for more than 1 second. If you want to operate the unit in Con.L mode (Local mode), press and hold lock button for more than 1 second. (Only lock button works in the display panel of main body at a Con.P mode)



Pic 4. Step information and control option.

- If you set the number of pattern repetition, the main body will work as programmed.
- If you check " **Deleting the previous data**" option and press a start icon, all the previous data will be erased. Please, be cautious.

※ Caution

- Maximum operating time is 99 hours.
- If you program total working time over 99 hours, the unit does not operate in a Program Mode. Especially be cautious when you program a pattern repetition.
- Please, be aware of specification about program time and temperature.
- If you program the pattern that exceeds equipment capacity, the unit can not work properly.

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP