lbx instruments

Orb-Pro Orbital shaker with digital screen
Lin-Pro Linear shaker with digital screen
3D-Pro 3D shaker with digital screen

Please read the User Manual carefully before use, and follow all operating and safety instructions!

user manual

english

User Manual

EN

Orb-Pro Orbital shaker with digital screen
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Preface

Users should read this manual carefully, follow the instructions and procedures, and beware of all the cautions when using this instrument.

Service

In order to guarantee this equipment works safely and efficiently, it must have a regular maintenance. In case of any faults, do not try to repair it yourself. If help is needed, you can always contact your dealer or Labbox via **www.labbox.com**

Please provide the customer care representative with the following information:
- Serial number
- Description of problem
- Your contact information

Warranty

This instrument is warranted to be free from defects in materials and workmanship under normal use and service, for a period of 24 months from the date of invoice. The warranty is extended only to the original purchaser. It shall not apply to any product or parts which have been damaged on account of improper installation, improper connections, misuse, accident or abnormal conditions of operation.
For claim under the warranty please contact your supplier.

1. Safety Instructions

	**Warning!** • Read the operating instructions carefully before use. • Ensure that only trained staff works with the instrument.
	**Protective ground contact!** • Make sure that socket must be grounded (protective ground contact) before use.

Table 1

- When working, wear the personal guard to avoid the risk from:
  - Splashing liquids
  - Broken glass containers
- Follow the safety instructions, guidelines and accident prevention regulations.
- Do not touch the running parts, moving instrument care not rolling your fingers.
- Set up the instrument in a spacious area on a stable, clean, non-slip, dry and fireproof surface. Do not operate the instrument in explosive atmospheres, with hazardous substances or under water.
- If the instrument does not run smoothly, please decrease the motor speed.
- Firmly secure the accessories and vessels in place to avoid damage or risk.
- Preparation of samples may lead to dangerous flammable substances. Only process samples that will not react dangerous.
- Use the standard accessories listed in the “accessories” section, and follow the instructions to use accessories to ensure safety. Please switch off the power before assembly of accessories, confirm the instrument and accessories are intact before switch on each time.
- The instrument can only be opened by an expert, please switch off before use.
- The voltage stated on the nameplate must correspond to the mains voltage.
- Do not cover the instrument during running. Prevent the collision and extrusion to instrument and accessories.
- Keep away from high magnetic field.

2. Proper Use

The instrument is designed for mixing in schools, laboratories or factories. This device is not suitable for using in residential areas or other constraints mentioned in Chapter 1.

Not using the accessories recommended by the manufacturer, or failing to use the instructions, may end up causing an unsafe situation.

3. Inspection

3.1. Receiving Inspection

Unpack the equipment carefully and check for any damages which may have arisen during transport. Please contact manufacturer/supplier for technical support.

Note:
If there is any apparent damage to the system, please do not plug it into the power line.

3.2. Listing of Items

The package includes the following items:

Items	**Qty**
Main unit	1
4 bar universal attachment (on Orb-Pro and Lin-Pro, not on 3D-Pro)	1
Power cable	1
User Manual	1

Table 2

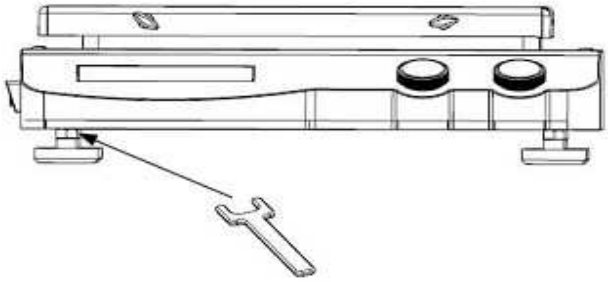
4. Trial run

Do trial operation as follows:

- Make sure the required operating voltage and power supply voltage match.
- Ensure the socket is securely earthed.
- Plug in the power cable， Power ON the instrument.
- LCD displays the safe rotary speed limit.
- LCD displays operating mode.
- Turn the speed knob to set the rated rotary speed
- Press the speed knob. And the shaking function is switched ON.
- Press the motor regulation knob again. and the shaking function is switched OFF.

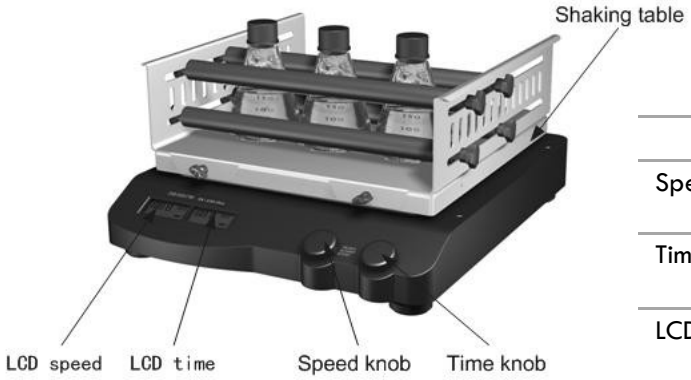
If these operations above are normal, the instrument is ready to operate following the “operation” chapter.
If these operations are not normal, the instrument may be in security protection state or be damaged.

If the mounting surface is not even, you can improve the stability of the instrument with the adjustable feet. To do this, turn the appropriate foot downward with the wrench until the instrument is standing securely on the surface.



5. Function

5.1 Control



Items	Descriptions
Speed knob	Set target speed. “rotation” is turned ON or OFF by pressing the knob
Time knob	Set working time. “rotation” is switched ON or OFF by pressing the knob
LCD	Displays the instrument status and settings
Main switch	Switch ON or OFF

Table 3

- Put the instrument on stable and safe place and plug in the main power.
- Turn ON the main switch on the left panel.
- The instrument starts a self-test.
- The instrument shows rated speed and time after initialization.
- Turn the speed knob on the left side to set the rated speed.
- Press the speed knob, characters on the left LCD will not flash any more and the shaking function is switched ON.
- Press the speed knob again, characters on the left LCD begin to flash, then the shaking function is switched OFF.
- Turn the time knob on the left side to set the rated time
- Press the time knob, characters on the LCD do not flash any more, and the timing function is switched ON
- Press the time knob again and characters on the right LCD begin to flash, and the timing function is switched OFF.

5.2 Set time

The desired shaking time can be set by turning the time knob on the right. A distinction is made for the shaking time setting between timed mode and continuous operation. If continuous mode is selected, the instrument can continue its shaking function for any amount of time with the previously set speed. If timed mode is selected, the shaker can run in the set time. After the instrument is powered OFF and restarted, the set time is erased to zero and it switches into offline operating mode.

If a target time (max. 19h 59min) and speed are set, users can activate the instrument with pressing the time knob, and the time will begin to count, If:

- A, pressing the time knob, the speed and the time will stop. Pressing the time knob again restarts the shaking function, the time will use the pre-set time.
- B, pressing the speed knob, the speed and the time will stop. Pressing the time knob again, restarts the shaking function, but not the time (It will be flashing on the right of the LCD). Pressing the time knob again restarts the time function. The time will use the pre-set time.

	**Note:** The current set time can be varied at any time.

5.3 Set speed

The desired speed and upper speed limit can be set by turning the speed knob. The continuous mode can be switched ON with pressing the left knob without a time setting and switched OFF by pressing the knob again.

Adjust the motor speed knob slowly in order to keep the instrument running smoothly.

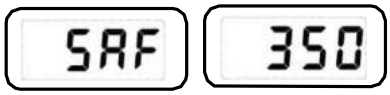
	**Note:** The current set speed can be varied at any time.

6. Operating modes

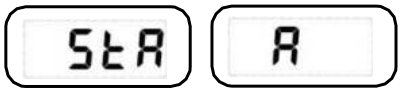
Operating mode A

Operating mode A is the default set mode. After turning ON the instrument with the main switch, the shaking and timing functions are turned OFF. The LCD displays the set time and speed values. They are adopted or varied when the corresponding functions are turned ON. After turning ON the instrument, the following process will be shown on the display.

- The left LCD displays "SAF" and the right displays the upper speed limit (rpm） which can be set by pressing the speed knob and turning at the same time.

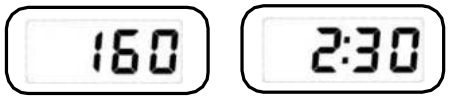


- The LCD displays run modes "StA"、"A" or "B" for about 2 seconds.



- The set or stored speed value is shown in the left display, and the set or stored time value is shown in the right display. Turn the speed knob and time knob can set the speed and time.

- After pressing the speed knob or time knob, the instrument begins to run at the set speed. The actual speed and time remaining are shown in the LCD. If the remaining has reached zero, the shaker stops its motion. Pressing the speed knob alone, the instrument will work at continuous mode (The time function is OFF)

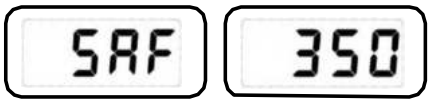


Note:
The set values can be varied during shaking.
Shaking can be stopped by pressing the left or right knob.

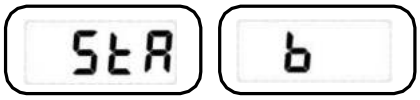
Operating mode B

When the instrument is turned ON values for speed and time are erased to zero, users can set them. The upper speed limit that has been set is taken over from operating mode A and cannot be modified. After the power has been turned OFF, the instrument will no longer automatically start up in operating Mode B by itself.
After turning ON the instrument and selected run mode, the following process will be shown on the display.

- The left LCD displays “SAF” and the right displays the upper speed limit (rpm) which cannot be changed.

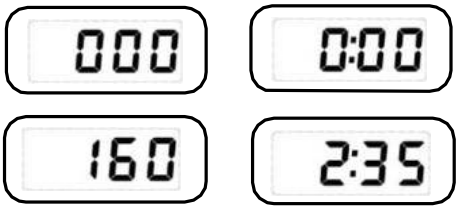


- The LCD displays run modes “StA” for 2 seconds.



- The set speed value is shown in the left display, and the set time value is shown in the right display.

Set the motor rotary speed and time.



- After pressing the speed knob or time knob, the instrument begins to run at the set speed. The actual speed and time remaining are shown in the LCD. If the remaining has reached zero, the shaker stops its motion.

Note:
The set values can be varied during shaking.
Shaking can be stopped by pressing the left or right knob.

Switching the mode

Switch the operation mode as follows:

- Turn OFF the instrument with the main switch.
- Hold down both knobs and turn ON the instrument with the mains switch. After 5 second, you can let go of the knobs.
- Switch between operating Modes A and B in order.

7. Supported load

In order to ensure a safe operation, the shaker must only be operated within the supported weight.
Make sure the holding surface of the shaker is always clean and leveled. Ensure the individual shaking vessels are placed evenly and fastened securely in the middle of the shaking table no matter if one or multiple shaking vessels are placed.

8. Faults

- When switched ON, the instrument doesn't work
  - Check if the power cable is properly fitted
  - Check if the fuse is broken

- The speed cannot reach the set value
  - Check if the instrument is overloaded

- The motor does not start via pressing the speed knob and time knob
  - Check if the time is set to zero

9. Interface

The digital shaker special adapter and cable are used to link to an external device. The standard 9-pin interface is used to connect with the PC.

- The cable between the shaker and the computer used EIA Standard RS232C communication line, corresponding to the DIN 66020 interface.
- Transmission method: Asynchronous signal transmission.
- Mode of transmission: Fully Duplex.
- 1 start bit; 8 character bits; 1 stop bit.
- Transmission speed: 9600 bit/s

⚠	**Note:** It is forbidden to plug in and off the power cable when the instrument is running.

10. Maintenance and Cleaning

Use and maintain the instrument in right way to keep it in good operating state in order to lengthen its life time and avoid the damage to the instrument. Only use the cleaning agents which have been approved by manufacturer to clean the instrument.

Only use cleanser that we advised as below:

Dyes	Isopropyl alcohol
Construction materials	Water containing tenside / Isopropyl alcohol
Cosmetics	Water containing tenside / Isopropyl alcohol
Foodstuffs	Water containing tenside
Fuels	Water containing tenside

Table 4

For materials which are not listed, please request information from manufacturer or your supplier. Before using another than the recommended method for cleaning or decontamination, the user must ascertain that this method does not destroy the instrument. Wear the proper protective gloves during cleaning of the instrument.

Note:

-Electrical instrument may not be placed in the cleansing agent for the purpose of cleaning.

-The instrument must be cleaned and put it into the initial packaging carton before sending to service for repair, avoiding the contamination of hazardous.

- Switch OFF the instrument and put it in the dry, clean, stable place at room temperature in long-term disuse.

11. Associated Standards and Regulations

Construction in accordance with the following safety standards:
EN 61010-1 UL 3101-1 CAN/CSA C22.2(1010-1) EN 61010-2-10
Construction in accordance with the following EMC standards:
EN 61326-1

12.Specifications

Items	**Specifications**
Voltage [VAC]	100 - 240
Frequency [Hz]	50/60
Power [W]	30
Shaking movement	Orbital
Orbital diameter [mm]	10
Max. shaking weight [kg]	7,5 (Orb-Pro, Lin-Pro) 5 (3D-Pro)
Motor type	External rotor brushless motor (Orb-Pro, Lin-Pro)
Motor rating input [W]	28
Motor rating output [W]	15
Permissible ON time [%]	100
Speed range [rpm]	100-500 (Orb-Pro) 100-350 (Lin-Pro) 10-70 (3D-Pro)
Speed display	LCD
Timer	Yes
Timer display	LCD
Time setting range [min]	1–1199
Run type	Time / Continuous operation
Dimensions [D×W×H mm]	420 x 370 x 100 (Orb-Pro) 420 x 370 x 100 (Lin-Pro) 360 x 430 x 106 (3D-Pro)
Weight [kg]	13,5
Permissible ambient temperature [℃]	5-40
Permissible relative humidity	80%
Protection class acc. To DIN EN60529	IP21
RS232 interface	Yes

Table 5

13. Accessories

Please get in touch with our company to order the following accessories available for this device:

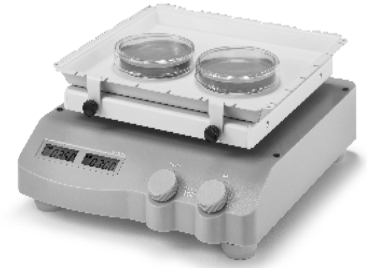
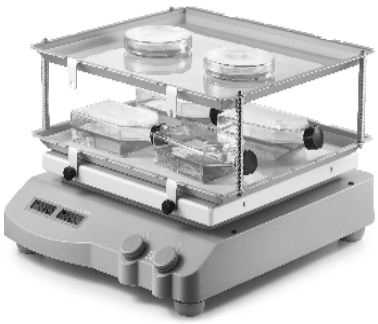
SHKP-A01-001	non-slip platform 30 x 28.5 cm 	
SHKP-A02-001	universal accessory with 4 bars 	
SHKP-A03-001	replacement bar for SHKP-A02-001	
SHKP-A00-001	clip fixation support for SHKP-500-001 	
SHKU-025-001	clip for 25 ml Erlenmeyer (28 max.)	
SHKU-050-001	clip for 50 ml Erlenmeyer (16 max.)	
SHKU-100-001	clip for 100 ml Erlenmeyer (16 max.)	
SHKU-250-001	clip for 200/250 ml Erlenmeyer (9 max.)	
SHKU-500-001	clip for 500 ml Erlenmeyer (4 max.)	
SHKU-A01-001	connectors for double non-slip platform **(To connect one non-slip platform on top of another one that has the same dimensions)** 	

Table 6

Nota importante para los aparatos electrónicos vendidos en España

Instrucciones sobre la protección del medio ambiente y la eliminación de aparatos electrónicos:

Los aparatos eléctricos y electrónicos marcados con este símbolo no pueden ser eliminados en forma de residuos urbanos.

De conformidad con la Directiva 2012/19/UE, los usuarios de la Unión Europea de aparatos eléctricos y electrónicos, tienen la posibilidad de devolver sus RAEE para su eliminación al distribuidor o fabricante del equipo después de la compra de uno nuevo. La eliminación ilegal de aparatos eléctricos y electrónicos es castigada con multa administrativa.

Remarque importante pour les appareils électroniques vendus en France

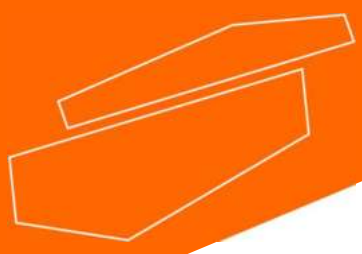
Informations sur la protection du milieu environnemental et élimination des déchets électroniques :

Les appareils électriques et électroniques portant ce symbole ne peuvent pas être jetés dans les décharges.
En réponse à la règlementation, Labbox remplit ses obligations relatives à la fin de vie des équipements électriques de laboratoire qu'il met sur le marché en finançant la filière de recyclage de ecosystem dédiée aux DEEE Pro qui les reprend gratuitement (plus d'informations sur www.ecosystem.eco).
L'élimination illégale d'appareils électriques et électroniques est punie d'amende administrative.

Nota importante per le apparecchiature elettroniche vendute in Italia

Istruzioni sulla protezione ambientale e sullo smaltimento dei dispositivi elettronici:

Le apparecchiature elettriche ed elettroniche contrassegnate con questo simbolo non possono essere smaltite come rifiuti urbani.
In conformità con la Direttiva 2012/19 / UE, gli utenti dell'Unione Europea di apparecchiature elettriche ed elettroniche hanno la possibilità di restituire i propri RAEE per lo smaltimento al distributore o al produttore di apparecchiature dopo averne acquistato uno nuovo. La rimozione illegale di apparecchiature elettriche ed elettroniche è punibile con una sanzione amministrativa.



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