ARGO LAB SKO-D XL
Orbital and Linear digital shaker

User manual

ARGO LAB

Contents

1. Warranty

Thank you for purchasing an instrument Argo Lab. This instrument is warranted under normal use for a period of 24 months from the date of purchase.

The warranty is valid only if the product is in original conditions. It does not apply to any product or parts of it that have been damaged due to incorrect installation, improper connections, improper use, accident or abnormal conditions of operation.

The manufacturer declines all responsibility for damage caused by failure to follow instructions, lack of maintenance and any unauthorized modification.

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2. Safety instruction

	**Note:** If there is any apparent damage to the system, please do not plug it into the power line.
	• Read the instructions carefully before use • Ensure that only qualified personnel using this tool • Do not heat flammable or highly volatile substances
	• Before use, make sure the instrument is connected to an outlet with a ground connection.

• At work, employees shall prevent the risk of:
- Spillage of liquids.
- Mechanical vibrations that may cause breakage of glass containers.
• Keep away from unauthorized use.
• Pay attention to your hands and fingers while the instrument is in motion.
• Place the instrument in a suitable area, on a stable, clean, non-slip, dry and fireproof. Do not use the tool in explosive atmospheres, contenenenti hazardous substances or under water
• Check the fluid level while adjusting the speed of the tool to avoid spillage of sample. Reduce the speed of the motor in case of need.
• Accessories must be adequately secured containers of liquid are well positioned on the instrument.
• It is not recommended shake combustible or flammable because the energy that the instrument gives the material could be dangerous.
• Check the instrument and accessories are in good condition before use. Never use damaged components. The safety and operating performance are guaranteed only if the instrument and accessories described are in order. Accessories must also be firmly connected to the device.
• The operating voltage indicated on the instrument must match the network to which it is connected.
• The instrument may only be opened by trained service technicians.

3. Proper use

The instrument has been designed to mix the liquid in school labs, chemical, pharmaceutical, industrial etc. This device is not suitable for domestic use.

4. Receiving Inspection

Unpack the instrument carefully and check for any damages which may have arisen during transport. If it happens, please contact manufacturer for technical support.

4.1 Listing of Items

The packing includes the following items:

ITEMS	Qty
Main unit	**1**
Power cable	**1**
User manual	**1**

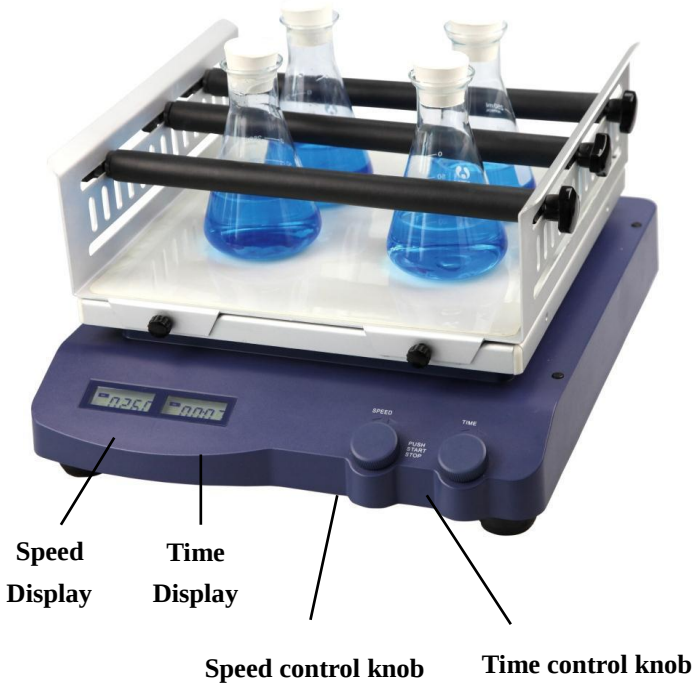
Table 1

5. 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.

6. Controls



Picture 2

Items	Descriptions
Speed knob	Set the rated rotary speed. " rotation" is switched ON or OFF via pressing the knob.
Time knob	Set working time. "rotation" is switched ON or OFF via pressing the knob
LCD	Display the status of instrument and any set
Mains switch	Switch ON or OFF.

Table 2

• Put the instrument on stable and safe place and plug in the mains power.
• Turn ON the mains switch on the left panel.
• The instrument starts 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 and characters on the left LCD do not flash any more, and the shaking function is switched ON.
• Press the speed knob again and characters on the left LCD begin to flash, and the shaking function is switched OFF.
• Turn the time knob on the left side to set the rated time
• Press the time knob and 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.

7. Set

7.1 Set time

The rated 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 shake 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 blanking 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 begin to read, If:
A，pressing the time knob，the speed and the time will stop. Pressing the time knob again, restart the shake 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, restart the shake function, the time not(There are flashing on the right of the LCD)，pressing the time knob again restart the time function. The time will use the pre-set time.

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

7.2 Setting Speed

The rated speed and upper speed limit can be set by turning the speed knob (As the Figure 6). The continuous mode can be switched ON with pressing the left knob without the time setting and switched OFF with pressing the knob again.

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

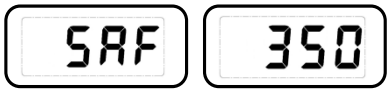
⚠	**Note:** The current set speed can be varied at any time.

8. Operating modes

Mode A

The operating mode is A is one of the initial factory settings. After switching on the instrument functions of agitation and time are on standby. The LCD display speed and time settings.

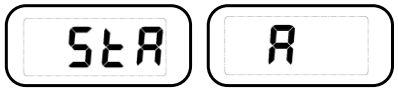
After switching on the instrument is displayed on the following process:



Picture 3

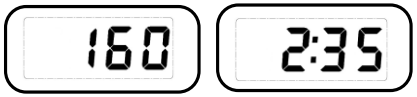
The left display shows "SAF" and the right display the upper limit speed (rpm) that can be set by pressing and turning the speed control knob.

The left display shows the sctitta "StA" and the right operating mode "A" or "B" for about 2 seconds.



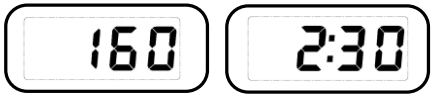
Picture 4

The set speed is displayed in the left display and the time in the right.
Rotating the monopole of speed and time can vary their values.



Picture 5

After pressing one of the knobs, the instrument starts to shake at the set speed. The current speed and remaining time are displayed in the LCD. When the time reaches zero the shaker stops. Once stopped, pressing only the speed control knob, the instrument starts to work in "continuous mode".



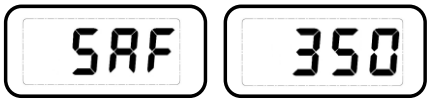
Picture 6

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

Mode B

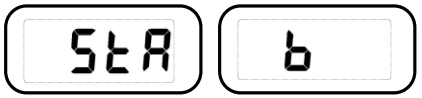
When the instrument is turned on and speed and time are zero and can be set.
The speed limit is set in mode A and mode B is only displayed, but cannot be changed.
After switching off of the instrument it should not be in B automatically, but you need to put it in manually if desired.
After power is turned on and you have selected the type of rotation (clockwise or counterclockwise), the display shows the following process:

• The left display shows "SAF" and right the speed limit (rpm) which as I said cannot be changed.



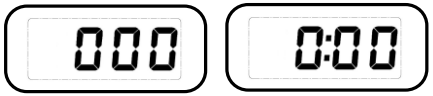
Picture 7

• The display shows the operating mode set for about 2 seconds..

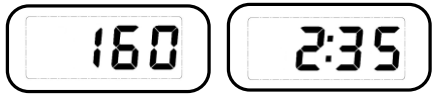


Picture 8

The speed and time settings are displayed in the display left and right respectively.
Rotating the monopole of speed and time can vary their values.

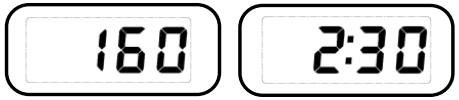


Picture 9



Picture 10

After pressing one of the two monopole, the instrument starts to shake at the set speed. The current speed and remaining time are displayed in the LCD. When the time reaches zero the shaker stops.



Picture 11

⚠	**Nota:** I valori impostati possono essere variati in ogni momento, anche durante il funzionamento. Lo strumento può essere fermato premendo una delle due monopole.

Changing the operating mode

To change the operating mode:

• Turn the power off at the main switch

• Press and hold both knobs simultaneously and switch it on. After about 5 seconds you can release the monopole.

• Changing the operating mode from A to B.

9. Supported load

To ensure safety, the shaker should be used with loads not exceeding the permissible load (7.5 kg for the SKO-D XL).
Make sure that the supporting surface of the instrument is always clean and flat.
Make sure that the recipient or are always supported in a safe and well-balanced on the plane of the shaker.

10. Faults

- When switched ON, the instrument doesn't work
  - Check whether the power cable fitted well
  - Check whether the fuse is broken
- The speed cannot reach set value
  - Check whether it is overloaded
- The motor does not start via pressing the speed knob and time knob
  - Check whether the time is set to zero

11. Maintenance and cleaning

• Proper maintenance of the instrument guarantees the condition and extend its life.

• Unplug the power cord before cleaning.

• When cleaning, be careful not to spray the cleaner inside the instrument.

• Use only mild detergent and do not contain abrasives.

• Before starting with any cleaning or decontamination, the user must ensure that the method used does not damage the instrument.

• Wear suitable protection when cleaning with chemicals

• If the instrument must be returned for service, it is necessary to provide for proper cleaning and possible decontamination by pathogens of the same. You should also put the instrument in its original packaging to send it to serivizio repair.

12. 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

13. Technical data

Voltage [VAC]	100～240
Frequency [Hz]	50/60
Power [W]	30
Shaking movement	Orbital and Linear
Orbital diameter [mm]	10
Max. shaking weight (with attachment) [kg]	7,5
Motor type	Brushless
Motor rating input [W]	28
Motor rating output [W]	15
Speed range [rpm]	100-500 (Orbital) 100-350 (Linear)
Speed display	LCD
Timer	Yes
Timer display	LCD
Time setting range [min]	1 – 1199
Run type	Time / Continuous operation
Dimensions [D×W×H mm]	420×370×100
Weight [kg]	13.5
Permissible ambient temperature [°C]	5－40
Permissible relative humidity	80%
Protection class acc. To DIN EN60529	IP21
RS232 interface	Yes

Table 3

14. Disposal

Information regarding the disposal of electrical and electronic equipment European Union.

Electrical and electronic equipment marked with the symbol on the side cannot be disposed of in landfills.

In accordance with EU Directive 2002/96/EC, the European users of electrical and electronic equipment have the opportunity to give back to the distributor or manufacturer upon purchase of a new one.

The illegal disposal of electrical and electronic equipment is punished with an administrative fine.