biocomma

SDC-4000
Multi-Tube Vortex Mixer

Instruction Manual

Biocomma Limited

Preface

Thank you for purchasing SDC-4000 multi-tube vortex mixer. This manual includes the functions and operation process of the instrument. To ensure the correct use of the instrument, please read this manual carefully before operating the instrument. Please keep this manual properly so that you can read it quickly in case of problems.

Unpacking and Inspection

When the user opens the packing box of the instrument for the first time, please check the instrument and accessories inside the box against the packing list, if you find that the instrument and accessories are wrong, incomplete or abnormal, please contact the seller or manufacturer.

Company Information

Manufacturer name: Biocomma Limited
Address: 1401~1406, Bldg. 12, Zhonghaixin Innovation Industrial Park, 12 Ganli 6th Rd., Jihua St., Longgang Dist., Shenzhen, Guangdong, 518114, China
Phone: 0086-755-25431879
Web site: www.biocomma.com
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Precautions

1.Important Safety Operation Information

Please read the instruction manual in detail before using the instrument.

It is forbidden for anyone to operate the instrument without reading this manual. If the instructions in this manual are not followed, the heat generated by the instrument during operation may cause severe burns and electric shock may occur. Please read the following safety instructions and guidelines carefully and take all precautions.

2.Safety

The following basic safety precautions must be observed during all operations, maintenance, and repair of this instrument. Failure to observe these precautions, or the warnings noted elsewhere in this manual, may affect the protection provided by the instrument and the intended range of use of the instrument.

This instrument is a common equipment complying with GB4793.1, GB4793.6 and GB4793.9 standards. This instrument is for indoor use.

Users are not allowed to disassemble or replace any parts or accessories of the instrument by themselves, if you need to replace or repair, please contact our after-sales service team, or contact the distributor (agent) from whom the user purchased the instrument, and the operation will be carried out by the after-sales service engineers or designated personnel.

Please read this operation manual carefully before operating this instrument, otherwise it may cause personal injury. Only qualified personnel trained in the installation and use of electrical equipment should operate this instrument.

Operators should not attempt to open or repair the instrument. Doing so will cause you to lose the warranty, and may also receive an electrical shock. If repair is required, it is the responsibility of our company to carry out the repair.

Before connecting the power supply, ensure that the voltage of the power supply is consistent with that required by the instrument. Also, ensure that the rated load of the power socket is not less than that required by the instrument.
If the power cord is damaged, it must be replaced. When replacing, it must be replaced with a power cord of the same type and specification. Do not place anything on the power cord when the instrument is in use. Do not place the power cord in a place where people walk.
When plugging or unplugging the power cord, always hold the plug part. When inserting the plug, ensure that the plug is completely inserted into the socket. When unplugging the plug, do not pull the power cord hard.

Warning! This biohazard symbol (yellow background, black symbols and outline lines) indicates that when dealing with samples or reagents that may be infected, TIP head collection boxes, and waste liquid generated from washing, they should be treated as potential sources of infection. Please take appropriate protective measures, such as wearing protective gloves and masks.

Warning! Beware of pinched fingers. When the instrument is in motion, do not put your hand into the moving area.

Power On

Power Off

Protective Conductor Terminal
Note: Terminals that are connected to the conductive parts of the equipment for safety purposes and are also intended to be connected to an external protective grounding system.

Recovery and Waste Disposal. This product must be processed in accordance with the regulations for the disposal of electrical and electronic equipment waste. Disposing of your old equipment in the correct way helps protect the environment and reduces health hazards.

This instrument should be placed in a place with low humidity, less dust, away from water sources, and avoiding direct sunlight and strong light sources. The room should be well – ventilated, free from corrosive gases or strong magnetic field interference, and far from heating, stoves, and all other heat sources. Do not place the instrument in a wet or dusty place.
The openings on this instrument are for ventilation. To avoid overheating, do not block or cover these ventilation holes.

When the work is stopped, the power should be turned off. When the instrument is not used for a long time, the power plug should be unplugged. After the instrument has cooled to room temperature, cover it with a soft cloth or plastic paper to prevent dust from entering.

In the following cases, the power plug of the instrument should be immediately unplugged from the power socket and contact the supplier or ask a professional maintenance person to handle it:

- Liquid has been spilled into the interior of the instrument;
- The instrument has been rained on or watered;
- The instrument is not working normally, especially if there are any abnormal sounds or odours;
- The instrument has been dropped or its casing has been damaged;
- The function of the instrument has changed significantly.

3.3.Instrument Maintenance and Care

Unless otherwise stated, all maintenance should be carried out in a non – experimental state. This instrument should be regularly cleaned with a clean soft cloth dipped in a small amount of anhydrous alcohol to clean the cavity, etc. If there are stains on the surface of the instrument, it can be cleaned with a soft cloth dipped in a cleaning paste.

3.1 Cleaning and Disinfection

The user must ensure that:
1) If a dangerous substance leaks inside or on the surface of the equipment, appropriate disinfection is required;
2) Disinfectants and cleaners that react chemically with the equipment parts or materials should not be used;
3) If there is any doubt about the compatibility of disinfectants and cleaners with the equipment parts or materials inside the equipment, consult the manufacturer or producer;
4) Only use the disinfectants or cleaners mentioned in the manual. If other types of disinfectants or cleaners are used, please confirm with the manufacturer in advance whether they can be used.

3.2 Daily Maintenance

After daily use, daily maintenance is required. The specific operation steps are as follows:
1) Keep the platform clean. There should be no residual liquid or stains on the plate position.
2) Close the running switch button of the instrument and then close the main power switch of the instrument.

3.3 Regular Maintenance

In addition to daily maintenance, after the instrument has been running for 6 months or has been stored for a long time, regular maintenance and care are required.
1) Check whether the transmission mechanism is intact. If the fixing screws are loose, tighten them in a timely manner.
2) Run a test program. The sound should be smooth and soft when running normally. If there is an abnormal sound, analyze the cause of its occurrence in a timely manner.
3) Check whether the circuit of the instrument is good, including whether the grounding is good, whether the insurance is intact, and whether the wires are aging.

3.4 Instrument Long - Term Non - Use Maintenance

Although the instrument is a laboratory equipment for continuous operation, there are still situations where it is not used for a long time. When the instrument really needs to be not used for a long time, the user needs to thoroughly disinfect the equipment, cut off the power switch of the instrument. The user needs to properly dispose of the waste materials in accordance with relevant regulations.

Contents

Chapter 1 Overview

1. Instrument Introduction

The SDC－4000 Multi－Tube Vortex Mixer is designed for mixing liquids and liquid－solid mixtures. It can quickly mix the samples you need to process in the form of high－speed vortices. The vortex mixing speed is uniform and high－speed, and it is widely used in food testing, biochemistry, genetic engineering, medical testing and other fields.

2. Instrument Structure

The SDC－4000 Multi－Tube Vortex Mixer consists of a mechanical part and an electrical part. Specifically, it consists of a housing, an oscillation disk, a test tube rack, and a control panel.

3. Expected Use

It can be used for liquid－liquid vortex mixing and solid－liquid vortex mixing of different types of samples such as vegetables, fruits, meats, eggs and reagents, so that the mixed samples and reagents achieve the effects of dispersion and homogenization, facilitating the later processing of samples.

Chapter 2 Instrument Working Principle

Using test tubes of different volumes to divide and load the samples and reagents that need to be mixed, fix the test tubes loaded with samples on the test tube carrier of the vortex mixer. The device is internally configured with a high－speed motor. After the motor is started, it will perform vortex oscillation, driving the samples to perform vortex mixing, thus achieving the of quickly mixing the samples.

Chapter 3 Performance Parameters

1. Performance Indicators

1.1 Use Performance

1.1.1 Sample Types: Reagent solutions, fruits, vegetables, meats, powders, etc.;
1.1.2 Processing Capacity: 1－20 samples (standard configuration)
1.1.3 Rotation Speed Range: 0－4000 rpm
1.1.4 Timing Range: 1－1999 min & Continuous Mode
1.1.5 Storable Programs: At least 6 groups of programs can be stored; preset vortex time, rotation speed, one－key start
1.1.6 Control Methods: Button control, knob adjustment,
1.1.7 Tray (Optional):
A. 16 positions for placing 50 mL centrifuge tubes
B. 10 positions for placing 50 mL centrifuge tubes + 10 positions for placing 15 mL centrifuge tubes (standard configuration)
C. 28 positions for placing 15 mL centrifuge tubes
1.1.8 Maximum Load: 800 g
1.1.9 Working Mode: Unlimited continuous or timed
1.1.10 Rotation Speed and Time Setting: Digital display, stepless adjustment
1.1.11 Gyration Radius: 3 mm
1.1.12 Safety Devices: Overspeed, locked－rotor, shutdown without starting and prompt tone
1.1.13 End Prompt Tone: Yes
1.1.14 Input Power: 220V~50Hz, 1A
1.1.15 Dimensions: 410mm*370mm*210mm
1.1.16 Weight: 25 KG

Chapter 4 Installation Instructions

1. Transportation and Storage Environment

Storage Environment Temperature: -20℃ ~ 50℃ ;
Storage Environment Humidity:20%~80%

2. Installation Environment Requirements

The SDC - 4000 Multi - Tube Vortex Mixer must be installed and used indoors that meet the following environmental conditions:
Environment Temperature: 10℃ ~ 40℃ ;
Relative Humidity: 30% - 70%;
Altitude: Below 2000 meters;
Power: 220V~50Hz, 1A;
Away from strong electromagnetic field interference sources;
Having a good grounding environment;
Well - ventilated, avoiding direct sunlight;
Installation desktop needs a space of not less than 50cm×40cm×40cm (length × width × height), flat, stable, and able to bear a weight of more than 30 KG;
Both sides of the device should leave at least 15 cm of space, and the rear of the device should leave at least 20 cm of space; Ensure that the device is not placed in a position that is difficult to operate and disconnect.

3.Instrument Unpacking

The packing list of the SDC - 4000 Multi - Tube Vortex Mixer is as follows:

No.	Contents	Quantity
1	The main unit of the SDC - 4000 Multi - Tube Vortex Mixer	1
2	Factory inspection report	1
3	Power adapter	1
4	Instruction manual	1
5	Product quality inspection certificate	1
6	Warranty card	1
7	Adapter	1

4.Power On

The back interfaces are as follows: power cord interface.

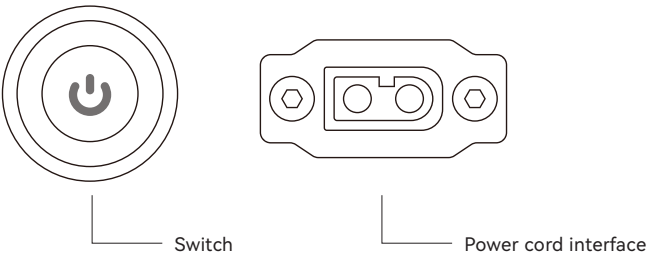

Figure 2: Back interfaces

Insert one end of the power cord into the device interface and connect the other end to a power cord box with a good ground to provide the required power. Incorrect grounding may cause electric shock and system damage.

Figure 3: Main unit

The power-on button is on the right side of the instrument. Before powering on, please confirm that there is no foreign matter on the table. Press the power-on button.
After normal power-on, the instrument will conduct a self-check. If the self-check is normal, it will enter the home page. If there are abnormal noises, pop-up error messages, or the self-check is not completed for a long time during the self-check process, please power off in time and contact the dealer or the manufacturer. Do not disassemble the instrument.

Chapter 5 Vortex Mixer Operation Instructions

1. Button Panel Introduction

Storage environment temperature: -20℃ to 50℃ ;
Storage environment humidity: 20% - 80%

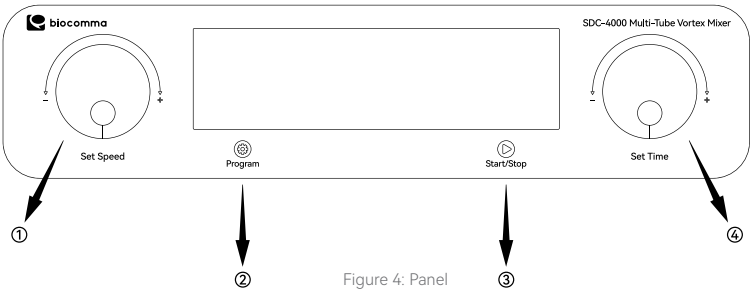

Figure 4: Panel

① : Speed setting knob
② : Program editing selection / program switching / exit program editing button
③ : Run program / stop program / confirm button
④ : Time setting knob

2.Operation Methods

The left knob ① is the speed setting knob: turning it clockwise increases the speed, and turning it counterclockwise decreases the speed.

The right knob ④ is the time setting knob: turning it clockwise increases the time, and turning it counterclockwise decreases the time.

The left button ② is the program setting / program switching / program exit button.
Clicking the button functions for program switching and program editing;
Long-pressing the button functions for exiting editing;

The right button ③ is the run program / stop program / save program button.
When editing a program, clicking it functions for saving the program;
When running a program, it functions for stopping;
In normal operation, it functions for starting the program.

Chapter 6 Fault Analysis and Treatment

No.	Fault Phenomenon	Cause Analysis	Treatment Method
1	No display on the screen when powered on	The power cord is not plugged in properly	Plug in the power cord properly
		There is no power supply in the power socket	Ensure the power supply is working normally
		The power switch is not turned on	Turn on the power switch
		The power supply is damaged	Contact the supplier or the manufacturer
		Others	
2	The knob has no response	The knob is loose	Tighten the knob
		The main board is faulty	Contact the supplier or the manufacturer
		Others	
3	There is no vortex in the running liquid	The rotation speed is set incorrectly	Increase the rotation speed
		Others	
4	The screen shows "E1" and there is a "beep" alarm sound;	The motor fails to start	Contact the supplier or the manufacturer
5	The screen shows "E2" and there is a "beep" alarm sound	Overspeed	Contact the supplier or the manufacturer
6	The screen shows "E3" and there is a "beep" alarm sound	The motor does not reach the specified rotation speed	Try to restart. If restarting is ineffective, contact the supplier or the manufacturer
7	The instrument vibrates violently	The test tubes are not symmetrically distributed	Place the test tubes symmetrically
		The foot pads are loose	Self-tightening foot pads
		Others	
8	The noise suddenly increases	The shock-absorbing column is aged or fractured	Immediately pause and contact the supplier or the manufacturer
		The bearing is damaged	Contact the supplier or the manufacturer
		Others	

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Add.: 1401~1406, Bldg. 12, Zhonghaixin Innovation Industrial Park, 12 Ganli 6th Rd., Jihua St., Longgang District., Shenzhen, Guangdong, 518114 P.R. China

Tel.: 86(755)-25431879 Web: www.biocomma.com Email: info@biocomma.com