

Cole-Parmer®

Instruction Manual Series SH-250

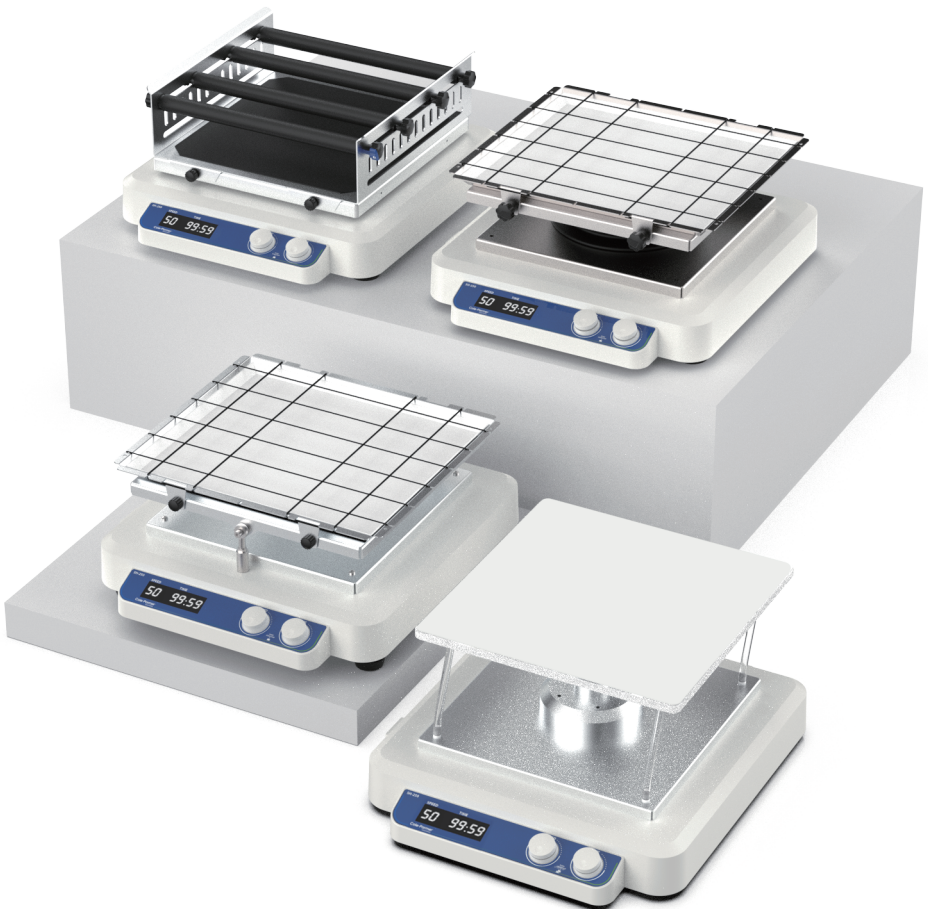


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1. Introduction

Thank you for purchasing this Cole-Parmer product. To get the best performance from this equipment, and for safety purposes, please read these instructions carefully before use. Before discarding the packaging check that all parts are present and correct.

Item Number	Model Number	Description	Voltage
50302-91	SH-250D-O	Orbital Shaker with Variable Speed, LED Digital Control, and 7.5 kg Load Capacity	110-240V 50-60Hz
50302-92	SH-250D-R	Reciprocating / Linear Shaker with Variable Speed, LED Digital Control, and 7.5 kg Load Capacity	110-240V 50-60Hz
50302-93	SH-250D-G	3D Gyro Shaker with 9-degree Tilt, Variable Speed, LED Digital Control, and 5 kg Load Capacity	110-240V 50-60Hz
50302-94	SH-250D-G-A	3D Gyro Rocking Shaker with 0-to-8-degree Adjustable Tilt, Variable Speed, LED Digital Control and 5 kg Load Capacity	110-240V 50-60Hz
50302-95	SH-250D-S	See-Saw / Rocking Shaker with 9-degree Tilt, Variable Speed, LED Digital Control, and 10 kg Load Capacity	110-240V 50-60Hz

2. Safety Instructions

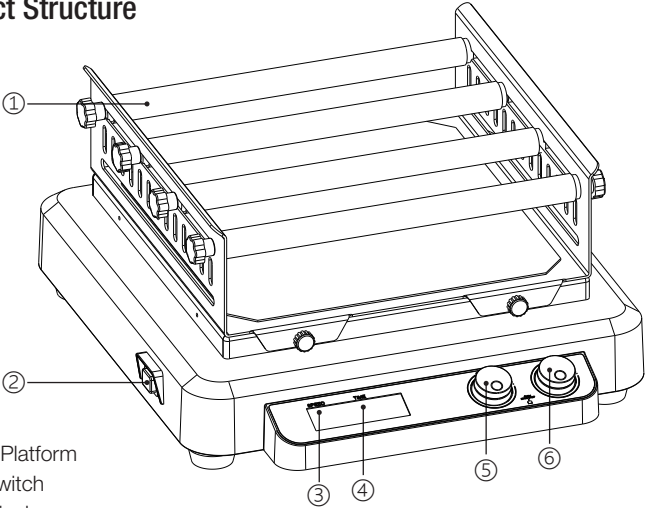
This equipment is designed to operate under the following conditions:

- For indoor use only
- Use in a well-ventilated area
- Ambient temperature range +5°C to +40°C
- Relative humidity not exceeding 80%
- Mains supply fluctuation not exceeding 10%
- Pollution degree 2
- Use at a minimum distance of 200mm from walls or other items
- **USE CARE AND WEAR PROTECTIVE SAFETY GEAR** to avoid the risk of:
 - Splashing liquids
 - Broken glass containers
- Follow standard safety guidelines and accident prevention regulations.
- Do not touch the platform of the instrument during operation.
- Set up the instrument on a stable, clean, non-slip, dry and fireproof surface.
- When setting speed, please pay attention to the vessels on shaking table to avoid splashing or spillage. 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.
- Only process samples that do not react dangerously.
- Power off the device before assembly of platform accessories, and confirm that all accessories are firmly attached before beginning shaking operation.
- Do not cover the instrument during operation.
- Keep the instrument away from a strong magnetic field.

Electrical Requirements

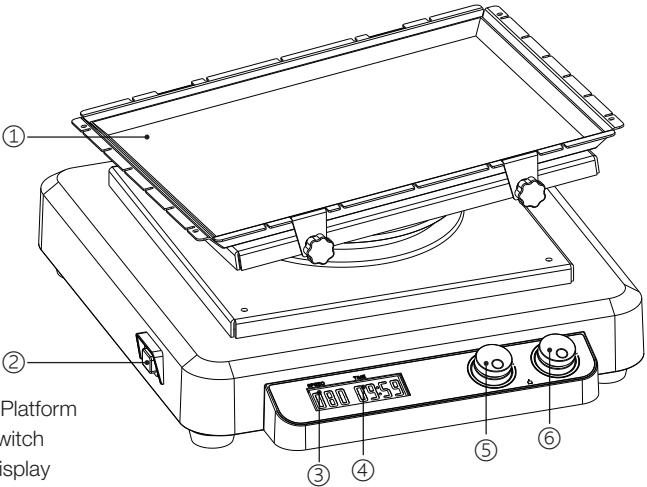
This equipment uses a universal 100 – 240 V Adapter, and adapter outlet plugs for all major regions. Ensure the outlet plug you select from the box matches the outlet where you will use the equipment.

3. Product Structure



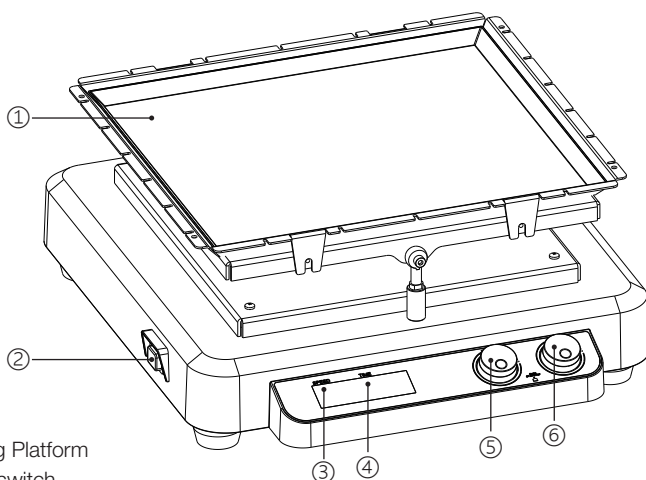
- ① Shaking Platform
- ② Power switch
- ③ Speed display
- ④ Time display
- ⑤ Speed control knob
- ⑥ Timer control knob

SH-250D-O Orbital Shaker & SH-250D-R Linear Shaker



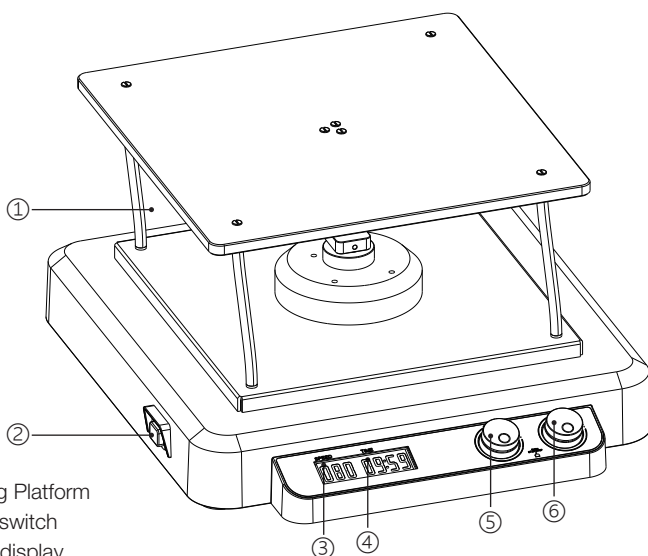
- ① Shaking Platform
- ② Power switch
- ③ Speed display
- ④ Time display
- ⑤ Speed control knob
- ⑥ Timer control knob

SH-250D-G 3D Gyro Shaker with 9° Tilt



- ① Shaking Platform
- ② Power switch
- ③ Speed display
- ④ Time display
- ⑤ Speed control knob
- ⑥ Timer control knob

SH-250D-S Rocker Shaker



- ① Shaking Platform
- ② Power switch
- ③ Speed display
- ④ Time display
- ⑤ Speed control knob
- ⑥ Timer control knob

SH-250D-G-A 3D Gyro Rocking Shaker with 0-8° Tilt

4. Specifications

Specifications					
Model	SH-250D-O / SH-250D-R		SH-250D-G	SH-250D-G-A	SH-250D-S
Shaking Motion	Orbital* (10mm diameter)	Linear*	3D w/ 9° tilt	3D w/ adj. 0-8° tilt	Rocking w/ 9° tilt
Max Load Capacity	7.5 kg		5 kg	5 kg	10 kg
Speed Range	20-500 RPM		10-70 RPM		
Motor Type	Brushless DC				
Display Type	Digital LED				
Timer Range	0-99Hr59Min				
Operation Type	Continuous or Timed				
Operating Ambient Temperature	5-40				
Operating Relative Humidity	80%				
Protection Class	IP20				
Voltage	100-240 VAC				
Frequency	50/60 Hz				
Power	40 W		35 W	35 W	40 W
Weight	11 kg		12 kg	9 kg	10 kg
Housing Dimensions [WxDxH]	407×452×105mm		407×452×105mm	407×452×225mm	407×452×210mm
Platform Dimensions	317 x 317mm			330 x 330mm	317 x 317mm

* The Orbital Shaker and Reciprocating / Linear Shaker both come default in their respective shaking modes, but are both user-adjustable between the orbital shaking mode and linear shaking mode.

5. Before Use

Carefully unpack the box and remove all packing materials.

Inspect all contents for any damage. While rare, damage may occur during shipping. Before discarding the packaging, check the parts list (see below) for your product and ensure all items are present.

6. Box Contents

Packing Lists

SH-250D-O (50302-91) & SH-250D-R (50302-92)	
Item	QTY
Main Unit	1
Power Adapter	1
User Manual	1
Rubber Plugs	4
Unthreaded Spacers*	4
Universal Attachment with 4 Bars	1

* for use with platform installation in reciprocating (linear) shaking mode

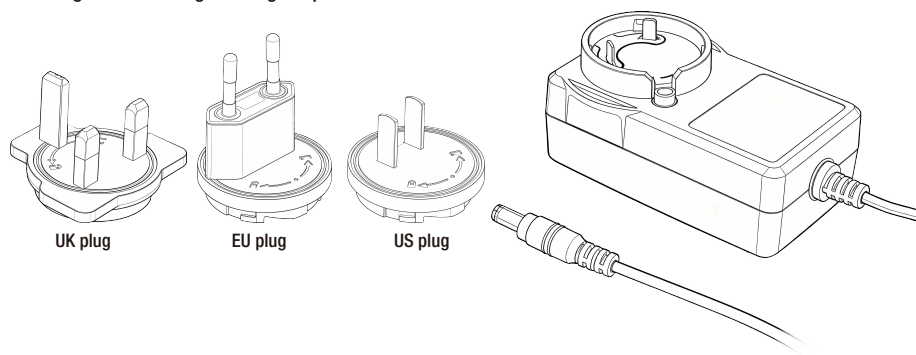
SH-250D-R (50302-92)	
Item	QTY
Main Unit	1
Power Adapter	1
User Manual	1
Rubber Plugs	4
Unthreaded Spacers*	4
Universal Attachment with 4 Bars	1

* for use with platform installation in orbital shaking mode

SH-250D-G (50302-93) & SH-250D-S (50302-95)	
Item	QTY
Main Unit	1
Power Adapter	1
User Manual	1
Non-slip Mat	1
Elastic Platform Strings	6

SH-250D-G-A (50302-94)	
Item	QTY
Main Unit	1
Power Adapter	1
User Manual	1
Non-slip Mat	1

Installing and Removing the Plug Adapter



The power adapter is supplied with interchangeable UK, EU, and US plug adapters.

To install:

- Select the appropriate plug adapter.
- Position the plug adapter onto the power adapter.
- Rotate the plug adapter toward the lock symbol () until it clicks into place.

To remove:

- Press and hold the release button.
- Rotate the plug adapter toward the unlock symbol ().
- Remove the plug adapter from the power adapter.

Note: Ensure the plug adapter is securely locked before connecting the power adapter to the mains supply.

7. Installation

Place the instrument on a safe and stable surface before installation and operation. Select the correct plug for your region and connect the instrument to a power outlet.

SH-250D-O Orbital Shaker & SH-250D-R Reciprocating / Linear Shaker

These two models share a common platform structure but differ in shaking motion. The platform base is pre-installed in either the orbital shaking mode or reciprocating shaking mode accordingly. If you desire to change the shaking mode, see “Switching between Linear and Orbital Mode for SH-250D-O Orbital Shaker and SH-250D-R Reciprocating / Linear Shaker” in Fig. 2 .

For both models, you will need to install the platform onto the platform base. Both models come default with our “Universal Attachment with 4 Bars”. Simply place this platform attachment onto the platform base, then line up and tighten the four knurled knob screws (see fig. 1). The bars are also installed using two knurled knob screws each on either side of the platform. Place your flasks in place and choose the slots where the bars will go to restrain the flasks from moving around during shaking operation.

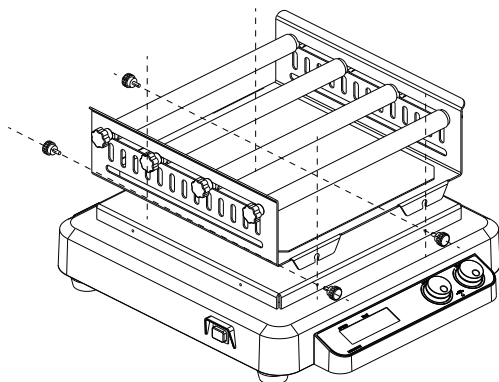


Fig. 1 Knurled knob screws for universal attachment

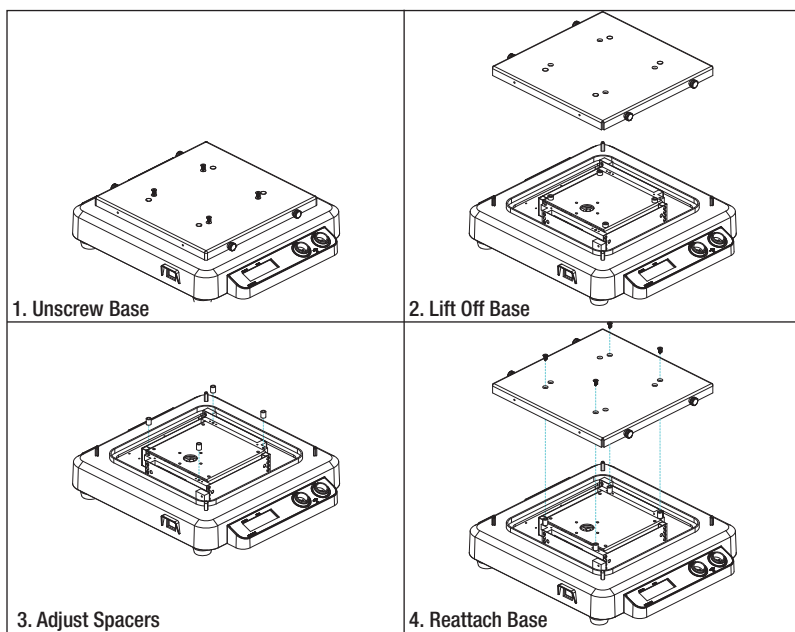


Fig. 2 Switching between Linear and Orbital Mode for SH-250D-0 Orbital Shaker and SH-250D-R Reciprocating / Linear Shaker

Step-by-Step Guide for Switching between Linear and Orbital Modes

1. Unscrew Base: Remove the four screws securing the platform base.
2. Lift Off Base: Lift the base and set it aside.
3. Adjust Spacers: Reposition the four column spacers as shown in the figure.
4. Reattach Base: Place the base back onto the adjusted spacers and secure with the four screws.

To switch back to Linear Mode, reverse the spacer adjustment process accordingly.

SH-250D-G 3D Gyro Shaker with 9 Degree Tilt & SH-250D-S Rocker Shaker

These two models share the same platform structure, but offer different shaking motions. These two models come with a platform and removable non-slip mat pre-assembled. Please ensure the four knurled knob screws that fix the platform onto the main unit are tightly secured (see fig. 3).

These two models also come with 6 elastic strings which are attached to the platform in a cross-hatched pattern to restrain flasks from tipping over.

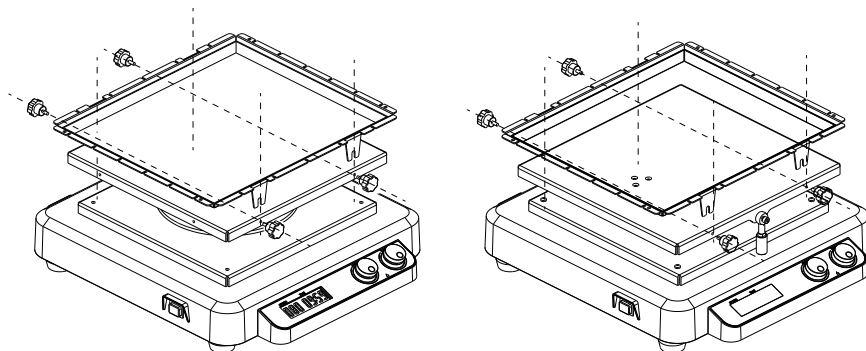


Fig. 3 Knurled Knob Screws for SH-250D-G 3D Gyro Shaker and SH-250D-S Rocker Shaker

SH-250D-G-A 3D Gyro Rocking Shaker with 0-8 Degree Tilt

This shaker does not require any installation before use. The tilt angle can be easily adjusted by hand. Look for the angle adjustment knob under the platform (see fig. 4). Counter-clockwise rotation will increase the angle, and clockwise rotation decreases the angle.

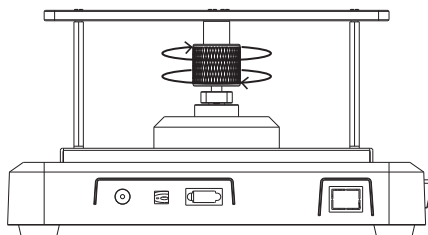
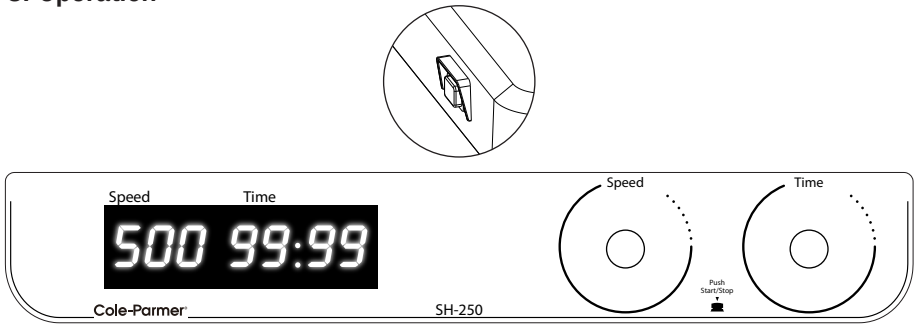


Fig. 4 Angle Adjustment Knob for SH-250D-G-A 3D Gyro Rocking Shaker with 0-8 Degree Tilt

8. Operation



Instructions

Powering On

- Switch the instrument “ON” using the power switch on the side.
- The instrument briefly initializes, and the display will momentarily display the version number. Then, both the timer and speed displays will display “OFF”.

Speed Control Knob

- Rotate the speed control knob to set the target RPM. The value is automatically confirmed and set after 2 seconds of staying on that value.
- Press the speed control knob to start shaking.
- Press the speed control knob again to stop shaking.

Timer Control Knob

- Rotate the timer control knob to set the target countdown time. The settable range is 0hr0min to 99hr59min. The value is confirmed and set after 2 seconds of staying on that value.
- Press the timer control button to start the timer.
- Press the timer control button again to stop the timer.
- When the timer is stopped before reaching 00:00, the time remaining when stopped will be saved for the next use when the timer is activated again. In other words, stopping the timer while it is operating will pause the timer, not reset the timer.
- **Note: Keep the timer set to “OFF” for continuous operation.**

When shaking operation and the timer are concurrently in operation, shaking automatically stops when the timer counts down to 0, and the timer alarm will sound 3 times. For the next use, the countdown timer will reset to the most recently set timer value.

Shaking operation and timer operation operate separately, i.e., shaking operation will continue indefinitely if the timer is turned “OFF”, and vice versa, the timer continues to count down if shaking is turned “OFF”.

The shaking RPM and countdown time can be adjusted at any time during operation. Simply rotate the knobs to the desired value, wait 2 seconds, and the instrument will automatically confirm and set the new parameter value.

9. Troubleshooting

If the switch is flipped ON, but the instrument does not appear to power on, first check if the power adapter connections are securely plugged in. If the issue persists, there may be a blown fuse. Please reach out to technical support to replace the fuse.

If shaking suddenly stops during operation, refer to the following.

If the digital display shows:

- “Er 01”, this indicates the motor is blocked.
- “Er 02”, this indicates a motor overspeed failure.

A potential cause could be overloading. In this case, power off the instrument first. Then reduce the load, and attempt shaking operation again.

If the error codes persist after restarting the device and reducing the operating load, please reach out to technical support to resolve the issue.

10. Maintenance, Servicing & Repairs

WARNING: Ensure the unit is disconnected from the mains electricity supply before attempting maintenance or servicing.

This series of equipment does not require routine servicing. The only maintenance required is to clean external surfaces with a damp cloth and mild detergent. Surfactant-treated water, and isopropyl alcohol are recommended. Spillages or splashes should be cleaned up straightaway after isolating the unit from the mains electricity supply.

Repairs

Any repairs or replacement of parts **MUST** be undertaken by suitably qualified personnel.

Only spare parts supplied or specified by Cole-Parmer should be used. Fitting of non-approved parts may affect the performance of the safety features designed into the instrument.

For a comprehensive list of parts required by service engineers conducting internal repairs, or to receive a service manual, please contact the Sales Department of Cole-Parmer quoting both the model and serial number.

If in any doubt please contact the Technical Department of Cole-Parmer.

11. Warranty

We guarantee that our scientific instruments adhere to the most rigorous engineering and quality standards. This instrument is warranted to be free from defects in materials and workmanship under normal use and service, for a period of 36 months from the date of dispatch. The warranty is extended only to the original purchaser. For claims under the warranty, please contact your local seller.

Scope of Warranty

The following conditions are not covered under the warranty.

- Faults or damage caused by negligence, improper installation, improper operation, or failure to use and maintain the machine in accordance with the instructions in this operating manual.
- Issues caused by unauthorized disassembly or modification.

12. Associated Standards and Regulations

This device has been constructed to conform to standards as outlined below.

Construction in accordance with the following safety standards:

EN 61010-1, EN IEC 61010-2-051

Construction in accordance with the following EMC standards:

EN 61326-1

13. Accessories

Image	Ordering No.	Description	Compatibility
	50302-96	Universal Attachment with 4 Bars	Compatible with SH-250D-O (50302-91) SH-250D-R (50302-92) SH-250D-G (50302-93) SH-250D-S (50302-95)
	50302-97	Fixing clip attachment for 25mL flasks (16 fixing clips)	Compatible with SH-250D-O (50302-91) SH-250D-R (50302-92) SH-250D-G (50302-93) SH-250D-S (50302-95)
	50302-98	Fixing clip attachment for 50mL flasks (16 fixing clips)	
	50302-99	Fixing clip attachment for 100mL flasks (16 fixing clips)	
	50303-00	Fixing clip attachment for 250mL flasks (9 fixing clips)	
	50303-01	Fixing clip attachment for 500mL flasks (4 fixing clips)	
	50303-02	Fixing Clip Attachment Base Plate	Compatible with SH-250D-O (50302-91) SH-250D-R (50302-92) SH-250D-G (50302-93) SH-250D-S (50302-95)
	50303-03	Fixing clips -for 25mL flasks (1 clip)	For use with Fixing Clip Attachment Base (50303-02)
	50303-04	Fixing clip - for 50mL flasks (1 clip)	For use with Fixing Clip Attachment Base (50303-02)

Image	Ordering No.	Description	Compatibility
	50303-05	Fixing clip - for 100mL flasks (1 clip)	For use with Fixing Clip Attachment Base (50303-02)
	50303-06	Fixing clip - for 250mL flasks (1 clip)	For use with Fixing Clip Attachment Base (50303-02)
	50303-07	Fixing clip - for 500mL flasks (1 clip)	For use with Fixing Clip Attachment Base (50303-02)
	50303-08	Dish platform with non-slip mat and fixed string (6 pcs)	Compatible with SH-250D-O (50302-91) SH-250D-R (50302-92) SH-250D-G (50302-93) SH-250D-S (50302-95)
	50303-09	Non-Slip Mat	For use with Dish Platform (50303-08)



This product meets the applicable CE Directives and UKCA Legislation for radio frequency interference and may be expected not to interfere with, or be affected by, other equipment with similar qualifications. We cannot be sure that other equipment used in its vicinity will meet these standards and so we cannot guarantee that interference will not occur in practise. Where there is a possibility that injury, damage or loss might occur if equipment malfunctions due to radio frequency interference, or for general advise before use, contact the manufacturer.

Declaration of Conformity

Catalog Number:	Description:
50302-91	Orbital Shaker
50302-92	Reciprocating / Linear Shaker
50302-93	3D Gyro Shaker with 9 Degree Tilt
50302-94	3D Gyro Rocking Shaker with 0-8 Degree Tilt
50302-95	Rocker Shaker

This product series is CE marked, confirming compliance with the following standards:

EN 61010-1:2010+A1:2019

EN IEC 61010-2-051:2021+A11:2021

EN 61326-1:2013

This product series is UKCA marked, confirming compliance with the following standards:

BS EN 61010-1: 2010/A1:2019/AC:2019-04

BS EN IEC 61010-2-051:2021+A11:2021

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Ordering Information

Part Number	Series	Model Number
50302-91	SH-250	SH-250D-O
50302-92	SH-250	SH-250D-R
50302-93	SH-250	SH-250D-G
50302-94	SH-250	SH-250D-G-A
50302-95	SH-250	SH-250D-S

Warranty Registration



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