

Microplate Shaker

Catalog Number:
88861023
88861024





Important before using this product, read this entire operation manual carefully. Users should follow all of the operational guidelines contained in this manual and take all necessary safety precautions while using this product. Failure to follow these guidelines could result in potentially irreparable bodily harm and/or property damage.

Caution all internal adjustments and maintenance must be performed by qualified service personnel.

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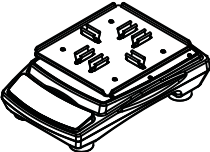
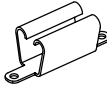







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Section 1 Inspection and Installation

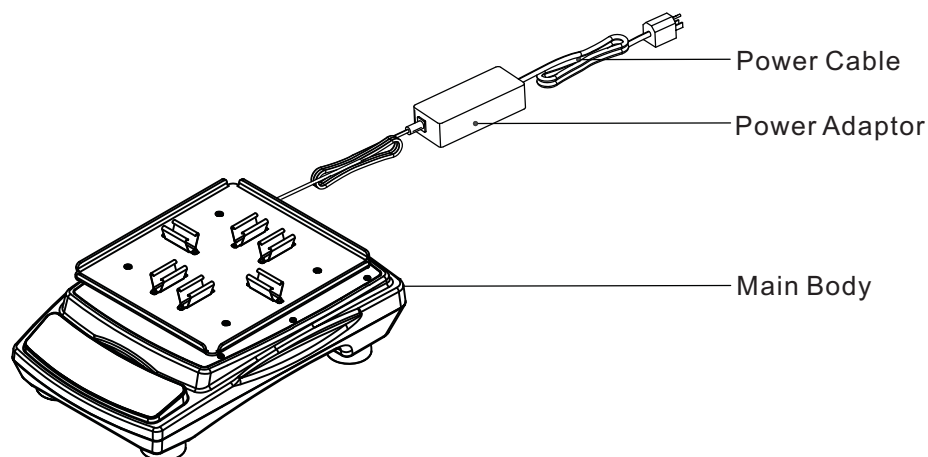
1. Inspect package and contents upon receipt of the instruments. If the package is severely damaged or if there are any missing pieces, please contact the manufacturer immediately.
2. Unpack the instrument, ensure all parts of the instrument and accessories are not missing or damaged. Make sure to take out all the components before discarding the packing. If there are any missing or damaged pieces, please contact the manufacturer immediately.
3. Place the instrument on a level and firm surface to avoid vibration and noise.

1.1 Packing List

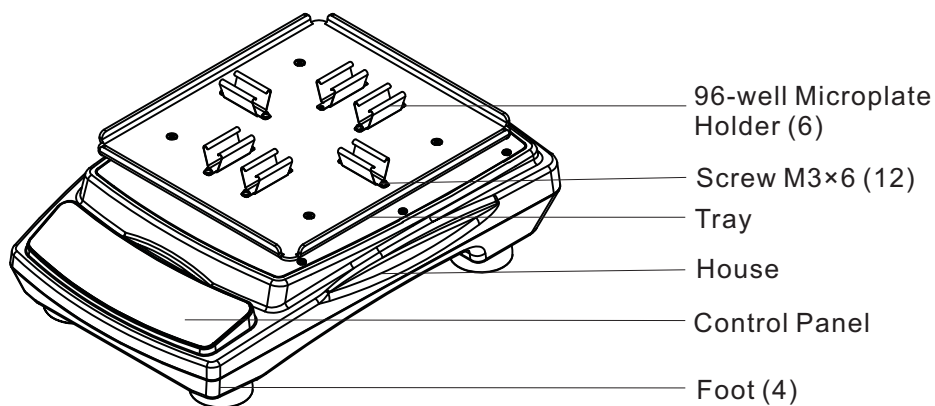
Table -1 Packing List

| Cat. No | 88861023 | 88861024 | Figure |
|---------------------------------|------------------------------|---|--|
| Model | Microplate Shaker US plug | Microplate Shaker International plug |  |
| 96-well microplate holder | 6 | 6 |  (Assembly on the plate) |
| General Power Adaptor | 1 | 1 |  |
| US Plug | 1 | N/A |  |
| CN Plug | N/A | 1 |  |
| EU Plug | N/A | 1 |  |
| UK Plug | N/A | 1 |  |
| M3×6 Screw | 12 | 12 |  |
| Screw Driver | 1 | 1 |  |

1.2 Connections



1.3 Structure Diagram



Section 2 Overview

2.1 Specifications

Rotation Speed

| | |
|------------------|---|
| Range | 150 to 1000rpm |
| Orbit Diameter | Ø 2.5mm |
| Speed Accuracy | ±1% of set speed up to 299rpm ±2% 300 to 1000rpm |
| Display | LED |
| Display Accuracy | 1 rpm |

Note: Maximum speed may vary with heavy or unbalanced loads.

Load

| | |
|--|--|
| Maximum Load | 1 kg (Clamps included) |
| Maximum Capacity (Centered on tray) | 96-well Microplate-4 standard 6 with optional accessory |

Power Supply

| | |
|-------------|-----------------------------|
| Requirement | AC100-240V ,50Hz/60Hz, 0.2A |
|-------------|-----------------------------|

Time

| | |
|--------------|------------------|
| Timing Range | 0min to 99h59min |
|--------------|------------------|

Size

| | |
|----------------------|-----------------------------------|
| Overall Dimensions | 415×293×143mm(16.3×11.5×5.6inch) |
| Tray Dimensions | 320×260mm(12.6×10.2inch) |
| Packaging Dimensions | 536×501×346mm(21.1×19.7×13.6inch) |

Weight

| | |
|--------------|----------------|
| Net Weight | 11.6Kg(25.5lb) |
| Gross Weight | 16Kg(35.23lb) |

Others

| | |
|-------------|-----------------------------|
| Certificate | ROHS, WEEE, cCSAus, CE Mark |
|-------------|-----------------------------|

2.2 Environmental Conditions

Application Environmental Conditions: indoor use

| | |
|-------------|-------------|
| Altitude | ≤2,000 m |
| Temperature | 5°C to 40°C |
| Humidity | 20% to 85% |

Storage Environmental Conditions

| | |
|-------------|----------------------------|
| Altitude | ≤2,000 m |
| Temperature | 0°C to 60°C |
| Humidity | 20% to 90%, non-condensing |

2.3 Safety Instructions

Please read the entire instruction manual before operating the Microplate Shaker.



WARNING DO NOT use the Microplate Shaker in a hazardous atmosphere or with hazardous materials for which the unit was not designed. Also, the user should be aware that the protection provided by the equipment may be impaired if accessories used are not provided or recommended by the manufacturer, or are used in a manner not specified by the manufacturer.

CAUTION ! To avoid electrical shock, completely cut off power to the unit by disconnecting the power cord from the unit or unplug from the wall outlet.

Disconnect unit from the power supply prior to maintenance and service. Any spills should be removed promptly. Biohazard spills should be cleaned using approved liquid promptly. Solvent spills are a fire hazard. Stop the unit immediately, and DO NOT operate until clean up is complete and vapors have dissipated.

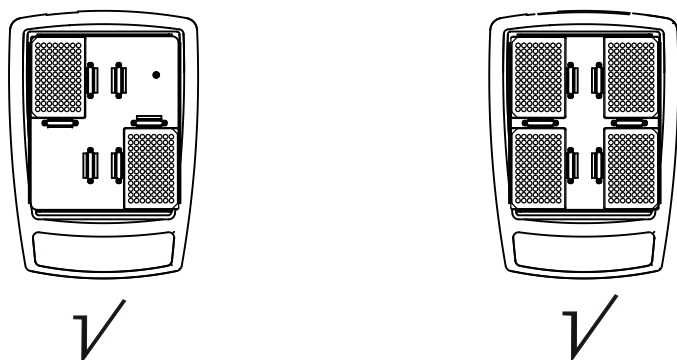
DO NOT immerse the unit for cleaning.

DO NOT operate the unit if it shows signs of electrical or mechanical damage.

Placement of Loads

Please place loads symmetrically during operation.

Symmetrical placement



Application areas of this microplate shaker include gel colorization/ decolorization, sample cleaning, antibody staining, hybridization, immunoprecipitation, blot, and small volume tissue culture.

2.4 Capacity and Speed

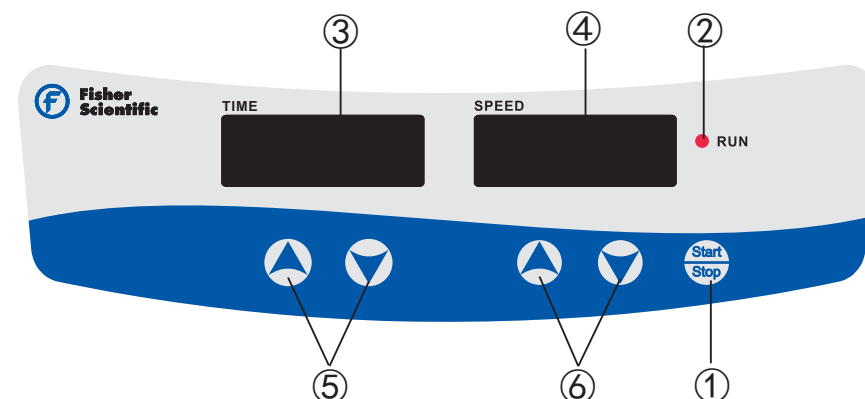
| Load Type | Liquid Capacity | Max Speed |
|--------------------|-----------------|-------------|
| 96-well Microplate | 1/2-well deep | 150-1000rpm |
| 96-well Microplate | 2/3-well deep | 150-800rpm |

Warning: The rotation speed is inversely proportional to the load. When the instrument is running, it is recommended to adjust the rotation speed from low to high step by step and run the instrument at an appropriate speed to avoid spillage of liquids.

Section 3 Operation

This chapter covers the control panel and its operation.

3.1 Operations of the Control Panel



The front panel of the Microplate Shaker contains all the controls needed to operate the unit.

1. Start/Stop button: Start or stop the instrument.
2. RUN indicator light: The light is on when the instrument is running and off when the instrument is in standby.
3. TIME display window: The window shows cumulative time (in continuous mode) or remaining time (in timer mode). The range of time displayed is 0 to 99 hours and 59 minutes. The accuracy is 1 minute.
4. SPEED display window: The window shows set speed (when the instrument is in standby) or current speed (when the instrument is running).
5. Set Time Buttons: UP/DOWN Arrow buttons are used to increase/ decrease the set time of the instrument.
6. Set Speed Buttons: UP/DOWN Arrow buttons are used to increase/ decrease the set speed of the instrument.

Preparation

1. Connect all the components according to the figures shown on page 1-3 of this manual. Use grounded power outlet.
2. Press down the power switch on the back right side of the instrument and put it to the "I" state and then the instrument is in standby.

3.2 Settings

Time Settings

1. Continuous mode

Press the “▲” or “▼” arrow button below the TIME display window. When the number shown on the display window starts flashing, press “▼” arrow button to decrease the time to 00:00 and then release the button. The time setting is finished after the number shown on the display window has flashed twice.

2. Timer mode

Press the “▲” or “▼” arrow button below the TIME display window. When the number shown on the display window starts flashing, press “▲” or “▼” arrow button to increase or decrease the time value. Release the button when the time shown on the display window reaches the set value. The time setting is finished after the number shown on the display window has flashed twice.

Speed Settings

Press the “▲” or “▼” arrow button below the SPEED display window. When the number shown on the display window starts flashing, press “▲” or “▼” arrow button to increase or decrease the speed value. Release the button when the speed shown on the display window reaches the set value. The speed setting is finished after the number shown on the display window has flashed twice.

Note: press the “▲” or “▼” arrow button for a longer time to accelerate the setting.

Run and Stop

1. Continuous Mode

Press “Start/Stop” button and the instrument will start running with the specified settings and the RUN indicator light will be on. The TIME display window will show the cumulative time and the SPEED display window will show the current speed. Press “Start/Stop” button again and the instrument will slow down until it stops. The instrument will then be in standby and the two display windows will show the set values.

2. Timer Mode

Press “Start/Stop” button and the instrument will start running with the specified settings and the RUN indicator light will be on. The TIME display window will show the remaining time and the SPEED display window will show the current speed. Press “Start/Stop” button again and the instrument will slow down until it stops. The instrument will then be in standby and the two display windows will show the set values.

Finish Operation

After the operation is finished, press the power switch at the back right side the instrument and put it into the “O” state. Unplug the instrument and store the instrument according to the storage guide.

Note:

To ensure shaking operation smooth and steady, it may take 1 minute for the microprocessor control system to accelerate the tray to the set speed.

Alarm Instructions

1. During operation, the alarm will sound after 10 seconds if the actual rotation speed of the unit is 0 or higher than 1000 RPM.
2. During operation, the alarm will sound after 10 seconds if the unit is running steadily (running steadily means the unit has been running at the actual speed which is within ± 10 RPM of the set speed for 2 seconds).
3. After the instrument alarms, LED RUN indicator light will go off, LED SPEED window will show “ERR1”, and the machine will stop running, Press any key to put the instrument in standby.
4. After the timer goes off, the buzzer will alarm and the instrument will stop running automatically.

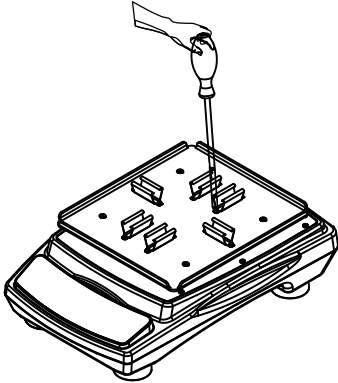
| Set Rotation Speed | Actual Rotation Speed | Alarm Time |
|--------------------|--|------------------|
| (150, 300) | Lower 10 RPM than the set speed and no more than 50% of the set speed | After 10 seconds |
| | More than 10 RPM than the set speed and no more than 150% of the set speed | After 10 seconds |
| | Lower 10 RPM than the set speed and lower than 50% of the set speed | After 2 seconds |
| | More than 10 RPM than the set speed and more than 150% of the set speed | After 2 seconds |
| (301, 1000) | Lower 10 RPM than the set speed and no more than 70% of the set speed | After 10 seconds |
| | More than 10 RPM than the set speed and no more than 130% of the set speed | After 10 seconds |
| | Lower 10 RPM than the set speed and lower than 70% of the set speed | After 2 seconds |
| | More than 10 RPM than the set speed and more than 130% of the set speed | After 2 seconds |

Power Recovery

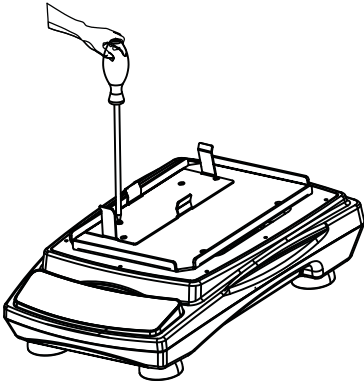
If the power supply is cut off suddenly while the instrument is in operation, the unit will automatically run at the previously set parameter upon power restoration. The display window will flash. Press any button to stop flashing.

3.3 Installation of Accessories

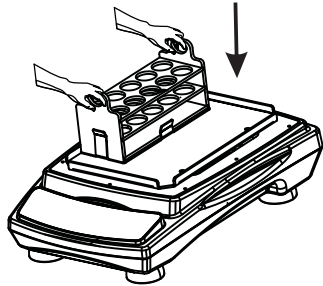
1. Unscrew the stainless steel clip on the tray with a screwdriver.



2. Place the test tube rack holder onto the tray and fasten the 4 sunk screws.



3. Vertically clip the test tube rack into the holder and make sure there is no gap between the rack and the holder.



4. Insert the test tube.

Note: When using single test tube, it is recommended not to set the speed too high because of load imbalance.

Section 4 Safety Tips and Maintenance

Safety Tips

1. Use independent power supply.
2. Check if the local power supply voltage is suitable for use.
3. Do not drag the power supply cable when unplugging.
4. Do not use non-specified power cable nor damage cable.
5. Service should only be performed by a qualified professional.
6. The power supply must be unplugged under the following situations:
 - a. when the unit is moved
 - b. when the electrical cabinet or the moving component is opened
 - c. when the equipment is malfunctioning
 - d. when the equipment is not in use

Maintenance

- a. This instrument uses brushless DC motor. It is maintenance free and has a long service time, high quality, and low noise level.
- b. Surface can be cleaned with a mild detergent and water.

Clean Spill

If accidental spillage of liquids caused by mishandling or contained breakage occurs on the surface of the instrument, please shut down the instrument and clean up the liquid immediately.

If the liquid has already spilled into the unit, please cut off the power supply first and immediately clean up the liquid at the surface of the instrument. Then place the instrument in a ventilated and dry environment for 24 hours before reuse. If the instrument is still not functioning after drying for 24 hours, please contact the manufacturer.

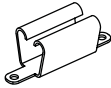
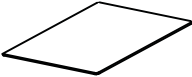
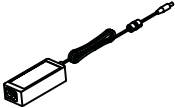
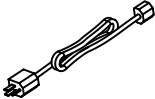
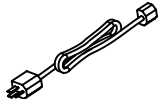
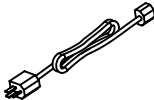
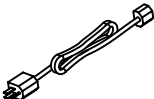
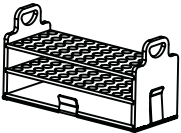
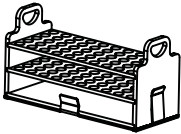
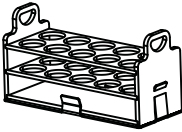
Warning: Disassembling/Assembling without a qualified professional's guidance may cause malfunctioning of the instrument.

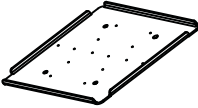
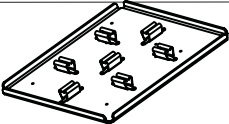
Section 5 Troubleshooting

Please refer to the following table to troubleshoot if any malfunction occurs. If the problem still exists, contact your local sales representative.

| Error | Cause | Solution |
|--|----------------------------------|---|
| Cannot start machine, LED display window off | Power disconnected | Connect the power |
| | Switch off | Switch on |
| | Power adaptor failure | Replace power adaptor |
| No shaking of the tray | Over-weighted or unbalanced load | Adjust the weight and position of load, decrease rotation speed |
| | Electrical malfunction | Contact Fisher Scientific |
| | Mechanical malfunction | Contact Fisher Scientific |
| Loud noise | Microplate loose | Adjust position of the microplate holder |
| | Tray loose | Fasten screws |
| Other | Keep record for maintenance | |

Section 6 Optional Accessories/Spare Parts

| Description | Cat. No. | Dimensions | Figure |
|-----------------------------|----------|---------------------------|---|
| 96-well microplate holder | 88861172 | 54×19×19mm (2pcs/pack) |  |
| Sticky Mat | 88861144 | 140×140mm |  |
| General Power Adaptor | 88861128 | AC 100~240V, 50/60HZ |  |
| US Plug | 88861129 | 125VAC,10A, 1.8m |  |
| CN Plug | 88861130 | 250VAC,10A, 1.8m |  |
| EU Plug | 88861131 | 250VAC,10A, 1.8m |  |
| UK Plug | 88861132 | 250VAC,10A, 1.8m |  |
| 1.5ml/2.0ml Micro Tube Rack | 88861101 | 195×84×100mm |  |
| 15ml Centrifuge Tube Rack | 88861102 | 195×84×100mm |  |
| 15ml Centrifuge Tube Rack | 88861103 | 195×84×100mm |  |

| Description | Cat. No. | Dimensions | Figure |
|-----------------------|----------|----------------|---|
| Platform Large | 88861171 | 298×274mm |  |
| 6 Well Plate Assembly | 88861173 | 298×274×21.5mm |  |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Section 7 **Warranty**

When used in laboratory conditions and according to these operation instructions and maintenance, this product is warranted for 24 months against defective materials or workmanship. The 24 month warranty period begins from the delivery date of this product.

For product quality or performance issues, contact Fisher Scientific Customer Service.