fisherbrand

Operations Manual

Nutating Mixer Fixed Speed
Nutating Mixer Var. Speed
3D Platform Rotator

V1 12/05/17

fisher scientific
part of Thermo Fisher Scientific

This manual covers the model shown below

NA Model	EU Model	Voltage	Description
88861041	N/A	110V	Nutating Mixer Fixed Speed 120V
88861042	15584070	220V	Nutating Mixer Fixed Speed 230V
88861043	N/A	100~240V	Nutating Mixer Var. Speed US
88861044	15594070	100~240V	Nutating Mixer Var. Speed Intl
88861045	N/A	100~240V	3D Platform Rotator US plug
88861046	15504080	100~240V	3D Platform Rotator Intl plug

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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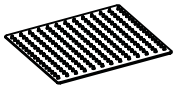
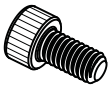
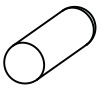
Contents

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

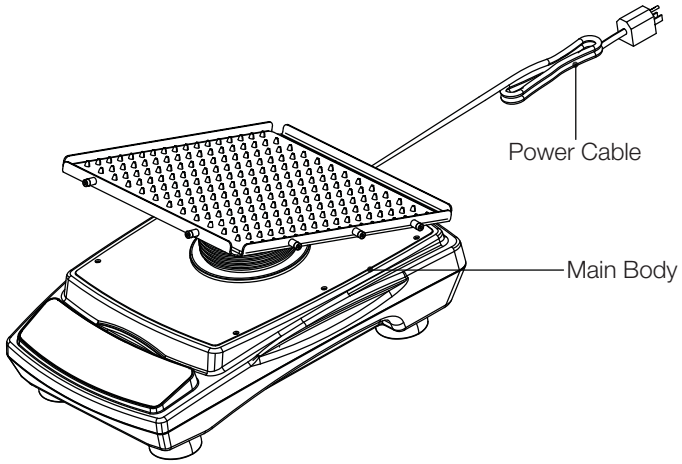
Table -1 Packing List

Cat. No NA/EU	88861041	88861042 /15584070	88861043	88861044 /15594070	88861045	88861046 /15504080	Figure
Model	Nutating Mixer Fixed Speed 120V	Nutating Mixer Fixed Speed 230V	Nutating Mixer Var. Speed US	Nutating Mixer Var. Speed Intl	3D Platform Rotator US plug	3D Platform Rotator Intl plug	
*Dimpled Rubber Mat	1	1	1	1	1	1	
General Power Adaptor	N/A	N/A	1	1	1	1	
US Plug	1	N/A	1	N/A	1	N/A	
CN Plug	N/A	1	N/A	1	N/A	1	
EU Plug	N/A	1	N/A	1	N/A	1	
UK Plug	N/A	1	N/A	1	N/A	1	
*Screw for Rubber Strip	10	10	10	10	10	10	
Rubber Strips	6	6	6	6	6	6	
Fuse	2	2	N/A	N/A	N/A	N/A	

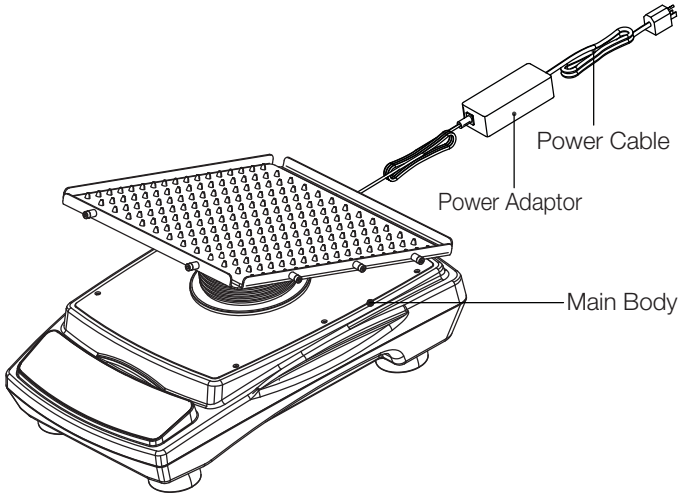
*Has been installed on the instrument

1.2 Connections

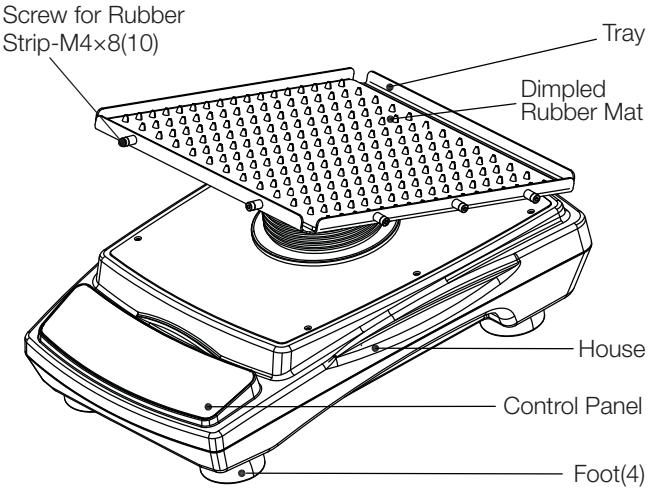
Nutating Mixer Fixed Speed



Nutating Mixer Var. Speed/3D Platform Rotator



1.3 Structure Diagram



Section 2 Overview

2.1 Specifications

Nutating Mixer Fixed Speed		
Cat. No. NA/EU	88861041	88861042 /15584070
Speed	24rpm	20rpm
Speed Accuracy	±1rpm	
Tilt Angle	20°	
Tilt Angle Accuracy	±1°	
Rotation Angle	0 to 360°	
Maximum Load (Centered on tray)	0.8kg	
Requirement	110V, 60z, 0.1A	220V, 50Hz, 0.05A
Overall Dimensions	415×293×255mm(16.3×11.5×10.0in.)	
Tray Dimensions	316×276×17mm(12.4×10.9×0.7in.)	
Package Dimensions	536×501×346mm(21.1×19.7×13.6in.)	
Net Weight	5.9kg(13lb)	
Gross Weight	7.9kg(17.4lb)	
Noise Level	< 55 dB with no load	
Certificate	ROHS, WEEE, cCSAus, CE Mark	

Nutating Mixer Var. Speed / 3D Platform Rotator			
Cat. No. NA/EU	US plug Intl plug	88861043 88861044/15594070	88861045 88861046/15504080
Speed Range		2 to 60rpm	2 to 80rpm
Display Mode		LED	
Display Accuracy		1rpm	
Speed Accuracy		±1rpm	
Tilt Angle		20°	7°
Tilt Angle Accuracy		±1°	
Rotation Angle		0 to 360°	
Maximum Load (Centered on tray)		0.8kg	
Timer Range		1min to 99h59min	
Display Mode		LED	
Requirement		100~240V, 50Hz/60Hz,1A	100~240V, 50Hz/60Hz, 0.8A
Overall Dimensions		415×293×244mm (16.3×11.5×9.6in.)	415×293×178mm (16.3×11.5×7.0in.)
Tray Dimensions		316×276×17mm(12.4×10.9×0.7in.)	
Package Dimensions		536×501×346mm(21.1×19.7×13.6in.)	
Net Weight		6.8kg(15.0lb)	6.7kg(17.4lb)
Gross Weight		8.8kg(19.4lb)	8.7kg(19.1lb)
Noise Level		< 55 dB with no load	
Certificate		ROHS, WEEE, cCSAus, CE Mark	

2.2 Environmental Conditions

Application Environmental Conditions: indoor use

Temperature	5 to 40℃（41 to 104℉）
Humidity	20% to 85%,
Altitude	≤2,000 m
Voltage Fluctuation	±10% of the nominal voltage

Storage Environmental Conditions

Temperature	0 to 60℃（36 to 124 ℉）
Humidity	20% to 90%, non-condensing

2.3 Safety Instructions

Please read the entire instruction manual before operating the Nutating Mixer/3D Platform Rotator.

⚠ **WARNING DO NOT** use the Nutating Mixer/3D Platform Rotator 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 no 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. Bio hazard 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.

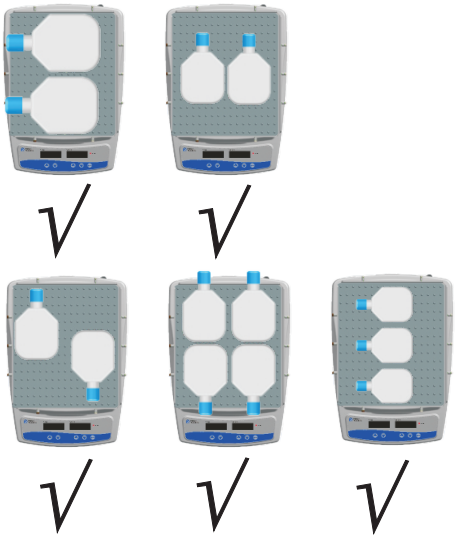
Position of Loads

Place the loads in the recommended positions below:

1. Place load at the center of the tray
2. Place loads symmetrically around the center of the tray
3. Make sure to use rubber strips to fasten containers onto the tray

Centered placement

Symmetrical placement

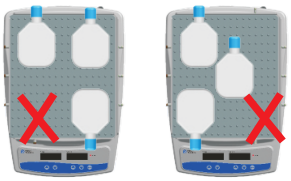


Asymmetrical placement

Cornered placement

Sided placement

Other placement



⚠ Asymmetric loading or unloading may affect the normal operation of the instrument and may even cause unpredictable damage.

2.4 Loads and Speed

Nutating Mixer Var. Speed

Cell Culture Flask Specification (cm2)	≤Capacity (ml)	Maximum Speed (rpm)
25	30 / 40	60
75	225	60
150	450	60
175	600	60
225	800	60

3D Platform Rotator

Cell Culture Flask Specification (cm2)	≤Capacity (ml)	Maximum Speed (rpm)
25	30 / 40	80
75	225	80
150	450	80
175	600	80
225	800	80

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

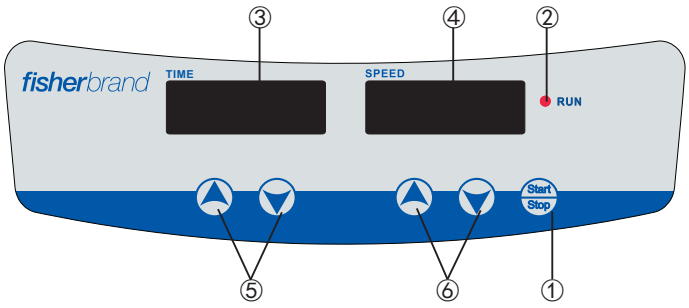
For safety, please always using rubber strip to hold samples in place.

Section 3 Operation

This chapter covers the control panel and its operation.

3.1 Control Panel

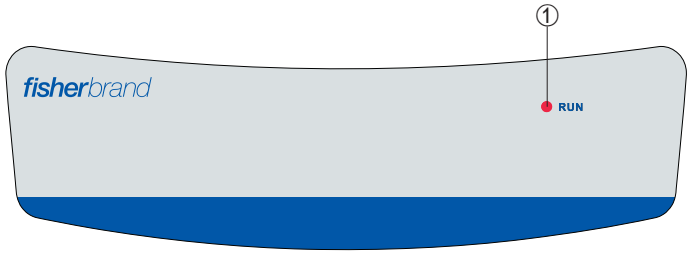
Nutating Mixer Var. Speed/3D Platform Rotator



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.

Nutating Mixer Fixed Speed



1.RUN indicator light: The light is on when the instrument is running.

3.2 Installation

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 "|" state and then the instrument is in standby.

3.3 Settings

Nutating Mixer Variable Speed/3D Platform Rotator

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.

Nutating Mixer Fixed Speed

Turn the power switch to “|” position. The RUN indicator light will be on and the instrument will start rotating at the fixed speed.

Finish Operation

After the operation is finished, please 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.

Alarm System

When the normal operation is obstructed or stopped by malfunctioning, the instrument will stop running automatically within 2 minutes and the alarm will sound.

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.

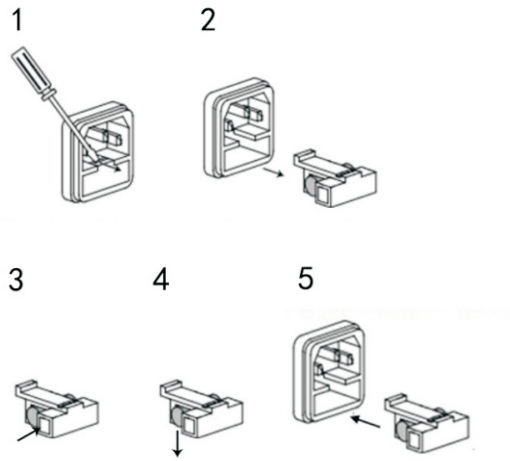
Section 4 Safety Tips and Maintenance

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 or 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 a high-accuracy motor. It is maintenance free and has a long service time, high quality, and low noise level.
b. Surfaces can be cleaned with a mild detergent and water. Liquid is not allowed inside the dust cover.
c. Two fuses are installed inside the power socket at the back of the Nutating Mixer Fixed Speed (One is for work and the other is for backup). The installation of the fuses is shown in the figure below:



Warning: Avoid dripping detergent or water into the instrument during cleaning.

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

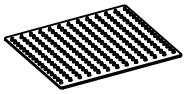
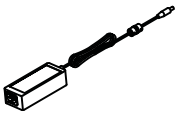
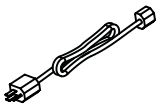
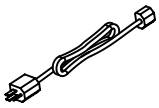
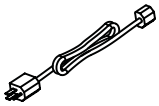
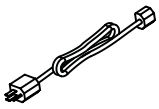
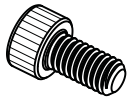
Warning: Disassembling/Assembling without a qualified professional's guidance may cause malfunctioning of the instrument.

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
	Power switch off	Turn power 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	Load moving	Change Dimpled Rubber Mat or fasten load
	Tray loose	Fasten fixing screws on the tray
	House loose	Fasten fixing screws at the House
Other	Keep record for maintenance	

Section 6 Optional Spare Parts

Description	NA Cat. No.	EU Cat. No.	Dimensions	Max. Qty	Figure
Dimpled Rubber Mat	88861198	15594130	298×258mm	1	
Rubber Strips	88861178	15594120	180×7mm (6pcs/pack）	5	
General Power Adaptor	88861154	15554120	AC 100~240V, 50/60HZ	1	
Power Cable US Plug	88861155	N/A	125VAC, 10A, 1.8m	1	
Power Cable CN Plug	88861156	N/A	250VAC, 10A, 1.8m	1	
Power Cable EU Plug	88861157	15564120	250VAC, 16A, 1.8m	1	
Power Cable UK Plug	88861158	15574120	250VAC,13A, 1.8m	1	
Screw for Rubber Strip	88861199	15504140	M4×8（8pcs/pack）	10	

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.

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