

USER GUIDE

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HulaMixer® Sample Mixer

Catalog Number 15920D

Revision 004

For Research Use Only. Not for use in diagnostic procedures.

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Product Contents

HulaMixer[®] Sample Mixer Contents

The components of the HulaMixer[®] Sample Mixer are listed in the following table. See page 13 for product specifications.

Component	Quantity
HulaMixer [®] Sample Mixer	1
HulaMixer [®] Platforms	2
External AC/DC adapter (100–240 V, 1.25 A)	1
HulaMixer [®] Sample Mixer User Guide	1
Quick Reference Card	1

Upon Receipt of the HulaMixer[®] Sample Mixer

Examine the unit carefully for any damage incurred during transit. File any damage claims with the carrier. The warranty does not cover in-transit damage.

Unpacking the HulaMixer[®] Sample Mixer

Remove packing materials carefully, and retain for future shipment or storage of the unit.

Product Use

For Research Use Only. Not for use in diagnostic procedures.

General Information

Getting Started

About this Guide

IMPORTANT! Before using this product, read and understand the “Safety Information” appendix (page 15) in this document. Operation of the HulaMixer[®] Sample Mixer is subject to the conditions described in this User Guide. The protection provided by the equipment may be impaired if the equipment is used in a manner not specified by Life Technologies.

Set Up

The unit must be stored and transported in a horizontal position.

1. Place the unit on a horizontal, even work surface.
 2. Plug the external power supply connector into the 12 V socket at the rear side of the unit.
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Platform Replacement

1. Loosen the two fixing screws and remove the platform.
 2. Install the new platform and secure it with the screws.
 3. Tighten the two fixing screws.
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About the HulaMixer® Sample Mixer

Product Description

HulaMixer® Sample Mixer provides:

- Orbital rotational motion
 - Reciprocal motion
 - Vibrating motion of the platform in different planes
-

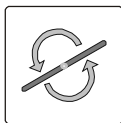
Principle of Operation

Operation of the HulaMixer® Sample Mixer is based on rotational movement of the platform in the vertical plane to provide effective mixing of biological liquids in tubes.

The microprocessor control allows the user to set a program which can deliver not only separate mixing motions, but also allows programming segments of different motion types consecutively in cycles of motions.

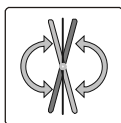
Types of Motion

The HulaMixer® Sample Mixer provides 3 types of motion, which can be used separately (except for vibration mode, which works in conjunction with reciprocal motion mode) and consecutively in a cycle:



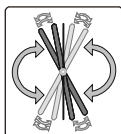
Rotating motion (Orbital)

Simple, even, circular motion used in rotators, with adjustable speed from 1–100 rpm.



Reciprocating rotating motion (Reciprocal)

Vertical rotation with changing direction of rotation. Adjustable turning angle (from 1–90° from the vertical plane, increments of 1°) with adjustable speed from 1–100 rpm. For reciprocal motion, there is a pause function (from 0–5 seconds, 1 second increments); this can be set in the Vibration/pause mode.



Vibration mode (Vibro)

Intensive vibration/vortex function with small amplitude (from 1–5°) is performed during pause of reciprocal motion. Intensive vibration requires that the pause time (see page 12) is activated. Setting the vibration angle to 0° will abolish all vibration (including the weak vibration associated with reciprocal motion), but only if the pause time is activated.

Continued on next page

About the HulaMixer® Sample Mixer, Continued

- Setting Options**
- Speed (rpm) and time (seconds) of rotational motion (360°) of the platform for program segments from 0–250 seconds, or non-stop (continuous rotation) at 1–100 rpm.
 - Speed (rpm), turning angle (1–90° from the vertical plane), and time (0–250 seconds for program segments, or non-stop) of reciprocal motion when the direction of the platform’s rotational motion is changing in turns within the limits of the turning angle.
 - Program segments of vibrating motion of the platform (turning angle 1–5°, and duration of 1–5 seconds) run on the borders of reciprocal motion segment. It is available only when the reciprocal motion is ON.
 - Pauses of short duration (1–5 seconds), for temporary platform motion stops, may be programmed on the borders of reciprocal motion segments by setting the vibrating motion turning angle to zero. It is available only when the reciprocal motion is ON.
 - Operating time from 1 minute to 24 hours, or non-stop.
-

- Applications**
- HulaMixer® is designed for mixing biological solutions, cell suspensions, Dynabeads®, as well as incubation and cultivation of biological liquids according to the operator set program.
 - The device is applicable in all areas of laboratory research in biotechnology, microbiology, chemistry, and medicine.
 - HulaMixer® is designed for operation in closed laboratory rooms, cold rooms, and incubators at temperatures from 4°C to 40°C.
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Operation of the HulaMixer® Sample Mixer

Basic Operation

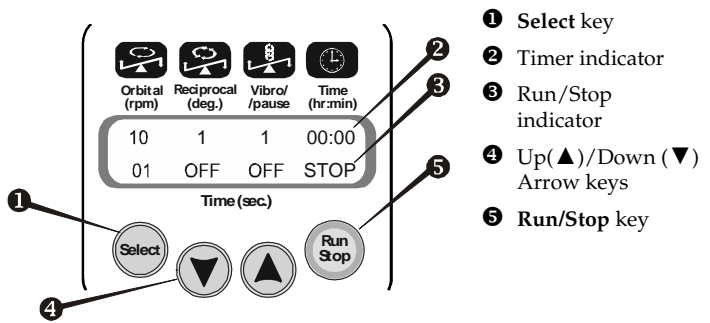
Experienced Users

See the included Quick Reference Guide on how to use the mixer, especially for use with Dynabeads® products.

Loading Samples

When loading samples, use an even number of tubes arranged symmetrically to the rotation axis to balance the unit during operation.

HulaMixer® Control Panel



Continued on next page

Basic Operation, Continued

Basic Operation

Note: Refer to HulaMixer® Control Panel (page 8) for location and identification of indicated keys.

1. Connect the AC/DC adapter to the main power supply.
2. Place tubes on one of the platforms.
3. Set the appropriate program and operation time (see Entering Programs, page 10).
4. Press the **Run/Stop** key **5** to start the program.
5. The platform motion begins and the corresponding indication [RUN] **6** and the changing time values are displayed.
6. If the operation time is not set and the timer indicator **2** shows [0:00], pressing the **Run/Stop** key causes continuous operation of the unit until the **Run/Stop** key is pressed again.
7. If the operation time is set then the unit stops after the set time interval has elapsed, (flashing STOP on the display) and a sound signals the end of the operation (press the **Run/Stop** key to stop the signal).
8. For repeat operation of the previous program press the **Run/Stop** key.
9. If necessary, the HulaMixer® Sample Mixer can be stopped at any time during operation by pressing the **Run/Stop** key. Platform motion stops when the platform achieves horizontal position. Pressing the **Run/Stop** key again starts the program from the beginning (countdown timer restarts).

Note: A stepper motor is used in this model. This allows the user to stop the platform with their hand for a moment, without causing damage to the unit. If the platform is stopped by hand during the operation, the program does not stop and the platform motion automatically resumes after the platform is released.

10. To turn off the unit, unplug the AC/DC adapter from the outlet.
-

Entering Programs

Entering Program Segments

Note: Refer to HulaMixer® Control Panel (page 8) for location and identification of the indicated keys.

1. Press the **Select** key **1** to choose the parameter to change (the active parameter is flashing). Use the **▲** and **▼** keys **2** to set the necessary value.

Note: Pressing the **▲** or **▼** key for more than 2 seconds changes the display rapidly.

2. The program can be changed during operation. The last settings are automatically remembered and will display when starting the operations again.
3. The countdown timer is used to control the operation time of programmed motion cycles. The timer can be set for a period from 1 minute to 24 hours (in 1 minute increments).

Note: When setting program parameters for operation with higher loads, the HulaMixer® Sample Mixer may not perform at highest settings in reciprocal and vibration modes. The recommended load is indicated in Product Specifications, page 13.

Programming Motion Cycles

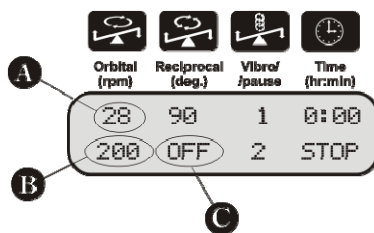
The following program examples show separate motion types and their available combinations into cycles. Set motion parameters as indicated to achieve the motion cycle desired.

Orbital Rotation

Orbital rotation (A): 1–100 rpm.

Orbital rotation time (B): 1–250 seconds.

Reciprocal motion time (C): OFF.

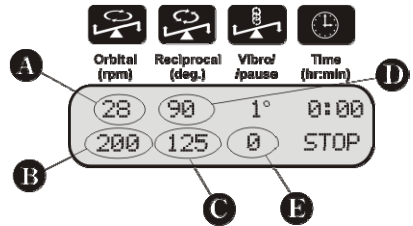


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Entering Programs, Continued

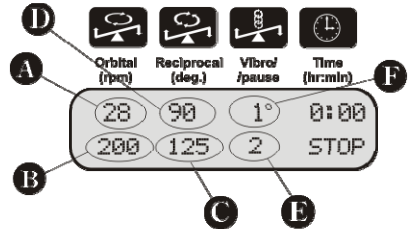
Orbital + Reciprocal Rotation

Orbital rotation (A): 1–100 rpm.
 Orbital rotation time (B): 1–250 seconds.
 Reciprocal motion time (C): 1–250 seconds.
 Reciprocal motion turning angle (D): 1–90°.
 Vibrating motion (E): [0] OFF.



Orbital + Reciprocal + Vibration

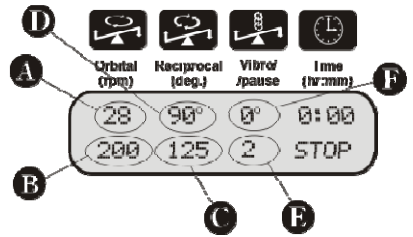
Orbital rotation (A): 1–100 rpm.
 Orbital rotation time (B): 1–250 seconds.
 Reciprocal motion time (C): 1–250 seconds.
 Reciprocal motion turning angle (D): 1–90°.
 Vibrating motion (E): 1–5 seconds.
 Vibrating motion turning angle (F): 1–5°.



Note: If the set time of Reciprocal motion (C) is shorter or equal to the set time of Vibrating motion (E) then the Reciprocal motion will be omitted (Orbital + Vibration).

Orbital + Reciprocal + Pause

Orbital rotation (A): 1–100 rpm.
 Orbital rotation time (B): 1–250 seconds.
 Reciprocal motion time (C): 1–250 seconds.
 Reciprocal motion turning angle (D): 1–90°.
 Vibrating motion/pause (E): 1–5 seconds
 (this is the time of pause duration).
 Vibrating motion turning angle (F): 0°.



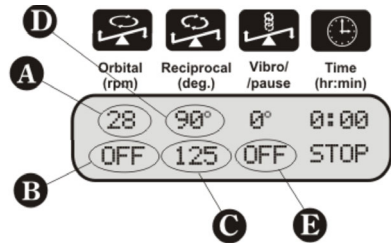
Note: If the set time of Reciprocal motion (C) is shorter or equal to the set time of Vibrating motion/pause mode (E), the Reciprocal motion will be omitted (Orbital + Pause).

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Entering Programs, Continued

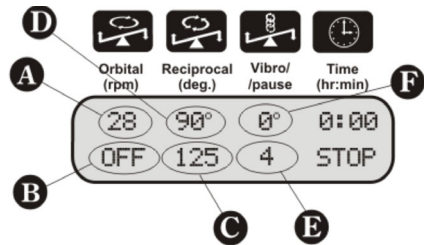
Reciprocal Rotation

Orbital rotation (A): 1–100 rpm.
 Orbital rotation time (B): [0] OFF.
 Reciprocal motion time (C): 1–250 seconds.
 Reciprocal motion turning angle (D): 1–90°.
 Vibrating motion (E): [0] OFF.



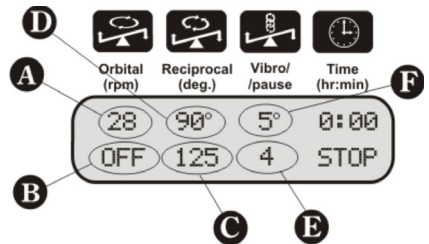
Reciprocal + Pause

Orbital rotation (A): 1–100 rpm.
 Orbital rotation time (B): [0] OFF.
 Reciprocal motion time (C): 1–250 seconds.
 Reciprocal motion turning angle (D): 1–90°.
 Vibrating motion/pause (E): 1–5 seconds
 (this is the time of pause duration).
 Vibrating motion turning angle (F): 0°.



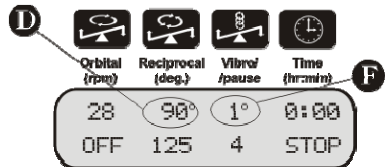
Reciprocal + Vibration Motion

Orbital rotation (A): 1–100 rpm.
 Orbital rotation time (B): [0] OFF.
 Reciprocal motion time (C): 1–250 seconds.
 Reciprocal motion turning angle (D): 1–90°.
 Vibrating motion (E): 1–5 seconds.
 Vibrating motion turning angle (F): 1–5°.



Intensive Vibration/Vortexing

Orbital rotation (A): 1–100 rpm.
 Orbital rotation time (B): [0] OFF.
 Reciprocal motion time (C): 1–250 seconds.
 Reciprocal motion turning angle (D): 90°.
 Vibrating motion (E): 1–5 seconds.
 Vibrating motion turning angle (F): 1°.



Appendix

Product Specifications

HulaMixer® Sample Mixer

Vertical and reciprocal rotation modes

- Speed range 1–100 rpm
- Timer 0–250 seconds
- Vertical rotation movement 360°

Reciprocal rotation mode

- Turning angle 1–90° (increment 1°)
- Timer 0–250 seconds

Vibration/pause mode

- Turning angle 0–5° (increment 1°)
- Timer 0–5 seconds
- Pause 0–5 seconds

PRS-26 platform capacity

- Microcentrifuge tubes, vacutainers, and 15-mL tubes 26 pcs

PRS-5/12 platform capacity

- 50-mL tubes 5 pcs
- Microcentrifuge tubes and vacutainers 12 pcs

Maximum loading 0.5 kg

Program timer 0–24 hours
(increment 1 minute)
or non-stop

Power (external) 12 V, 1.25 A

Dimensions (W × D × H) 365 × 195 × 155 mm




Weight <1.8 kg

Operating Conditions

Operation of the HulaMixer® Sample Mixer is subject to the following conditions:

- Indoor use.
 - Altitude below 2000 meters.
 - Temperature range: 4°C to 40°C.
 - Maximum relative humidity: 80% for temperatures up to 31°C, decreasing linearly to 50% relative humidity at 40°C.
-

Explanation of Symbols and Warnings

Conformity mark	Description
	Indicates conformity with safety requirements for Canada and U.S.A.
	Indicates conformity with European Union requirements for safety and electromagnetic compatibility.
	Indicates conformity with Australian standards for electromagnetic compatibility.



Caution, risk of danger.
Consult the manual for further safety information.



Do not dispose of this product in unsorted municipal waste.
CAUTION! To minimize negative environmental impact from disposal of electronic waste, do not dispose of electronic waste in unsorted municipal waste. Follow local municipal waste ordinances for proper disposal provision and contact customer service for information about responsible disposal options.

Safety Information

General Safety **WARNING!** Using this product in a manner not specified in the user documentation may result in personal injury or damage to the instrument or device. Ensure that anyone using this product has received instructions in general safety practices for laboratories and the safety information provided in this document.

- Before using an instrument or device, read and understand the safety information provided in the user documentation provided by the manufacturer of the instrument or device.
 - **CAUTION!** The unit should be saved from shocks or drops.
 - **CAUTION!** After transport or storage in humid conditions, allow the unit to completely dry for 2–3 hrs before connecting to the supply voltage.
 - **CAUTION!** Do not modify the design of the unit.
 - **CAUTION!** Place the unit on a stable surface that can withstand the shaking or rotational movement of the unit during operation..
-

Electrical Safety

- Connect only to a power supply with a voltage corresponding to that on the serial number label.
 - Use only the external power supply connector provided with this product.
 - Ensure that the external power supply connector is easily accessible during use.
 - Before moving the unit, disconnect the external power supply from the power outlet.
 - If liquid is spilled inside the unit, disconnect it from the external power supply and have it checked by a competent person.
-

Safety Information, Continued

During Operation

- Do not operate the unit in environments with aggressive or explosive chemical mixtures.
 - Do not operate the unit if it is faulty or has been incorrectly installed.
 - For indoor use only.
 - Do not place a load exceeding the maximum loading mentioned in the “Product Specifications” section.
 - When power is restored after interruption the unit turns on automatically and resumes operation (the timer is restarted).
-

Cleaning and De-contamination

CAUTION! Cleaning and Decontamination.

Use only the cleaning and decontamination methods specified in the manufacturer's user documentation. It is the responsibility of the operator (or other responsible person) to ensure the following requirements are met:

- The instrument is properly decontaminated a) if hazardous material is spilled onto or into the equipment, and/or b) prior to having the instrument serviced at your facility or sending the instrument for repair, maintenance, trade-in, disposal, or termination of a loan (decontamination forms may be requested from customer service).
 - Before using any cleaning or decontamination methods (except those recommended by the manufacturer), users should confirm with the manufacturer that the proposed method will not damage the equipment.
 - Clean the unit only with a damp cloth; do not use chemical cleaning agents.
-

Technical Support

Obtaining Support

For the latest services and support information for all locations, go to www.lifetechnologies.com.

At the website, you can:

- Access worldwide telephone and fax numbers to contact Technical Support and Sales facilities
 - Search through frequently asked questions (FAQs)
 - Submit a question directly to Technical Support (techsupport@lifetechnologies.com)
 - Search for user documents, Safety Data Sheets (SDSs), vector maps and sequences, application notes, formulations, handbooks, certificates of analysis, citations, and other product support documents
 - Obtain information about customer training
 - Download software updates and patches
-

Safety Data Sheets (SDS)

Safety Data Sheets (SDSs) are available at www.lifetechnologies.com/support.

Limited Product Warranty

Life Technologies Corporation and/or its affiliate(s) warrant their products as set forth in the Life Technologies' General Terms and Conditions of Sale found on Life Technologies' website at www.lifetechnologies.com/termsandconditions. If you have any questions, please contact Life Technologies at www.lifetechnologies.com/support.

Guarantee

When used in laboratory conditions and according to these working instructions, this product is guaranteed for two years from the shipping date against faulty materials or workmanship.

Purchaser Notification

Limited Use Label License: Research Use Only

The purchase of this product conveys to the purchaser the limited, non-transferable right to use the purchased amount of the product only to perform internal research for the sole benefit of the purchaser. No right to resell this product or any of its components is conveyed expressly, by implication, or by estoppel. This product is for internal research purposes only and is not for use in commercial services of any kind, including, without limitation, reporting the results of purchaser's activities for a fee or other form of consideration. For information on obtaining additional rights, please contact **outlicensing@lifetech.com** or Out Licensing, Life Technologies, 5791 Van Allen Way, Carlsbad, California 92008.

General Information

Manufactured for Life Technologies AS, Norway. Life Technologies AS complies with the Quality System Standards ISO 9001:2008 and ISO 13485:2003. HulaMixer® Sample Mixer conforms to the requirement of the following directives:
EMC Directive 2004/108/EC
Low Voltage Directive 2006/95/EC
The HulaMixer® complies with the requirements of the RoHS directive, 2002/95/EC

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