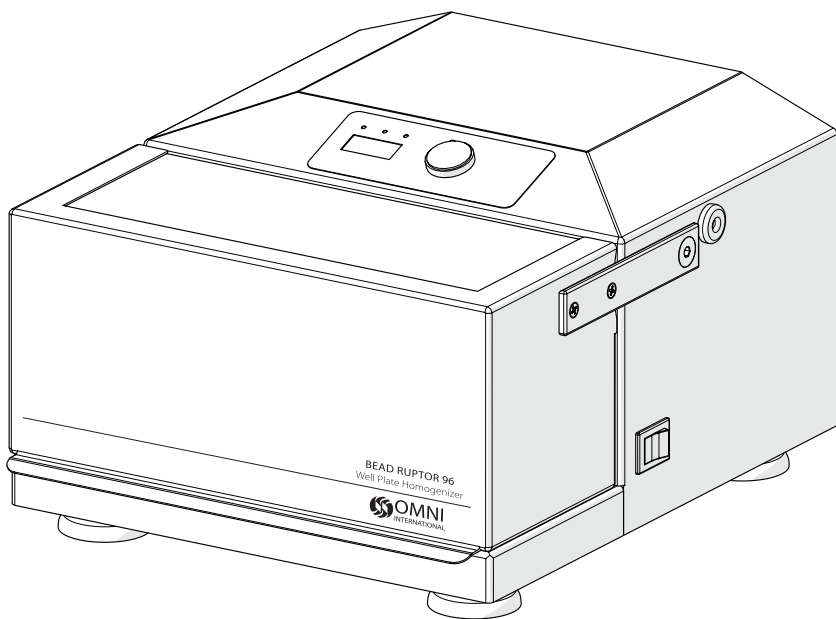


# Bead Ruptor 96

## Well Plate Homogenizer

User Manual





Data herein has been verified and validated. It is believed adequate for the intended use of the instrument. If the instrument or procedures are used for purposes over and above the capabilities specified herein, confirmation of the validity and suitability should be obtained; otherwise Omni International does not guarantee results and assumes no obligation or liability. This publication is not a license to operate under, or a recommendation to infringe upon, any process patents.

This product is warranted to be free from defects in material and workmanship for a period of ONE YEAR from the date of delivery. Omni International will repair or replace and return free of charge any part which is returned to its factory within said period, transportation prepaid by user, and which is found upon inspection to have been defective in materials or workmanship. This warranty does not include normal wear from use; it does not apply to any instrument or parts which have been altered by anyone other than an employee of Omni International nor to any instrument which has been damaged through accident, negligence, failure to follow operating instructions, the use of electric currents or circuits other than those specified on the plate affixed to the instrument, misuse, or abuse. Omni International reserves the right to change, alter, modify, or improve any of its instruments without any obligation whatever to make corresponding changes to any instrument previously sold or shipped.

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This product has been engineered for safety; however, basic safety precautions and common sense must always be demonstrated when using any electrical product.

- DO NOT attempt to modify any part of this product.
- DO NOT allow the machine to be submerged in any liquid.
- DO NOT use in any setting other than an indoor laboratory.
- DO NOT plug power cord into an incorrect outlet or subject it to an incorrect voltage.
- Use this product only for its intended purpose.
- DO NOT use attachments not recommended by the manufacturer.
- DO NOT operate the product if it is damaged in any way.
- Keep this product away from heated surfaces.
- DO NOT modify the plug or cord that is provided. If the plug will not fit the outlet, have the proper outlet installed by a qualified electrician.
- DO NOT operate the product with the safety ground disconnected.

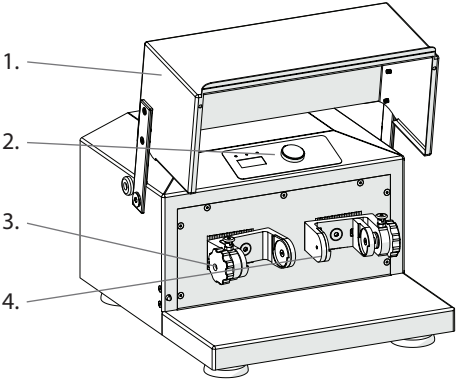
**WARNING: The processing chamber of the Bead Ruptor 96 is enclosed by a strong covering lid. Starting of the machine is possible only with the lid closed. If the lid is open, message "LID" appears on the display, when the START/STOP key is pressed. When message "LID" appears on display, the lid must be closed and the error message cleared by pressing the START/STOP key. The instrument can then be started by pressing the START/STOP key again. If the lid is opened during operation, the machine stops rapidly and message "Er3" appears on display. When message "Er3" appears on display, the machine cannot be restarted by pressing the START/STOP key. The main POWER switch must be turned to OFF and then ON again, to clear the message before instrument operation can proceed.**

#### **MILLING JAR FILL REQUIREMENTS**

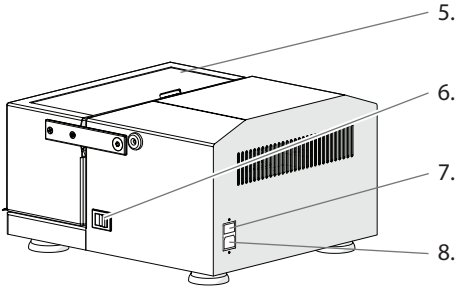
**WARNING: The sample quantity must not be less than 25% of the milling jar capacity. The milling balls may otherwise damage the milling jars. The milling jars and milling balls must be the same material. Otherwise the milling jar could be damaged.**

**WARNING: The instrument must be balanced prior to operation. Do not operate the instrument with only one milling jar or one well plate adapter installed in a single milling jar holder. Both milling jar holders must have either a milling jar (filled with equivalent mass) or well plate adapters. If not balanced damage to the lid is possible.**

# Overview



- 1. Lid
- 2. Control Panel
- 3. Milling Jar holder (left)
- 4. Milling Jar holder (right)



- 5. Lid
- 6. On/Off Switch
- 7. Fuse Compartment
- 8. Power Cord Port

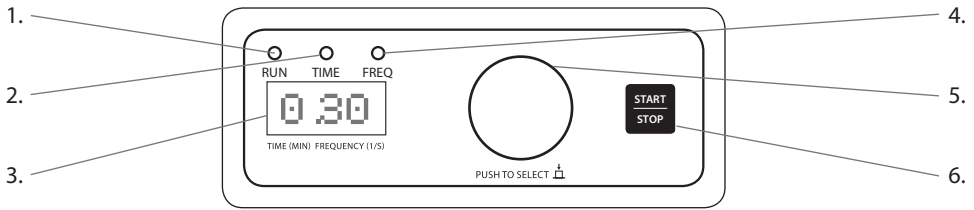
The Bead Ruptor 96 consists of the following:

Description	Quantity
Bead Ruptor 96 Assembly	1
Power Cord	1
Spare Fuse	1
User Manual	1

## Technical Data

Power supply	230V ± 10% - 50/60Hz 115V ± 10% - 50/60Hz
Rated power	200W
Fuses	2 x 2AT 250V (230V) 2 x 5AT 250V (115V)
Vibrational frequency regulation	Digital, from 3 to 30 Hz (180 - 1800 min-1), in 0.1 Hz steps
Timer	5 sec - 99 min, timer HOLD function, in 1 sec steps (below 10 min), or 10 sec steps (above 10 min)
Max. volume of milling cups	50 ml
Max Well Plate Capacity per milling jar holder	1 X 2 ml deep well plate, 2 X 1 mL deep well plate, 3 X standard well plate
Dimensions W x D x H	385 x 420 x 240 mm (465 mm with hood open)
Weight	42 kg
Noise emission (without milling balls)	70 dB(A)
Ambient temperature	5°C - 40°C
Atmospheric humidity	< 85% RH

# Control Panel

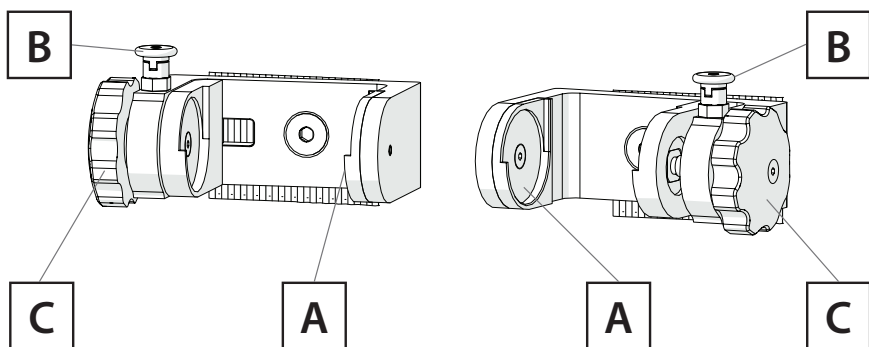


- |                      |                           |
|----------------------|---------------------------|
| 1. Run signal light  | 4. Frequency signal light |
| 2. Time signal light | 5. Control Knob           |
| 3. Display Screen    | 6. Start/Stop button      |

- **RUN** Signal light (green) - lit when the Bead Ruptor 96 is running.
- **TIME** Signal light (yellow) - lit when the Bead Ruptor 96 timer selection is active.
- **FREQUENCY** Signal light (yellow) - lit when the Bead Ruptor 96 frequency selection is active. Frequency is defined as number of wave cycles per second (1/s). Measured in Hz.
- **CONTROL KNOB** (rotate / push) - rotate right (+) Or left (-) to change the Time or Frequency setting values. Push the Control Knob to switch between Time and Frequency settings.
- **START/STOP** button - press to start or stop the cycle.

**WARNING: Only start the Bead Ruptor 96 with the lid in the closed position. The display will read "LID" if the lid is open when attempting to start. Always start and stop the Bead Ruptor 96 with the Start/Stop button.**

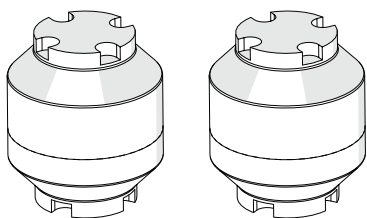
# Milling Jar and Rack Holders



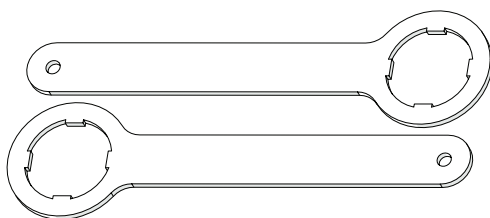
A. Centering Points

B. Locking Pin

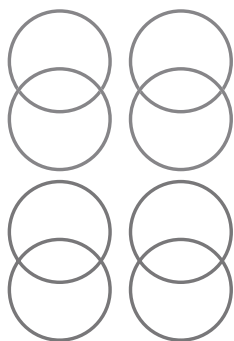
C. Knob



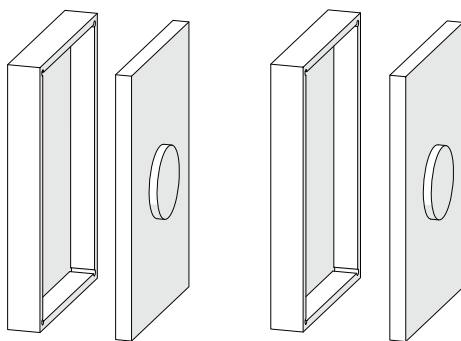
Milling Jars



Jar Wrenches



O-Rings



Well Plate Adapters

# Inserting Milling Jars

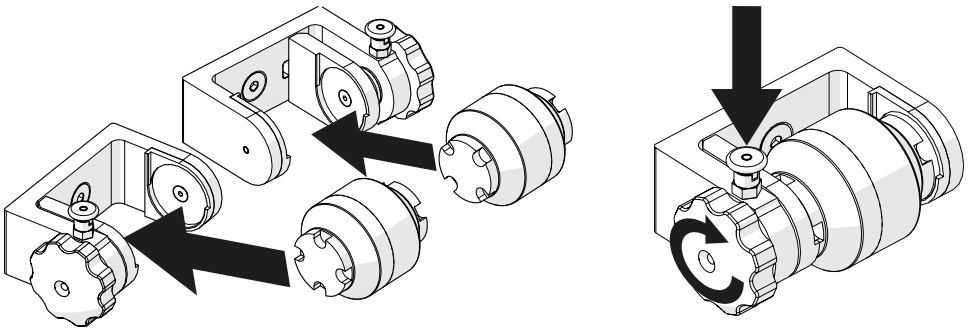
- Fill milling jar with material to be milled. Ensure the two-white o-rings are in place prior to sealing jars.
- Lift the locking pin (B) upwards from the groove and turn it 90° in any direction to unlock.
- Turn the knob (C) counter clockwise all the way to maximize clamping range.
- Turn locking pin 90° and allow it to reengage in locked position.
- Place the milling jar into the milling jar arm and seat it into centering points (A).
- Gently turn knob (C) clockwise until the milling jar fits firmly inside the holder, free of play.
- To remove the milling jar, lift the locking pin (B) and turn it 90° to unlock and turn the knob (C) counter clockwise to loosen. If locking pin is difficult to release turn knob (C) slightly clockwise to release locking pin tension.

**WARNING: Do not force locking pin (B) open. Turn knob (C) clockwise to release.**

**WARNING: Milling jars must be inserted and aligned with centering points (A). If this is not done jars may be ejected during processing.**

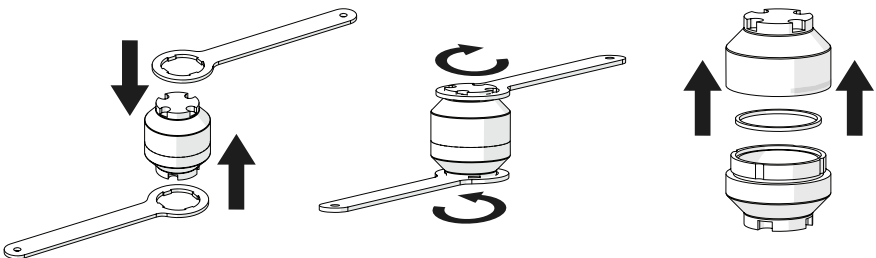
**WARNING: When removing hot or cryogenically cooled milling jars always wear protective gloves.**

**WARNING: It is unlawful to mill flammable or explosive material.**



# Opening Milling Jars

- Obtain two milling jar wrenches
- Place one milling jar wrench on each end of the milling jar
- Turn one wrench counterclockwise while securing the other wrench from moving to loosen jar seal.
- Carefully separate jar halves.



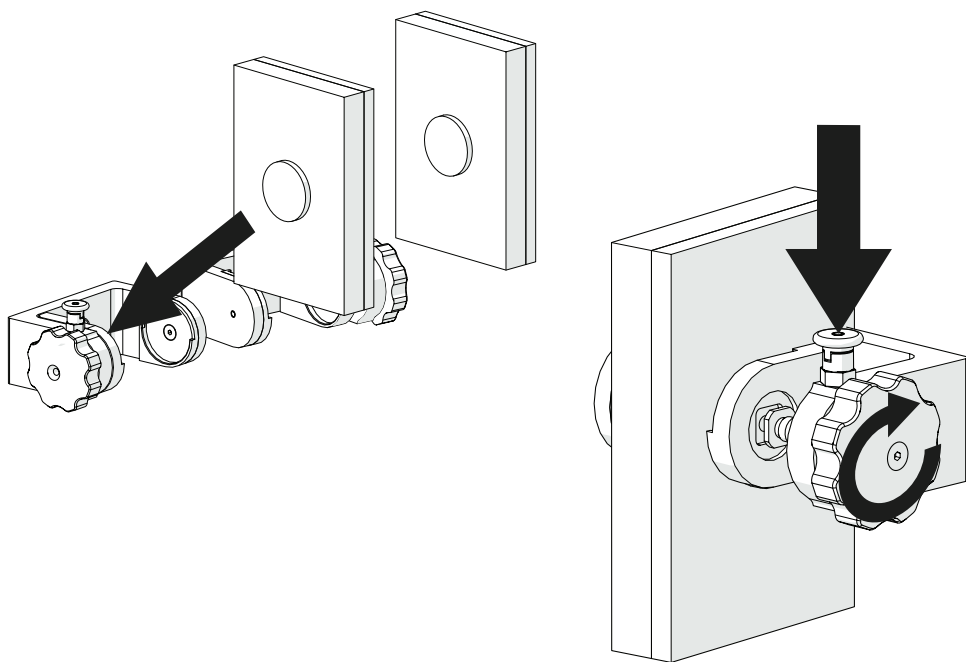
# Inserting Well Plate Adapters

- Bead Ruptor 96 well plate adapters can hold 1 X 2 mL deep well plate, 2 X 1 mL deep well plates or 3 X standard well plates per processing arm.
- Place samples and beads in the well plate.
- Fully seal the well plate with well plate mat. Care must be taken to ensure the well plate is properly sealed. A silicon mat is recommended.
- If processing multiple well plates, stack the well plates bottom to top.
- Place the well plate adapters on the top and bottom of the well plate stack. Ensure the adapter extensions are aligned.
- Lift the locking pin (B) upwards from the groove and turn it 90° in any direction to unlock.
- Turn the knob (C) counter clockwise all the way to maximize clamping range.
- Turn locking pin 90° and allow it to reengage in locked position.
- Place the well plate adapter into the milling jar arm and seat it into centering points (A). Gently turn knob (C) clockwise until the well plate adapter fits firmly inside the holder, free of play.
- To remove the well plates, lift the locking pin (B) and turn it 90° to unlock and turn the knob (C) counter clockwise to loosen. If locking pin is difficult to release, turn knob (C) slightly clockwise to release locking pin tension.

**WARNING: Do not force locking pin (B) open. Turn knob (C) clockwise to release.**

**WARNING: Well plates and adapters must be inserted and aligned with centering points (A). If this is not done the well plates may be ejected during processing.**

**WARNING: Milling arms must be balanced prior to operation. You must always operate with two well plate adapters. One in each arm.**



# Safety instructions when working with Liquid Nitrogen

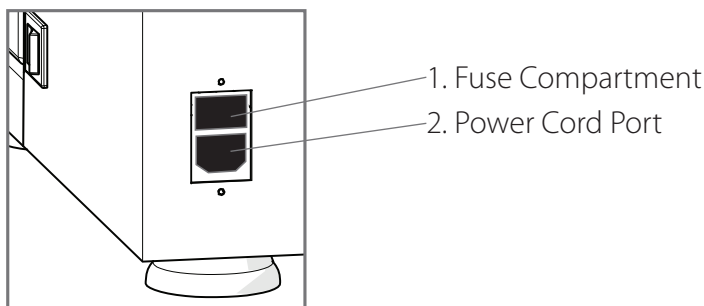
The Bead Ruptor 96 can be operated with liquid nitrogen for cryogenic milling of milling jars. Milling jars can be pre-cooled in a liquid nitrogen bath then placed on the Bead Ruptor 96 for dissociation of tough materials. Cooling times and processing times will be dependent on target material. It is highly recommended that you follow the safety instructions for handling liquid nitrogen provided by your liquid nitrogen provider.

**WARNING: Always wear protective gloves and goggles when working with liquid nitrogen. Liquid nitrogen has a temperature of -196°C and will cause severe burns and frostbite with skin or eye contact.**

## Accessories

Milling Jars	Order Number
Stainless Steel 25 mL - set of two	27-004
Stainless Steel 50 mL - set of two	27-006
Grinding Balls	
10 mm stainless - set of ten	27-203
25 mm stainless - set of five	27-206
Well Plate and Tube Adapters	
Stainless Steel - set of two	27-101
PTFE - set of two. (Holds 48 x 0.5 - 2 mL microcentrifuge or screw cap tubes)	27-106

# Replacing the Fuse



The following fuses are required for the Bead Ruptor 96:

- 2 x 2AT 250V (230V)
- 2 x 5AT 250V (115V)
- Unplug power cord from the power cord port (2).
- By pressing the locking device on the bottom side of the fuse compartment (1), fuse holder is released and you can pull it out.
- Replace fuses.
- Insert fuse holder and push it, until it locks.

## Troubleshooting

Error	Possible Solution
Power Switch is not illuminated when the Bead Ruptor 96 is on.	1. Check the power supply 2. Check fuses and replace if necessary 3. Call for service
Display screen is not working	Call for service
"LID" appears on display	Indicates that the lid is open when the start button was pressed. Close lid and clear message by pressing the Start/Stop button. Press Start/Stop to begin cycle.
Message "Er1" appears on display screen	Motor has over heated. Turn power off and allow motor to cool down.
Message "Er2" appears on display screen	The Bead Ruptor 96 is unable to reach the set vibrational frequency. Check Milling Jars for obstructions. Switch Power OFF and ON to clear error message.
Message "Er3" appears on display screen	Lid was opened during operation. The power must be turned OFF and then ON to clear error message before operation can continue.

**DO NOT: attempt to service the Bead Ruptor 96 in a manner other than those discussed in this manual. For any issue that is unsuccessfully corrected using this guide, please contact your authorized dealer or call Omni International at 1-800-776-4431.**





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