

Bead Ruptor 24 User Manual



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WARRANTY INFORMATION

This manual is a guide for the use of the Bead Ruptor 24 Bead Mill Homogenizing System and accessories.

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.

Notes, cautions, and warnings within the text of this manual are used to emphasize important and critical instructions.

This Omni International 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. For the first 90 days, both parts and service are without charge. For the balance of the period, parts will be provided but service will be charged at established labor rates. 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.

THE FORGOING OBLIGATION IS IN LIEU OF ALL OBLIGATIONS AND LIABILITIES INCLUDING NEGLIGENCE AND ALL WARRANTIES OF MERCHANTABILITY OR OTHERWISE, EXPRESSED OR IMPLIED IN FACT OR BY LAW, AND STATE OUR ENTIRE AND EXCLUSIVE LIABILITY AND BUYERS EXCLUSIVE REMEDY FOR ANY CLAIM OF DAMAGES IN CONNECTION WITH THE SALE OR FURNISHING OF GOODS OR PARTS, THEIR DESIGN, SUITABILITY FOR USE, INSTALLATION, OR OPERATION. OMNI INTERNATIONAL WILL IN NO EVENT BE LIABLE FOR ANY SPECIAL OR CONSEQUENTIAL DAMAGES WHATSOEVER, AND THEIR LIABILITY UNDER NO CIRCUMSTANCES WILL EXCEED THE CONTRACT PRICE FOR THE GOODS FOR WHICH LIABILITY IS CLAIMED.

SECTION 1 — IMPORTANT SAFEGUARDS

READ ALL INSTRUCTIONS BEFORE USING

SAVE THIS USER MANUAL

The Bead Ruptor 24 has been engineered for maximum functionality as well as 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 the Bead Ruptor 24. If you experience problems with or have questions about your Bead Ruptor 24, contact your authorized dealer or call Omni at 1-800-776-4431 or 770-421-0058.

WARNING!

- **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.
- Keep this product away from heated surfaces.

To reduce the risk of burns, electrocution, fire, or injury:

- Use this product only for its intended purpose as described in this booklet. Do not use attachments not recommended by the manufacturer.
- **DO NOT** operate the product if it is damaged in any way.

RISK OF ELECTRIC SHOCK:

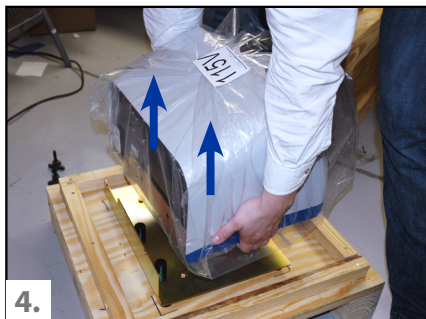
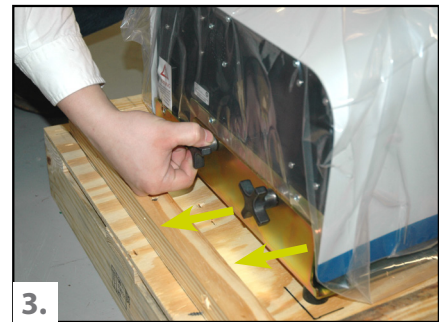
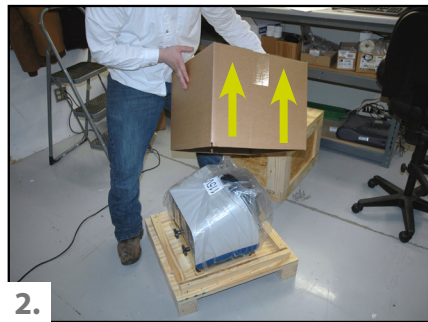
Although this equipment is fully insulated and grounded, it is important for all users to be aware of the potential hazard of using liquids close to a power supply. If any liquids are spilled, immediately disconnect the instrument from the main power supply (remove the power cord from the AC power input on the rear panel) and clean the equipment and the surrounding area. DO NOT reconnect the equipment until it has been fully inspected.

SECTION 2 — UNPACKING THE BEAD RUPTOR 24

2.1 UNPACKING THE BEAD RUPTOR 24

CAUTION: DO NOT lift the Bead Ruptor 24 by holding the lid. It must be lifted by gripping the sides of the unit and holding it from the bottom.

1. Place the crate on a level floor surface.
2. Using a screwdriver or power drill, remove the 16 screws from the bottom edge of the crate.
3. Lift the lid from the crate.
4. Lift and remove the inner cardboard box
5. Unscrew the two external knob screws from the back of the unit to release from the support plate.
6. Slide the Bead Ruptor away from the knob screw holes.
7. Lift the unit up and off of the crate bottom. DO NOT LIFT THE UNIT BY HOLDING THE LID.
8. Place the Bead Ruptor on a clean, horizontal and stable surface and remove the plastic bag



PLEASE NOTE: Do not discard the crate & packaging foam. This packaging must be used in the event the Omni Bead Ruptor 24 needs to be returned to Omni for any reason.

SHIPPING THE BEAD RUPTOR IN ANY OTHER PACKAGING WILL VOID ALL WARRANTIES.

SECTION 2 — UNPACKING THE BEAD RUPTOR 24

Remove the warning sticker from the back of the unit and check that the voltage switch matches the voltage delivered by your electric power supply.



CAUTION:

If the voltage supplied to the equipment is higher than what is indicated on the voltage switch, the electronics can be irreversibly damaged, voiding the warranty.

Ensure that the air vents are not covered. Allow at least 6 inches of space around air vents for proper motor ventilation.

CAUTION: **DO NOT** connect the unit to the main power supply until installation is complete and the correct voltage is selected.

Plug the Bead Ruptor 24 into the power supply using the supplied power cord.

In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This instrument is equipped with an electric cord which is grounded to the chassis housing. The plug must be plugged in to an outlet that is properly installed and grounded in accordance with all local codes and ordinances.

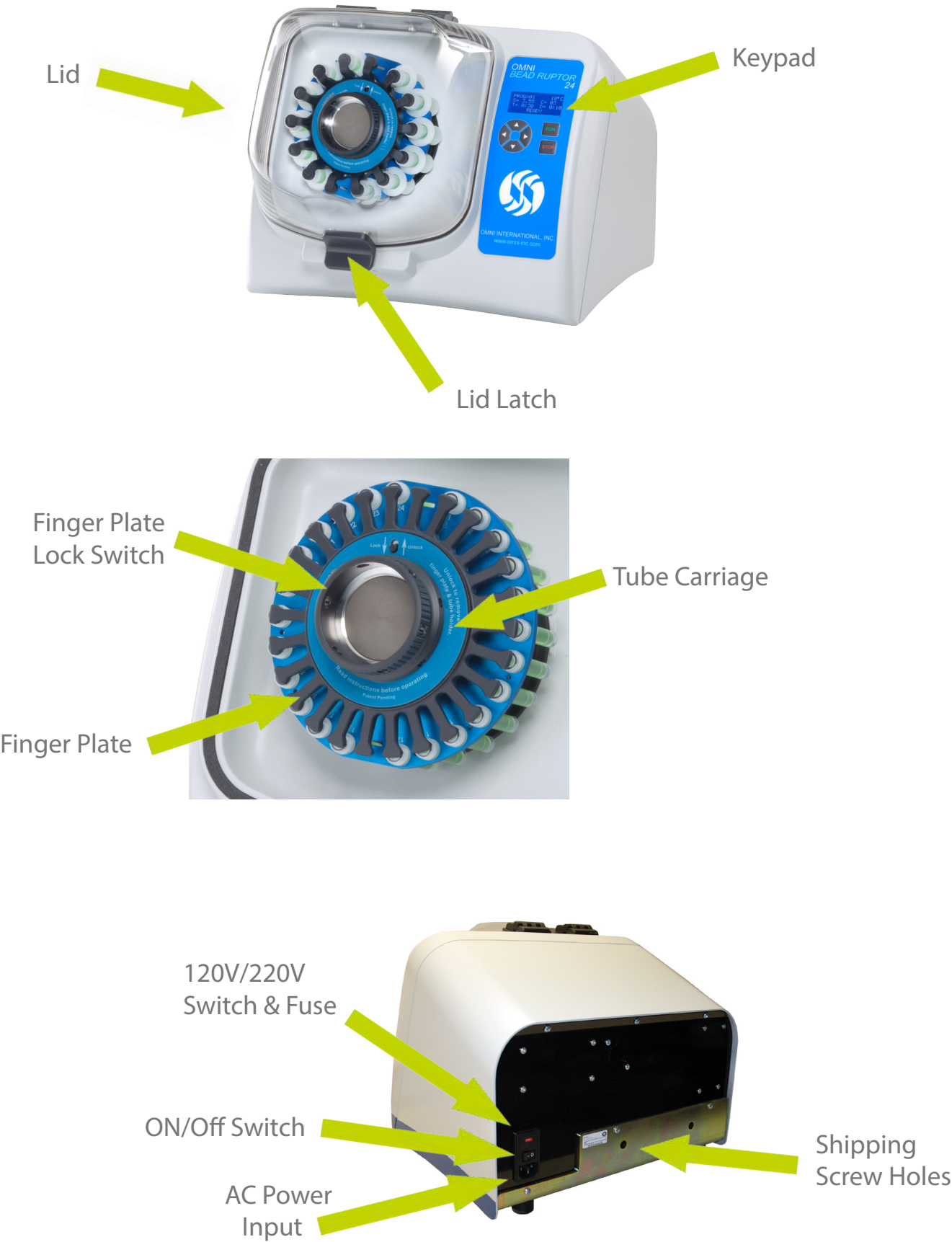
WARNING: **DO NOT** modify the plug or cord that is provided. Damaged or worn power cords should be repaired or replaced immediately by a qualified electrician.

- **DO NOT** turn the unit upside down: the Bead Ruptor 24 must always rest on all four feet to avoid damaging internal components or breaking the housing.
- **DO NOT** operate the unit when the housing is removed; potentially lethal voltage exists within the instrument.
- **DO NOT** operate the unit with the safety ground disconnected.

CAUTION: Use only accessories and consumables recommended by the manufacturer. Accuracy and operating lifetime may be affected if alternative products are used. Any damages caused by non-recommended parts are not covered by the manufacturer's warranties.

SECTION 2 — UNPACKING THE BEAD RUPTOR

2.2 UNIT OVERVIEW



SECTION 2 — UNPACKING THE BEAD RUPTOR

2.3 COMPONENTS

Prior to operation, please remove all parts from the shipping container and inspect for damaged or missing parts. If any parts are found to be damaged or missing, please contact Omni International at 800.776.4431.

DESCRIPTION	QUANTITY	P/N
Motor Drive Unit (115V or 220V)	1	19-011
Power Cables	1	LT710 (115V) and LT712 (220V)
Spare Fuse	1	00-193
Instruction Manual	1	03-231
Quick Start Guide	1	03-233

2.4 ADDITIONAL ACCESSORIES *(sold separately)*



96 STRIP WELL TUBE CARRIAGE (P/N 19-010-330)

- Holds 96 x 1.2 mL strip well tubes
- Includes tube carriage that holds the 1.2 mL strip well tubes firmly in place during processing.



1.5 mL MICROTUBE CARRIAGE KIT (P/N 19-010-310S)

- Holds 24 x 1.5 mL microtubes
- Includes the Bead Ruptor Finger Plate that holds the 1.5 mL microtubes firmly in place during processing.



2 mL TUBE CARRIAGE KIT (P/N 19-010-310)

- Holds 24 x 2 mL or 24 x 0.5 mL skirted tubes
- Includes Bead Ruptor Finger Plate that holds the 2 mL tubes firmly in place during processing.



7 mL TUBE CARRIAGE KIT (P/N 19-345-007)

- Holds 12 x 7 mL tubes
- Patent pending snap-in tube carriage for 7 mL samples. Kit includes tube carriage and lock ring.



15 mL TUBE CARRIAGE KIT (P/N 19-345-015)

- Holds 3 x 15 mL tubes
- Patent pending snap-in tube carriage for 15 mL samples. Kit includes tube carriage and lock ring.



30 mL TUBE CARRIAGE KIT (P/N 19-345-035)

- Holds 6 x 30 mL tubes
- Patent pending snap-in tube carriage for 30 mL samples. Kit includes tube carriage and lock ring.



50 mL TUBE CARRIAGE KIT (P/N 19-345-050)

- Holds 3 x 50 mL tubes
- Patent pending snap-in tube carriage for 50 mL samples. Kit includes tube carriage and lock ring.

SECTION 2 — UNPACKING THE BEAD RUPTOR

2.4 ADDITIONAL ACCESSORIES *(sold separately)*



CRYO 24 COOLING UNIT (P/N 19-8010)

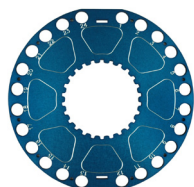
It keeps samples cool before, after & during processing. Used with liquid nitrogen or dry ice, it maintains a consistent temperature for heat sensitive samples. Compressed air travels through a heat exchanger, where liquid nitrogen or dry ice cool the air prior to moving it across the sample tubes. Works exclusively with the Bead Ruptor 24.

The BR-Cryo 24 is not compatible with 15ml, 30ml and the 50ml tube carriages



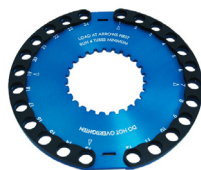
BEAD RUPTOR RACK (P/N 19-604)

The optional Bead Ruptor Rack simplifies the tube loading process and enables storage of loaded Tube Carriages before and after processing down to -80°C .



2 mL TUBE CARRIAGE FOR THE BEAD RUPTOR 24 (P/N 19-010-30902)

Holds 24x2 mL or 0.5 mL tubes.



2 mL SNAP CAP TUBE CARRIAGE FOR THE BEAD RUPTOR 24 (P/N 19-309-02S)

Holds 24x1.5 mL snap cap tubes

3.1 TUBES & TUBE CARRIAGES

96 x 1.2 mL strip well tubes

1.2 mL Strip Well volume and tissue size

Minimum: 200 μ L, 10 mg

Maximum: 1.0 mL, up to 750 mg

CAUTION: The maximum recommended speed for the 1.2 mL strip well tube carriage is 5 m/s. The 96 x 1.2ml strip well tube carriage is not compatible with the BR-Cryo lid.



24 x 1.5 mL microtubes

1.5 mL Microtube volume and tissue size

Minimum: 200 μ L, 10 mg

Maximum: 1.3 mL, up to 1 g



24 x 2 mL or 0.5 mL screw cap tubes

2 mL Tube Volume and Tissue Size:

Minimum: 300 μ L, 1 mg

Maximum: 1.8 mL, 1 g

0.5 mL Tube Volume and Tissue Size:

Minimum: 25 μ L, 1 mg

Maximum: 0.35 mL, 30 mg



SECTION 3 — BEAD RUPTOR SAMPLE TUBES

3.1 TUBES & TUBE CARRIAGES (cont.)

12 x 7 mL screw cap tubes

7 mL Tube Volume and Tissue Size:

Minimum: 1 mL, 1 g

Maximum: 5 mL, up to 4 g

CAUTION: The maximum recommended speed for the 7 mL Tube Carriage is 6 m/s.



3 x 15 mL screw cap tubes

15 mL Tube Volume and Tissue Size:

Minimum: 2 mL, 300 mg

Maximum: 10 mL, up to 10g

CAUTION: The maximum recommended speed for the 15 mL Tube Carriage is 7 m/s. The 15ml tube carriage is not compatible with the BR-Cryo lid.



6 x 30 mL screw cap tubes

30 mL Tube Volume and Tissue Size:

Minimum: 4 mL, 1 g

Maximum: 30 mL, up to 20 g

CAUTION: The maximum recommended speed for the 30 mL Tube Carriage is 5 m/s. The 30ml tube carriage is not compatible with the BR-Cryo lid



3 x 50 mL screw cap tubes

50 mL Tube Volume and Tissue Size:

Minimum: 5 mL

Maximum: 50 mL

CAUTION: The maximum recommended speed for the 50 mL Tube Carriage is 5 m/s. The 50ml tube carriage is not compatible with the BR-Cryo lid



CAUTION: Use only Omni sample tubes. Accuracy and operating lifetime may be affected if alternate tubes are used.

SECTION 3 — BEAD RUPTOR SAMPLE TUBES

3.2 ORDERING INFORMATION

1.5 mL PRE-FILLED BEAD MILL MICROTUBES

BEAD MEDIA	TUBE SIZE	BEAD SIZE	DESCRIPTION	QUANTITY	DNase/RNase FREE PART#
Ceramic	1.5 mL	1.4 mm	Soft Tissue Homogenizing Mix	50	19-617*
Glass	1.5 mL	0.5 mm	Tough Micro-organism Lysing Matrix	50	19-612

* Maximum recommended speed is 5.0 m/s

Bulk Sample Tubes (No Beads)

Empty 1.5 mL microtubes. Beads are not included.

TUBE SIZE	DESCRIPTION	QUANTITY	ORDER NUMBER
1.5 mL	Polypropylene micro tube; RNase, DNase free	500	19-661
1.5 mL	Polypropylene micro tube; RNase, DNase free	1000	19-661-1000

SECTION 3 — BEAD RUPTOR SAMPLE TUBES

3.2 ORDERING INFORMATION

2 mL & 0.5 mL SCREW CAP PRE-FILLED BEAD MILL TUBES

BEAD MEDIA	TUBE SIZE	BEAD SIZE	DESCRIPTION	QUANTITY	DNase/RNase FREE PART#
Glass	2 mL	0.1 mm	Micro-Organism Lysing Mix	50	19-621
	2 mL	0.5 mm	Tough Micro-Organism Lysing Mix	50	19-622
Garnet	0.5 mL	0.15 mm	Small Volume Micro-Organism Lysing Mix	50	19-623
	2 mL	0.7 mm	Hard & Fibrous Tissue Homogenizing Mix	50	19-624
Carbide	0.5 mL	0.25 mm	RNA Extractions, Micro-Organism & Soil Homogenizing Mix	50	19-625
Ceramic	2 mL	1.4 mm	Soft Tissue Homogenizing Mix	50	19-627
	2 mL	2.8 mm	Hard Tissue Homogenizing Mix	50	19-628
Metal	2 mL	2.38 mm	Hard Tissue Grinding Mix	50	19-620

Bulk 2 mL & 0.5 mL Screw Cap Sample Tubes (No Beads)

Empty sample tubes with caps and O-Rings. Beads are not included.

TUBE SIZE	DESCRIPTION	QUANTITY	ORDER NUMBER
2 mL	Nonreinforced Polypropylene screw cap tube with caps. RNase & DNase free.	500	19-647
2 mL	Reinforced polypropylene screw cap tube with caps. RNase & DNase free.	500	19-648
2 mL	Reinforced polypropylene screw cap tube with caps. RNase & DNase free.	1000	19-649
0.5 mL	Nonreinforced Polypropylene screw cap tube with caps. RNase & DNase free.	500	19-650

SECTION 3 — BEAD RUPTOR SAMPLE TUBES

3.2 ORDERING INFORMATION (cont.)

7 mL PRE-FILLED BEAD MILL TUBES

BEAD MEDIA	TUBE SIZE	BEAD SIZE	DESCRIPTION	QUANTITY	ORDER NUMBER
Metal	7 mL	2.38 mm	Hard Tissue Grinding Mix	50	19-670
Ceramic	7 mL	1.4 mm	Soft Tissue Homogenizing Bead Mix	50	19-677
	7 mL	2.8 mm	Hard Tissue Homogenizing Bead Mix	50	19-678

Pre-filled Tubes maximum recommended speed is 6.0 m/s

7 mL BEAD MILL TUBES AND BULK BEAD MEDIA (*These tubes are not pre-filled with beads*)

BEAD MEDIA	TUBE SIZE	BEAD SIZE	BEAD QUANTITY	DESCRIPTION	QUANTITY	ORDER NUMBER
Glass	7 mL	0.1 mm	400 g	Empty Sample Tubes with Bulk Micro-Organism Lysing Bead Mix	50	19-654
	7 mL	0.5 mm	400 g	Empty Sample Tubes with Bulk Tough Micro-Organism Lysing Bead Mix	50	19-656
Ceramic	7 mL	1.4 mm	325 g	Empty Sample Tubes with Bulk Soft Tissue Homogenizing Bead Mix	50	19-652
	7 mL	2.8 mm	325 g	Empty Sample Tubes with Bulk Hard Tissue Homogenizing Bead Mix	50	19-653
Metal	7 mL	2.38 mm	500 g	Empty Sample Tubes with Bulk Hard Tissue Grinding Bead Mix	50	19-655
None	7 mL	-		Empty Sample Tubes	1,000	19-651

7 mL Bead Tubes are not certified RNase/DNase Free

BULK 15 mL SCREW CAP SAMPLE TUBES (NO BEADS)

TUBE SIZE	DESCRIPTION	QUANTITY	ORDER NUMBER
15 mL	Polypropylene conical screw cap tube with caps	100	19-6615
15ml	Polypropylene conical screw cap tube with caps	500	19-6615-500

Pre-filled Tubes maximum recommended speed is 7 m/s. 15ml bead tubes are not certified RNase/DNase free.

SECTION 3 — BEAD RUPTOR SAMPLE TUBES

3.2 ORDERING INFORMATION (cont.)

30 mL PRE-FILLED BEAD MILL TUBES

BEAD MEDIA	TUBE SIZE	BEAD SIZE	DESCRIPTION	QUANTITY	ORDER NUMBER
Metal	30 mL	2.38 mm	Hard Tissue Grinding Mix	50	19-6350
	30 mL	2.38 mm	Hard Tissue Impaction Grinding Mix with 1/4" Ceramic	50	19-6350Z
Ceramic	30 mL	1.4 mm	Soft Tissue Homogenizing Bead Mix	50	19-6357
	30 mL	1.4 mm	Soft Tissue Impaction Homogenizing Mix with 1/4" Ceramic	50	19-6357Z
	30 mL	2.8 mm	Hard Tissue Homogenizing Mix	50	19-6358
	30 mL	2.8 mm	Hard Tissue Impaction Homogenizing Mix with 1/4" Ceramic	50	19-6358Z

30 mL Bead Tubes are not certified RNase/DNase Free, Maximum recommended speed is 5.0 m/s for 30ml tubes

Bulk 30 mL Screw Cap Sample Tubes (No Beads)

Empty sample tubes with caps. Beads are not included.

TUBE SIZE	DESCRIPTION	QUANTITY	ORDER NUMBER
30 mL	Polypropylene screw cap tube with caps.	100	19-6635
30 mL	Non-reinforced Polypropylene screw cap tube with caps.	500	19-6635-500

30 mL BEAD MILL TUBES AND BULK BEAD MEDIA (*These tubes are not pre-filled with beads*)

BEAD MEDIA	TUBE SIZE	BEAD SIZE	BEAD QUANTITY	DESCRIPTION	QUANTITY	ORDER NUMBER
Metal	30 mL	2.38 mm	500 g	Empty Sample Tubes with Bulk Hard Tissue Grinding Mix	50	19-6350K
Ceramic	30 mL	1.4 mm	325 g	Empty Sample Tubes with Bulk Soft Tissue Homogenizing Mix	50	19-6357K
	30 mL	2.8 mm	325 g	Empty Sample Tubes with Bulk Hard Tissue Homogenizing Mix	50	19-6358K

SECTION 3 — BEAD RUPTOR SAMPLE TUBES

3.2 ORDERING INFORMATION

50 mL PRE-FILLED BEAD MILL TUBES

BEAD MEDIA	TUBE SIZE	BEAD SIZE	DESCRIPTION	QUANTITY	ORDER NUMBER
Ceramic	50 mL	2.8 mm	Hard Tissue Homogenizing Mix	50	19-6508

Bulk 50 mL Screw Cap Sample Tubes (No Beads)

Empty sample tubes with caps. Beads are not included.

TUBE SIZE	DESCRIPTION	QUANTITY	ORDER NUMBER
50 mL	Polypropylene conical screw cap tubes with caps	100	19-6650

50 mL Bead Tubes are not certified RNase/DNase Free, Maximum recommended speed is 5.0 m/s.

3.4 IMPORTANT SAMPLE TUBE INFORMATION

Dry, fresh or frozen samples can be homogenized with or without buffer using the Bead Ruptor 24 and Bead Ruptor sample tubes.

The intratube forces generated by the Bead Ruptor 24 during the homogenization process are up to 400 x g. Intratube forces are dependent on the speed setting and the bead media present inside the tube. Omni provides unique tubes that are designed to withstand such high forces. It is not recommended to use tubes provided by other suppliers as these may not withstand to forces generated by the Bead Ruptor 24 and could result in tube failure and loss of sample. Please reference the table below for Omni tube speed thresholds.

TUBE SIZE	SPEED	TUBE SIZE	SPEED	TUBE SIZE	SPEED	TUBE SIZE	SPEED
0.5ml	8 m/s	2ml non reinforced	8 m/s	7ml	6.0 m/s	30ml	5.0 m/s
1.5ml	5 m/s	2ml reinforced	8 m/s	15ml	7.0 m/s	50ml	5.0 m/s

CAUTION: 2ml non reinforced tubes are not compatible with beads >2mm in diameter.

In addition to the intratube forces generated by the Bead Ruptor 24, sample heating can occur when processing for multiple cycles or extended time periods. Excessive sample heating can result in tube leakage or failure. Because the Bead Ruptor has the ability to run at up to 8 m/s, tube leakage and breakage could occur due to heat and pressure build-up inside the tube.

In the event of tube leakage or tube breakage, Omni recommends the following solutions:

- Use the tubes as single-use or disposable
- Add more buffer to decrease the force applied by the beads to the tube walls
- Open the Bead Ruptor's lid for 5 to 10 minutes in order to cool down the tubes and tube carriage between cycles.
- Place the sample tubes in an ice bucket for few minutes in between cycles prior to run additional cycles.
- Ensure that the fingerplate is tightened securely and the lock is engaged.
- Ensure tube caps are tightened completely

CAUTION: DO NOT freeze Bead Ruptor Tubes in liquid nitrogen.

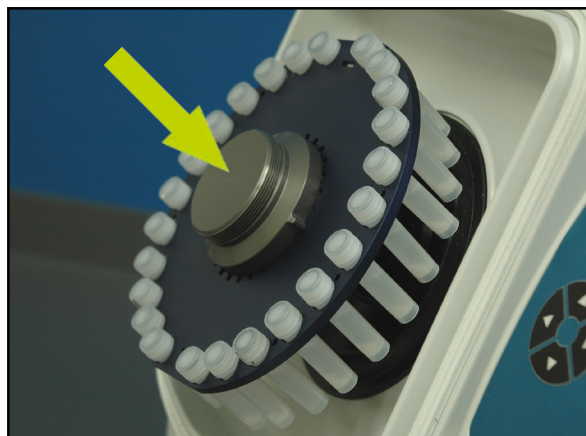
SECTION 4 — BEAD RUPTOR OPERATION

4.1 LOADING SAMPLE TUBES

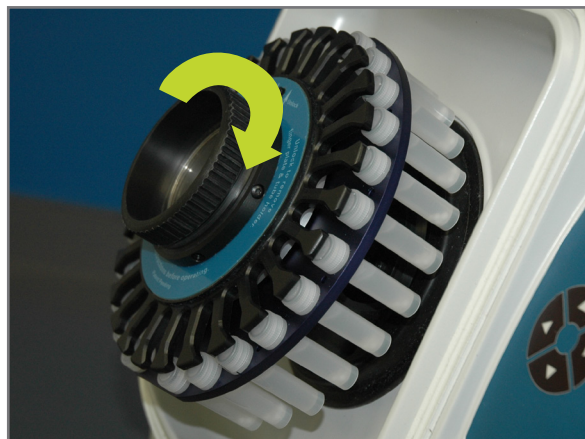
When using a 1.5 mL microtube carriage or 2 mL Tube Carriage, a minimum of 4 tubes (filled or empty) are required per run and must be spaced evenly. The positions of 1, 7, 13, and 19 on the 1.5ml and 2mL tube carriage are ideal for balancing the tubes (refer to the numbers etched into the tube carriage). Beyond those locations, the user may load additional tubes in any position without the need to balance the remaining tubes.



1. Place Bead Ruptor tubes into the Tube Carriage.



2. Place the tube carriage onto the Drive Hub.



3. Put the finger plate in place over the drive hub and screw down to secure tubes.



4. Move the locking switch to the 'lock' position.

CAUTION: DO NOT run the Bead Ruptor without moving the switch to the "Lock" position.



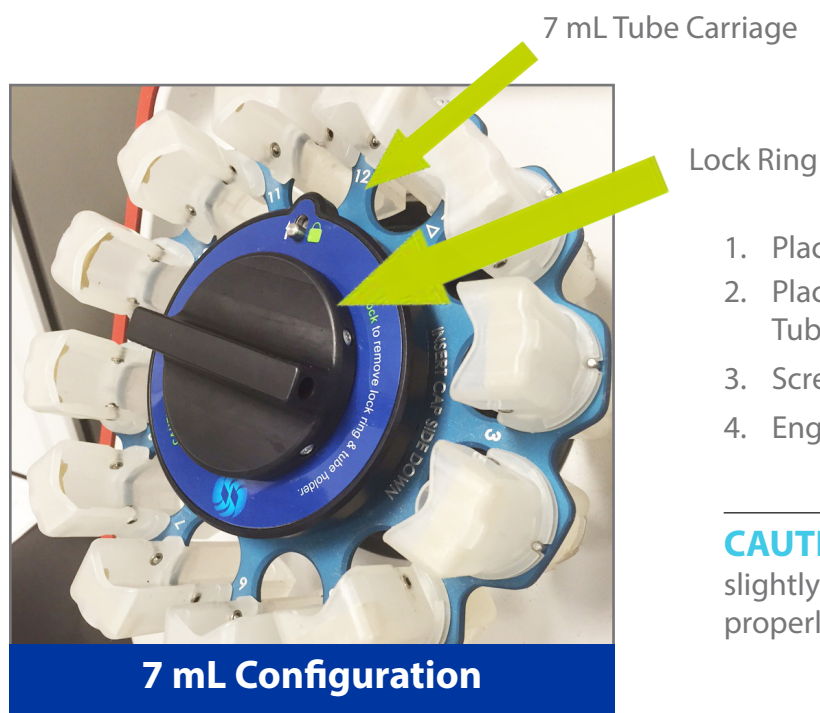
5. Close the lid until the locking handle clicks into place

SECTION 4 — BEAD RUPTOR OPERATION

4.1 LOADING SAMPLE TUBES (cont.)

CAUTION: The drive hub can become very hot during operation. Use caution when removing tubes from the Tube Carriage / Tube Holders.

IDENTIFICATION OF PARTS:



1. Place the tube carriage onto the Drive Hub.
2. Place Bead Ruptor 7 mL tubes into the Tube Carriage.
3. Screw the locking ring on tightly.
4. Engage the lock.

CAUTION: You may need to turn the knob slightly while pressing on the lock to engage properly. **DO NOT** exceed > 6 m/s



1. Place Bead Ruptor 15 mL tubes into the Tube Carriage.
2. Place the tube carriage onto the Drive Hub.
3. Screw the locking ring on tightly.
4. Engage the lock.

CAUTION: You may need to turn the knob slightly while pressing on the lock to engage properly. **DO NOT** exceed > 7 m/s

SECTION 4 — BEAD RUPTOR OPERATION

4.1 LOADING SAMPLE TUBES (cont.)

30 mL Tube Carriage



1. Place Bead Ruptor 30 mL tubes into the Tube Carriage.
2. Place the tube carriage onto the Drive Hub.
3. Screw the locking ring on tightly.
4. Engage the lock.

CAUTION:

You may need to turn the knob slightly while pressing on the lock to engage properly. **DO NOT** exceed 5 m/s **DO NOT** run unit without engaging the lock first.



50 mL Tube Carriage



1. Place Bead Ruptor 50 mL tubes into the Tube Carriage.
2. Place the tube carriage onto the Drive Hub.
3. Screw the locking ring on tightly.
4. Engage the lock.

CAUTION: Always insert the tube fully past the spring plunger. **DO NOT** exceed >5 m/s

CAUTION: The 15ml, 30ml and 50ml, tube carriages are not compatible with the BR-Cryo lid.

SECTION 4 — BEAD RUPTOR OPERATION

4.2 KEYPAD LAYOUT

The keypad of the Bead Ruptor 24 (see diagram below) consists of an LCD screen, 4 arrow buttons, and a "RUN" and "STOP" button.



The user can adjust four different homogenization settings with this interface. The \triangle UP and ∇ DOWN arrow buttons are used to navigate through the menu and the \triangleleft LEFT and \triangleright RIGHT arrow buttons are used to adjust the parameters.

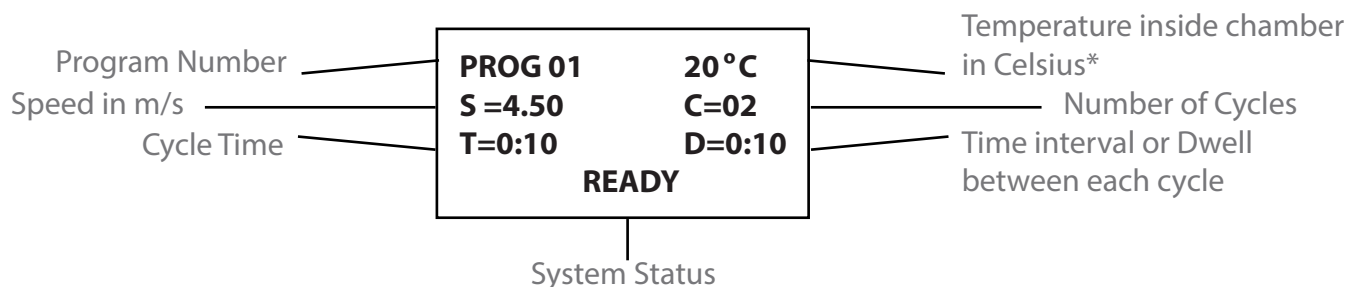
4.3 START UP OF THE EQUIPMENT

Turn the Bead Ruptor 24 on by pressing the ON/OFF switch located on the rear panel near the AC power input. When the unit is turned on, a welcome screen is displayed for five seconds showing the following information:



From this screen the user can press and hold the \triangleright to select the display language. The user can choose from F = French, E = English, G = German, I = Italian, S = Spanish.

After five seconds of the welcome screen, a menu displays the programming mode. Programming mode displays the last program run before power was removed. Example:



- "S" = denotes speed in m/s and can be adjusted from 0.8m/s to 8m/s in 0.15m/s increments.
- "T" = denotes the time in minutes: seconds. Time can be set from 0:01 sec. to 9:59 minutes in 1 second increments.
- "C" = denotes the number of times the cycle (speed x time) is repeated; and can range from 01 to 10 cycles.
- "D" = denotes the time interval in seconds of dwell/pause between each cycle and can be controlled from 0 seconds to 9:59 minutes.

SECTION 4 — BEAD RUPTOR OPERATION

4.4 SPEED SETTING

Homogenization with the Bead Ruptor 24 is the result of the collision of the bead matrix and sample within the Bead Ruptor tubes. The rate of collision and energy of impact determine the effectiveness of the disruption process and are controlled by the Bead Ruptor 24 “S” setting, the motion of the tube carriage, the bead media, and the tube fill volume.

The “S” display in meters per second refers to the maximum vertical velocity achieved by a sample tube during reciprocating processing motion.

4.5 TEMPERATURE SENSOR

The Bead Ruptor 24 is equipped with a unique temperature monitor which is located inside the processing chamber. The temperature displayed is the processing chamber temperature, not the sample temperature inside of the sample tubes.

5.1 PROGRAMMING

The Bead Ruptor 24 is programmable for Speed/Processing Energy, Time, Number of Runs and Dwell (or Pause) between cycles. The Bead Ruptor memory can store up to 99 programs.

After powering on, the LCD screen will display the program number blinking to denote this is the ‘active’ variable. The \triangle and ∇ keys move the cursor between the different variables within the program while the \triangleleft and \triangleright buttons respectively decrease or increase the value of the active variable.

Each press of the button will incrementally change the variable’s value. Holding down the \triangleleft or \triangleright buttons causes the variable to advance rapidly.



Active Variable	System Status Display
Program: XX	CLOSE LID or READY
S	SPEED m/s
T	CYCLE TIME
C	NUMBER OF CYCLES
D	PAUSE DWELL

PARAMETER	OPERATING RANGE
Speed / Energy	From 0.8 m/s to 8 m/s in increments of 0.15 m/s
Time	From 0:01 to 9:59 in increments of 1 second
Number of Runs	1 to 10
Dwell/Pause between Runs	0:00 to 9:59
Storable Programs	1 to 99

If run is stopped or paused system status will read **“PROGRAM PAUSED”**
At the end of the program **“DONE”** will be displayed followed by **“REMOVE SAMPLES”**

CAUTION: Wait until the unit stops and displays “DONE—REMOVE SAMPLES” before opening the lid.

PLEASE NOTE:

- Homogenization settings cannot be changed once the run is in progress
- The Bead Ruptor 24 is designed for non-stop use and does not require a cool down period between runs.

The user can pause or stop a run by pressing the “STOP” button at any time. The unit displays the Cancel information until the run has completely stopped.

SECTION 5 — PROGRAMMING

5.2 ADJUSTING PARAMETERS

Use the \triangle and ∇ Arrow Keys to move the 'active' character (or cursor) between the different variables within the program while the \triangleleft and \triangleright buttons respectively decrease or increase the value of whichever variable is active.

Adjusting the Speed/Energy Setting

Use the \triangle and ∇ arrow keys to highlight the "S"- speed setting.

PROG 04	20 °C
S =4.50	C=02
T=0:10	D=0:10
SPEED	M/s

The "S" (Speed) value can be varied by using the \triangleleft and \triangleright Arrow buttons. "S" (Speed) adjustment ranges from 0.8 m/s to 8 m/s in increments of 0.15 m/s.

When the desired value is reached, the user can go to the next desired variable or go back up to Program to begin the run.

The "S" (Speed) of the Bead Ruptor is displayed in m/s, which is a specific representation of the forces applied to the sample, due to the velocity of the tube carriage movement, and the speed and geometry of the motion. Using RPM, for example, is not representative of the bead movement and processing energy because RPM only indicates the motor speed.

ADJUSTING THE RUN TIME

Use the \triangle and ∇ arrow keys to highlight the "T"- Time option.

PROG 04	20 °C
S =4.50	C=02
T=0:10	D=0:10
CYCLE TIME	

The user can change the Run Time using the \triangleleft and \triangleright Arrow buttons. The run time ranges from 1 second to 9 minutes and 59 seconds in increments of 1 second.

When the desired value is reached, the user can go to the next desired 'variable or go back up to Program to begin the run.

5.2 ADJUSTING PARAMETERS

ADJUSTING THE NUMBER OF CYCLES

Use the \triangle and ∇ arrow keys to highlight the “C”- Cycles option.

PROG 04	20 °C
S =4.50	C=02
T=0:10	D=0:10
NUMBER OF CYCLES	

The user can change the Number of Cycles using the \triangleleft and \triangleright Arrow buttons. The number of cycles ranges from 1 to 10.

When the desired value is reached, the user can go to the next desired variable or go back up to Program to begin the run.

ADJUSTING THE PAUSE OR “DWELL” BETWEEN CYCLES

Use the \triangle and ∇ arrow keys to highlight the “D”- Pause Dwell option.

PROG 04	20 °C
S =4.50	C=02
T=0:10	D=0:10
PAUSE DWELL	

The user can change the Dwell time between 2 or more cycles using the \triangleleft and \triangleright Arrow buttons. The dwell time between cycles ranges from 0 seconds to 9 minutes and 59 seconds in increments of 1 second.

When the desired value is reached, the user can go to Program to begin the run.

The unit will beep twice when the run is complete.

CAUTION: Wait until the unit stops and displays “DONE—REMOVE SAMPLES” before opening the lid. The drive hub can become very hot during operation. Use caution when removing the tube carriage.

6.1 CLEANING THE BEAD RUPTOR 24

The housing of the unit can be cleaned with a sponge or damp cloth moistened with water or alcohol.

WARNING: For safety purposes and to prevent any damage of the unit, the recommendations listed below should be strictly followed:

- **DO NOT** spray water or alcohol directly on the unit, especially in the air vents and the fan
 - **ALWAYS** disconnect the power cord before cleaning
 - **DO NOT** use any type of scrapers
 - **DO NOT** use caustic solvents or acetone. Harsh solvents can damage the finish of the housing and lid.
 - **DO NOT** autoclave the finger plate. This will cause it to crack. Instead, wipe the space fingerplate down with a damp cloth and a mild detergent.
-

Example of Decontamination Procedure

If a tube breaks when a run is in progress, decontaminate parts that may have been contaminated with an appropriate disinfectant. The decontamination procedure is the sole responsibility of the user. Parts that may have been contaminated can be cleaned with a sponge or a damp cloth moistened with a non-abrasive cleanser.

In case another decontamination procedure is to be applied, please first contact technical support to ensure the compatibility of the new procedure with the instrument.

SECTION 7 — TROUBLESHOOTING

DO NOT attempt to service the Bead Ruptor 24 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: 800.776.4431.

7.1 ERROR MESSAGES

ERROR MESSAGE	POSSIBLE CAUSES	ACTION(S)
Close Lid	The lid is not latched properly	1. Check that nothing prevents the lid from closing. 2. Press lid and ensure the handle is locked properly.
	Detection system is faulty	1. Turn off the unit. 2. Contact technical assistance.

7.2 TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	ACTION(S)
The fan does not work	No Power	1. Check main voltage 2. Check that the voltage of the unit matches that being delivered by the main power supply. 3. Make sure that the unit is plugged in properly. 4. Check and replace fuses if blown.
	Faulty Fan	1. Turn off the unit. 2. Contact technical support.
Display screen shows incomplete or unusual characters	CPU needs to be reset	1. Turn off the unit. Wait a few seconds. Turn the unit back on.
No display on the screen	No Power	1. Check main voltage. 2. Check that the voltage of the unit matches that being delivered by the main power supply. 3. Make sure the unit is plugged in properly. 4. Check and replace fuses if blown.
	Faulty display screen	1. Turn off the unit. 2. Contact technical support.
One or several tubes are not sealed tightly	The cap is not properly sealed or the tube is faulty	If dangerous or potentially dangerous sample is contained in the tube, apply the proper decontamination procedure.
Unit powers on with a loud "BANG"	Motor control device damaged due to incorrect voltage selection	Return unit to Omni International for replacement of motor control device.
Unit powers on but motor does not turn	Incorrect voltage selected	Power off the unit and select appropriate voltage. Power on the unit. If problem persists, contact Omni International for assistance.
Fingerplate lock is difficult to disengage.	Knob position	Turn knob slightly counter-clockwise to release tension.
Tube leakage	<ul style="list-style-type: none"> Speed is too high High temperature or pressure inside tubes 	See solutions on page 13

SECTION 8 — TRANSPORT, STORAGE & SERVICE

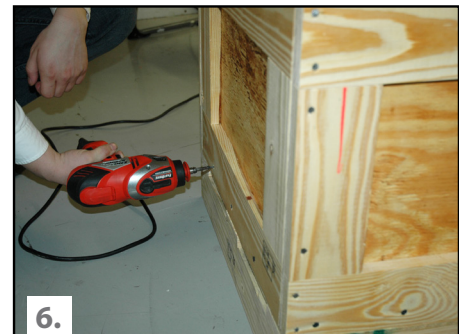
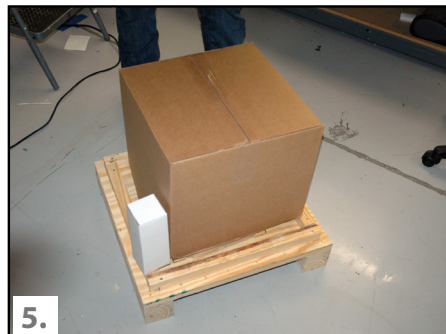
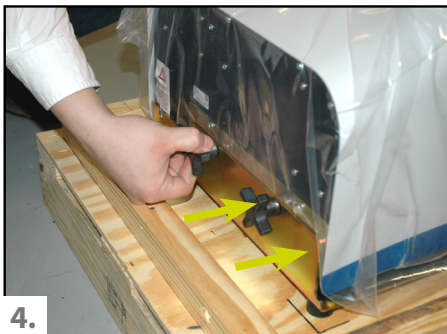
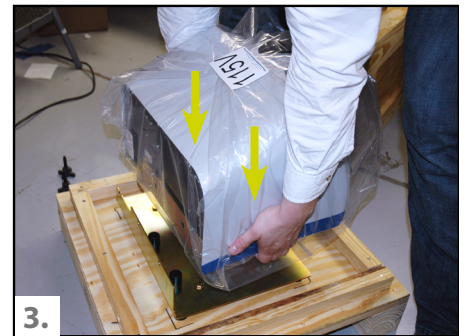
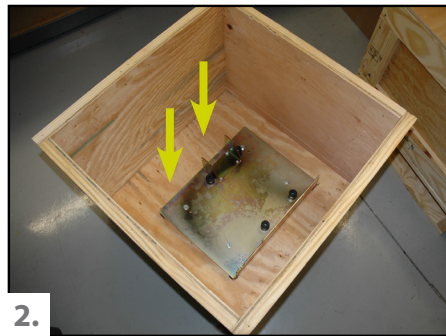
8.1 TRANSPORTING THE BEAD RUPTOR 24

The Bead Ruptor 24 must be shipped in its original packaging.

Before transporting the equipment, it is necessary to:

1. Close the lid of the Bead Ruptor 24 and cover with the plastic bag.
2. Align the slots on the bottom of the unit with the support hooks on the base of the shipping crate.
3. Lower the unit onto the hooks and slide it backward until the back of the unit touches the supporting edge.
4. Secure the unit to the support plate with the included knob screws. Tighten the screws as much as possible.
5. Place the cardboard box over the Bead Ruptor.
6. Use a screwdriver or power drill to secure the lid to the top of the crate.

PLEASE NOTE: The Bead Ruptor 24 MUST be shipped in its original packaging. Failure to do so can result in serious damage to the unit and will void all warranties.



8.2 STORAGE

The unit can be used in a cold room, but it must be stored in a dry area at a temperature ranging from 0° C/32° F to 50° C/122° F

8.3 SERVICE

It is recommended that the speed of the Bead Ruptor 24 be calibrated annually to ensure maximum operation. For this or any other product servicing please contact Omni International at 800.776.4431.

8.4 DECONTAMINATION REQUIREMENT

Should an instrument or component that has been used with radioactive or pathogenic material require factory or field service, comply with the following procedure to ensure the safety of service personnel:

Clean the parts to be serviced of all encrusted material and decontaminate them. There must be no radio-activity detectable by survey equipment. Obtain a Decontamination Certificate from Omni International. Complete the certificate and attach to the instrument or parts being returned.

If no Decontamination Certificate is attached, and a potential radioactive or biological hazard is detected or suspected by Omni International, the equipment will not be serviced until proper decontamination and certification is complete. The sender will be contacted for instructions as to the disposition of the equipment. Disposition costs will be borne by the sender.

WARNING: It is a violation of federal law to transport biologically hazardous or radioactive materials without proper packaging, labeling, and appropriate warnings.

Register your Bead Ruptor & tell us about your research!

Please visit the web address below to register your new Bead Ruptor. You will also be asked to provide us with information about your research. In return, we'll send you a Starbucks gift card!

Register today!

www.omni-inc.com/warranty



9.1 SPECIFICATIONS

LENGTH	17 in / 43.2 cm
WIDTH	15.5 in / 39.4 cm
HEIGHT	13 in / 33 cm (24 in / 61 cm with lid open)
WEIGHT	54 lbs. / 24 kg
SPEED PERFORMANCE RANGE	0.8 m/s - 8 m/s
NOISE LEVEL	<70 db
ELECTRICAL REQUIREMENTS	115 volts, 60 Hz or 220 volts, 50 Hz
STANDARDS APPROVAL / COMPLIANCE	CE certified



Keep your sensitive samples cold!

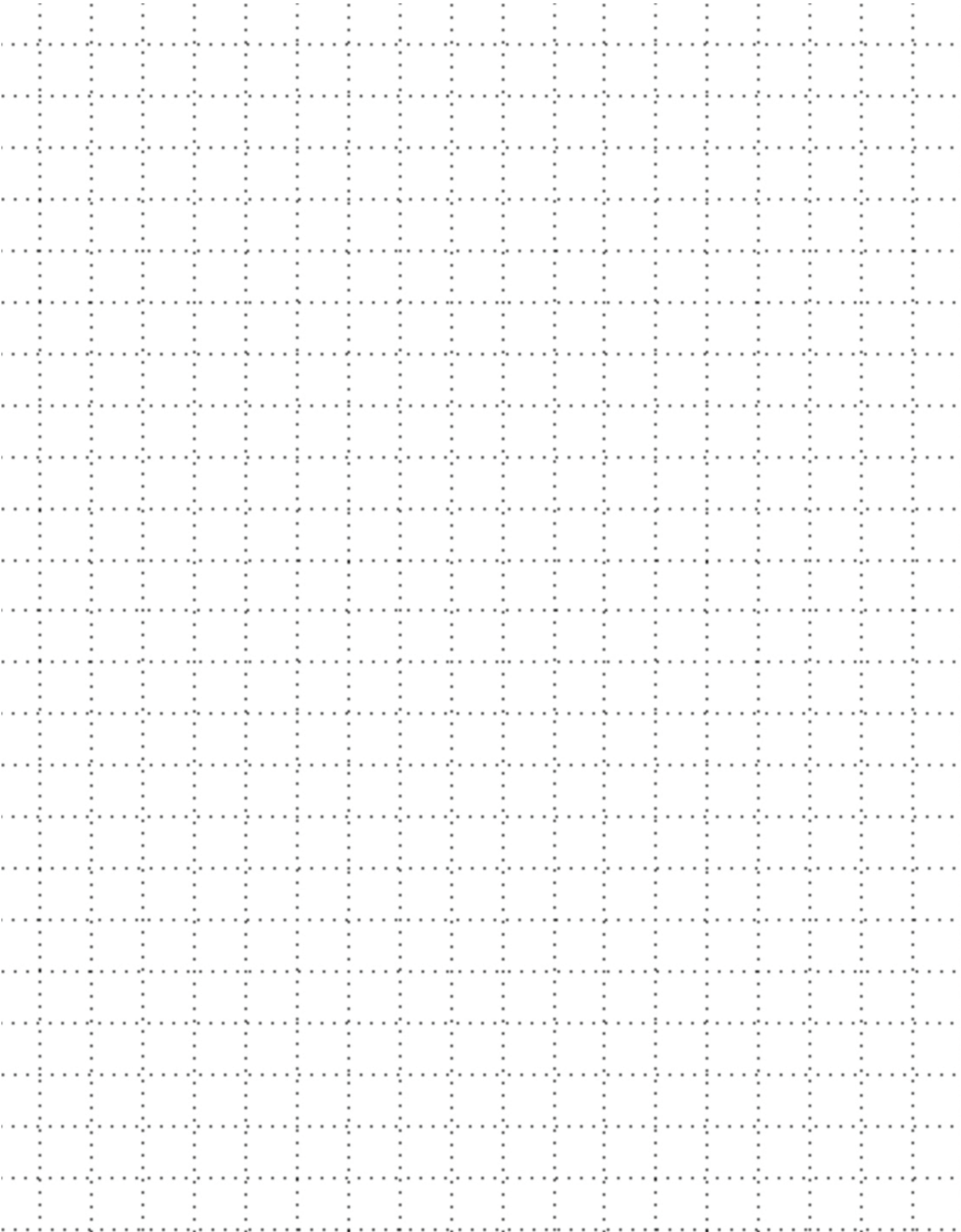
The Cryo 24 is the perfect companion to the Bead Ruptor 24.

It keeps samples cool before, after & during processing. Used with liquid nitrogen or dry ice, it maintains a consistent temperature for heat sensitive samples.

Compressed air travels through a heat exchanger, where liquid nitrogen or dry ice cool the air prior to moving it across the sample tubes.

Call 1-800-776-4431 or visit www.omni-inc.com for more information

NOTES:



NOTES:

A large grid of dotted lines for writing notes. The grid consists of 20 columns and 20 rows of small squares, each formed by two intersecting dotted lines. The grid is intended for taking handwritten notes.



The Homogenizer Company
omni-inc.com | 800.776.4431
935 C Cobb Place Blvd. Kennesaw, GA 30144