

Omni BR Cryo

Cooling Unit User Manual



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WARRANTY INFORMATION

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 TWO YEARS 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.

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.

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: Reduce the risk of unintentional starting; make sure the speed switch is in the OFF position before plugging in the motor.

WARNING: Damaged or worn power cords should be repaired or replaced immediately by a qualified electrician.

WARNING: Improper connection of the equipment can result in a risk of electric shock.

SECTION 1 — IMPORTANT SAFEGUARDS

READ ALL INSTRUCTIONS BEFORE USING.

SAVE THIS USER MANUAL

The BR CRYO has been engineered for maximum functionality as well as safety; however, basic safety precautions and common sense must always be demonstrated when using any scientific product. Do not attempt to modify any part of the BR CRYO . If you experience problems with or have questions about your BR CRYO, 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.
- Keep this product away from heated surfaces.
- Only use instrument in a well ventilated area.

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.
- **DO NOT** operate this product with the Bead Ruptor 24 15 mL, 30 mL or 50 mL tube carriages. Damage to the BR-Cryo lid will result.

RISKS ASSOCIATED WITH LIQUID NITROGEN:

It is recommended that the BR CRYO be operated with liquid nitrogen. Liquid nitrogen is a colorless, odorless, highly refrigerated gas (around -196°C). The main risks associated with the handling of this product are asphyxiation and burns. To protect against burns the operator must wear equipment which protects the eyes, face and skin. Use liquid nitrogen in a well ventilated area.

It is advised to have the safety instructions about the risks and precautions associated with the utilization of liquid nitrogen on hand.

- **DO NOT** disconnect the in and out airflow hoses when they are under pressure.
- **DO NOT** apply air pressure of more than 120 PSI as this may damage the internal components of the cooling system.
- **DO NOT** tilt the equipment: the BR CRYO must always stand on its four feet. Failing to do so could damage its internal components or cause liquid nitrogen to be spilled.
- **DO NOT** operate the unit when the shell is partially or entirely removed.
- **DO NOT** install unauthorized components or accessories as this will void the warranty.
- **DO NOT** overfill the tank with liquid nitrogen.
- **DO NOT** transport the unit before emptying the nitrogen tank completely.
- **DO NOT** transport the unit in packaging which is different from the original one.
- **DO NOT** use compressed gases which are not specified.

REQUIRED: Compressed dry air is required to use the BR CRYO unit: purity 99.99%, water content < 5 PPM. Pressure: between 55 and 120 PSI.

CAUTION: Operate unit only when the external thermometer indicates -5°C with dry ice or 0°C with liquid nitrogen.

DO NOT operate the Bead Ruptor 24 when the temperature within the processing chamber is below -5°C.

SECTION 2 — UNPACKING THE BR CRYO

2.1 UNPACKING THE BR CRYO

CAUTION: DO NOT lift the BR CRYO by holding the cover. It must be lifted by gripping the sides of the unit and holding it from the bottom.

1. Open the box on a level floor surface and lift the top white foam piece.
2. Remove the black hose.
3. Remove the clear hose.
4. Lift the small inner foam piece to reveal the BR CRYO unit.
5. Remove the cardboard box which contains the BR CRYO black lid.
6. Remove the foam support pieces around the BR CRYO.
7. Carefully lift the BR CRYO from the box and place the unit on a hard, flat surface.



PLEASE NOTE: SAVE ALL INCLUDED PACKAGING!

SECTION 2 — UNPACKING THE BR CRYO

2.2 PARTS

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 1-800-776-4431.

DESCRIPTION	QUANTITY	P/N
BR CRYO Cooling Unit	1	19-8011
Insulated BR CRYO Hose	1	19-8503
Compressed Air Hose	1	19-8501
BRCRYO BR 24 Lid (black)	1	19-8520
External Thermometer Kit	1	19-8502
Tool Kit	1	19-8014
User Manual	1	19-8026



Insulated BR CRYO Hose 19-8503



Compressed Air Hose 19-8501



BR CRYO/BR 24 Lid 19-8520



External Thermometer 19-8502

SECTION 3 — SETTING UP THE BR CRYO

3.1 UNIT OVERVIEW

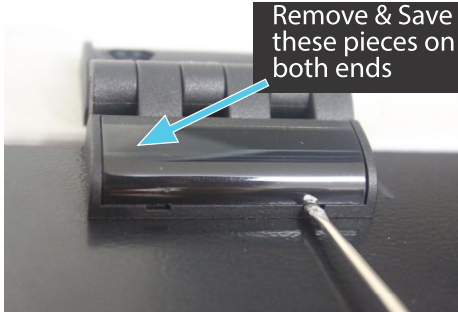


SECTION 3 — SETTING UP THE BR CRYO

3.2 ATTACHING THE NEW LID TO THE BEAD RUPTOR 24

Make sure the Bead Ruptor 24 is powered OFF before connecting the BR Cryo.

Tools required: Flat-head screwdriver and 1/16" Allen wrench (Part# 00-421)



1. Using a flat-head screwdriver, carefully pry up the hinge covers from the Bead Ruptor 24 lid. (SAVE THE HINGE COVERS).



2. Using an Allen wrench remove the 4 screws and nuts from the lid/hinge of the Bead Ruptor 24.



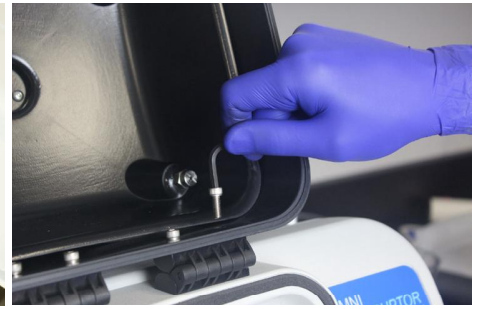
3. Remove the original lid .



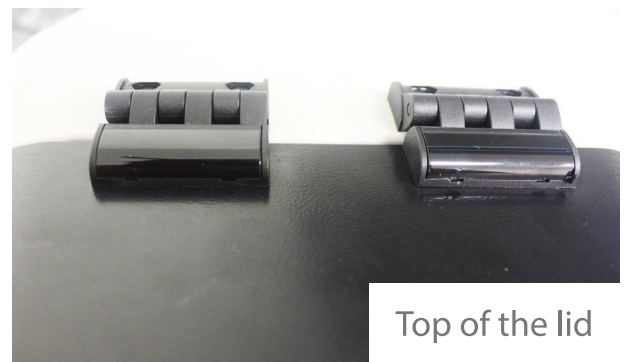
4. Position the new black lid as shown onto the Bead Ruptor 24. Use the included screws and the original nuts to attach the new lid.



5. Insert the nuts into the holes on top of the hinges.



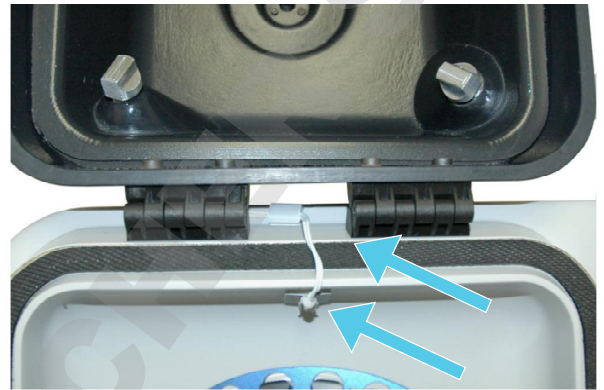
6. Insert the screws into the holes in the underside of the black lid. Using an Allen wrench, secure the lid to the hinges.



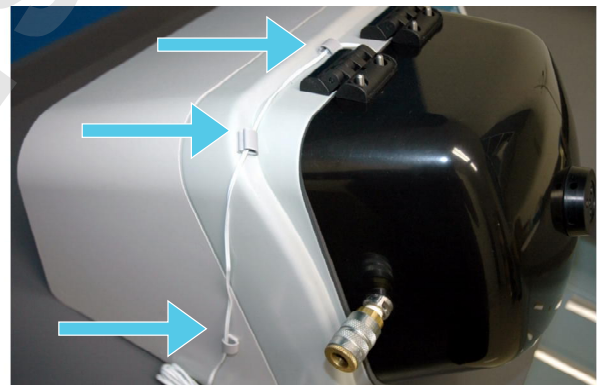
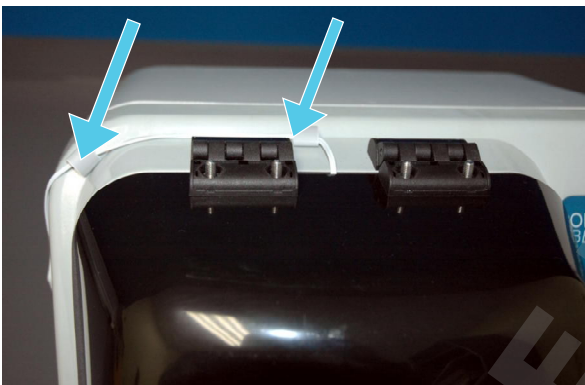
SECTION 3 — SETTING UP THE BR CRYO

3.3 THERMOMETER INSTALLATION

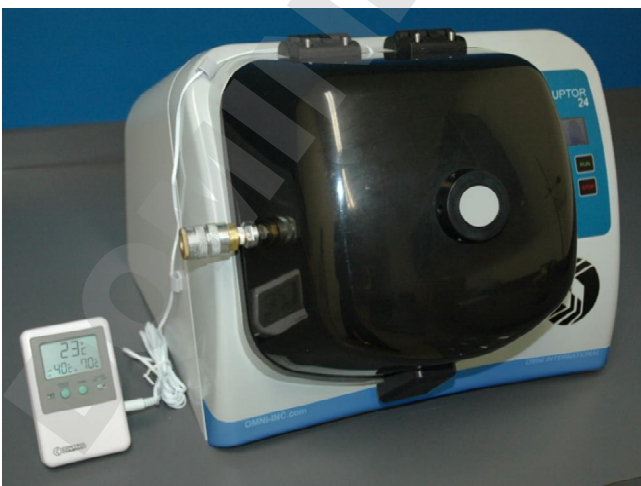
1. Install the black thermocouple clip by peeling the protective film off the adhesive back and placing it in the location shown below.



2. Attach the three gray thermocouple wire clips in the same way to the locations shown below.



3. Remove the thermometer from its packaging.
4. The thermometer has been preset to Celsius with alarms to be triggered if temperatures reach below -10°C or over 70°C . To change to Fahrenheit, refer to the supplied thermometer instructions. Set Fahrenheit alarm to trigger at 14°F and 150°F .



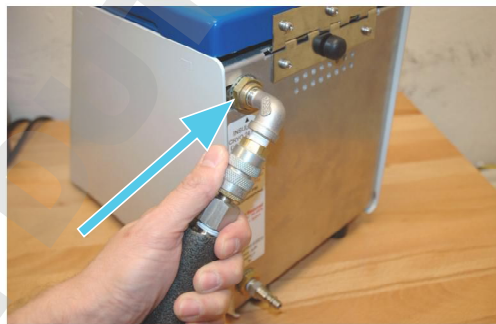
5. Guide the thermocouple wire through the gray clips and snap it into the black thermocouple clip.
6. Plug the thermocouple sensor into the side of the thermometer unit.
7. Peel off the protective film from the thermometer's LCD display.

SECTION 3 — SETTING UP THE BR CRYO

3.4 CONNECTING THE HOSES

Compressed dry air is required to use the BR Cryo unit: purity 99.99%, water content < 5 PPM
Operational air pressure is between 55 and 120 PSI.

1. Connect the hose from your air supply to the rear of the BR Cryo unit. An optional hose with a “quick connect” coupling is included with the unit. An additional fitting may be required to connect the hose to your air supply.
2. Connect the 90° elbow end of the insulated hose to the black lid on the Bead Ruptor 24.
3. Connect the straight end of the insulated hose to the BR Cryo.



Recommended Dry Air Guidelines

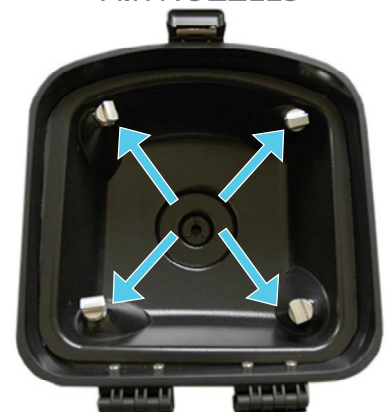
- Obtain a high-pressure cylinder of “Medical Air”, which is a blend of nitrogen and oxygen and contains virtually no traces of oil or water vapor. **OR**
- Between an air compressor and the BR CRYO inlet, either a refrigerated air dryer or desiccant type dryer can be used. Generally, these systems are specified in the lowest dew point that can be reached. For the BR CRYO a dew point in the range of -200°C (-125°F) is required.

DO NOT use inlet pressure below 55 PSI or above 120 PSI.

3.5 AIR NOZZLES

Inside the BR Cryo lid, are four air nozzles from which the cooled air is emitted during operation. Each nozzle swivels to allow for direct cooling to specific areas, or nozzles can be oriented in clockwise or counterclockwise direction to induce an optimal circular flow pattern. Prior to each run, check the nozzle orientation to ensure that the desired cooling effect is selected. A “x” pattern configuration is recommended.

AIR NOZZLES



SECTION 4 — OPERATION WITH LIQUID NITROGEN

4.1 USING LIQUID NITROGEN

WARNING: Wear eye, face, hand and skin protection when working with liquid nitrogen. Operate in a well ventilated area.

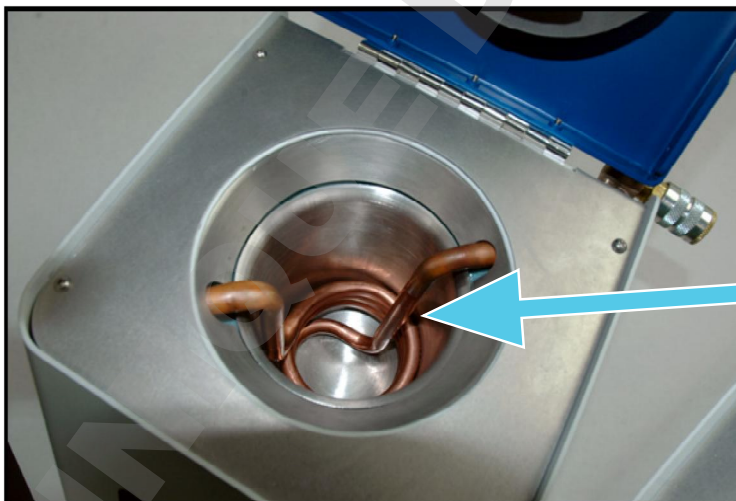
All installation procedures on pages 5-10 must be carried out before using the BR CRYO.

Pre-Cooling Instructions

NOTE: Do not load samples into the Bead Ruptor processing chamber prior to pre-cooling

1. Before adding liquid nitrogen to BR CRYO chamber, run dry air for 30 seconds on high to purge lines.
2. Fill chamber to 3 inches (7.6cm) below the top of the chamber. This corresponds to approximately 0.5L or 16 oz. of liquid nitrogen. The copper coils at the bottom of the chamber must be covered.
3. Close the BR CRYO lid and turn the Airflow Control Knob counterclockwise to begin the flow of air into the processing chamber.
4. Pre-cool the processing chamber to 0°C.

PLEASE NOTE: Pre-cool the Cryo chamber and Bead Ruptor processing chamber only once. There is no need to cool the Cryo chamber between runs.



The coils must be covered.

WARNING: DO NOT pre-cool the Bead Ruptor processing chamber and the lid to lower than 0°C when using liquid nitrogen.

SECTION 4 — OPERATION WITH LIQUID NITROGEN

4.2 PREPARATION FOR HOMOGENIZATION

1. Insure that the knob of the BR CRYO is in the off position (all the way clockwise) and all hoses are connected correctly. (see page 12)
2. Load samples into the Bead Ruptor 24.
3. Set the desired time, speed dwell and number of cycles on the Bead Ruptor 24.
4. Close the Bead Ruptor 24 lid.

4.3 HOMOGENIZING SAMPLES

CAUTION: 55-120 PSI is the recommended air pressure for use with the BR CRYO. Pressure above 120 PSI could potentially damage internal components.

1. After completing the pre-cooling and preparation phase, refill the BR CRYO with enough liquid nitrogen to fill the chamber 3 inches (7.6cm) below the top of the chamber. The BR CRYO holds approximately 0.5 liter of liquid nitrogen which is sufficient for approximately 4 minutes of homogenization time.
2. Lower the lid of the BR CRYO.
3. Turn the Airflow Control Knob counter clockwise to begin cooling of the Bead Ruptor 24 sample chamber and samples. Turning the knob further counter clockwise increases the airflow and decreases the temperature in the Bead Ruptor 24 sample chamber. Allow the air to flow until the temperature displayed on the external thermometer reaches 0°C.
4. As soon as the external thermometer indicates 0° C (23°F), press "RUN" on the Bead Ruptor 24 to begin homogenization.



DO NOT cool below 0°C when pre-cooling the Bead Ruptor 24 processing chamber prior to homogenization.

DO NOT operate the BR-Cryo with the 15 mL, 30 mL or 50 mL tube carriages. Damage to the BR-Cryo lid will result.

SECTION 4 — OPERATION WITH LIQUID NITROGEN

4.4 AFTER HOMOGENIZATION

1. Turn off the compressed air supply.
2. Turn off the BR CRYO by turning the knob clockwise to the off position.
3. Open the lid of the BR CRYO.
 - Allow the liquid nitrogen to evaporate completely before attempting to move the BR CRYO unit.
 - Allow the connected hoses to warm up before attempting to remove them. Protective gloves are recommended.

WARNING: Avoid any direct skin contact with the cold parts of the BR CRYO and Bead Ruptor 24.

WARNING: Handle the equipment with protective gloves.

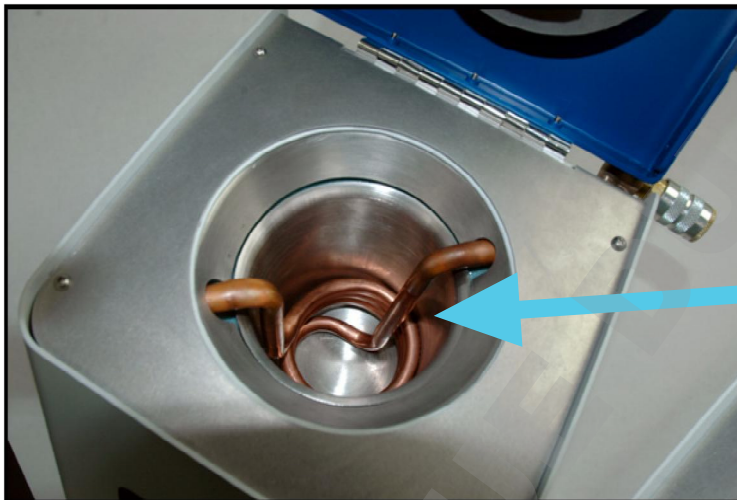
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SECTION 5 — OPERATION WITH DRY ICE

5.1 USING DRY ICE

Liquid Nitrogen will provide the best cooling results with the BR Cryo. However, dry ice and alcohol may also be used. All installation procedures on pages 6-12 must be carried out before using the BR Cryo.

1. Run dry air for 30 seconds on high to purge lines.
2. Fill the BR Cryo chamber with approximately 0.5L (16 oz.) of dry ice.
3. Pour approximately 0.5L (16 oz.) of ethanol or methanol inside the BR Cryo chamber.
The alcohol should cover the top of the internal coil.
4. Let the mixture sit for five minutes, without air flowing, to allow the coils to cool.
5. After five minutes, close the BR Cryo lid and turn the Airflow Control Knob counter clockwise to maximum until the temperature reading indicates 0°C on the external thermometer.



The coils
must be
covered.

WARNING: DO NOT pre-cool the Bead Ruptor processing chamber and the lid to lower than -5°C when using the dry ice/alcohol mixture.

5.2 PREPARATION FOR HOMOGENIZATION

1. Insure that the knob of the BR Cryo is in the off position (clockwise) and all hoses are connected correctly. (see page 12)
2. Load samples into the Bead Ruptor 24. (See Bead Ruptor 24 User Manual)
3. Set the desired time, speed, dwell and number of cycles on the Bead Ruptor 24.
4. Close the Bead Ruptor 24 lid.

SECTION 5 — OPERATION WITH DRY ICE

5.3 HOMOGENIZING SAMPLES

CAUTION: 55-120 PSI is the recommended air pressure for use with the BR Cryo. Pressure above 120 PSI could potentially damage internal components. .

1. If necessary, add more dry ice to top off the mixture before closing the BR Cryo lid. This mixture of dry ice and alcohol will allow for roughly 90 minutes of homogenization time.
2. Lower the lid of the BR Cryo.
3. Adjust the Airflow Control Knob to begin cooling of the Bead Ruptor 24 sample chamber and samples. Turning the knob counter clockwise increases the airflow and decreases the temperature in the Bead Ruptor 24 sample chamber. Allow the air to flow until the temperature display on the external thermometer is approximately -5°C (23°F).
4. As soon as the temperature reading indicates 0°C (23°F) on the external thermometer, press "RUN" on the Bead Ruptor 24 to begin homogenization.



DO NOT exceed below -5°C when pre-cooling the Bead Ruptor 24 processing chamber prior to homogenization.

SECTION 5 — OPERATION WITH DRY ICE

5.4 AFTER HOMOGENIZATION

1. Turn off the compressed air supply.
2. Turn off BR Cryo airflow.
3. Open the lid of the BR CRYO and turn the airflow control knob to the off position.
 - Allow the liquid nitrogen to evaporate completely before attempting to move the BR CRYO unit.
 - Allow the connected hoses to warm up before attempting to remove them. Protective gloves are recommended.

WARNING: Avoid any direct skin contact with the cold parts of the BR CRYO and Bead Ruptor 24.

SECTION 6 — MAINTENANCE & SERVICE

6.1 CLEANING THE BR CRYO

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

Example of Decontamination Procedure

If a sample 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 diluted alcohol.

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.

DO NOT attempt to service the BR Cryo 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.

6.2 TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	ACTION(S)
Cold air is not flowing into the Bead Ruptor 24	The cooling system is not supplied with compressed air.	<ol style="list-style-type: none">1. Check that the air source is open.2. Check that there are no leaks in the hoses.
	<ul style="list-style-type: none">- The airflow nozzles are obstructed.- The air purity is lower than what is recommended.	<ol style="list-style-type: none">1. Wait for the units to completely de-frost.2. Ensure the air purity is 99% and the water content is <5ppm.3. If problem persists, contact technical support.
One or several outflows do not work.	One or more of the nozzles are defective.	<ol style="list-style-type: none">1. Contact technical support.
System is not performing optimally.	The airflow holes are obstructed.	<ol style="list-style-type: none">1. Wait for the units to completely de-frost.2. If problem persists, contact technical support.
	The outflow control valves or regulator are defective.	<ol style="list-style-type: none">1. Contact technical support.

SECTION 7 — TRANSPORT, STORAGE & SERVICE

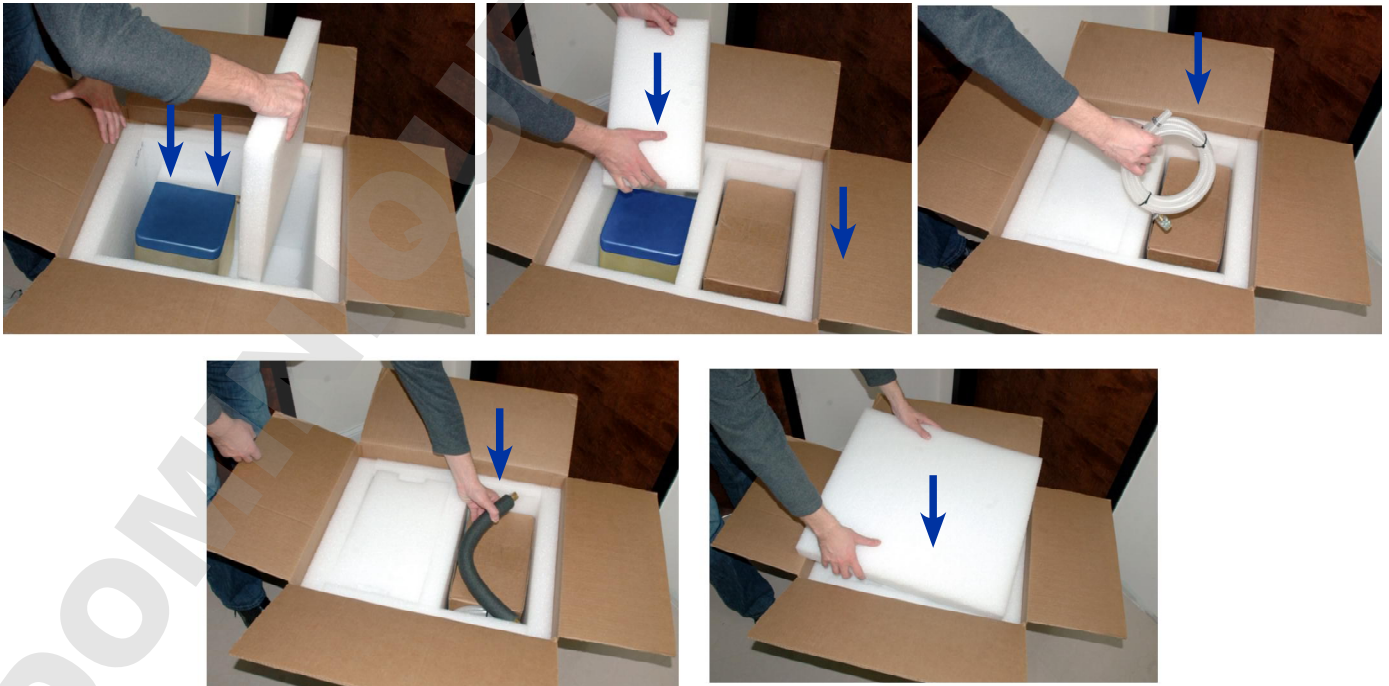
7.1 TRANSPORTING THE BR CRYO

Avoid violent shocks that may damage the equipment. Save and use all original packaging for the BR Cryo.

CAUTION: DO NOT lift the BR Cryo by holding the cover. It must be lifted by gripping the sides of the unit and holding it from the bottom.

Before transporting the equipment, it is necessary to:

1. Ensure that the BR Cryo does not contain any liquid nitrogen or dry ice and alcohol.
2. Use a soft cloth to remove any moisture from the unit.
3. Place the original packaging box on a level floor surface.
4. Carefully place the BR Cryo adjacent to one side of the Styrofoam-lined box.
5. Place the white foam support pieces against the side and rear of the BR Cryo.
6. Place the black BR Cryo/BR 24 lid into the smaller cardboard box and place inside the empty Styrofoam compartment.
7. Place the notched white foam piece over the BR Cryo.
8. Store the hoses next to and on top of the cardboard box containing the lid.
9. Place the large white Styrofoam piece on top and seal the cardboard box.



PLEASE NOTE: SAVE ALL INCLUDED PACKAGING!

SECTION 7 — TRANSPORT, STORAGE & SERVICE

7.2 STORAGE

The unit must be stored in a dry area at a temperature ranging from 0°C/32°F to 50°C/122°F.

7.3 SERVICE

For any product servicing please contact Omni International at 1-800-776-4431.

7.4 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 radioactivity 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.

SECTION 8 — SPECIFICATIONS

8.1 SPECIFICATIONS

Length:	13.5 in./34.3cm (at base) & 8 in./20.3cm (at top)
Width:	9 in./22.9cm
Height:	11.5 in./29.2cm (24 in./61cm tall with lid open)
Weight:	16 lbs./7.26kg
Cryo Chamber Volume:	1 Liter (2 quarts)
Warranty:	One Year

8.2 OPERATING REQUIREMENTS

Air Outflow

Optimal Pressure Of Compressed Air Source:	From 55 to 120 PSI
Clean & Dry Compressed Air:	Purity 99.99%, water < 5ppm
Liquid Nitrogen Required Per Run:	1 liter max
Liquid Nitrogen Consumption:	About 1 liter / 5 min. of homogenization time
Dry Ice/Alcohol Mixture Required:	0.5L (16 oz.) of alcohol + 0.5L (16 oz.) of dry ice
Dry Ice Consumption:	About 1liter of mixture / 90 min. of homogenization time

DO NOT use inlet pressure below 55 PSI or higher than 120 PSI.

DO NOT operate the Bead Ruptor 24 when the temperature within the processing chamber is below -10°C.



Omni-inc.com

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Rev B

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