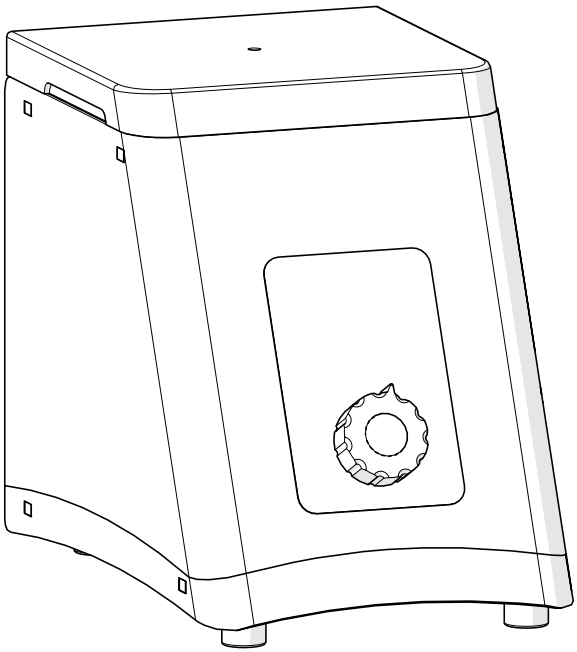
Bead Mill Cryo

Cooling Unit

User Manual



Catalog No	Description
432-0394	VWR Cryo Cooling Unit

Legal Address of Manufacturer

United States

VWR International, LLC
100 Matsonford Rd
Radnor, PA 19087
800-932-5000
http://www.vwr.com

Europe

VWR International bv
Researchpark Haasrode 2020
Geldenaaksebaan 464
3001 Leuven
+ 32 16 385011
http://be.vwr.com

Country of Origin

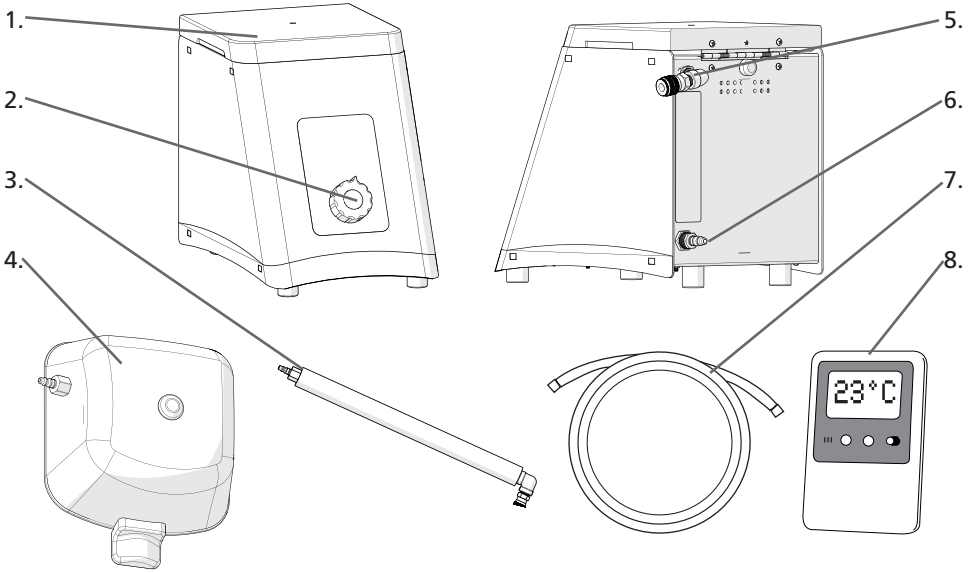
Made in USA

Intended Use

The VWR Bead Mill is intended for milling and homogenising of a number of substances. Not intended for medical or diagnostics purposes.

Table of Contents

Overview / Package Contents



1. Lid
2. Airflow Control Knob
3. Insulated Cryo Hose
4. Bead Mill Cryo Lid
5. Cold Air Outflow
6. Compressed Air Input
7. Compressed Air Hose
8. External Thermometer

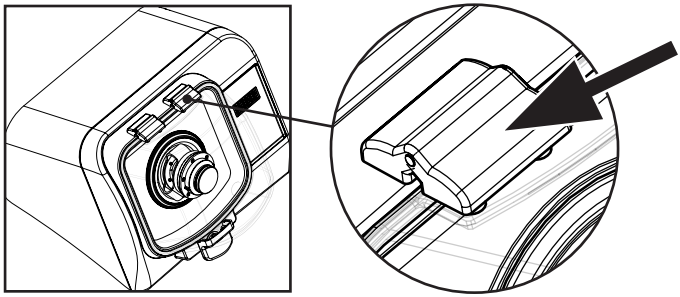
The Bead Mill Cryo Cooling Unit consists of the following:

Description	Quantity
Bead Mill Cryo Cooling Unit	1
Insulated Cryo Hose	1
Bead Mill Cryo Lid	1
External Thermometer	1
Compressed Air Hose	1
Tool Kit	1
User Manual	1
Not Included	
Hose Barb - 3/8” or equivalent	1

Installation

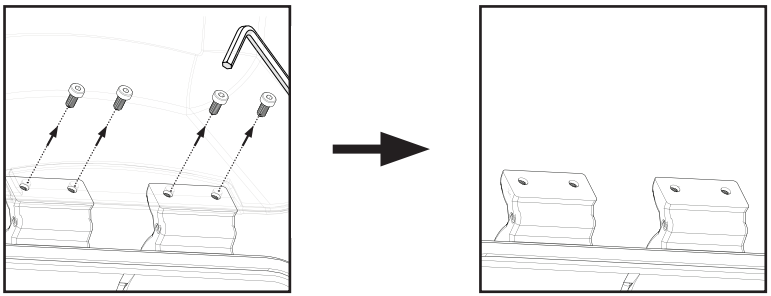
Removing the Bead Mill Lid

1.



Locate Lid Hinges.

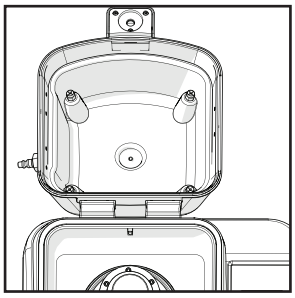
2.



Lift Lid and remove 4 screws using the provided Allen Key. Remove Lid

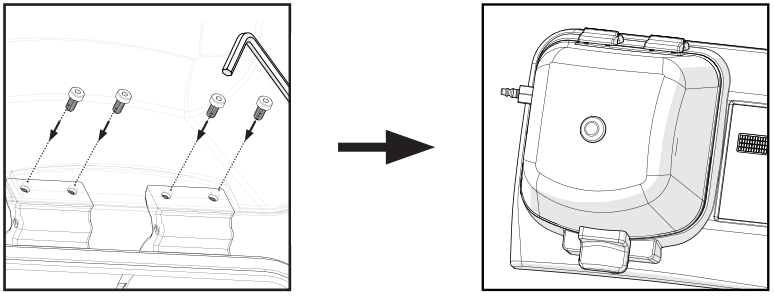
Replace with Bead Mill Cryo Lid (Black)

3.



Align black Cryo lid onto the Bead Mill.

4.

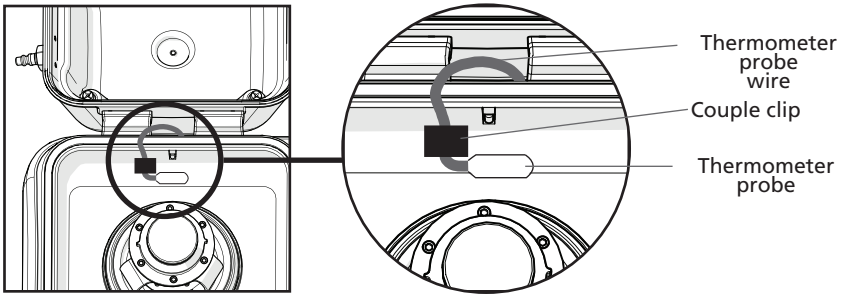


Replace the four screws and tighten using the provided Allen Key.

Installation

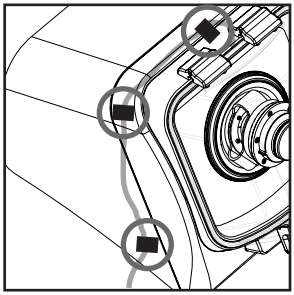
Install the External Thermometer

1.



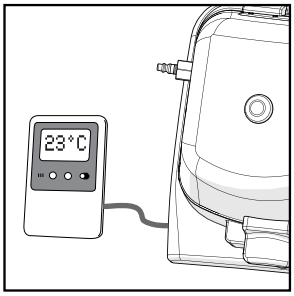
Position the Thermometer Probe under the Bead Mill lid as shown, using the Couple Clip to secure the thermometer probe wire under the Bead Mill lid.

2.



Place remaining Couple Clips as shown. Guide the thermometer probe wire through the clips.

3.



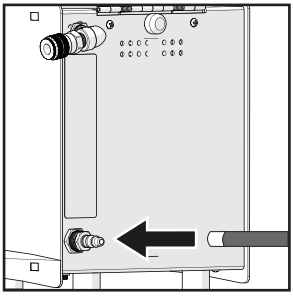
Plug the thermometer probe wire into the External Thermometer.

NOTE: The Digital Thermometer has been preset to Celsius with alarms to be triggered if temperatures reach below -10°C or over 70°C.

Installation

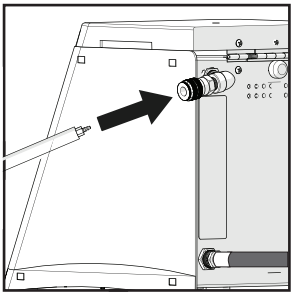
Install Intake and Output Hoses

NOTE: Compressed ISO8573 Class 2 or better air is required to use the Cryo unit: Total oil < 0.1 mg/m^3, vapor pressure dew point < -50ºC. The compressed air hose can be fitted to a standard medical air regulator using a 3/8" hose clamp.

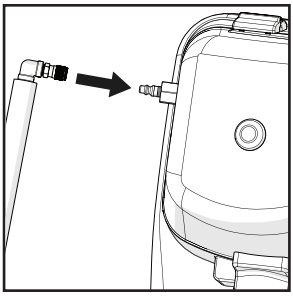
1. 

Connect the hose from air supply to the rear of the Cryo unit.

Note: An optional hose with a "quick connect" coupling has been included with the Cryo.
An additional fitting is required to connect the hose to the air supply.
Hose Barb - 3/8" or equivalent.

2. 

Connect the straight end of the Insulated Cryo Hose to the Cryo Unit.

3. 

Connect the 90º elbow end of the Insulated Cryo Hose to the Bead Mill Lid.

Recommended Dry Air Guidelines

• Obtain a high-pressure cylinder of Medical Air. Medical Air is a blend of nitrogen and oxygen that contains virtually no traces of oil or water vapor.

OR

• Between an air compressor and the Cryo Unit inlet, use a refrigerated air dryer or desiccant dryer. These systems are specified in the lowest dew point that can be reached.

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

Operation

Liquid Nitrogen
Pre - Cooling

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

PRE-COOLING - follow pre-cooling procedure before homogenizing samples.

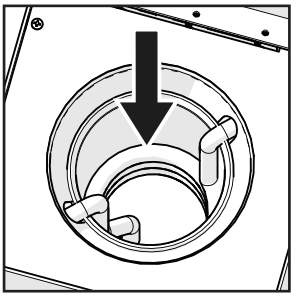
NOTE: Do not load samples into the Bead Mill processing chamber prior to pre-cooling.

1.

- Purge air lines by running dry air for 30 seconds at the MAX setting.

- Turn knob to the Off position.

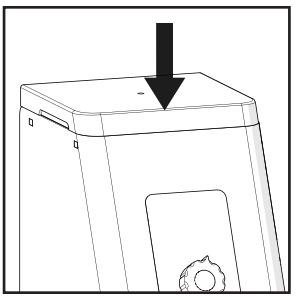
2.

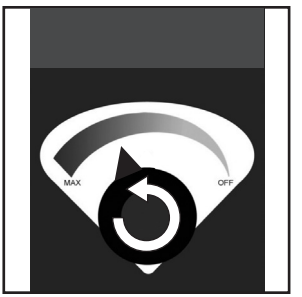


Add 0.5 L or 16 oz. of liquid nitrogen to the chamber, fill to 3 inches (7.6 cm) below the top of the chamber.

NOTE: The copper coils in the chamber must be completely covered by liquid nitrogen.

3.





Close the lid of the Cryo unit and turn the air flow control knob counterclockwise to begin the flow of air into the processing chamber. Pre-cool the Bead Mill processing chamber to 0ºC.

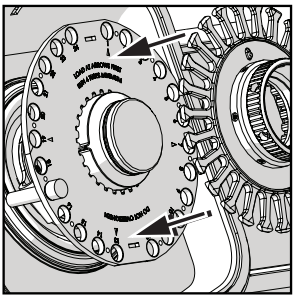
WARNING: DO NOT pre-cool the processing chamber below 0ºC.

Operation

Liquid Nitrogen
Homogenizing Samples

1. 

Ensure that the knob of the Cryo is in the off position and all hoses are connected correctly.

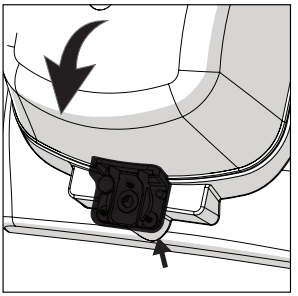
2. 

- Load samples into the Bead Mill.

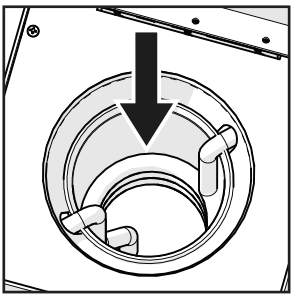
- Install Finger Plate

- Set the desired time, speed dwell and number of cycles on the Bead Mill.

WARNING: Cryo is compatible with 1.5 mL, 2 mL and 7 mL tubes only.

3. 

Close the Bead Mill lid.

4. 

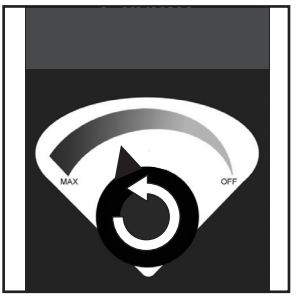
Add 0.5 L or 16 oz. of liquid nitrogen to the chamber of the Cryo unit, fill to 3 inches (7.6 cm) below the top of the chamber.

NOTE: The copper coils in the chamber must be completely covered by liquid nitrogen.

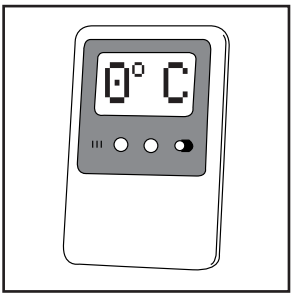
CAUTION: 55-120 PSI is the recommended air pressure for use with the Cryo. Pressure above 120 PSI could damage internal components.

Operation

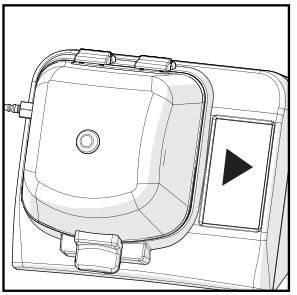
Liquid Nitrogen
Homogenizing Samples

5. 

Turn Airflow control knob counter clockwise to begin cooling.

6. 

Allow air to flow until the External Thermometer reads 0°C.

7. 

Once the temperature has reached 0°C, press RUN on the Bead Mill to begin homogenization.

8. 

When the cycle has ended:

- Turn off compressed air supply
- Turn off Cryo
- Open the lid of the Bead Mill and remove samples.

CAUTION: Allow liquid nitrogen to evaporate before attempting to move the Cryo unit.

WARNING: Avoid direct skin contact with Cryo and Bead Mill components after exposure to liquid nitrogen. Always use protective gloves.

Operation

Dry Ice

Pre-Cooling

Liquid nitrogen will provide the best results.
However, dry ice and alcohol may be used.

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

PRE-COOLING - follow pre-cooling procedure before homogenizing samples.

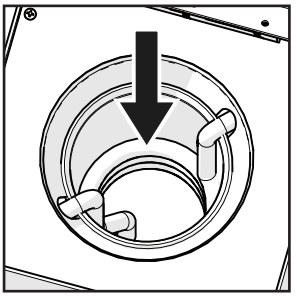
NOTE: Do not load samples into the Bead Mill processing chamber prior to pre-cooling.

1.

- Purge air lines by running dry air for 30 seconds at the MAX setting.

- Turn knob to the **Off** position.

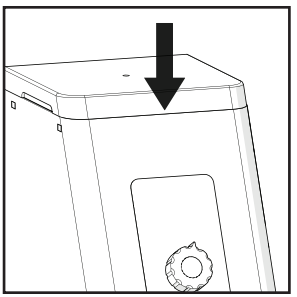
2.

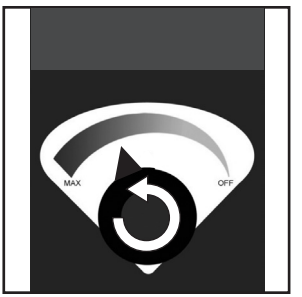


- Add 0.5 L (16 0z.) Of dry ice to the Cryo chamber.
- Add 0.5 L (16 oz.) of ethanol or methanol to the Cryo chamber and the mixture sit for five minutes to allow the coil to cool.

NOTE: The copper coils in the chamber must be completely covered by the alcohol and dry ice.
WARNING: Do not fill more than 3/4 of the chamber volume as leaking may occur.

3.





Close the lid of the Cryo unit and turn the air flow control knob counterclockwise to begin the flow of air into the processing chamber. Pre-cool the Bead Mill processing chamber to -5°C.

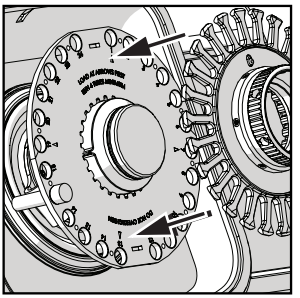
WARNING: DO NOT pre-cool the processing chamber below -5°C.

Operation

Dry Ice
Homogenizing Samples

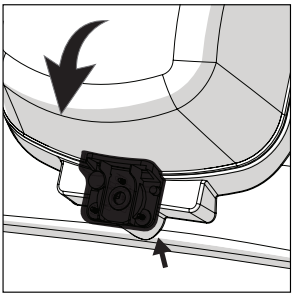
1. 

Ensure that the knob of the Cryo is in the off position and all hoses are connected correctly.

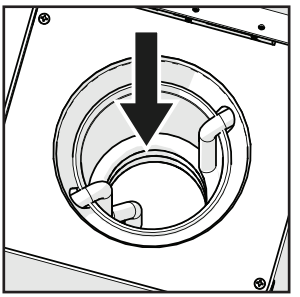
2. 

- Load samples into the Bead Mill.
- Install Finger Plate
- Set the desired time, speed dwell and number of cycles on the Bead Mill.

WARNING: Cryo is compatible with 1.5 mL, 2 mL and 7 mL tubes only.

3. 

Close the Bead Mill lid.

4. 

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- Add 0.5 L (16 oz.) of ethanol or methanol to the Cryo chamber and the mixture sit for five minutes to allow the coil to cool.

NOTE: The copper coils in the chamber must be completely covered by the alcohol and dry ice.

WARNING: Do not fill more than 3/4 of the chamber volume as leaking may occur.

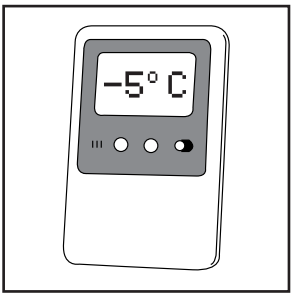
CAUTION: 55-120 PSI is the recommended air pressure for use with the Cryo. Pressure above 120 PSI could damage internal components.

Operation

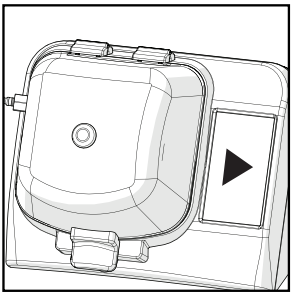
Dry Ice
Homogenizing Samples

5. 

Turn Airflow control knob counter clockwise to begin cooling.

6. 

Allow air to flow until the External Thermometer reads -5°C (23°F)

7. 

Once the temperature has reached -5°C, press RUN on the Bead Mill to begin homogenization.

8. 

When the cycle has ended:

- Turn off compressed air supply
- Turn off Cryo
- Open the lid of the Bead Mill and remove samples.

CAUTION: Allow the dry ice to evaporate and dispose of remaining alcohol before attempting to move the Cryo unit.

WARNING: Avoid direct skin contact with Cryo and Bead Mill components after exposure to dry ice. Always use protective gloves.

Trouble Shooting

Problem	Possible Cause	Action
Cold air is not flowing into the Bead Mill.	The cooling system is not supplied with compressed air.	1. Check that the air source is open. 2. Check that there are no leaks in the hoses.
	- The airflow nozzles are obstructed. - The air purity is lower than recommended.	1. Wait for the units to completely de-frost. 2. Ensure the air purity is 99% and the water content <5ppm.
One or several outflows do not work.	One or more nozzles are defective.	Contact Technical Support
System is not performing optimally	The airflow holes are obstructed.	1. Wait for the units to completely de-frost. 2. If problem persists, contact technical support.
	The outflow control valves or regulator are defective.	Contact technical support.

RISKS ASSOCIATED WITH LIQUID NITROGEN: It is recommended that the 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 that protect 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: transport the unit before emptying the nitrogen tank completely.

DO NOT: overfill the tank with liquid nitrogen.

DO NOT: use compressed gases which are not specified.

DO NOT: operate the Cryo cooling unit with the Bead Mill 15 mL, 30 mL, or 50 mL tube carriages. Damage to the Cryo lid will result.

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 thus may damage the internal components or cause liquid nitrogen to be spilled.

DO NOT: install unauthorized components or accessories as this will void the warranty.

DO NOT: transport the unit packaging other than the original.

DO NOT: attempt to service the Cryo Cooling Unit in a manner other than those discussed in this manual.

Technical Service

Web Resources

Visit the VWR website at **www.vwr.com** for:

- Complete technical service contact information
- Access to the VWR Online Catalogue, and information about accessories and related products
- Additional product information and special offers

Contact Us

For information or technical assistance, contact your local VWR representative or visit **www.vwr.com**.

Warranty

VWR warrants that this product will be free from defects in material and workmanship for a period of two (2) years from date of delivery. If a defect is present, VWR will, at its option and cost, repair, replace, or refund the purchase price of this product to the customer, provided it is returned during the warranty period. This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication, or from ordinary wear and tear. If the required maintenance and inspection services are not performed according to the manuals and any local regulations, such warranty turns invalid, except to the extent, the defect of the product is not due to such non-performance.

Items being returned must be insured by the customer against possible damage or loss. This warranty shall be limited to the aforementioned remedies. IT IS EXPRESSLY AGREED THAT THIS WARRANTY WILL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND IN LIEU OF THE WARRANTY OF MERCHANTABILITY.

Compliance with Local Laws and Regulations

The customer is responsible for applying for and obtaining the necessary regulatory approvals or other authorisations necessary to run or use the Product in its local environment. VWR will not be held liable for any related omission or for not obtaining the required approval or authorisation, unless any refusal is due to a defect of the product.

Equipment Disposal

This equipment is marked with the crossed out wheeled bin symbol to indicate that this equipment must not be disposed of with unsorted waste. Instead it is your responsibility to correctly dispose of your equipment at life cycle end by handing it over to an authorized facility for separate collection and recycling. It is also your responsibility to decontaminate the equipment in case of biological, chemical and/or radiological contamination, so as to protect from health hazards the persons involved in the disposal and recycling of the equipment. For more information about where you can drop off your waste of equipment, please contact your local dealer from whom you originally purchased this equipment. By doing so, you will help to conserve natural and environmental resources and you will ensure that your equipment is recycled in a manner that protects human health.

Thank you.