

The Revvity logo is displayed in white lowercase letters on a black rectangular background. To the right of the logo, there is a decorative graphic of several overlapping, translucent spheres in shades of yellow, orange, and green, resembling a molecular or biological structure.

revvity

USER MANUAL

Omni Tip™ Homogenizing Kits

Version: G Date: October 2024
Document Number: PCR-258

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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.

WARNING: DO NOT process pathogenic material in an open container, since aerosols created during normal processing could be inhaled by the operator. Please call for assistance in processing pathogens or other material which require sealed enclosures.

WARNING: Safety glasses are recommended when using Omni Tip™ plastic probes. It is possible for plastics to shatter or break after exposure to certain chemicals, or after repeated autoclaving.

WARNING: Keep all housings in place and in working order.

WARNING: Remove all tools from the generator probe before turning the motor on.

WARNING: DO NOT use the motor in a dangerous environment.

WARNING: Disconnect the motor before servicing, and when changing the generator probe.

WARNING: 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.

WARNING: Reduce the risk of unintentional starting; make sure the power 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.

CAUTION: Large, solid particles, such as frozen tissue, may cause damage to the standard Omni Tip™ generator probes. Use the Hard Tissue Omni Tips™ for those applications.

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Proper Equipment Operation

To reduce the risk of electric shock, do not remove the cover. No user serviceable parts are inside. Refer to qualified service personnel if help is required. Use this product only in the manner described in this manual. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

FCC

This device complies with part 15 of the FCC (United States Federal Communications Commission) Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference
- This device must accept any interference received, including interference that may cause undesired operation.

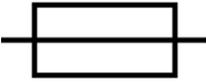
CE/UKCA

This device complies with all CE and UKCA rules and requirements. Changes or modifications to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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Table of Symbols

Symbol	Description	Symbol	Description
	Caution. Refer to the User documentation (ISO 7000-0434B)		On (power). (IEC 60417-5007)
	Hazardous voltage; risk of electric shock. (IEC 60417-6042)		Off (power). (IEC 60417-5008)
	Fuse. (IEC 60417-5016)		Consult Instructions for Use. (ISO 7000-1641)
	Alternating current. (IEC 60417-5032)		CE Compliance Mark
	UKCA Certification Mark		WEEE symbol (EN50419:2005)
	RoHS Certification Mark		KC Certification Mark

Site Requirements

Operating Environment

4°C to 40°C / 39°F to 104°F, Humidity: 5% to 95% RH

Ambient Air

The system must be located in an area where the ambient air is clean. No emission of solid particles or smoke in the air by adjacent equipment is allowed. The level of dust should be comparable to that of normal laboratory spaces.

External Fire Protection

External fire protection should be installed according to local regulations for equipment operating unattended.

Decontamination

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 Revvity. 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 Revvity 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.

Omni Tip™ Homogenizing Kits

Omni's convenient Tissue Homogenizing Kits come with everything needed to homogenize tissue samples quickly and efficiently for successful RNA extraction. Each kit includes an Omni TH Homogenizer with an adapter for mounting Omni Tips™ generator probes (see Omni Tip™ Plastic Probes Section for more information). A choice of stainless steel rotor-stator generator probes is also available (see Motor Maintenance Section for more information). Our Tissue Homogenizing Kits are designed for situations where molecular contamination between samples cannot be tolerated. Stainless steel generator probes are available for efficient processing of frozen and/or fibrous tissues. Omni Tips™ are ideal when molecular contamination is of the utmost concern and are most beneficial when working with soft, unfrozen tissues. It is important that the diameter and length of the selected generator probe will fit securely within the vessel being used and the generator probe (plastic or stainless steel) is appropriate for the application.

Accessories

For applications where hands-free operation is desired, an optional stand assembly is available. A post clamp assembly is included with the Omni TH for post-mounting the unit to any comparable size ring stand. Additional Omni Tip™ generator probes are available. The adapter included in our Tissue Homogenizing Kits is required for mounting Omni Tips™ to the Omni TH Homogenizer, and is not disposable.

Description	Part Number	Quantity
Stand Assembly Kit	S1000	1
Omni Tip™ Adapter (for motor with black nose ring)	A1000SB	1
Omni Tip™ Adapter (for motor with blue nose ring)	12-121	1
7 mm Soft Tissue Omni Tips™	30750	25
7 mm Soft Tissue Omni Tips™	32750	50
7 mm Soft Tissue Omni Tips™	34750	100
7 mm Soft Tissue Omni Tips™	35750	500
7 mm Soft Tissue Omni Tips™	3M750	1000
7 mm Hard Tissue Omni Tips™	30750H	25
7 mm Hard Tissue Omni Tips™	32750H	50
7 mm Hard Tissue Omni Tips™	34750H	100
7 mm Hard Tissue Omni Tips™	35750H	500
7 mm Hard Tissue Omni Tips™	3M750H	1000
12 mm Hard Tissue Omni Tips™	301250	25
12 mm Hard Tissue Omni Tips™	321250	50
12 mm Hard Tissue Omni Tips™	341250	100
12 mm Hard Tissue Omni Tips™	351250	500
12 mm Hard Tissue Omni Tips™	3M1250	1000

TH Tissue Homogenizer

The TH Tissue Homogenizer is a variable speed, handheld or post-mounted homogenizer. It combines a high-speed, high-torque motor with a choice of autoclavable rotor-stator generator probes of various diameters or Omni Tip™ Plastic Probes.

Specifications

Part Number	TH-115 and TH-220
Input Voltage	TH-115 - 100-115V, 50/60 Hz and TH-220 - 220-230V 50/60 Hz
Weight	1.18 lbs. (538 g)
Dimensions	W: 2.5" (6.4 cm), H: 9" (22.9 cm)
Power	125 Watts
Speed	5,000 - 35,000 rpm
Standards Approval	CE and UKCA Approved

The TH consists of the following:

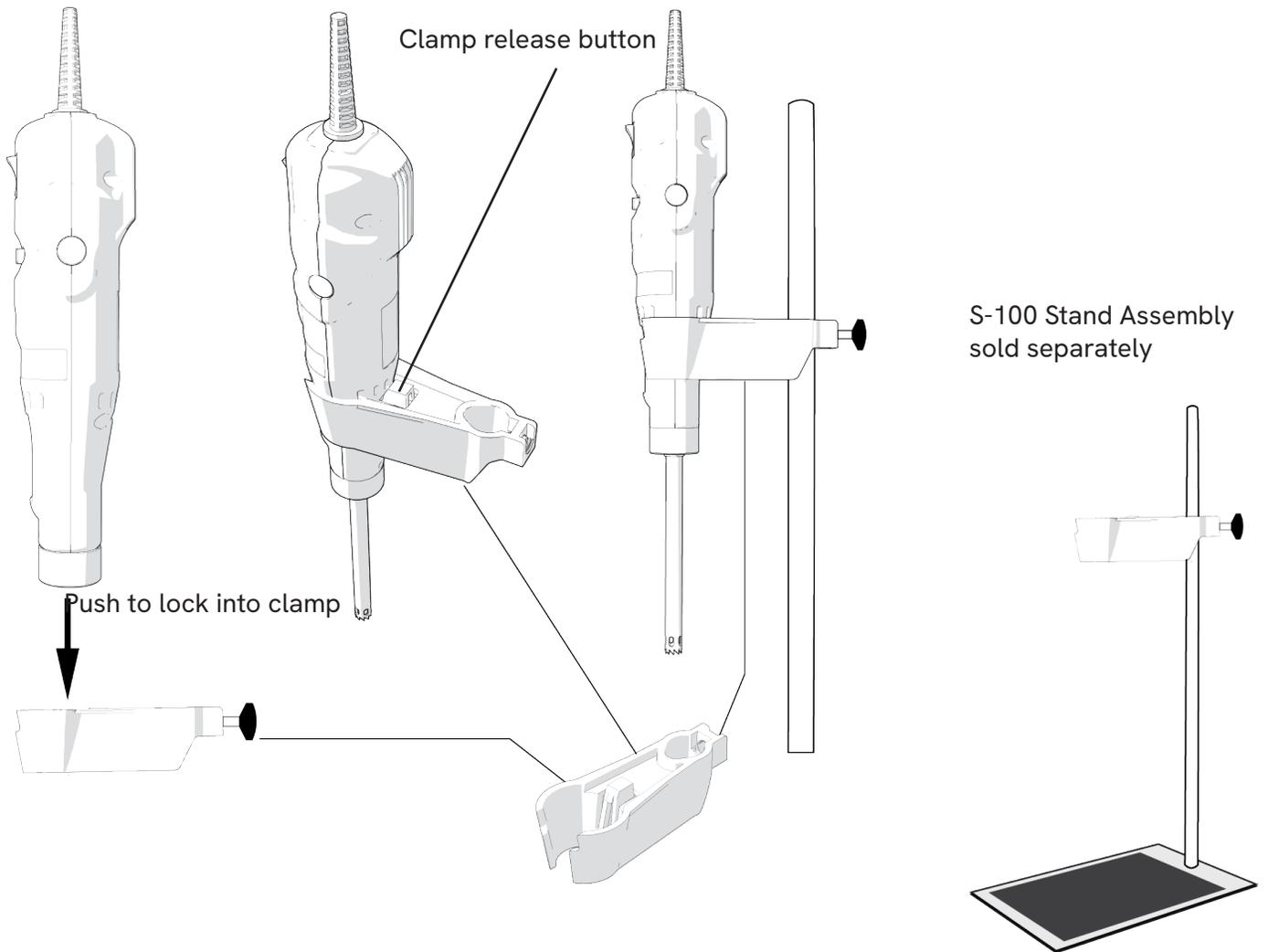
Description	Part Number	Quantity
Motor Drive Unit 110V or 220V	TH01 or TH02	1
Clamp	12-118	1
Tool Kit	T1001	1
Soft Tissue Omni Tip	30007L	1
Hard Tissue Omni Tip	30007HT	1
Omni Tip Adapter	12-121	1
Instruction Manual	H259-TH	1

Optional Stand Available (sold separately) - Order No. S1000

Stand Mounting the TH

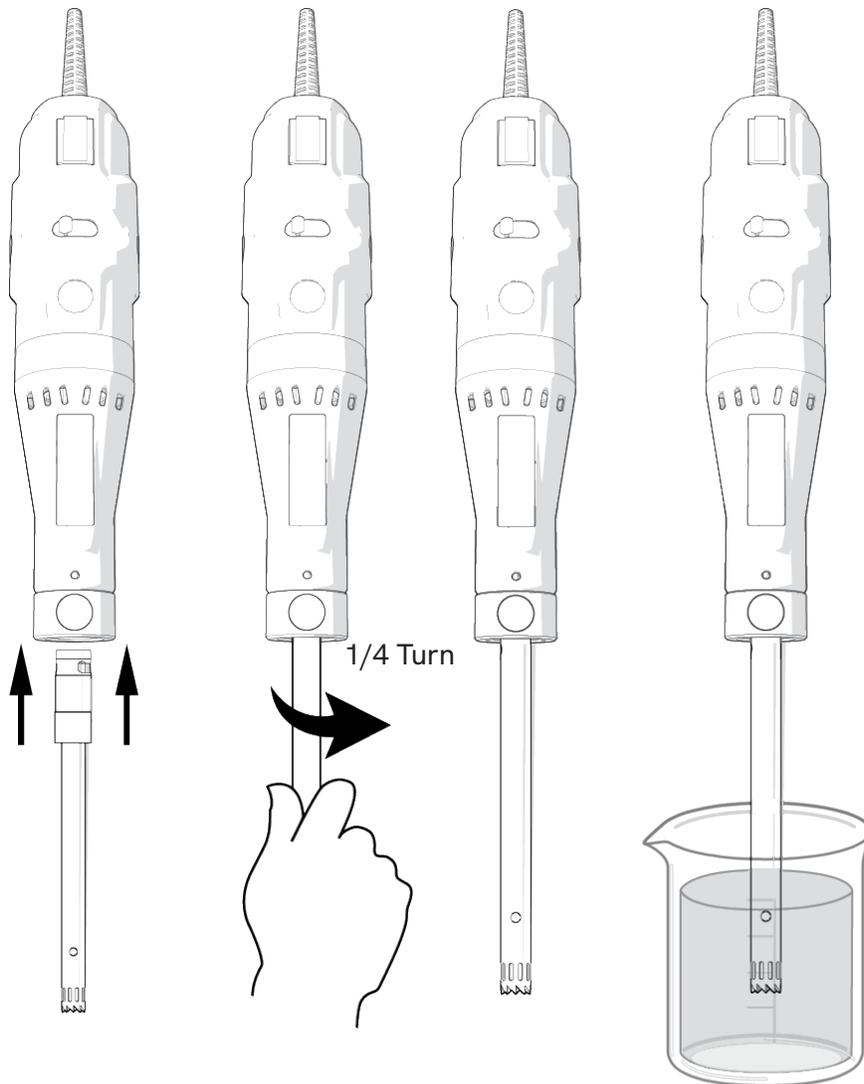
The Stand Assembly (S-1000) is sold separately.

- Slide the TH motor into the opening on the end of the post clamp assembly and push it down firmly. The unit will lock in place.
- To release the TH, press the black button on the back of the opening of the post clamp assembly and lift the motor from the cradle.
- Slide the post clamp assembly down over the end of the post until the clamp is at the desired height and lock in place.



Inserting Generator Probes into the TH

Stainless steel rotor-stator generator probes are easily installed to the TH motor by means of a quarter-turn bayonet mount. Simply push the generator probe into the motor housing as far as possible, turn clockwise, and release. Remove the blue protective cap from the tip of the generator probe and the TH is ready to operate.



1. Insert Generator Probe into coupling.
2. Quarter turn clockwise to lock.
3. Tighten thumbscrew.
4. Ready to use.
*Always submerge probe in liquid before starting.

*Never run dry

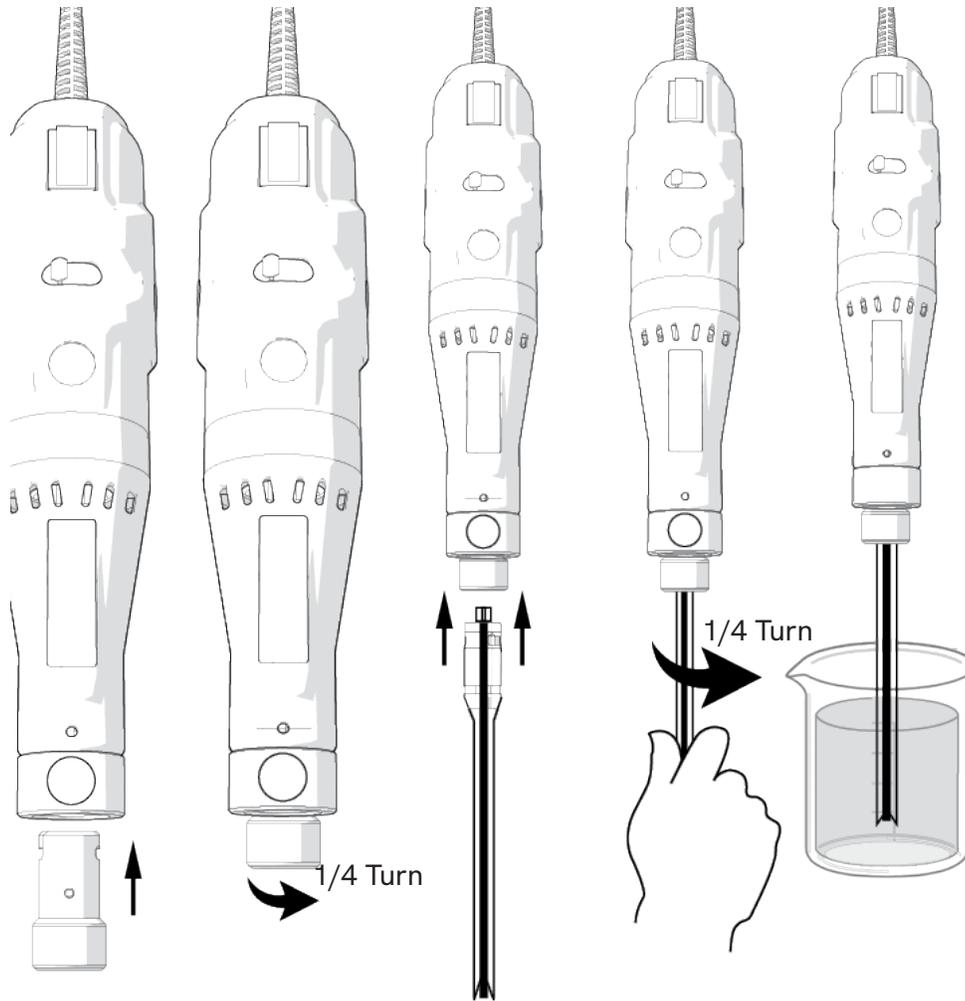
WARNING: The blue protective cap must be removed from the end of the generator probe before operating.

Generator Probes for the TH

Diameter	Length	Part Number	Processing Range	Pack Qty
5 mm	75 mm	B5-075	<200 μ L - 5 mL	1
5 mm	75 mm	B5-075-6	<200 μ L - 5 mL	6
7 mm	110 mm	B7-110ST	250 μ L - 30 mL	1
7 mm	110 mm	B7-110ST-6	250 μ L - 30 mL	6
10 mm	110 mm	B10-110ST	1.5 - 100 mL	1
10 mm	110 mm	B10-110ST-6	1.5 - 100 mL	6

Inserting Disposable Omni Tip Probes into the TH

An adapter (12-121) is required to use Omni Tip™ disposable plastic probes with the TH. TH Tissue Homogenizers with a black nose ring will require adapter (A1000SB) to use Omni Tips™. First, insert the smaller end of the adapter into the TH as far as possible, turn clockwise, and release. Next, insert the disposable probe into the adapter as far as possible, turn clockwise, and release. The TH is now ready to operate. Omni Tips™ can be disposed of after use.



1. Insert adapter into coupling.
2. Quarter turn clockwise to lock. Tighten thumbscrew.
3. Insert probe into adapter.
2. Quarter turn clockwise to lock.
5. Ready to use.
*Always submerge probe in liquid before starting.

*Never run dry

General Operation

Connect the TH to an appropriate power outlet. Speed of the TH varies between 5,000 and 35,000 rpm and is set by means of the blue slider switch. The power switch located above the blue slider switch turns the motor on and off.

Insert the generator probe into the TH motor. The depth of the generator probe in the sample vessel can significantly affect flow patterns within the vessel. This also affects processing efficiency. As a rule of thumb, the generator probe usually operates most efficiently at a depth of 1/3 (to 1/2) of the liquid height. Heavy sediments may require deeper immersion, and this processing depth can be optimized by observing flow patterns and related processing results. While processing, liquid can circulate through the two holes at the bottom of the generator probe. When using a stainless steel probe, the top hole should not be immersed in the sample. Blocking the upper hole could result in liquid being drawn into the lower motor bearing.

Operating at the top speed of 35,000 rpm enhances the processing efficiency of the rotor-stator generator probe. For most samples, three to four short bursts at top speed should be sufficient for complete homogenization of the sample.

NOTE: For optimal sample recovery during processing, reduce the motor speed and completely remove the generator probe from the sample. Then turn off the motor drive unit.

Theory of Operation

The rotor shaft is coupled directly to the drive motor, via the drive pin. When attached to the homogenizer motor, the rotor shaft can spin up to 35,000 rpm. This assembly makes up the rotor portion of the rotor-stator generator probe. The tube/collar assembly is attached to the motor housing, but does not spin. This is the stator portion of the rotor-stator generator probe. As the rotor knife spins within the tube and collar assembly, it creates a pumping action, pulling the sample into the open end of the generator probe and forcing the sample out through the windows in the tube. The interaction of the rotor knife with these windows sets up a shearing action, reducing the particle size of the sample. The speed differential between the rapidly moving portion and the relatively stationary portion of the sample sets up a second force called cavitation which pulls the sample apart, further reducing the particle size.

The processing efficiency can be affected by:

- Amount of material processed vs. size and speed of the generator probe.
- Container geometry and size (round vessels encourage swirling, while fluted or cornered vessels disrupt flow patterns for more effective mixing/processing).
- Processing speed vs. optimal speed.
- Size and type of material and flow characteristics (material particles must be small enough to be carried into the generator head for optimal processing).

Operational Guidelines

Rotor-stator homogenization provides highly efficient cellular lysis and membrane disruption while reducing the high-molecular weight of cellular components. Omni Tip Tissue Homogenizing Kits allow rapid and complete disruption of cell lysates to expose intracellular contents and ensure increased yields. A choice of rotor-stator generator probes, in plastic or stainless steel, process a wide range of sample preparation applications.

Non-sterile, plastic Omni Tips™ generator probes are ideal for situations where molecular contamination between samples cannot be tolerated. Omni Tips™ were designed to be disposed of after each use, eliminating cross contamination risks along with the time and effort normally required for cleaning. While Omni Tips™ are not recommended for extended use with phenol or guanidine-based reagents. Disposal may be required when used in conjunction with these reagents.

Stainless steel generator probes are best for difficult-to-process tissues and for situations where sample-to-sample contamination is not a concern. Stainless steel generator probes are equipped with a Teflon bearing. Our stainless steel generator probes can be quickly disassembled for thorough cleaning and bearing maintenance.

Revvity's stainless steel generator probes are available in many configurations tailored for specific sample types. Flat bottom generator probes are recommended for liquid or soft tissues, while saw tooth and extended blades are best for processing fibrous tissues. For situations where preprocessing or cutting the tissue prior to homogenization is inconvenient, wide windows allow larger pieces of sample to effectively pass through the processing head where shearing occurs.

Regardless of which type of generator probe is being used, the following factors can affect processing efficiency:

Size and Type of Material Being Processed

Solid particles, in any dimension, should be no more than half the diameter of the rotor-stator generator probe for optimal processing. This is extremely important when using the Omni Tip™ disposable generator probes. Stainless steel generator probes with extended blades and/or wide windows are available for processing large, solid samples.

Processing Speed

Omni Tip™ Homogenizing Kits include a handheld TH Homogenizer with motor speeds up to 35,000 rpm. Operating at the top speed enhances processing efficiency of the generator probes (both plastic and stainless steel) supplied with the Omni Tip™ Kits.

Container Geometry and Size

Round vessels encourage swirling. Fluted or cornered vessels disrupt flow patterns, allowing for more effective mixing/processing.

Chemical Resistance

Omni Tips™ generator probes are made of polycarbonate and an amorphous thermoplastic polyetherimide. The plastics used in Omni Tips™ have good chemical resistance to weak acids, chlorides, hypochlorides, and many other chemicals, allowing for reuse. However, phenol or guanidine-based reagents, commonly used in PCR studies, are not recommended for extended use with Omni Tips™. Exposure to these chemicals shortens the life of Omni Tips™ and usually results in disposal after each use.

Therefore, reuse is not guaranteed in such circumstances. If any cracking or brittleness is detected in an Omni Tips™ generator probe, it is recommended that it be discarded. Due to the many different chemicals and environments in which processing takes place, it is the responsibility of the user to set sterilization guidelines and protocols to optimize the life and performance of their Omni Tips™ generator probes.

Autoclaving Omni Tips™

Omni Tips™ generator probes may be autoclaved up to seven times and retain their mechanical properties. Due to different combinations of chemicals and environments, it is suggested that the autoclaving recommendations be followed as a guideline only, and the user should decide how to best alter the procedure for their specific application.

The tube and shaft of Omni Tips™ can be autoclaved at up to a maximum of 250°F for 45 minutes. This includes a 15-minute ramp up, 15-minute hold, and a 15-minute ramp down of the temperature cycle. If the tube or shaft begins to warp as a result of autoclaving, discard and lower the cycle time or temperature level accordingly for future runs.

Cleaning the Omni Tip™ Adapter

The Omni Tip™ (12-121 and A1000SB) adapters are constructed of aluminum with stainless steel rotating components. For general cleaning, it is recommended that the adapter be wiped down with a lint free cloth and an alcohol solution. Adequate molecular contamination cleaning can also be accomplished by scrubbing with soap and hot water, followed by brief rinsing with 1% SDS, and then by distilled water which has been treated with diethylpyrocarbonate (DEPC). **Autoclaving, baking, or submersion in cleaning agents is not recommended;** this will shorten the life of the adapter housing and bearings.



Omni Tip™ Adapter 12-121 (Blue Nose Ring)



Omni Tip™ Adapter A1000SB (Black Nose Ring)

Troubleshooting

Problem	Corrective Action
The TH is plugged in and turned on but is not functioning.	<ul style="list-style-type: none"> ▪ Check that the brushes are not worn and are correctly installed. Replace if necessary.
Motor is turned ON and makes a makes a "buzzing" sound, but is not working.	<ul style="list-style-type: none"> ▪ Check that the brushes are not worn and are correctly installed. Replace if necessary.
Motor unit operating speed declines, stalls intermittently, or stops completely.	<ul style="list-style-type: none"> ▪ Check that the brushes are not worn and are correctly installed. Replace if necessary.
PTFE bearing wears quickly.	<ul style="list-style-type: none"> ▪ Fluid level may be too low in the tube. ▪ Immerse the probe deeper into the fluid.
Excessive splashing in sample tube.	<ul style="list-style-type: none"> ▪ Fluid level too low for tube size.

WARNING: Any service must be performed by a qualified service technician. This can be either an Revvity Technician or an end user resource.

All parts need to be sourced from the Revvity service department.

Appendix

This equipment is marked with the crossed-out wheeled bin symbol, to indicate that this equipment may not be disposed of as unsorted municipal waste.

It's 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 of waste equipment. It's also your responsibility to decontaminate your equipment in case of biological, chemical or radiological contamination, and so protect the persons involved in the disposal and recycling of the equipment from health hazards.

For more information about where you can dispose of your waste equipment, please contact your local dealer, from whom you purchased the equipment.

By doing so, you will help to preserve natural and environmental resources and you will ensure that your equipment is recycled in a manner that protects human health.





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