Compresstome® VF-510-0Z User Manual

Thank You

Thank you for choosing the Compresstome® VF-510-0Z!

At Precisionary Instruments, we are thrilled to help you get started with your new vibrating microtome, and we take great pride in quality customer service. Please read the following manual to help you get started with the Compresstome® VF-510-0Z.

Note

The information, numerical data, notes and value judgements contained in this manual represent the current state of scientific knowledge and state-of-the-art technology. We aim to update the present manual regularly according to the latest technical developments. Please contact us or visit our website to find the latest versions of this user manual.

Contact info@precisionary.com for updated information.
Website: www.precisionary.com

Safety

Dangers, warnings, and cautions appear in a box and are marked by the warning triangle.

Important information for the user, such as disclaimers, appear in a box and are marked by the information symbol.

Caution! Follow the accompanying documentation.

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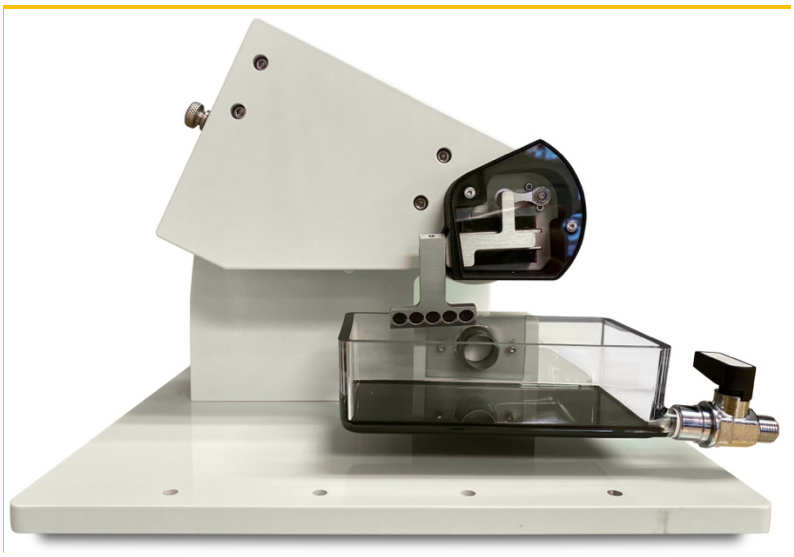
Part 1: Introduction

Model Description



The VF-510-0Z tissue slicer model is the latest version of our flagship product in the Compresstome® slicer family. With patented Auto Zero-Z® technology, the VF-510-0Z is fully automated to section both fixed and live tissues with a thickness range of 4 µm* to 1000 µm and an adjustable precision of 1 µm.

The Compresstome® VF-510-0Z excels at sectioning slices used for:

- Electrophysiology
- Immunohistochemistry
- Organotypic culture slices
- Precision cut tissue slices
- Sectioning of mature or older brain tissues
- And much more!

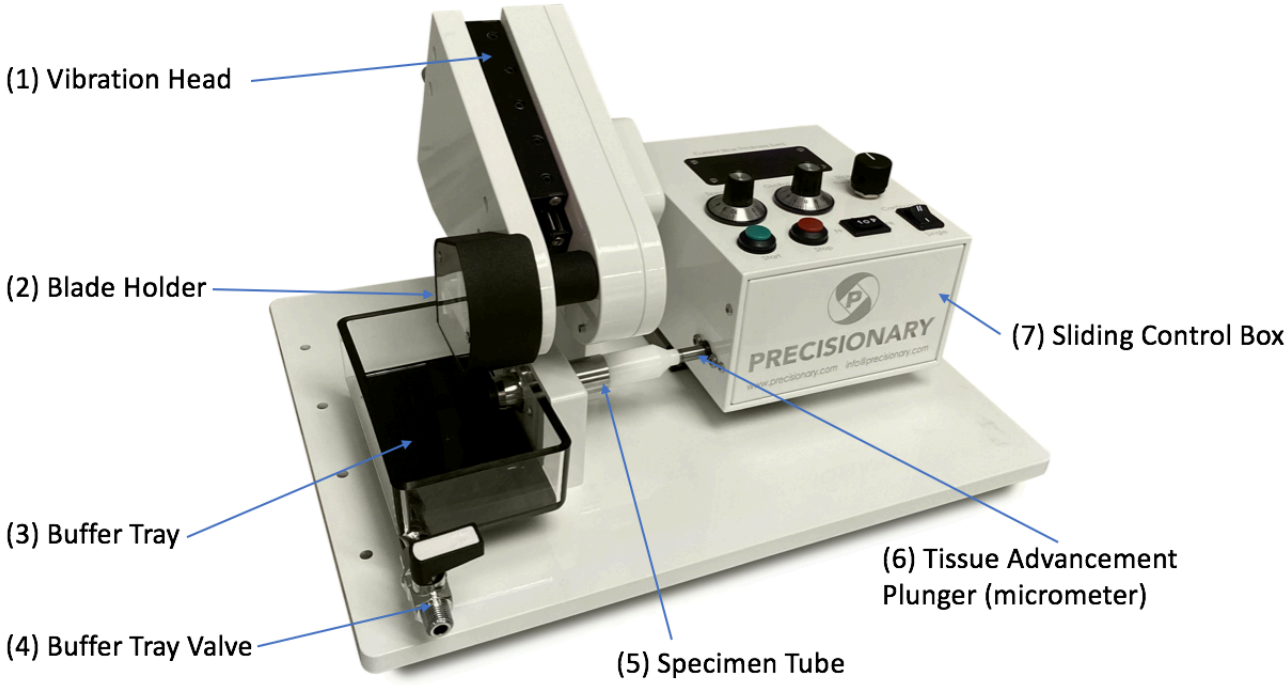
*Slice thickness minimum depends on tissue sample and organ system.

Technical Specifications

Advance Speed	0-20 mm/s, adjustable
Return Speed	20 mm/s
Vibration Frequency	0-45 Hz, adjustable
Vibration Amplitude	2 mm
Z-axis Vibration	~0 µm
Compatible Blades	Stainless Steel, Ceramic, Tungsten Carbide
Cutting Angle	15 degrees (fixed, no need for blade alignment)
Thickness Adjustment	Automatic
Micrometer Resolution	1 µm
Specimen Tube Diameters	15.5 mm (normal), 20 mm (large)
Maximum Tissue Length	2.5 cm
Minimum Slice Thickness	4 µm*
Cutting Mode	Single or Continuous
Cutting Bath	140 x 60 x 30 mm (maximum 250 mL)
Power Source 	For both domestic & international customers: 100-240 V AC and 50/60 Hz for each power supply cord. Only the original power supply unit (power cord) should be used with the Compresstome® VF-510-0Z model.
Power Consumption	18 W
Dimension (L x W x H)	330 x 240 x 190 mm
Weight	5 kg

*Depends on tissue type and organ system.

Model Components



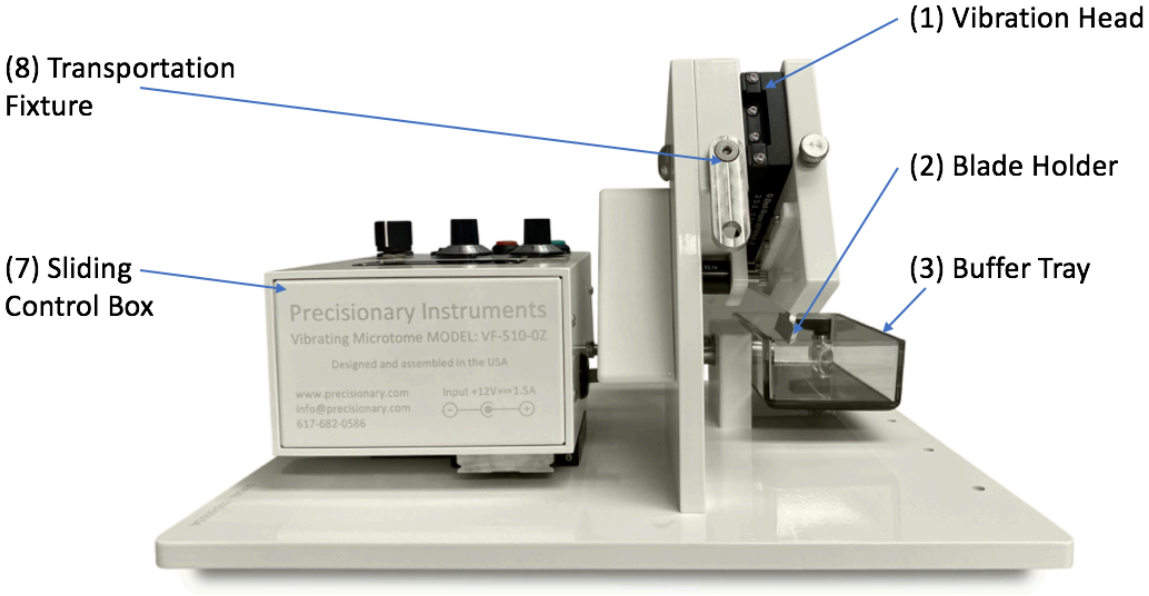


Figure Number	Compresstome Part	Part Number	Function
1	Vibration Head	--	Blade oscillation assembly, which includes a blade holder and an oscillation motor
2	Blade Holder	VF-BH-VM-MGNT	Holds and stabilizes the cutting blade
3	Buffer Tray	VF-BT-510	Holds buffer or solutions during sectioning
4	Buffer Tray Valve	VF-BT-PL-BOS	On/off knob to keep solution in buffer tray and easily remove solution when needed
5	Specimen Tube	VF-SPS-VM-15.5-BOS VF-SPS-VM-20-BOS	Two different tube sizes (15.5 mm and 20 mm in diameter) that hold the specimen for sectioning and embedding tissue in agarose
6	Tissue Advancement Plunger (micrometer)	--	Pushes the specimen tube forward for the sample to be cut
7	Sliding Control Box	--	Controls for the cutting speed, oscillation frequency, and to set desired thickness in microns
8	Transportation Fixture	--	Stabilizes vibration head for safe transport

All moving and electrical components of the Compresstome® tissue slicer must be kept dry, in particular the power supply unit.

Control Box Anatomy

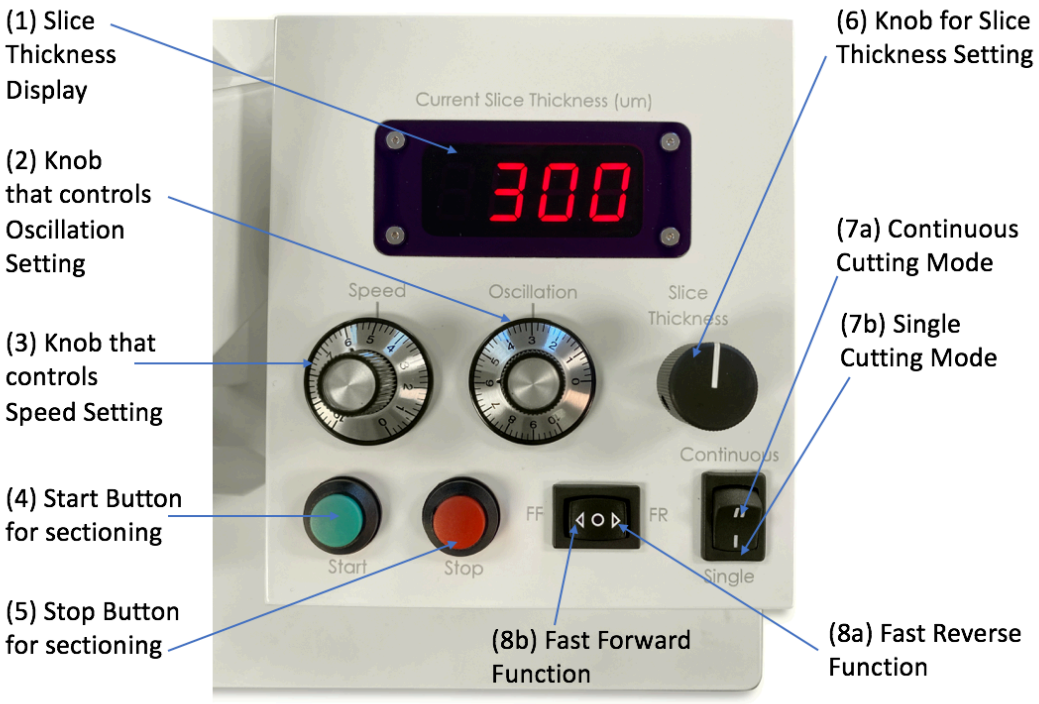


Figure Number	Control Box Part Name	Control Box Function
1	Slice Thickness Display	Displays the slice thickness your VF-510-0Z will cut slices to (in µm)
2	Knob that controls Oscillation setting	Control the oscillation frequency of the blade holder as it cuts
3	Knob that controls Speed setting	Controls how fast the vibration head travels on its cutting track
4	Start button for sectioning	Will begin sectioning after turning the machine on (begins vibration head and blade holder movement)
5	Stop button for sectioning	Stops the vibration head and blade holder movement along the cutting track upon being pressed
6	Knob for Slice Thickness setting	Use this knob to adjust and set your desired slice thickness for sectioning
7a	Continuous Cutting Mode	Will section continuous sections in a row when in this cutting mode
7b	Single Cutting Mode	Will only section one slice upon pressing “Start” button
8a	Fast Reverse function	Moves the tissue advancement plunger in reverse, retreating into the control box.
8b	Fast Forward function	Moves the tissue advancement plunger forward, towards the specimen tube plastic plunger

Accessories

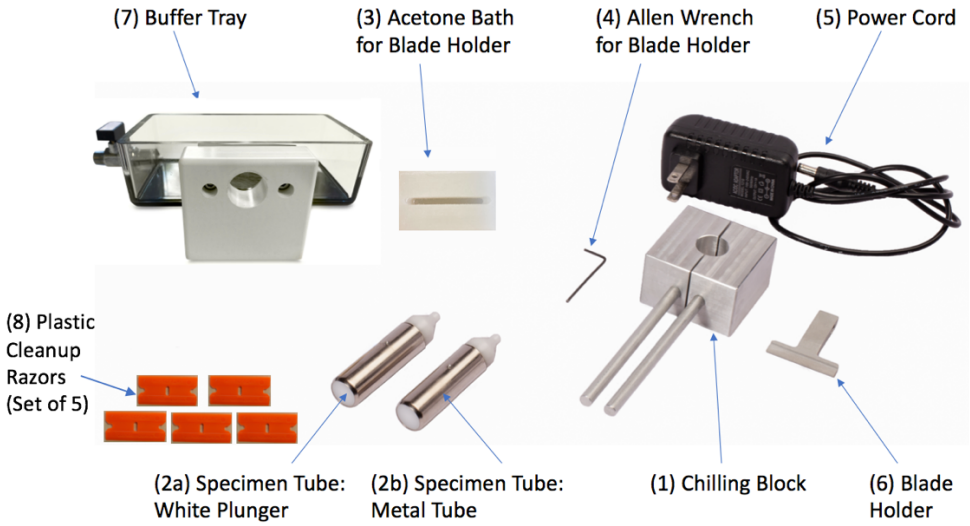


Figure Number	Compresstome Part	Part Number	Function
1	Chilling Block	VF-VM-CB-15.5-BOS VF-VM-CB-20-BOS	Rapidly chills agarose in specimen tube for sectioning
2a	Specimen Tube: Plastic Plunger	VF-SPS-VM-15.5-BOS VF-SPS-VM-20-BOS	Where tissue sample is glued onto
2b	Specimen Tube: Metal Tube		Outer metal tube that the plastic plunger moves through for the sample to be cut
3	Acetone Bath for Blade Holder	VF-VM-AB	Use to clean the blade holder via acetone soak
4	Allen Wrench for Blade Holder	VF-BH-VM-AW	Use to remove and tighten the small screw on the blade holder when taking it on/off the machine
5	Power Cord	VF-VM-PC-BOS	Power cord for the VF-510-0Z model.
6	Magnetic Blade Holder	VF-BH-VM-MGNT	Apply the blade to the blade holder via magnets (stainless steel) or glue (ceramic and tungsten)
7	Buffer Tray	VF-BT-510	Holds the buffer solution and specimen tubes for sectioning
8	Plastic Cleanup Razors	VF-BL-VM-PCR	Use to clean the edges of the plastic plungers after sectioning with the Compresstome®

Starter Kit Components

Note: All of our Compresstome® consumables can be ordered online at:
https://precisionary.com/e-store/

Contact us directly at info@precisionary.com and we will send you a quote.

Consumable	Part Number	Quantity	Description
Agarose Tablets	VF-AGT-VM-10	10	Low melting agarose for embedding tissue.
Blades	VF-BL-VM-SSB	10	Double-edged stainless-steel blades.
Pipettes	__	2	Plastic, disposable pipettes included for easy transfer of agarose into the specimen tubes for embedding.
Glue	VF-VM-GLUE	1	Used for securing blades to the blade holder and tissue specimens to the specimen tube.
Forceps	VF-VM-FORCEPS	2	Small forceps for easy manual manipulation of tissue sample.
Petroleum Jelly	VF-VM-PJ	1	Petroleum jelly recommended for application to the inside of the tube adapter to help prevent minor leaks for Compresstome slicer buffer trays (0.16 ounces each packet)
Plastic Cleanup Razor	VF-BL-VM-PCR	5	Use to clean the edges of the white plungers after sectioning with the Compresstome.

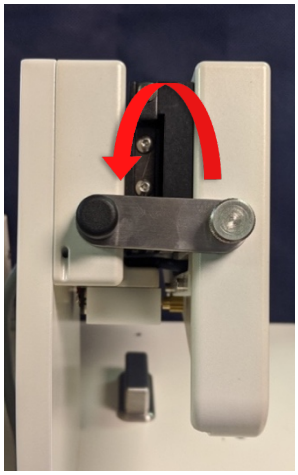
Only use Precisionary supplied parts for Compresstome® operation; this includes only using the chilling block, blade holder, specimen tubes and buffer tray supplied with your Compresstome® tissue slicer. Do not use parts supplied from alternate suppliers for use with the Compresstome®.

Part 2: Setup

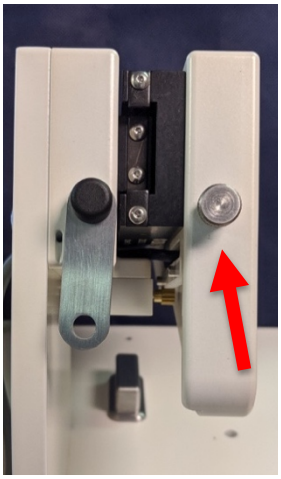
IMPORTANT! Transportation Fixture Removal

Please remove the transportation fixture before your first-time use. This fixture will need to be securely mounted back to the machine before any future shipment.

Before using the Compresstome® slicer, you MUST remove the thumbscrew that holds the "transportation fixture" in place on the machine. This piece is screwed in at the back of the vibrating head and is there to help stabilize the Compresstome® during shipment. Failure to remove the transportation stabilization plate may result in damage to the vibrating head.



1. Remove thumbscrew that is on the right side of the transportation fixture. You do not need to remove anything on the left side (leave as is).



2. After removing the thumbscrew, the transportation fixture will fall shown in the picture above. Place the thumbscrew back into the machine so that it does not get lost and that you can reattach the transportation fixture for any future shipments.

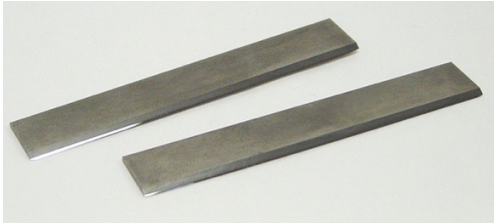
Mounting the Cutting Blade to the Blade Holder

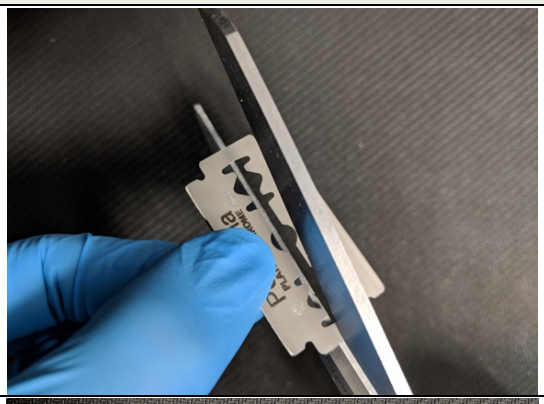
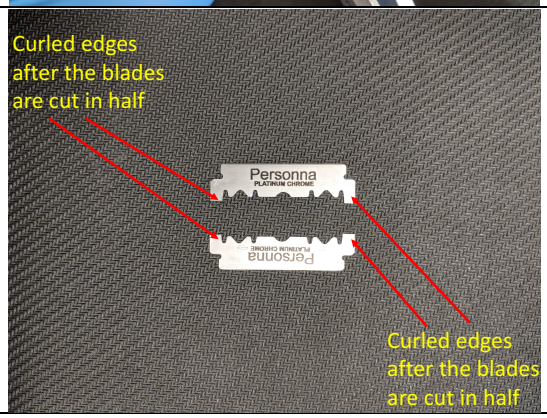
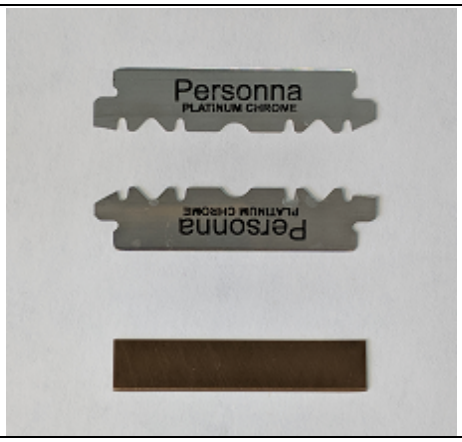
Double-edged razor blades, ceramic blades, and tungsten carbide blades are ideal for this vibrating microtome. The Compresstome® Starter Kit includes either 10 double-edged razor blades or two ceramic blades to get you up and running with your Compresstome® purchase. The blades should be cleaned with acetone and ethanol before use.

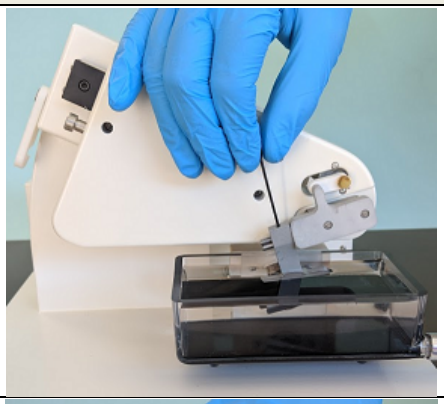
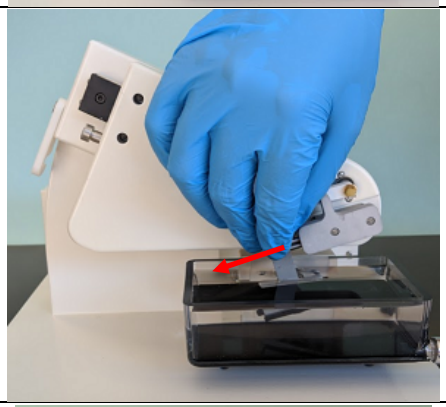
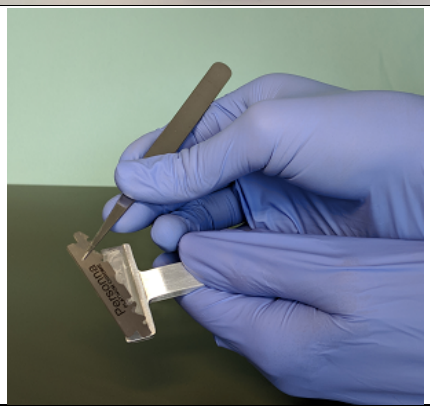
The sharpness of the blade can directly affect the quality of the slices. As seen in the table below, we recommend replacing blades periodically according to the razor and tissue type.

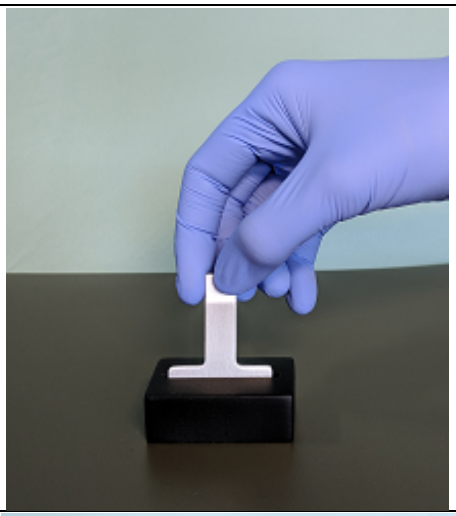
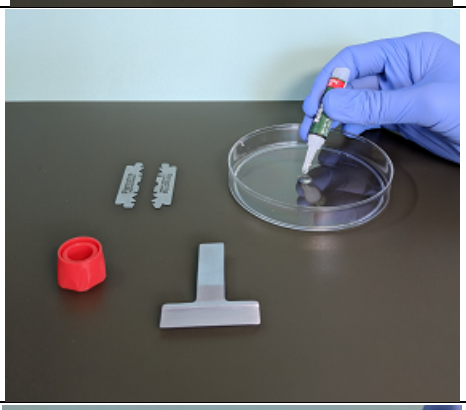
Razor Type	Tissue Type	Replacement Frequency
Double-edged	Standard (brain, lung, gastrointestinal, skin)	Every 3-5 samples
	Fibrous (lymph nodes, liver, spleen, kidney)	Every 1-2 samples
Ceramic	All	Every 3-4 weeks
Tungsten	All	Every 1-2 weeks

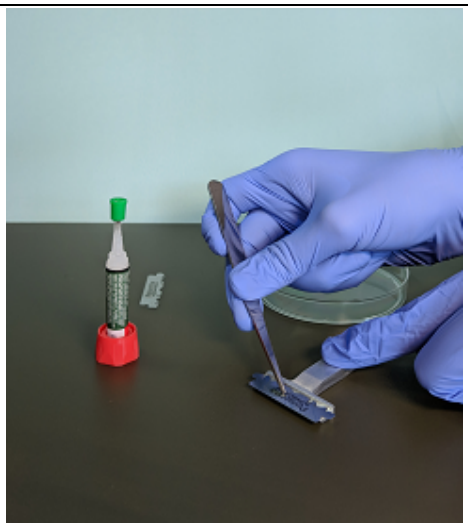
For each double-edged stainless steel blade, cut the blade horizontally to form two separate blades. You will only need one of the two resulting blades for each use. For ceramic and tungsten blades, remove one of the blades carefully from the pack.

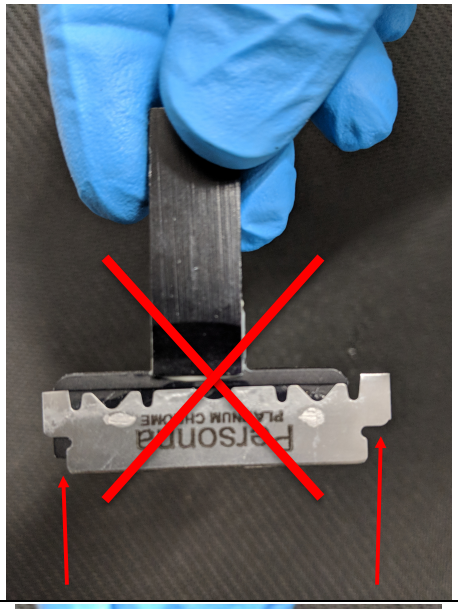
Blade Type	Blade Picture
Stainless Steel Double-Edged Blades	
Ceramic Blade	
Tungsten Carbide Blade	

How to Properly Cut the Double-Edged Blades		
Step #	Instruction	Picture
1	Carefully cut the double-edged blades horizontally:	
2	Two separate blades will form:	
3	After the stainless-steel blades are cut in half, trim the extra tabs (curled edges) on the ends of the blades so they don't stick out beyond the blade (pictured in step #2). If using a ceramic or tungsten blade, simply remove one carefully from pack to apply directly to the blade holder. ⚠ **Exercise caution when handling sharp objects and always remember to wear gloves and safety goggles while operating the Compresstome®.**	
4	The blades will be ready to use and will look like this:	

How to Properly Mount the Cutting Blade to the Blade Holder via Glue		
1	To remove the blade holder from the vibrating head unit, loosen the small screw on top of the blade holder with the included Allen wrench. ⚠ **Always remove the blade holder BEFORE removing or inserting the buffer tray.**	
2	Slide the blade holder off the axial bar.	
3	Remove the old cutting blade. ⚠ **Dispose of blade safely into a sharps container.**	

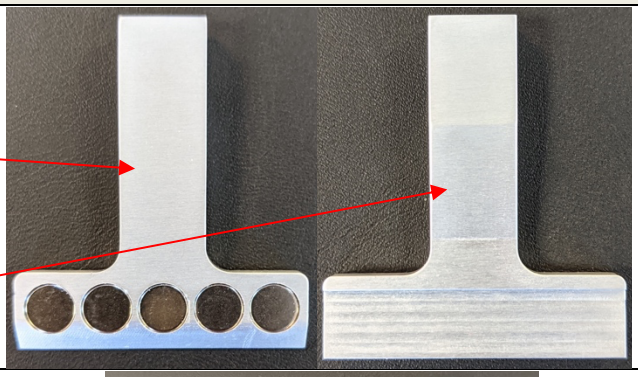
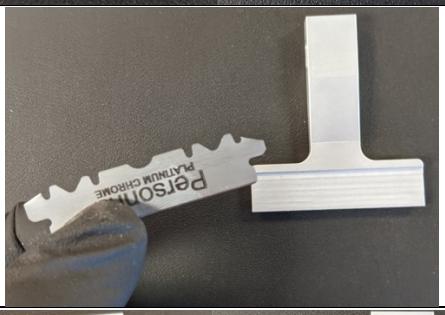
4	Soak the blade holder in the acetone bath for 5 minutes. Wipe off any residual glue on the blade holder using a paper towel. It is critical to ensure all glue residue is removed before attaching a new blade. ***DISCLAIMER:* Please only use acetone to clean the blade holder and specimen tube. The buffer tray is not made of acetone safe materials.**	
5	Squeeze a small amount of super glue onto a petri dish or other solid surface.	
6	Pipette 5 µL of the super glue along the full length of the blade holder.	

7	Position the cutting blade on the blade holder. The edge of the blade should touch the raised lip of the blade holder (see step #7a). Make sure the exposed surfaces of the blade are clean to prevent damage to tissue. Press firmly, then allow the glue to dry for one (1) minute before use. ⚠ **Do NOT touch blade**	
7a	You are ready to use your blade/blade holder when the cutting blade is positioned like this: When applying a ceramic or tungsten blade, follow the same steps here to glue the blade and ensure that the top edge of the blade is aligned against the raised lip of the blade holder. ⓘ **The ceramic and tungsten blades <u>must</u> be glued onto the blade**	

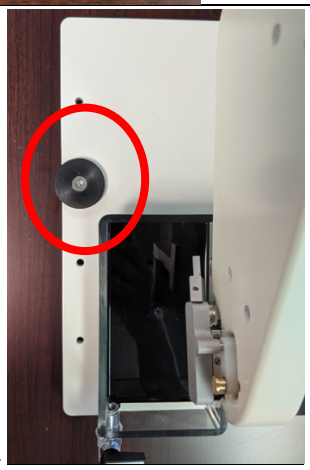
7b	You do NOT want your cutting blade to be mounted like this: On the left side, the trimmed, curled edge is on the raised lip of the blade holder and the blade is off-centered. On the right side, you can see how the blade is off-centered. The curled edge was also not trimmed on this side.	
7c	This is another example of how you do NOT want to mount your cutting blade to the blade holder: Notice that the top edge of this blade is not touching the blade holder edge, and it is also not centered. There is also a buildup of glue on the blade holder, and this should be cleaned before mounting a new cutting blade.	

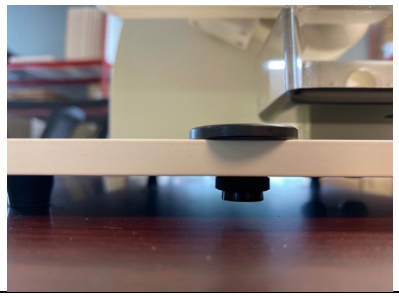
Mounting the Cutting Blade to the Magnetic Blade Holder

The magnetic blade holder can be used without glue to adhere the stainless-steel blades only. The below directions explain how to attach the stainless-steel blades to the magnetic blade holder. While the magnetic blade holder can still hold ceramic and tungsten carbide blades, these blades will need to be applied via glue in the above steps on pages 13-15, they are not magnetic. To clean the magnetic blade holder, soak in liquid overnight and dry & clean right after use.

Step	Instruction	Photo
1	The magnetic blade holder will have visible magnets along the outer side (left photo) of the holder. Locate the inner side of the blade holder (right photo), with the raised lip along the top edge, as this is the side of the blade holder the blade will be applied to.	
2	Carefully remove and cut one of the double-edged stainless-steel blades for your experiment (see page 12), and prepare to position the blade on top of the flat side of the blade holder.	
3	Carefully place the blade on the blade holder so that the top edge of the blade touches the bottom edge of the raised blade holder lip.	
4	Carefully slide the blade towards the right from the edge hanging off the blade holder to center the blade along the magnets. Once your blade is centered and aligned, you are ready to use your new magnetic blade holder!	

Attaching the Gooseneck Lamp to the Compresstome®

Step	Instruction	Picture
1	To attach the Gooseneck Lamp, you will first need to attach the Magnet "Puck" and thumbscrew onto the base of your Compresstome model. The photo on the top shows the two pieces separately, and the photo on the bottom shows the two components as one (i.e. how they will be installed on your Compresstome).	
2	To attach the magnet "puck" onto the Compresstome, first choose which slotted hole you wish to attach the magnet "puck"; which will be one of the four slotted holes shown here. For example, the second slotted hole from the top is chosen in this photo. Separate the two pieces, and place the magnet (the "puck" part) into the desired slot, as shown here:	
3	Next, carefully tilt the Compresstome® on its "back" so that the bottom is facing you. **When doing this step, the magnet "puck" may fall out! Please be sure to either hold onto the puck as you gently tilt the Compresstome, or reinsert the puck once the Compresstome is on its side. Take the thumbscrew and screw it onto the end of the magnet puck underside of the Compresstome. Once attached, it will look like so:	

4	Now, gently lay the Compresstome upright, and you are now ready to attach your Gooseneck Lamp to your Compresstome! You can see from the two photos that the magnet “puck” rests on the top of the Compresstome base, and the thumbscrew holds the magnet in place from the underside of the base of the Compresstome, as shown in the second photo:	 
5	The bottom of the Gooseneck Lamp easily attaches to the top of the magnet “puck” and so the lamp will stay in place throughout sectioning! Once the magnet “puck” is installed onto your Compresstome® base, you can gently place your Gooseneck Lamp on top of the magnet “puck”.	
6	Plug the lamp into a nearby standard outlet, flip the switch “on”, and angle the Gooseneck Lamp how you choose for your experimental needs. Here are some examples of our favorite Gooseneck Lamp positions during use: The Gooseneck Lamp is flexible, there are many different ways to utilize the Gooseneck Lamp during use with the Compresstome!	 

Preparing Agarose for Embedding

All tissue specimens must be embedded in agarose for the Compresstome® to perform as designed. We recommend using our type-Ib agarose tablets. However, for larger quantities, type-Ib agarose powder can be purchased through Sigma Aldrich at:

http://www.sigmaaldrich.com/catalog/product/sial/a0576?lang=en&region=US

Please see Table 1 below for using our 0.5 g agarose tablets. We recommend using a 2.0% to 3.0% agarose solution. The "firmness" of the agarose gel should match the "firmness" of your tissue.

Solution volume needed to achieve % agarose (mL)			
Agarose %	1 tablet	2 tablets	3 tablets
1.5%	33	67	100
1.8%	28	56	83
2.0%	25	50	75
2.2%	23	45	68
2.5%	20	40	60
3.0%	17	33	50
3.2%	16	31	47
3.5%	14	29	43

Table 1

On page 22, you will find Table 2 that displays the cutting parameters using the VF-510-0Z (and all Compresstome®) models. These guidelines are starting points for the speed, oscillation, and agarose concentration needed to section the specific tissue type with the Compresstome®. Please use these cutting parameters to start, and adjust as needed as you continue using your VF-510-0Z model.

Step #	Instruction	Picture
1	Each tablet contains 0.5 g of low-melting point agarose. We recommend adding 20-25 mL of solution to each vial containing 1 agarose tablet. For alternative gel strengths, please see Table 1 on page 20 for the appropriate solution volume.	
2	Dissolve the agarose tablet for ~2 minutes by swirling the vial. The agarose tablet needs to be completely dissolved in the buffer solution before heating in the microwave.	
3	Heat the agarose as you normally would. If using a microwave, heat the agarose solution for 10 seconds, then shake to mix it up, and repeat until the solution has become clear. **Heating the solution in 10 seconds intervals helps prevent the solution from overflowing.** You may see a lot of bubbles in the solution, which is normal. The solution is complete when the graininess dissipates and the solution is clear. Allow it to cool for at least 5 minutes in a 39 - 42 °C bath. Keeping the prepared agarose solution in a warm water bath will keep it from congealing so that it is ready to use for specimen embedding.	**Unscrew top of agarose vial when heating it in the microwave.**

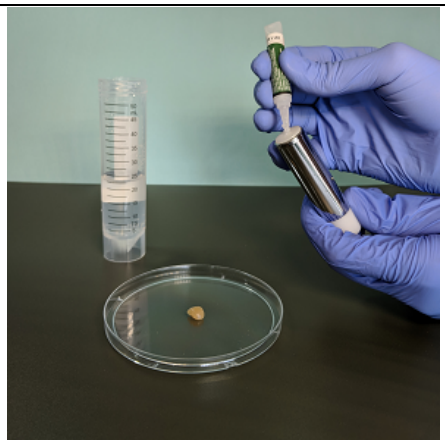
Cutting Parameters Guideline

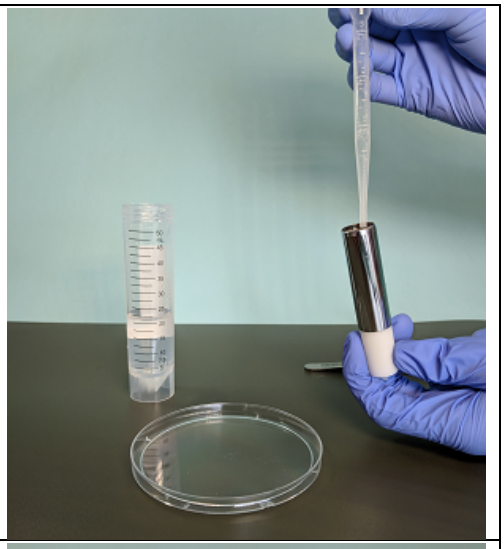
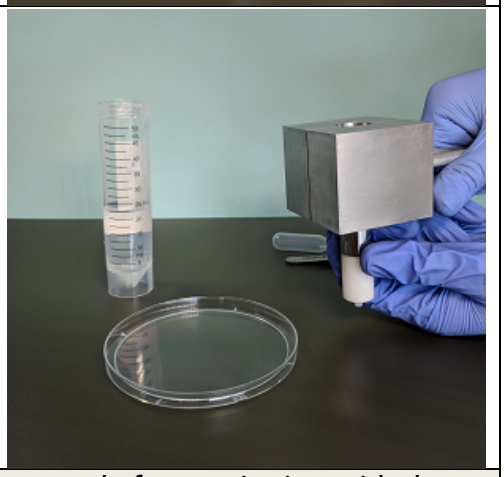
Compresstome® Cutting Parameters

Tissue or Specimen	Advance (Speed)	Oscillation	Suggested Agarose %
Lung: • Precision-cut lung slices	2-3	3-4	2%
Any fixed tissues	1.5-2	3-4	2%
Brain: live • Electrophysiology • imaging	1.5-2	3-4	1.8-2%
Organotypic slices: Tumor research Brain culture slices	2-3	4-5	2%
Retina (fixed and acute slices) * Infuse with agarose or gelatin to replace vitreous humor	1.5-2	5-6	2.5%
Kidney (acute slices)	3-4	5-6	2.5%
Liver (acute slices)	3-4	5-6	2.5%
Cardiac (fixed and acute slices) * Infuse with agarose or gelatin to fill up atria/ventricles	1.5-2	5-6	2.5%
Gut (fixed and acute slices)	3-4	3-4	2.5%
Plants: Leaves	3-4	4-5	2%
Plants: Stems	3-4	4-5	2%
Plants: Seeds	6-8	2-3	2.5%
Skin (Epidermis)	2-3	5-6	2.5%
Muscle (fixed and acute slices)	2-3	4-6	2.5%
Adipose (fixed and acute slices)	4-5	5-6	1.8%
Lymph node (fixed and acute slices) * Use 3% agarose for more fibrous tissues	1.5-2	5-6	2.5%
Spleen (fixed and acute slices)	3-4	6-7	2%

Table 2

Embedding Tissue in Agarose

1	Place the chilling block into water and ice bath or a freezer to cool for at least 1 hour. The chilling block must be chilled pre-embedding your tissue sample.	
2	Prepare your tissue sample by cutting it so that the tissue fits inside the specimen tube. Squeeze a small amount of super glue onto the specimen tube base. The glue should cover the approximate area of your tissue sample. Take care not to let super glue leak down the sides of the plunger. If the metal casing gets stuck, you will need to soak the specimen tube in acetone to help dissolve the glue and detach the two pieces.	
3	Using forceps, position the tissue onto the specimen tube base and allow the glue to cure. For specific orientations, you may need to cut a flat surface into the tissue allowing for the tissue to be glued more securely to the specimen tube.	
4	Withdraw the specimen tube base downwards until the tissue sample fully enters the tube.	

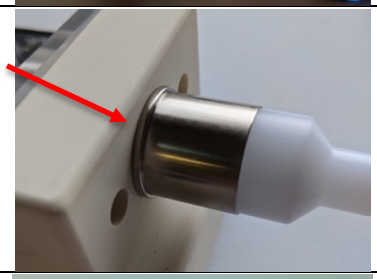
5	Pipette in agarose to fully cover specimen. Make sure no bubbles remain around the sample. Tap the side of the tube to remove any that are present. Suctioning the bubbles out with the pipette can also help remove them.	
6	Place the chilling block (should be pre-chilled, see step 1) over the specimen tube to chill the entire sample and help the agarose solidify. This typically takes 30 seconds – 1 minute, depending on the size of the sample.	
Once your tissue is embedded into agarose, you are ready for sectioning with the Compresstome® slicer!		

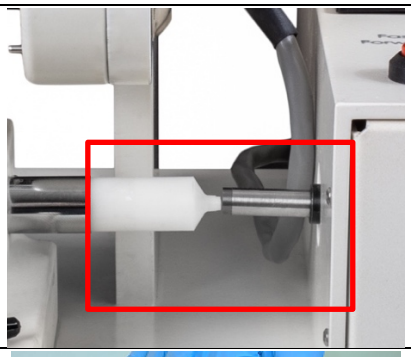
Part 3: Operation

Sectioning with the Compresstome® Tissue Slicer

Exercise caution if using fixatives and always remember to wear gloves and safety goggles while operating the Compresstome®.

The Compresstome® tissue slicer is intended for indoor use only, 5˚ C to 40˚ C temperature. If the Compresstome® equipment is used in a manner not specified, the protection provided may be impaired.

Step #	Instruction	Picture
1a	Insert the tapered end of the specimen tube into the removable buffer tray. **We recommend applying a small amount petroleum jelly to the specimen tube to ensure a good seal.**	
1b	Push the tube in fully such that the stopper ring hits the adapter base of the buffer tray. The adapter base will stop the specimen tube from being inserted any further than it needs to be to begin sectioning.	
2	Slide the buffer tray onto the Compresstome® slicer and lock in place with the thumb screw. **Make sure to <u>ALWAYS</u> tighten the thumbscrew on the buffer tank before you begin to section!**	

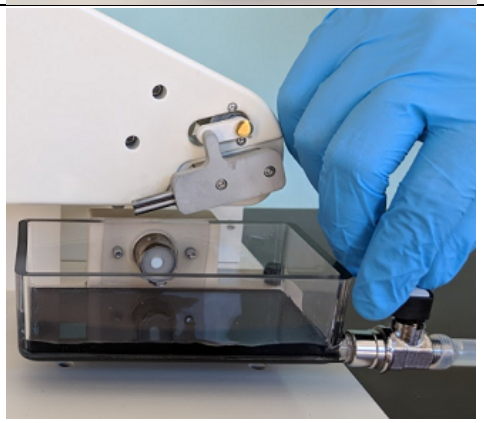
3	Make sure the micrometer is touching the back of your specimen tube before you begin sectioning. You can use the 'Fast Forward' and 'Fast Reverse' functions on the control box to move the micrometer forward or backwards.	
4	Slide the prepared blade holder onto the axial bar of the vibrating unit, and lock in place with the included Allen key. The side of the blade holder with the blade on will be facing the control box/the specimen tube. ⚠ **Make sure the buffer tray is already in place BEFORE sliding the prepared blade holder onto the machine.**	
5	Plug the one end of power cord into your VF-510-0Z machine, and the other into your standard power outlet. Turn the power on.	
6	Use the control box to set the slice thickness, sectioning speed, and frequency of oscillation to best suit your experimental needs. Please see page 22 (Table 2) for specific cutting parameters.	
7	To produce the best slices with consistent thickness and accuracy, start sectioning ~50-100 microns higher than your desired thickness. Begin sectioning on continuous mode while reducing the thickness in smaller increments after each slice is produced. Once you reach your desired thickness level, you can continue slicing with the VF-510-0Z and adjust the sectioning speed and frequency oscillation as needed.	**EXAMPLE #1:** My desired thickness is a 20 µm thick slice, so I will begin sectioning at 120 µm, the next cuts will be 110µm, → 100µm → 90 µm, → 80 µm, → 70 µm, → 60 µm, → 50 µm, → 40 µm → 30 µm, → 25 µm, → 20µm. **EXAMPLE #2:** My desired thickness is a 250 µm thick slice, so I will begin sectioning at 300 µm, the next cuts will be 290µm, → 280µm → 270µm → 260µm, → 250µm,

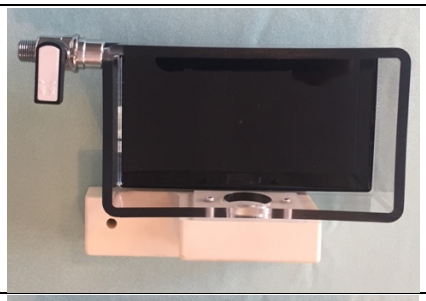
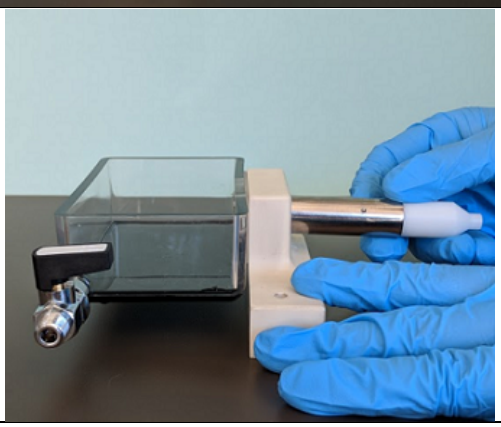
Part 4: General Information

General Cleaning and Maintenance

The Compresstome® should be disconnected from the power source before preforming any maintenance or servicing operations.

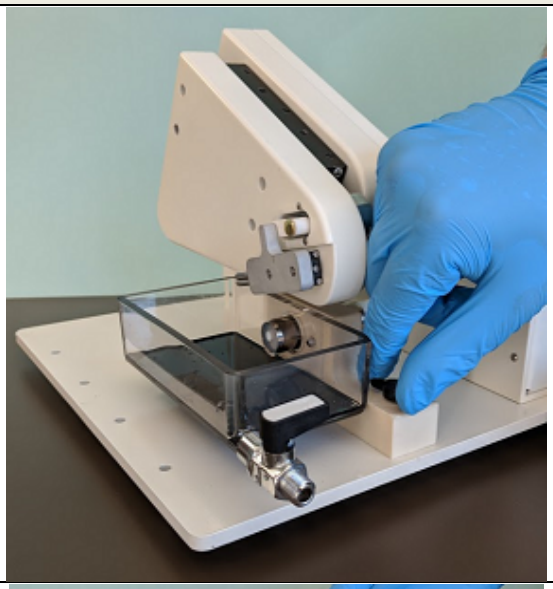
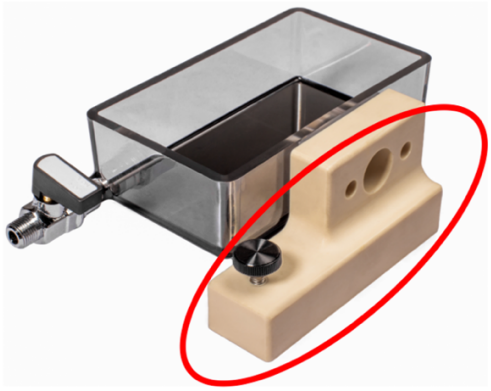
Exercise caution when dealing with flammable substances and always remember to wear gloves and safety goggles while operating and cleaning the Compresstome®.

Step #	Instruction	Picture
1	Remove blade holder by loosening the small screw with the included Allen key and sliding it off the axial bar. If reusing the blade, set it aside. If changing the blade, follow the instructions beginning on page 11.	
2a	Empty buffer from the buffer tank. This can be done by opening the ball valve directly into a sink, attaching a hose to the ball valve to drain it directly through the hose, or removing the buffer tank entirely (see step 2d). ***DISCLAIMER:*** **The buffer tray is not made of Acetone safe materials. We recommend using 70% ethanol solution or 70% isopropyl alcohol solution to clean the buffer tray.**	

2b	If using the ball valve, please refer to these photos (2b + 2c) for opening and closing the ball valve. In this photo, the buffer tray valve is closed:	
2c	In this photo, the buffer tray valve is open: Open the buffer tray valve for removing the buffer solution and cleaning the buffer tray.	
2d	As an alternative method to empty the buffer tank, loosen the thumb screw and remove the full buffer tray.	
3	Remove the specimen tube from the base.	

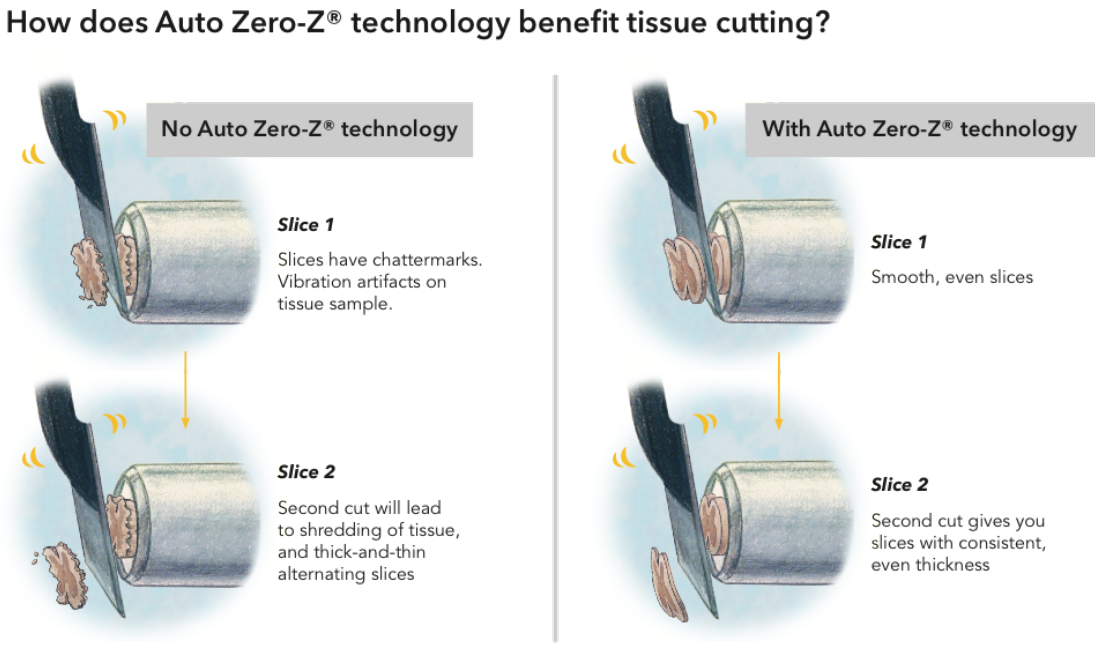
4	Remove the plunger from the metal casing.	
5	Use the plastic cleanup razor to scrape residual glue from the front end of the plunger.	
6	Clean up any debris on the plunger and inside of the specimen tube with acetone swabs or soft brush. ***DISCLAIMER:*** **Please only use acetone to clean the blade holder and specimen tube. The buffer tray is not made of Acetone safe materials.**	

Buffer Tray Maintenance and Cleaning

Step #	Instruction	Picture
1	Unscrew buffer tray assembly. Slide tray off unit. **Make sure the blade holder is ALREADY removed before removing the buffer tray from the machine.**	
2	Clean with rubbing alcohol. ***DISCLAIMER:* Do not use acetone as it may damage the materials.**	
3	Be sure to also clean the underside of the specimen tube base- the piece of the buffer tray that attaches to the magnet on the base of the machine- with rubbing alcohol when cleaning the buffer tray.	

Auto Zero-Z® Technology

Auto Zero-Z® is our latest breakthrough technology at Precisionary Instruments. This is a patented feature designed to allow the blade holder to operate in near zero Z-axis deflection without the need to optically align every single time.



Please ensure that you follow the special instructions for blade mounting to ensure that Auto Zero-Z® works every time you slice.

The advantages of the Auto Zero-Z® combined with Compresstome® techniques are:

- Healthier slices and better surface structure preservation.
- Thinner minimum slice thickness. By combining the Auto Zero-Z® and Compresstome® technology, it is now possible to achieve an unprecedented fixed brain slice thickness of 4 µm* without paraffin embedding or freezing.
- No vibration marks on the fixed brain slices. The result is a very smooth and flat slice surface which is optimal for histological processing.
- No optical alignment device is required for Auto Zero-Z® operation.
- No blade alignment procedure is required when changing to a new blade.

*Slice thickness minimum depends on tissue type and organ system.

Troubleshooting

- ❖ Avoid trapping any air bubbles in the agarose during embedding.
- ❖ The blade holder is a pre-aligned, delicate part. Glue residue on either side of the blade holder will deteriorate slice quality.
- ❖ Do not bubble artificial cerebrospinal fluid (ACSF) or other buffer solutions during slicing to avoid contaminating and damaging the linear bearing of the vibration head. This is the most critical step to increase the work life of the machine. (If you require bubbling, please ask us about our Oxygenation Attachment, built specifically for the Compresstome® slicers)

The vibrating head unit does not move when I begin to cut for the first time.

- When the Compresstome tissue slicer first arrives, the vibrating head is secured in place at the top by the transportation fixture (see photo on page 10). This transportation fixture needs to be removed before turning the machine on and cutting. If the transportation fixture is not removed, the head unit will not move beyond its attached location.
- If the vibrating head unit does not move at all, and no noise is heard, the issue could be due to an electrical problem in the vibrating arm. If this occurs, please contact us.

How do I keep the buffer tray cold?

- There are many options to keep your buffer tray cold during sectioning! Customers typically pre-chill or semi-freeze the buffer solution, which keeps the temperature of the solution cold during the cutting process. One huge advantage of the Compresstome® is that the speed of tissue slicing is significantly faster than the speeds of other market slicers. So even without packing ice around the buffer tray, the Compresstome® can slice live tissue rapidly to preserve slice health!
- Another great option is that with the VF-510-0Z, you can easily remove the buffer tray, pour ~1mm of buffer into the tray, and place the tray in the freezer so there is a nice frozen layer at the bottom of your buffer tray, underneath your standard buffer solution, for sectioning.
- Another option is to place cold gel packs around the buffer tray to keep the entire unit cold. Using gel packs also makes clean up easy!
- Lastly, a great, simple option to keep your buffer tray cold is to use our Compresstome Double-Walled Buffer Tank! Our Double-Walled Buffer Tank takes the place of your standard buffer tray. There is space in the ‘double wall’ to keep ice cubes in while you section, and the ice will not go into your buffer tray or interfere with cutting!

Is agarose safe to use for live tissue? For fixed tissue?

- Absolutely! Agarose is a soft embedding medium that is safe to use for embedding both live and fixed tissues. We have diligently performed experiments in the lab to test the effects of agarose on both live and fixed tissue. Our agarose tablets are "low gelling point" at 36°C, and it has been proven safe time and again because you can keep it from congealing in a warm water bath while below biological temperatures. Agarose does not harm the specimen in any case. For example, researchers at Allen Brain Institute have cut live slices of cortical tissue and performed patch-clamp electrophysiology experiments on layer I cortical neurons. The agarose helps to stabilize tissue so that cutting with the Compresstome® yields slices with smooth surfaces.

What are the best cutting parameters for cutting speed and oscillation?

- That's a great question, and our most commonly asked question too! The short answer is: try a cutting speed (the "Advance" knob) of 1 to 3, and an oscillation setting of 4 to 6. This is what we generally recommend for starting guidelines. Please see page 22 for the full list of cutting parameters for specific tissue types.

I am getting chatter marks on tissue slices. How do I get smoother slices?

- If you are getting vibration artifacts, please try the following diagnostic steps:
    1. Set the speed slightly lower (try an "Advance" setting of 1 to 1.5). Also set the oscillation frequency higher (try a setting of 5-7).
    2. Make sure that you are using 2-3% agarose without any bubbles in the agarose surrounding the tissue.
    3. Try changing the blade to start with a new cutting blade.
    4. If you are working with tissue that has open cavities inside, please remember to inject the cavities with agarose to ensure that all air spaces have been filled up.
    5. Finally, if you are still having chatter mark trouble, give us a call or email us! We are here to help.

I am getting uneven tissue slices. How do I fix this?

- Getting uneven thicknesses from slice to slice is unusual for the Compresstome®. But if you are getting uneven slices, it may be because the agarose density does not match the tissue density you are slicing. For instance, agarose that is too soft (<2%) will not provide enough stability for cutting with firmer tissue (such as cardiac or lymph node tissues, which are more fibrous). When this happens, use a higher concentration of agarose (3%). Also try decreasing the speed ("Advance") to 1 to 1.5 and increase the oscillation frequency to 5-7.

The agarose rim around the tissue does not fall off. How do I separate the agarose from the tissue after cutting?

- If you would like the agarose rim to fall off after each slice, try using a higher concentration of agarose, such as 3% to 3.5%. The firmer the agarose, the more likely that it will automatically fall off the tissue after each slice is cut.
- You can also try brushing the tissue with a 30% sucrose solution to coat it before embedding in agarose. This puts a layer around the tissue that allows the agarose rim to fall off easier after your slices fall into the buffer tray/solution.

Warranty Information

There is a five (5) year warranty for the VF-510-0Z Compresstome® vibrating microtome. Annual service plans after the warranty period ends are available for purchase. Consumables, shipping fees, handling costs, and training plans are non-returnable. Delivery is considered to be completed when items arrive to the customer.

Warranty Void Conditions

The warranty for the Compresstome® VF-510-0Z model is voided under the following conditions: Any attempt to repair the Compresstome® or tampering with the control box, moving bar, or oscillating head unit, along with any Compresstome® parts (gooseneck lamp, specimen tubes, chilling block, buffer trays, etc.) without reaching out to Precisionary Instruments first causes the warranty to be voided. In this case, the customer is responsible for all shipping and repair costs as the warranty is voided due to customer tampering in an attempt to repair the Compresstome® VF-510-0Z model.

Contact Information

Additional questions? Need assistance? We have multiple ways for you to contact us, including:

E-mail: info@precisionary.com

Fax: 1-866-424-2217

Phone:
Customer Service & Quotes: (617) 682-0586
Technical Support: (617) 682-0586

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