RMC Boeckeler

Product Guide

SERVING MICROSCOPISTS' NEEDS FOR EM AND LM
IN MATERIALS & BIOLOGICAL SCIENCES

RMC Boeckeler has over 75 years experience in product innovation. In-house engineers and scientists design and build sample preparation tools for nanotechnology research, including those for electron microscopy 3D image reconstruction, correlative imaging and cryosectioning. We are committed to maintaining the proven quality and reliability of our products, backed up with responsive customer service.

THE ULTRAMICROTOME COMPANY

ULTRAMICROTOMY

The **Powertome** is the only fully upgradable ultramicrotome, with the ability to take a **PTXL**, the routine workhorse and build it up to the **PTPC** research level system with computer control and video options. Both PTXL and PTPC can be upgraded to the **PT3D** for array tomography and cryo.

The PT 3D features a full 1 mm advance, permitting uninterrupted ultrathin sectioning to a depth of one millimeter. This unique advantage is especially beneficial for 3D reconstruction work, array tomography and any situation involving frequent trimming with the ultrathin feed, such as cryosectioning.

The PT 3D has a high definition video package where the sectioning process is displayed in real-time at the center of the computer monitor. An image capture system allows videos or still photographs to be taken at any time, which is extremely useful for collaboration and archiving.

The ultramicrotome can be controlled with either a touch screen monitor or digital tactile controller or, if more convenient the user can opt to use both.

The PTPC is equipped with PC control, useful for controlling the Powertome and archiving information. Direct internet capabilities are also included, linking you to our specialists to help troubleshoot difficult samples.

The PTXL is controlled via a digital tactile controller, eminently suitable for routine work. The Powertome is capable of accommodating glass knives up to 12mm wide, triangular tungsten carbide knives and any commercial brand of diamond knives

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Sectioning of both biological and industrial materials can be achieved with the **LN*Ultra,*** a liquid nitrogen-cooled cryo chamber attachment for the Powertome.

Capable of holding temperatures down to minus 180°C, the stable environment of the LN*Ultra* is perfect for sectioning and planing a variety of samples. These include rubber and soft polymers, biological cells and tissues, for example for immunolabelling using the Tokuyasu technique or CEMOVIS (Cryo Electron Microscopy of Vitreous Ice Sections).

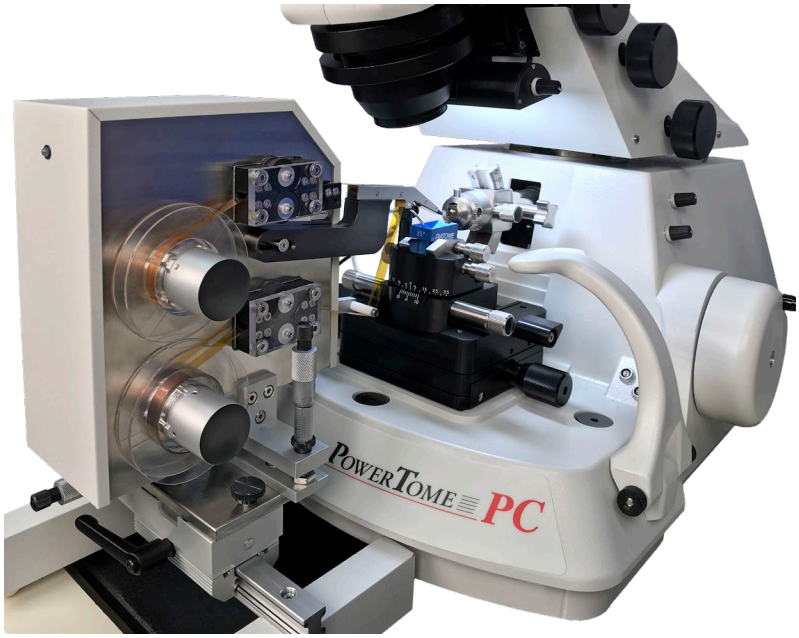
In combination with the Powertome 3D, many sections can be trimmed and cut without tedious resetting, a time-saving benefit negating the need for realigning the sample and block.

Liquid Nitrogen consumption is very low so only a small, 12 liter Dewar is required. This can provide a stable sectioning environment for around seven hours, while saving your laboratory LN2 costs over more inefficient systems.

ARRAY TOMOGRAPHY

3D reconstruction and tomography are growing in use in todays EM world. RMC is at the forefront with two offerings, depending on the volume to be reconstructed. For small volumes, where tens to hundreds of sections are required, the **ASH2** is favored for ease of use and speed. The ASH2 quickly locks onto any current ultramicrotome, instantly converting it into an instrument capable of sectioning and collecting hundreds of sections.

For larger volume work, the unique **ATUMtome** can produce many thousands of serial sections, unattended and uninterrupted, without the need for resetting the specimen arm, thanks to the million nanometer feed of the PT3D.



ULTRAMICROTOMY WORKFLOW INSTRUMENTS

TISSUE PROCESSING

For routine tissue processing and resin embedding, automation is the safest and most reproducible route, especially with the **EMP5160**. Sealed vials keep hazardous reagents away from the user while maintaining an optimal environment for the efficient processing of plant or animal samples.

KNIVES

The sectioning process is not complete without knives and RMC provide cutting edges for all types of EM and LM applications. Tungsten knives are popular for a number of hard sample applications in materials science and diamond knives are the preferred tool for various techniques. For many, the glass knife is preferred for teaching, trimming and for those unknown samples which may have inclusions that can instantly damage your diamond edge.

The **GKM2** glass knife maker produces the most reproducible straight edged glass knives available. With its balanced break methodology coupled with a pressure detector readout for precise reproducibility of breaking pressure, the GKM2 is the favored knifemaker for many laboratories.

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CONTRASTING

After ultramicrotomy, most sections require contrasting with lead and uranyl salts. As well as being hazardous if not handled correctly, both can cause precipitates during the contrasting process. To provide a safe and healthy environment, RMC developed the **QG3100**, capable of contrasting up to 40 grids in one run. It is simple to use, programmable and cost efficient. The QG3100 conveniently accepts a variety of prepared staining solutions and protocols, determined by end-user requirements as opposed to other proprietary and expensive stains.

CRYO-PROCESSING

Today, many labs run cryo workflows and sample processing under cryo conditions. These often yield superior structural morphology and improved immunolabelling over routine resin embedding.

The **FS8500** can be used for the PLT technique (Progressive Lowering of Temperature) which does not require high pressure freezing and is a relatively inexpensive route into cryo preparation. It can, of course, be used in conjunction with a high pressure freezer. After which, processing can begin at minus 140°C, rising to minus 30°C for polymerization with the built in LED UV polymerization system, or to room temperature for embedding in other resins.

LIGHT MICROSCOPY

As well as sample preparation for EM, RMC has developed a portfolio of microtomes for materials science and histology, for room temperature and cryo applications.

For fully automated sectioning, the **MT990** rotary motorized microtome provides a reproducible, even cutting speed for the hardest of samples.

The advantages of the motor drive can also be used to take the repetitive strain from high output histology sectioning.

In conjunction with the **CR1000**, the MT990 becomes the world's only cryo microtome for light microscopy, capable of preparing large area rubber, polymer and biological samples.

LIGHT MICROSCOPY

The MT990, with or without the CR1000 accepts a plethora of knife types, including glass and diamond as well as disposable blades and solid steel or tungsten carbide knives.

Diamond Knife
Wet/Cryo

Glass Knife
in Holder

Wide Tungsten
Carbide Knife

Triangular Tungsten
Carbide Knife

For routine work, the **MR2** and its motorized advance partner, the **MR3** are available, both frequently being used for histology and materials preparation. Both rotary microtomes feature a rapid trim function, positive mechanical lock on the hand wheel, specimen orientation and rotation, plus a digital section counter display on the front panel.

MR2

MR3

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