

# LN Ultra



LN Ultra shown mounted on PowerTome XL ultramicrotome and Anti-Vibration Table

## Advanced, Stable Cryo Sectioning System For Ultramicrotomy

Sectioning of both biological and industrial materials can be achieved with the LN Ultra, a liquid nitrogen-cooled cryochamber attachment for the PowerTome series of ultramicrotome. Mounted onto the PowerTome, the LN Ultra provides optimal thermal stability necessary for producing cryosections.

Capable of holding temperatures from +40°C to -180°C, the stable environment of the LN Ultra is perfect for sectioning and planing a variety of samples. These may include rubber and soft polymers, or biological cells and tissues; used for example, for immunolabelling using the Tokuyasu technique or CEMOVIS (Cryo Electron Microscopy of Vitreous Ice Sections).

Liquid Nitrogen consumption is very low, allowing for a size efficient 15.5 liter Dewar. This can provide a stable sectioning environment for up to nine hours, while saving your laboratory LN<sub>2</sub> costs over less efficient systems.

May not be compatible with older PowerTome models; if an LN Ultra is being purchased to be used with a previously purchased PowerTome, we will require the serial number of the PowerTome in order to determine compatibility. Users with a non-compatible PowerTome will require the additional purchase of the current model of the PowerTome controller in order to operate the LN Ultra with their PowerTome.

**FEATURES**

- Newly designed specimen arm with zero coefficient of thermal expansion using Invar alloy and high-efficiency copper heat sink - Solid aluminum chamber provides greater thermal stability while providing a large opening for easy access to the specimen - Multiple chamber heaters eliminate exterior condensation
- New pump with updated valves delivers liquid nitrogen in less time
- Brighter LED lights increases visibility in the chamber
- Re-designed cryo-workstation provides comfort and stability when handling sections inside the chamber
- Produces ultra-thin cryosections for biological & materials applications
- Highest thermal stability for demanding Tokuyasu immunolabelling & CEMOVIS techniques
- Ideal for sectioning & cryo-planing co-polymer structures and nano-bio materials
- Excellent for SEM, AFM and other scanning probe microscopies
- Quick install & easy removal for switching efficiently from cryo to room temperature sectioning and back
- Quickly switch between pre-cooled knives in holders designed to accommodate multiple diamond or glass knives, or a trim tool
- Knife clearance angle easily adjusted inside cooled chamber, with external knife rotation & lateral movement control
- Hybrid control system including touch screen computer and digital tactile controller when mounted on a PowerTome PC
- Rapid trimming with computer control
- Compact digital tactile controller displays knife and specimen temperatures, conveniently stacks on top of PowerTome controller

**SPECIFICATIONS**

- Temperature Range           +40°C to -180°C
- Temperature Stability       +/- 0.1°C
- LN2 Dewar Volume           15.5L
- Operating Time               Up to or over 9 hours

**INCLUDES**

- Insulated & externally heated cryosectioning chamber with covers
- Cryo workstation with handrests and tool tray
- Digital control unit with 4 temperature memory channels and digital display of knife and specimen temperatures
- Specimen mounting pins (10 each; 2mm, 3 mm, and 6.5mm) and pin holders
- Flat specimen holders
- Four knife holders enable the use of a variety of glass and diamond knives, tungsten carbide and diamond trimming tools
- 15.5 liter liquid nitrogen dewar with cap
- Liquid nitrogen pump (non-pressurized), with insulated transfer line and pump stand

### ACCESSORIES AVAILABLE FOR PURCHASE

#### **Cryosectioning Specimen Holders**

- Specimen pins, 2mm. Package of 10 aluminum, slotted on one end.
- Specimen pins, 3mm. Package of 10 aluminum, slotted on one end.
- Specimen pins, 6.5mm. Package of 10 aluminum, cross-slotted on one end.
- Pin adapter for 3mm diameter pins and 6.5mm diameter pins.
- Pin adapter for 2mm diameter pins.
- Torme flat specimen vise.
- Torme flat specimen vise holder.
- Adapted for 3mm type A/B specimen carrier sandwich, supplied with holder and mounting dish.
- Flat specimen clamp holder.
- Mounting dish for loading specimens under LN<sub>2</sub>.
- Specimen pin mounting disc. Holds specimen pins for mounting specimens under stereomicroscope.
- Flat specimen clamp for specimens 4mm x 8mm x 6mm (no teeth, good for paper).
- Flat specimen clamp, conical, for specimens 4mm x 5mm x 6mm (jaws have teeth for pellets).
- Chuck tightening tool.
- CEMOVIS cryosectioning chuck with collet holder for 650µm diameter specimen tube.
- CEMOVIS cryosectioning chuck for 3mm diameter specimen carriers.
- AFM sample chuck, threaded, clamps 12mm diameter sample discs.  
Commonly used in Atomic Force Microscopes. Disc is clamped by a threaded locking nut.
- AFM sample holder, magnetic, for use with 8-10mm diameter sample discs.  
Commonly used in Atomic Force Microscopes. Disc is secured by a strong SmCo magnet.

#### **Cryosectioning Knife Holders**

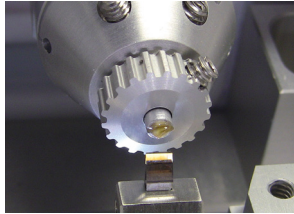
- Dual glass knife holder (holds 2 x 6mm wide knives and trimming tool)
- Diamond knife holder
- Glass knife holder
- Diamond knife and glass knife holder

#### **Other Cryosectioning Accessories**

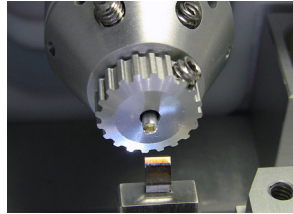
- Cryosectioning Kit:
  - Pick Up Loop
  - Embedding Loop
  - Eyelash Probe
  - Specimen Pin Stand
  - Parafilm
  - Forceps (3 sets)
  - Microscalpel
  - Custom glass slides
  - Specimen pins (qty 30)
- Grid holding device with grid transfer capsule for Gatan cryotransfer holder.
- Cryochamber cover.
- Environmental Cryo Chamber.
- Transparent acrylic chamber surrounding the cryo ultramicrotome system, with front access for the operator.  
Minimizes environmental disturbances during critical applications such as cryo ultra-thin sectioning of frozen hydrated specimens for CEMOVIS (Cryo-Electron Microscopy of Vitreous Sections).
- Static line ionizer mounting assembly.  
Includes grounding wires, for mounting the static line ionizer to the LN Ultra chamber.

ACCESSORIES AVAILABLE FOR PURCHASE (continued)

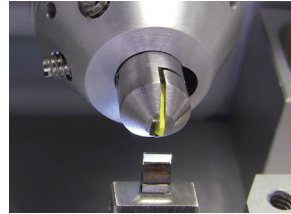
**SPECIMEN HOLDERS**



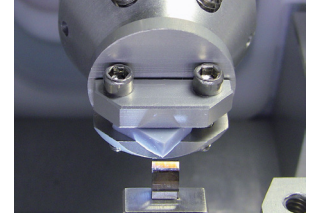
3mm Pin Adapter



2mm Pin Adapter



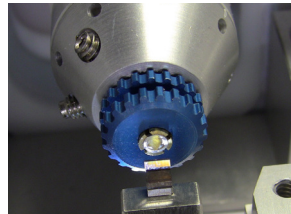
Torme Flat Specimen Vise



Flat Specimen Clamp



CEMOVIS Chuck, 650µm



CEMOVIS Chuck, 3mm



AFM Chuck, 12mm,  
(Threaded)



AFM Holder, 8-10mm,  
(Magnetic)

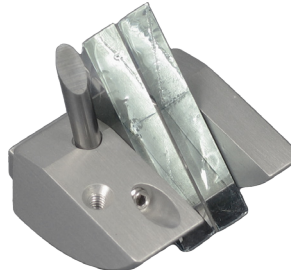
**KNIFE HOLDERS**



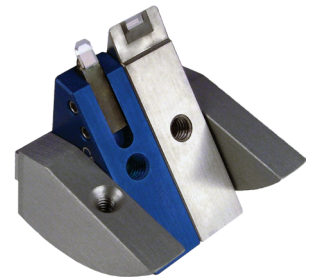
Dual Glass Knife Holder



Diamond Knife Holder



Glass Knife Holder

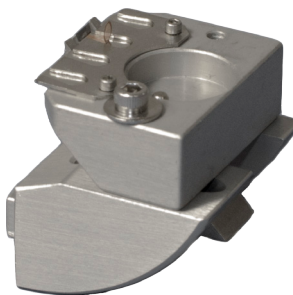


Diamond and Glass Knife Holder

**OTHER ACCESSORIES**



Specimen Pin Mounting Disk  
(shown with 2mm specimen  
pins)



Grid Holding Device



Static Line Ionizer  
Mounting Assembly



Chuck Tightening Tool