Disc Grinder
Model 623

Gatan's Disc Grinder is an accurate and dependable tool for mechanically pre-thinning specimens with high quality and uniform thickness. The pre-thinning and polishing procedures reduce overall time and improve quality of the final specimen. Model 623 produces parallel sided samples quickly and easily and the larger micrometer dial displays the thickness in microns (µm).

For transmission electron microscopy (TEM), the quality of the initial disc determines the quality of the final specimen. The thinner the starting disc thickness and the higher the uniformity is, the larger the final electron transparent area is. The problems most often encountered in trying to obtain thin discs are: tapering of the cross-section, sub-surface specimen damage and poor control of the final specimen thickness and uniformity.

The Model 623 Disc Grinder has been designed specifically to overcome these problems:
- The large diameter of the polishing face and the precise fit of the specimen mount ensure the specimen disc is held parallel to the polishing surface producing uniformly thin specimens.
- The ultra-fine thread and pre-loading of the specimen drive screw result in excellent control of the specimen thickness.
- By using the weight of the grinder itself to limit the maximum polishing pressure, the operator is able to reduce specimen damage to a minimum.

Parallel sided discs of 50µm thickness up to 9mm diameter are obtained quickly, easily, and are reproducible. The robust construction of the Gatan Disc Grinder ensures long, reliable service.

Operation: Following a simple “zero-check” the specimen mount is removed from the disc grinder and a specimen disc is mounted using the low melting point wax supplied. The specimen mount is placed into the grinder and the control knob is adjusted until the specimen is flush with the polishing surface. Small increments of material, about 10 µm in thickness, are progressively removed. Finer grit polishing compounds are being used in the final steps to obtain a highly polished surface. The specimen mount is then removed, the specimen turned over and remounted. The incremental polishing operation is repeated until the desired specimen thickness is indicated on the scale of the control knob.

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
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<tbody>
<tr>
<td>Grinder weight limits the maximum polishing pressure</td>
<td>Reduces specimen damage to minimum.</td>
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<tr>
<td>Ultra-fine thread and pre-loading of the specimen drive screw</td>
<td>Excellent control of the specimen thickness.</td>
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<tr>
<td>Large diameter polishing face and precise fit of the specimen mount</td>
<td>Ensures uniformly thin specimens.</td>
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623 Disc Grinder

**Specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Specimen size</td>
<td>Up to 9mm diameter</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Tool: 7.5cm diameter x 4.5cm height</td>
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<tr>
<td></td>
<td>Box: 30.5cm x 25.4cm x 4.5cm</td>
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<tr>
<td></td>
<td>Clearances: N/A</td>
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<tr>
<td>Weight</td>
<td>3 pounds</td>
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<tr>
<td>Power requirements</td>
<td>N/A</td>
</tr>
<tr>
<td>Warranty</td>
<td>1 year</td>
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</tbody>
</table>

**Note:** Specifications are subject to change.

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**Ordering information**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
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<tbody>
<tr>
<td>623</td>
<td>Disc Grinder</td>
</tr>
<tr>
<td>601.07000</td>
<td>TEM Specimen Cross Section Kit</td>
</tr>
<tr>
<td>623.30000</td>
<td>Specimen lapping kit</td>
</tr>
<tr>
<td>623.40001</td>
<td>Specimen mounting hot plate (120V)</td>
</tr>
<tr>
<td>623.40002</td>
<td>Specimen mounting hot plate (240V)</td>
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<tr>
<td>623.51000</td>
<td>Goniometer disc mount for grinding at 1° to 2° angles</td>
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</tbody>
</table>

Please consult with your sales representative for details and ordering information regarding spares and consumables.

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**Specimen Lapping Kit:** This kit consists of a heavy metal base, 3 flat glass lapping plates and 60 adhesive lapping discs. The metal base holds the glass plates in place as the disc grinder is moved with a figure-eight action over the lapping discs (40μm, 15μm, and 5μm grit).

**Specimen Mounting Hot Plate:** It is important that specimen discs are firmly attached during grinding. This is best done by using a low melting point wax polymer to form a strong, thin, hard adhesive bond. The Gatan Specimen Mounting Hot Plate is thermostatically controlled at the precise mounting temperature of 130°C. The hot plate also contains recesses to hold the specimen mounts in place when bonding the discs.

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Please contact Gatan for information on our complete line of TEM specimen preparation instruments, including:

- **Precision Ion Polishing System (PIPS™):** A user-friendly precision ion polisher designed to produce high quality, TEM specimens with minimal effort.
- **Liquid Nitrogen (LN2) Cold Stage, PIPS™ Sample Coating Option:** To enhance the performance and capabilities of the PIPS™, a liquid nitrogen (LN2) cooling option is now available.
- **Low Energy Option:** PIPS™ upgrade kit allowing operation at low energy, down to 100eV.
- **Centar Frontier:** The Centar Frontier is an all-inclusive polishing system, complete with an automated, computer controlled, in-situ microscope and patented image processing system (SEM/TEM/STEM/SEM/SCM/PEM).
- **MetEtch:** Quality samples are produced in a controlled environment with reproducible results. The Met-Etch tool offers a non-selective, universal etching technique for structures made of dissimilar materials and composites.
- **High Resolution Ion Beam Coater (IBC):** The high-resolution ion beam based sputter coating system produces thin, amorphous, and oxide-free coatings in a controlled environment for analysis in a field-emission SEM or TEM.
- **Precision Beam Etching and Coating System (PECS™):** Tool solution used to reveal and enhance fine structural detail through ion beam etching and coating for analysis in the Light Microscope (LM), Scanning Electron Microscope (SEM), and Transmission Electron Microscope (TEM).
- **Solarus®:** A new generation plasma system with unique H₂O₂ gas chemistry, interactive touch screen operation, 2 front loading TEM holder ports and multiple SEM/TEM samples at top loading chamber.
- **Disc Punch:** Rapidly cut TEM discs from ductile and soft materials, while maintaining specimen quality. The precise construction of every unit guarantees sharp edges and easy disc ejection even after long term use.
- **Disc Grinder:** An accurate and dependable tool for mechanically pre-thin specimens with high quality and uniform thickness.
- **Dimple Grinder:** Produces an exceptionally smooth thin area only a few microns in thickness, while minimizing distortion. Precision positioning and accurate electronic thickness control provide a wide thin area every time.
- **Ultrasonic Cutter:** Quickly cut simple holes, unique shapes or TEM discs from hard or brittle material ranging in size from <1mm to 10mm and in thickness from <4μm to 5mm.

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