



# MODEL 1063

## WaferMill™ ion beam delayering solution

Delayer multiple pre-selected regions on a full wafer from the top down. The fully automated process supports all phases of semiconductor processing for CD-SEM sample preparation.

### Model 1063 WaferMill™ ion beam delayering solution specifications

<b>Applications</b>	Near-line and in-line
<b>Equipment front-end module (EFEM)</b>	<p>Manufactured by Brooks Automation; comprises the following:</p> <ul style="list-style-type: none"> <li>• 300 mm front-opening unified pod (FOUP) loading station that holds up to 25 wafers</li> <li>• Four-axis wafer handling robot with a passive end effector</li> <li>• Pre-aligner that orients the wafer notch based on CD-SEM requirements</li> <li>• Controller unit</li> </ul>
<b>Pre-pump chamber</b>	300 mm VAT valve interface between the EFEM and load lock
<b>UV light</b>	Dual wave-length ultraviolet (UV) light (253.7 nm and 184.9 nm) mounted within the pre-pump chamber
<b>Load lock</b>	A 300 mm VAT valve interface between the pre-pump chamber and the process chamber; wafer presence sensors indicate when a wafer is in the load lock
<b>Vacuum system</b>	<p>Two dedicated turbomolecular pumps; one in pre-pump chamber and one in process chamber</p> <p>Oil-free diaphragm pump to back turbomolecular pumps</p> <p>Pressure monitoring with vacuum gauges</p>
<b>Pneumatic supply</b>	<p>Load lock and milling chamber:</p> <ul style="list-style-type: none"> <li>• Process gas: Inert gas (argon) with purity of 99.999% (ultra-high purity); 20 to 30 psi</li> <li>• Control gas: Dry nitrogen; 60 ±5 psi</li> <li>• Load lock vent gas: Clean, dry air (CDA); 20 to 30 psi</li> <li>• Automatic gas control: Three mass flow controllers (one per ion source)</li> </ul>

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<b>Process chamber</b>	<p>Linear stage moves the wafer in the X and Y direction with 5 µm accuracy</p> <p>Electrostatic chuck grips the wafer in place to provide a uniform milling plane by eliminating wafer bow</p> <p>Wafer presence sensors indicate when a wafer is in the process chamber</p> <p>Integrated wafer mapping based on KLARF files</p> <p>Ion source assembly: Three ion sources, located 120° apart, at 22.5° from the horizontal plane.</p> <ul style="list-style-type: none"><li>• Variable energy (1.0 to 6.0 keV) operation</li><li>• Beam current density: 10 mA/cm<sup>2</sup></li><li>• Beam size: 2 mm</li><li>• Point targeting provides the ability to drive the wafer to any point for processing</li></ul> <p>Turret/rocking assembly:</p> <ul style="list-style-type: none"><li>• Can be rocked ± 175°</li><li>• Angular deviation is ± 5° with a variable step size range of 0.1 to 2°</li><li>• Rocking speed is 1 rpm.</li></ul>
<b>Automatic termination</b>	<ul style="list-style-type: none"><li>• By timer</li><li>• By image processing; milling stops when a specified diameter is reached</li></ul>
<b>User interface</b>	<p>PC-based interface:</p> <ul style="list-style-type: none"><li>• Accessible from EFEM and chamber side</li><li>• Used to control the milling process</li></ul> <p>Operation indicator: Stack light</p>
<b>Optical system</b>	<p>Optical system for beam process monitoring and image acquisition:</p> <ul style="list-style-type: none"><li>• Field of view:<ul style="list-style-type: none"><li>– 15 mm (low magnification)</li><li>– 1.4 mm (high magnification)</li></ul></li><li>• Motorized zoom</li><li>• Motorized focus</li></ul>

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#### EFEM electrical requirements

- Electrical system: 200-240 VAC, 50/60 Hz, single phase (L1, L2, PE)
- System full load current: 20 A
- Constant load range 5-14 A, depending on configuration
- Overvoltage category II
- Jet power distribution unit is supplied with 10,000 AIC circuit breakers; SCCR 10,000 A
- House vacuum: < 40 kPa (7 psi)
- Vacuum port: 8 mm quick connect

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#### Power

208-240 VAC 50/60 Hz, 5200 Watts

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#### Warranty

One year

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