



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

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

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Process chamber	<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">• Variable energy (1.0 to 6.0 keV) operation• Beam current density: 10 mA/cm²• Beam size: 2 mm• Point targeting provides the ability to drive the wafer to any point for processing <p>Turret/rocking assembly:</p> <ul style="list-style-type: none">• Can be rocked $\pm 175^\circ$• Angular deviation is $\pm 5^\circ$ with a variable step size range of 0.1 to 2°• Rocking speed is 1 rpm.
Automatic termination	<ul style="list-style-type: none">• By timer• By image processing; milling stops when a specified diameter is reached
User interface	<p>PC-based interface:</p> <ul style="list-style-type: none">• Accessible from EFEM and chamber side• Used to control the milling process <p>Operation indicator: Stack light</p>
Optical system	<p>Optical system for beam process monitoring and image acquisition:</p> <ul style="list-style-type: none">• Field of view:<ul style="list-style-type: none">– 15 mm (low magnification)– 1.4 mm (high magnification)• Motorized zoom• Motorized focus

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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

Power

208-240 VAC 50/60 Hz, 5200 Watts

Warranty

One year



E.A. Fischione Instruments, Inc.
9003 Corporate Circle
Export, PA 15632 USA
Tel: +1 724.325.5444
Fax: +1 724.325.5443
info@fischione.com
www.fischione.com

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