

CP3000

Chemical Polishing Machine

Chemicals typically used in prime face polishing of semiconductor wafers or electronic and optoelectronic crystals, such as Bromine Methanol or acid etches, are highly aggressive and require the use of specialised corrosive resistant equipment.

The CP3000 has been designed exactly for this application, and utilises a chemical etch polishing process to produce high quality results with minimal subsurface damage.

Modern electronic devices also require increasingly stringent control over wafer geometry in terms of surface flatness, specimen parallelism and thickness control and the CP3000 Chemical Polishing Machine, particularly when used as the final stage of the Logitech wafer processing system, allows all of these criteria to be met.

As well as being compatible with aggressive polishing media, the CP3000 can also be used for less aggressive Chemlox polishing.

Corrosive Resistant Construction

The CP3000 is robustly constructed of epoxy painted rigid polyurethane, PVDF and other corrosion resistant materials and is designed to fit inside a typical fume extraction cabinet, thereby giving maximum operator convenience and safety.

Under deck fan cooling, with safety interlocks, has been incorporated in the machine to protect against the accumulation of explosive and corrosive vapours and also to maintain a constant operating temperature. For optimum safety, the machine will automatically cut out and refuse to re-start should an obstruction cause an airflow reduction of greater than 50%, in which case the remote shut off indicator will come on.

Configuration

The basic machine consists of a main drive unit (410mm (16") square approx), a corrosion resistant chemical feed unit, drain tank and joystick panel control module which may be located outside the user's fume cabinet if required.

The standard machine has a gear drive arrangement where samples rotate in planet gears around a central drive. A removable PVC drip tray beneath the polishing plate protects the main housing and makes cleaning easier.

Industry Standard System Architecture

Typical applications for the CP3000 Chemical Polishing Machine are the final chemical etch polishing before device fabrication or epitaxial growth analysis of the following materials:

- Cadmium Telluride and Mercury Cadmium Telluride for use in infra-red detectors and other devices.
- Thin and ultra-thin wafers of semiconductor materials such as Gallium Arsenide, Indium Phosphide and various II-VI and III-V compounds (for ASIC's etc).
- Cadmium Sulphide and similar electro-optic materials.



- *Minimum subsurface damage*
- *Maximum sample size - 112mm ϕ*
- *Robust construction from corrosion resistant materials*
- *Convenient, remote joystick control*
- *Fine etch polishing of semiconductor wafers & opto-electronic crystals*

The CP3000 is ideal for all applications requiring an electronic grade polish of the highest standard with minimal stressing of the crystalline structure (for MMIC's, laser diodes etc).

When used in conjunction with the uniquely versatile range of Logitech high precision bonding and demounting equipment, valuable electronic wafers and similar device materials may be safely processed without fear of front side damage.

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Operation

The CP3000 is fitted with a lift-off glass plate which will accept a range of self-adhesive polishing cloths up to 356mm (14") diameter. Thus, by utilising a number of spare lift-off discs, quick and easy change of polishing cloth and fluid may be facilitated.

The PVDF drive plate is also easily lifted off for cleaning.

The gear drive unit allows up to three 83mm (3.25") diameter samples to be polished simultaneously with approximately 25mm (1") of relative eccentric motion between the sample and the polishing cloth. If less eccentricity can be accepted, the sample diameter may be increased to 112mm (4.4") for 1 sample.

Process time can be pre-set on the 0-10 hours timer. On completion of the set time the plate can either continue running, thus permitting the samples to be flooded with diluent to arrest the chemical polishing process, or it can be set to stop automatically.

Process Route

Optimum geometric control of specimen combined with damage-free surface polishing is best achieved by using the CP3000 as the final stage in the Logitech machine system sequence.

Specimens may be thinned using the PP5 series jigs on PM5, LP50 or LP600 lapping systems, subjected to mild chemo-mechanical polishing (optional), then polished on the CP3000 machine to remove remaining traces of surface damage, thus satisfying the most stringent requirements.

Accessories, Components and Consumables

A comprehensive range of accessories, components and consumables are available to support all Logitech machines and systems, enabling optimum results and longevity of products. For a more comprehensive listing or to order consumables online please go to www.logitech.uk.com.



Technical Specifications

Power Supply	220V 50Hz, or 110v, 50/60Hz
Weight	42kg (90.2lbs)
Main drive unit	400x435x260mm (15.75x17.13x10.2")
Remote Control Unit	500x245x195mm (19.69x9.65x7.68")
Maximum Height with feed unit	660mm (25.98")
Polishing Plate diameter	356mm (14")
Maximum Sample Size	1 x 112mm (4.4") Ø
	3 x 83mm (3.27") Ø
Plate Rotation Speed	0-70rpm (continuously variable)

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