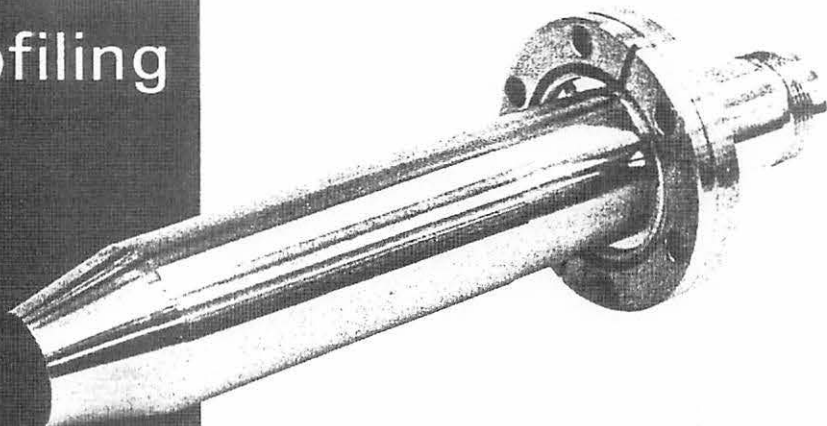




Rapid Depth Profiling

- High Sputtering Rates
- Ion Beam Scanning
- Rapid Change between Preset Current Densities
- Calibrate Erosion Rate
- Remote Control Capability
- Automatically Timed Degas Function



ION BOMBARDMENT GUN MODEL 981-2043

Rapid, precise depth profiling of film structures on surfaces is now possible with the Varian Ion Bombardment Gun. The Ion Bombardment Gun provides a high current density ion beam for sputter cleaning sample surfaces for LEED and Auger surface analysis work. The beam energy is variable from 0 to 3000 electron volts with current densities (for argon ions) exceeding $300 \mu\text{A}/\text{cm}^2$ at a gun-sample distance of 5 cm at the highest energy. An electrostatic lens system provides beam focusing, and deflection plates allow beam positioning as well as high frequency scanning in both the X and Y axis. Removal rates with the new gun can be controllably varied over orders of magnitude by varying the ion energy from 300 eV to 3 keV; by varying the beam current density from 0 to over $300 \mu\text{A}/\text{cm}^2$; and by scanning the beam, which reduces the average current density at any particular point.

SCANNING

Scanning is an important feature of the Varian ion bombardment gun. When used in depth profile studies, scanning provides uniform removal rates that produce a wide, flat-bottomed crater to remove the undesirable characteristics of crater walls from the point of the analysis.

Secondly, for various types of analyses, scanning is useful for uniformly sputtering a large area (1 cm^2 at 5 cm from the gun) of the sample. Finally, it permits an accurate and reproducible method for setting the average ion beam current density. This is accomplished by monitoring the current density as the beam is scanned over the Varian Beam Probe, described below.

DC DEFLECTION

The deflection plates are also very useful for static beam alignment. When scanning is not required, the dc deflection capability of the ion gun allows precise placement of the ion beam, ensuring that the ion gun beam and electron gun beam are centered on the same spot.

OTHER ADVANTAGES

Electrostatic focusing of the ion beam provides a spot size at the sample of approximately 3.5mm (FWHM) at a distance 5 cm from the gun with an ion beam energy of 300 eV.

In the event of a filament burnout in the middle of a vacuum cycle, the switchable dual filament assembly permits continued operation without interrupting the work in progress. At the end of the cycle, filament replacement is simplified by a plug-in anode-extractor assembly.

The new tapered head design allows greater accessibility for mounting the ion gun and other instruments close to the sample and CMA head. The gun is mounted in a port with $2\frac{3}{4}$ inch ConFlat® Flange and 1.5 inch ID tubulation (1.75 inch O.D.). The gun is fully bakeable to 250 °C.

ION BOMBARDMENT GUN POWER SUPPLY, MODEL 981-2046

The ion gun power supply provides a continuously variable acceleration voltage of 0-3000 volts. Beam current stability is assured by feedback regulation of the emission current which is variable from 0-40 mA.

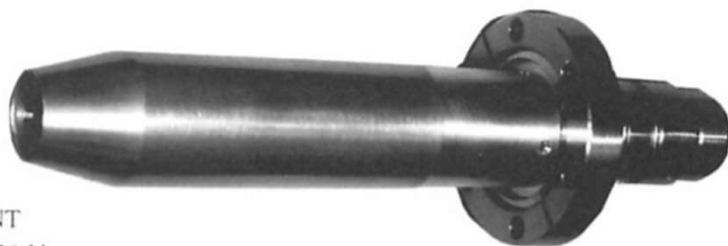
Beam focus is controlled by an adjustable voltage applied to the electrostatic lens in the gun. X- and Y-axis deflection controls allow precise dc positioning of the ion beam over a ± 5 mm range. In addition, two high frequency area scans may be used to permit rapid change of the average current density.

The unit has an automatic degas feature for cleaning the gun after exposure to atmosphere and before an ion bombardment operation. The power supply automatically sets the proper current and voltage levels, then turns them off automatically after a preset time.

A termination is provided for connection to a remote beam energy on/off switch which would allow, for example, externally timed depth profile measurements.

3 keV RASTER ION BOMBARDMENT GUN & CONTROL

- OUTSTANDING LOW VOLTAGE PERFORMANCE
- HIGH SPUTTERING RATES 200 A/MIN
- BEAM DIAMETER 2.5mm
- DUAL FILAMENT LINE OFF SIGHT
- INERT GAS OPERATION
- AUTOMATIC DEGASS FUNCTION
- 2.75" O.D. MOUNTING

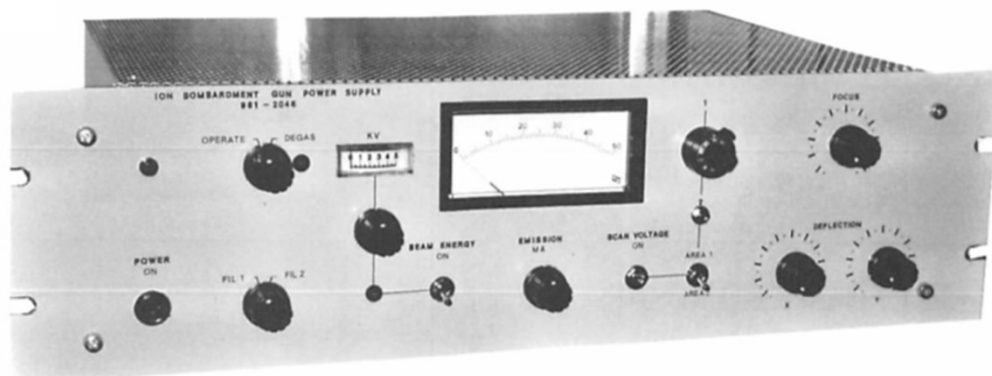


INCL.

MODEL 981-2043 GUN w/ DUAL FILAMENT

MODEL 981-2046 CONTROLLER, 115 V / 230 V

CABLE KIT. GASKET. MANUAL

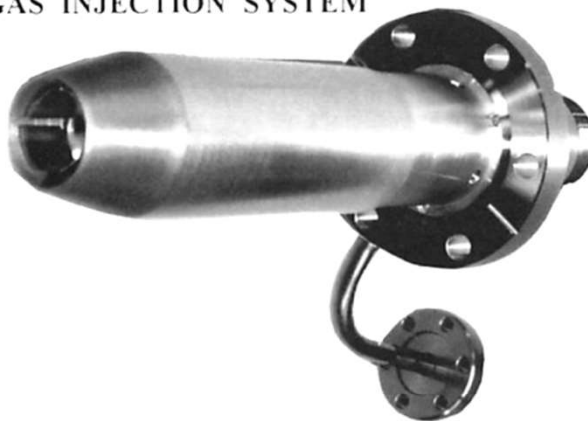


ACCESSORIES & SPARES:

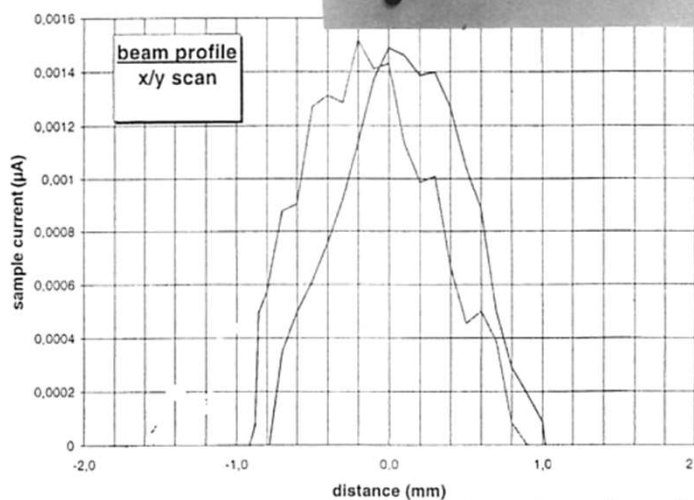
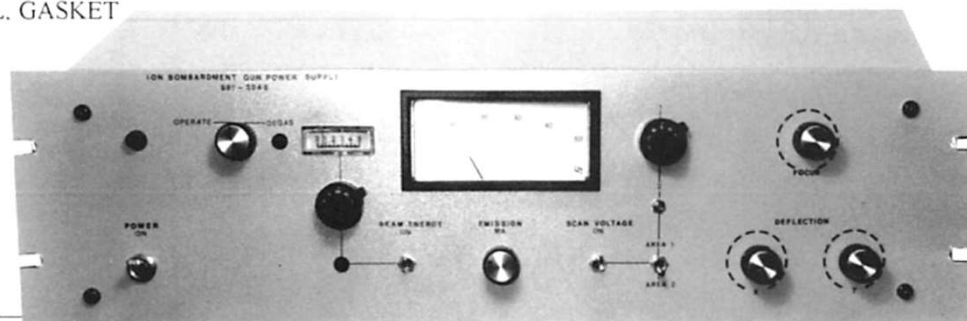
981-2046	POWER SUPPLY, 115 V / 230 V
981-2043	ION GUN. 6" LENGTH
981-2043-EXT	ION GUN. CUSTOM INSERTION LENGTH.
981-2040	ION GUN SHIPPING CONTAINER.
981-2044	REPLACEMENT FILAMENT. incl. TWO PAIR
660.115	25 ft. (6m) CONNECTION CABLE.
81.400.344	MANUAL, Gun
81.400.345	MANUAL. Controller
81.400.346	SET OF SCHEMATICS. LAYOUTS. PARTS LISTS
652.396	BEAM PATH GRID (GRIDDED WASHER)
648.324	EXTRACTOR GRID ASSY.
53.611.003	REMOTE. MALE CABLE CONNECTOR
36.885.251	FOCUS HV POTENTIOMETER
A 100	CLOCK SCANNER PC BOARD.
A 200	FILAMENT BIAS PC BOARD.
A 300	FILAMENT REGULATOR PC BOARD
A 400	BIAS REGULATOR PC BOARD
981-2046-LO	LOANER . POWER SUPPLY. RENT PER WEEK..

3 keV RASTER ION GUN WITH NOVEL GAS INJECTION SYSTEM

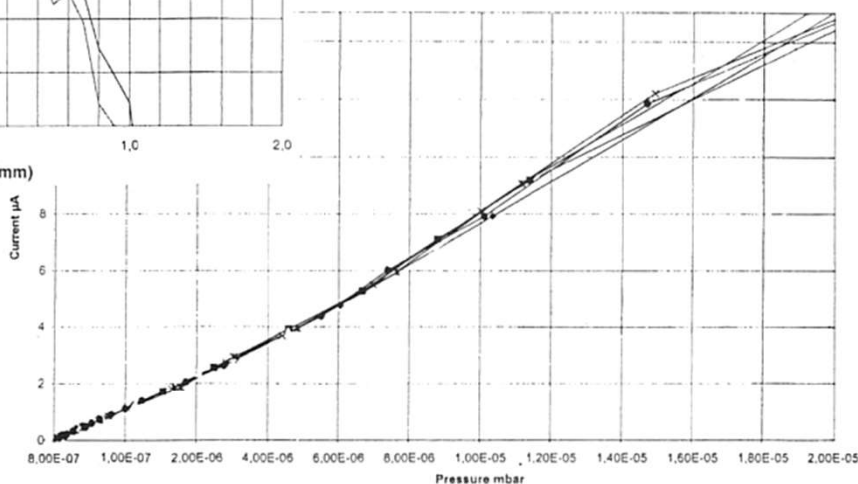
- SPUTTERING AT APPROX. 10-6T
- OUTSTANDING LOW VOLTAGE PERFORMANCE
- REFINED TRAP FOR IMPURITIES
- BEAM DIAMETER 2.5mm OR BETTER
- DUAL FILAMENT LINE OFF SIGHT
- INERT GAS OPERATION
- AUTOMATIC DEGASS FUNCTION
- 2.75" O.D. MOUNTING



INCL:
 981-2046 CONTROLLER
 981-2043-I GUN
 CABLE KIT, MANUAL, GASKET



Current-Pressure



ACCESSORIES & SPARES

- | | |
|------------|---|
| 981-2046 | POWER SUPPLY, 115 V / 230 V |
| 981-2043-I | ION GUN w/ GASINLET FLANGE |
| 980-2000 | BAK. LEAKVALVE, 1.33" / 1.33" |
| 980-1012 | REFILL ARGON GAS BOTTLE, 250 PSI
w/ SHUT OFF VALVE, 1.33"O.D. MOUNTING |

