

REFURBISHED STEPPER

## Sub-Micron 1x i-line System

The Ultratech 2244i was specifically designed as a cost effective approach to complement high NA reduction steppers in a mix-and-match environment, especially for high volume DRAM and ASIC manufacturing. This system features an ultra-large image field of 22 x 44mm with a 0.32 numerical aperture lens with an illumination bandwidth of 20 nanometers (355 to 375nm). As a result, this system provides 0.75 micron manufacturing capability. These features provide improved critical dimension (CD) interference effects and superior depth-of-focus for the 2244i.

In terms of manufacturing performance, the large field size coupled with an extremely fast and accurate linear motor wafer stage, results in the most productive step-and-repeat lithography tool in the industry at eighty 200mm wafers per hour.

When considering these benefits for cost-of-ownership, the 2244i provides an efficient solution for cost effective mix-and-match lithography with reduction steppers.

This system was removed from production in April of 2004. It has been kept in a climate controlled environment since then. It is fully refurbished to OEM specifications by Stepper Equipment Inc, and is available for demonstration by appointment.

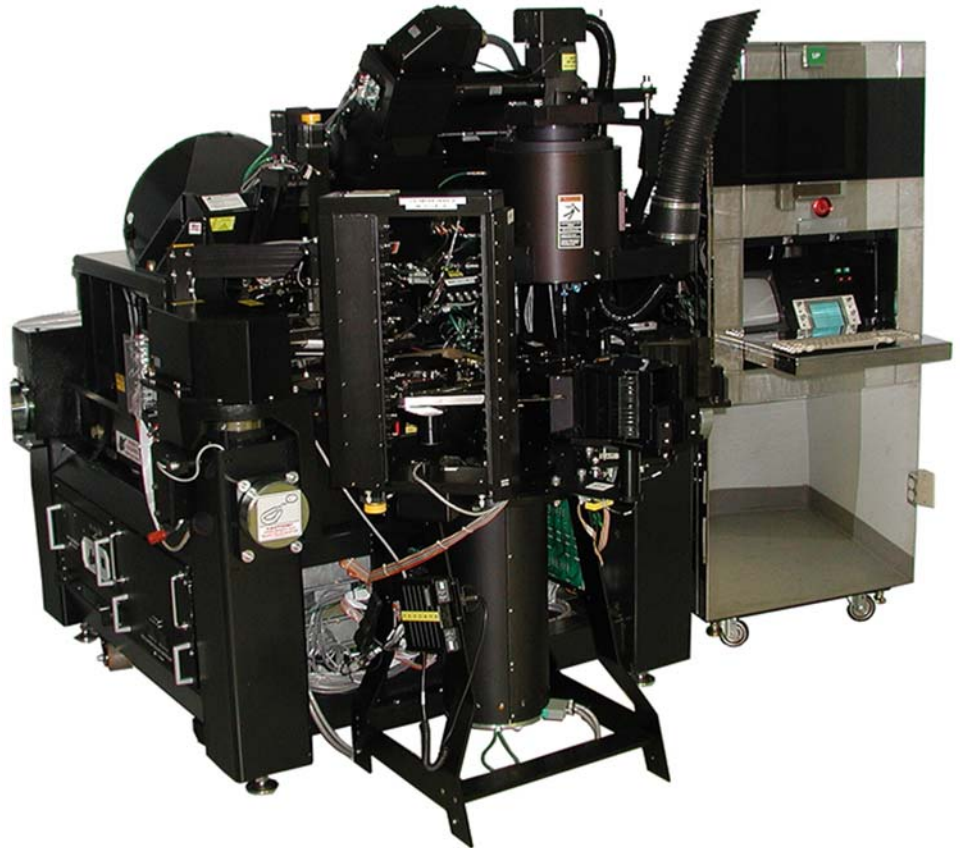
### HIGHLIGHTS:

Wafer Size: 4", 5", 6", 8"  
Loader Type: Genmark Robotic  
Computer: VME with floppy/hard disk  
Uniformity: 2.0 %  
Depth of Focus: 1.0 um @ 0.75um lines  
Maximum Square: 26.7 x 26.7 mm  
Maximum Aspect: 44mm x 22mm  
Reticle Size: 6" x 6" x 0.250"  
Alignment: Machine Vision/Dark field

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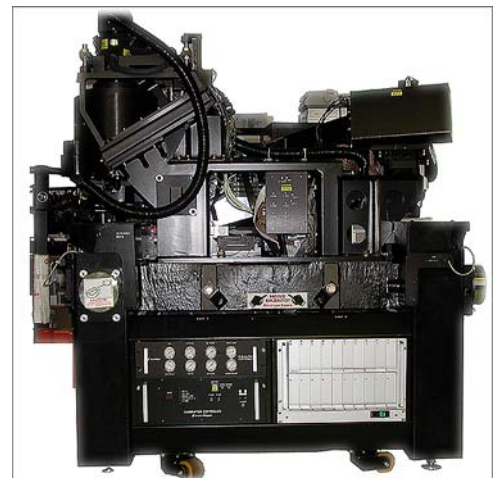
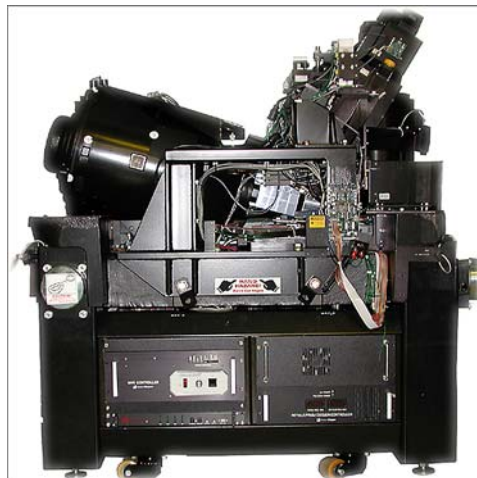
# Ultratech Model 2244i

Serial number 1296  
Manufactured April, 1997  
Minimum resolution: 0.75 micron



*Left side of stepper*

*Right side of stepper*



# Model 2244i Specifications

## Automatic Functions

Alignment options	Machine Vision or Darkfield alignment
Site by Site Alignment:	0.12um, 3 sigma
Enhanced Global Alignment	0.12um, 3 sigma
Auto Focus:	Continuous site by site, or global
Focus Gauge:	Automatic compensation for environmental fluctuations, image tilt
Auto wafer level:	Site by Site, electronic
Autoloader:	Robotic pick-and-place, no edge contact
Reticle loader	Robotic pick-and-place, interfaces directly

## Throughput Specifications

Reticle Load and Align:	Less than 5 minutes
Field Change:	7 seconds
125mm: EGA	115 Wafers per hour
150mm: EGA	105 Wafers per hour
200mm: EGA	80 Wafers per hour

## System specifications

Wafer Sizes:	2", 3", 4", 5", 6", 8"
XY Stage:	Monolithic structure, linear motor drive, Active air isolation vibration control
Computer:	VME Bus controller; 68030 based CPU; color graphics monitor with 3.5" floppy and hard disk
Printer:	80 column printer, with clean room paper

## Lens Specifications

Projection Ratio:	1:1
Exposure Spectrum:	Broadband exposure, 355nm-375nm
Alignment Spectrum:	500nm-650nm
Numerical Aperture:	.32 Numerical Aperture
Resolution	0.75um standard
Depth of Focus:	1.0 um @ 0.75 um lines and spaces, 2.0ums @ 0.8um lines and spaces
Field Size	Max area rectangle = 44 mm x 22 mm Longest rectangle = 44 mm x 22 mm Largest square, 26.7 mm x 26.7 mm

## Illumination Specifications

Automatic Exposure Control:	Integrated dose monitored for exposure repeatability
Lamp Type:	750 watt mercury arc, pulsed to 1000 watts during exposure
Mercury Vapor Control:	Built in
Exposure Uniformity	+/- 2.0%
Irradiance	> 700 mw/cm <sup>2</sup>

## Reticle Specifications

Size:	6" x 6" x 0.25"
Pellicle Protection:	Chrome Side
KLA/NJS Inspectable:	Yes
Substrate:	Quartz or low expansion
Alignment Mark:	Scribe Area
Size:	200um square standard, optional cross mask size allows reduction of mark to 70um minimum
Design Flexibility:	Vertical or Horizontal alignment marks optional, Machine Vision
Generation Technique:	E-Beam or optical step and repeat
Fields per reticle:	2 fields standard, up to 7 fields total ( requires optional hardware )

## Space Requirement

Footprint:	28 feet square ( 2.5m <sup>2</sup> )
Dimensions:	56.2" width x 50.4" depth x 73" height ( 143cm x 127.5cm x 185cm )
Service Clearance:	Allow 24" on all sides, and in back
Weight:	Less than 5000 lbs ( 1.814 kilos ) supported at four corners of base
Environmental Chamber	68" W x 100" D x 88.5" H ( 172cm x 254cm x 225cm )

## Stepper Environmental Req.

Ambient Temperature Control:	70 degrees , +/- 2 degrees Fahrenheit
Humidity	20% to 50% noncondensing
Air quality:	Class 100 per Federal Standard 209B

## Electrical Requirements

Electrical:	220 volts, 50/60 Hz, 15 Amps, Inrush current, 350 Amps for 5 milliseconds
Circuit breakers:	Separate 20 Amp circuit should be installed for each Model 2244i Each breaker should have separate ground wire returned to circuit breaker panel The circuit breaker panel should have it's ground bonded at the main transformer ground for building

## Pneumatic Requirements

Nitrogen or Compressed Air:	Minimum 100 psi, 2 CFM max, Dry to -40 degrees F dew point, filtered to 0.2 microns
Vacuum:	Two lines, each supplying 20 inches Hg at 1 SCFM average under full load, 2 SCFM max
Exhaust:	15-20 CFM at 0.3 inch water ( direct to house exhaust )