



AUTOMATION SYSTEMS  
GROUP

# Guardian®

## Bare Reticle Stocker

TOOL AUTOMATION

### Benefits

The Guardian's unique design provides semiconductor manufacturers with many compelling reticle storage benefits, including:

- Increased reticle protection and safety.
- Support of different stepper reticles within one stocker.
- Minimal footprint with high capacity.
- Superior contamination and ESD control, cycle times, reliability, serviceability and cost of ownership.
- Automated reticle delivery ready.

### Features

Complete Reticle Protection:

- ISO Class 3 Mini environment
- Airborne Chemical Filtration (Option)
- Standards Compliant

Dependable:

- Seismic Zone 4 compliant
- CE compliant components used throughout the system
- Highly reliable linear motors used in handling robot eliminate many moving parts

Intelligent:

- Laser targeting sensor auto-teaches the storage system

Flexible:

- Scalable heights to meet a variety of Fab requirements
- Payload I/O can be configured with any combination of all major reticle carrier openers

The Guardian® Bare Reticle Stocker (BRS) is Brooks Automation's next generation, fully automated, high-density bare reticle storage system.

As the most valuable component of the fab process, reticles must have the highest degree of protection against loss, damage or contamination. Inefficiencies in a fab's reticle logistics can result in costly disruption in the Litho bay, increased stepper idle time and ultimately result in missed customer shipments. The Guardian system is comprised of four modular assemblies—the Reticle Vault, Reticle Transfer Module, Service Module and I/O Module—each of which helps to provide the highest degree of reticle protection.

### *Reticle vault*

An innovative concept for automated reticle stockers, the Reticle Vault ensures total protection of reticles. The Reticle Vault was designed using a servo-controlled cylinder that rotates inside an enclosed chamber. Since it contains no moving mechanisms, the Reticle Vault can completely isolate reticles. In addition, an ultra-clean "Circular Air System" designed by Brooks Automation (patent pending) constantly bathes each reticle with single-use horizontal laminar airflow.

### *Reticle transfer module*

System robotics are located outside the reticle vault in a separate chamber. Designed specifically for bare reticle handling, the transfer robot removes reticles from the vault and places them into one of two I/O modules. Vertical airflow from a fan/filter unit located at the top of the chamber keeps clean air flowing over the robot during reticle transfers.

### *Service module*

The Guardian's service module is located outside the Reticle Vault at the back of the system for easy access. The Service Module contains all the major electrical controls in one pullout rack. All service is performed without ever entering the reticle storage vault.

### *I/O module*

The Guardian's I/O module contains reticle carrier openers for Nikon, Canon or ASML steppers. The module can "mix and match" opener types according to a fab's needs. All major carriers' ID systems can also be integrated into the I/O module.



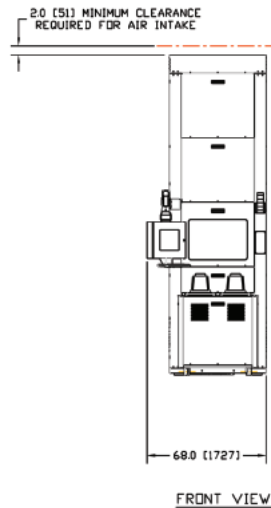
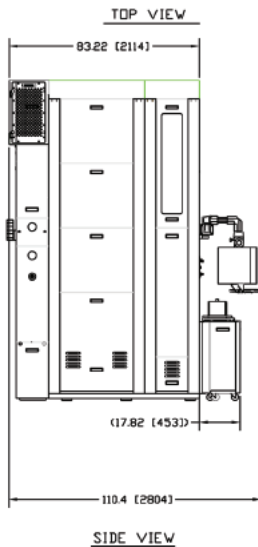
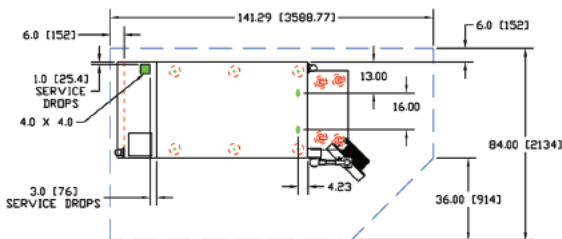
The Guardian Bare Reticle Stocker provides unprecedented levels of protection and safety for stored reticles.

*Software*

The Guardian enables Litho managers to control access to reticles, as well as track reticles leaving or entering the stocker, ensuring that users always know where reticles are. The Guardian is also compatible with Brooks Automation's IReticles™ Reticle Management Software, which offers advanced reticle management and tracking capabilities.

*Flexible system configurations*

The Guardian can be configured for 5- or 6-inch reticles, and is designed to accommodate service access through just two sides of the stocker. This provides the flexibility to position the Guardian in corners, in small rooms or in side-by-side clusters, freeing-up valuable fab floor space for more productivity-enhancing equipment.



**I/O MODULES**

SMIF	Maximum (2) SMIF pods
Nikon	Maximum (8) openers
Canon	Maximum (6) openers

**CAPACITY**

GM Model	1,296, 6-inch reticles; 1,620, 5-inch reticles
GT Model	1,632, 6-inch reticles; 2,040, 5-inch reticles

**CLEANLINESS**

System	ISO Class 3 28.3 particles/ft³ ≥@ 0.1µm
Storage Vault	ISO Class 2 2.83 particles/ft³ ≥@ 0.1µm

**DIMENSIONS**

Footprint	29.0 ft² [2.682m²]
Width	42 inches [1,066mm]
Depth	99.7 inches [2,531mm]
Height (GM Model)	118 inches [2,997mm]
Height (GT Model)	140 inches [3,556mm]

**CARRIER ID SYSTEMS**

- SMART-Tag™ (IR)
- Hermos (RF)
- Bar Code

**STANDARDS COMPLIANCE**

- CE Mark
- EMC, Machinery and Low Voltage Directives
- SEMI S2-0200
- SEMI S8
- SEMI E78, Level 1

**FACILITIES**

200/208/220/230 VAC, 1°, 50/60 Hz

*For more information, please contact your local Brooks Automation sales representative or visit [www.brooks.com](http://www.brooks.com).*

