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+1-573-466-4300

Operators Manual

Recessed Spin Chucks



Cee
Cost Effective Equipment

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1. Introduction

1.1. Confidentiality Statement

Information supplied is for the use in the operation and/or maintenance of Cee equipment. Neither this document nor the information it contains shall be disclosed to others for manufacturing or any other purpose without written authorization from, Cost Effective Equipment, LLC.

1.2. Types of Spin Chucks

- **Circular Vacuum** – For coating/developing/cleaning standard wafers and pieces
- **Recessed** – For coating rectangular substrates
- **Captive** – For developing/cleaning substrates
- **Porous Ceramic** - For coating/developing/cleaning thin substrates (<250µm)
- **Film Frame** - For developing/cleaning substrates mounted on film frame
- **Custom** - Perimeter Vacuum, Non Vacuum, Multi Substrate

2. Recessed Spin Chuck Use

When working with square or rectangular substrates, customers often struggle to eliminate edge buildup (non-uniformity) associated with uneven film drying in the corner regions. Each recessed spin chuck is custom-made to house the exact dimensions and thickness of the customer's square or rectangular substrate. The recessed cavity provides an auto-centering function and provides both lateral and vacuum grip. This design emulates a round wafer by removing the leading edge of the square and thereby dissipating the normal turbulence created in the spin bowl atmosphere. This design virtually eliminates edge interference bands. Additional distinct advantages of this design include complete backside coverage and mitigation of potential rear side contamination. Cee equipment is uniquely capable of combining recessed chuck technology, high accelerations, and multiple spin speeds to virtually eliminate edge effect issues.

2.1. Choosing a Chuck for the Substrate

Recessed chucks are designed specifically for individual substrates unless specified by Cee. Using substrates that the chucks are not design for can cause poor coating results.

2.2. Spin Chuck Removal and Installation

1. If equipped, locate the spin chuck screw (located in the center of Vacuum chuck) and remove with a hex key wrench.
2. Grasp the spin chuck and pull up and remove vertically.
3. Place new spin chucks in the same orientation as old and ensure that the spindle pin/key aligns with chuck slot.
4. Use a hex key wrench to secure spin chuck screw in the center of new chuck.

2.3. Substrate Placement and Removal

1. Place the wafer onto the chuck surface. The recessed section will automatically center the wafer.
2. Start the recipe and follow the on-screen instructions.
3. Once the process is complete, the vacuum automatically turns off and the substrate can be removed. Finger holes are provided to assist in removing the substrate from the recessed area.

3. Preventative Maintenance

This maintenance manual provides personnel with procedure and guidelines for maintaining a Cee® spin chuck. Below is a chart of recommend maintenance scheduling.

Maintenance Section	Maintenance Schedule
Safety Checks	Before daily tool use
Cleaning	After daily tool use
Mechanical Checklist	See Section Below Details

3.1. Safety Checks

Inspect spin chuck lid for the following defects:

- (a) Loose assemblies
- (b) Damage to the surface
- (c) Dirty surface

3.2. Mechanical Checklist

1. **Spin chuck cleanliness:** If any material has built up on the spin chuck, it can be wiped clean with most organic solvents isopropyl alcohol, or acetone. For major buildup of material, a glass slide can be used to gently scrap the material away. Follow by wiping clean. A dirty spin chuck could cause vacuum errors. See section below on detailed cleaning instructions. **Daily**
2. **Spin chuck flatness:** This can be seen visually with a straight edge. Small uniformity issues such as a burr can be gently removed with a razor blade or a glass slide. Larger deformations such as a damaged area from dropping can be removed with fine sandpaper. A non-uniform spin chuck can cause vacuum errors. **Quarterly**

3.3. Cleaning

For cleaning, it is good practice to use the mildest solvent possible such as organic solvents, acetone, isopropyl alcohol, or N-methylpyrrolidinone (NMP). Caustic acids or bases should not be used.

Keep solvent from getting into the vacuum system. When cleaning the spin chuck, remove it from the equipment.