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Operators Manual

Porous Spin Chucks




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. Porous Spin Chuck Use

Utilized for thinned substrates (< 250 µm), these spin chucks are constructed of a porous ceramic insert inside a recessed chuck cavity. They have the distinct advantage of completely supporting the backside of any given substrate dimension and equally distributing (diffusing) the vacuum source across the entire porous surface. This design mitigates potential vacuum-caused deflection and damage to the fragile substrate or coated film layer.

2.1. Choosing a Chuck for the Substrate

Porous chucks are designed specifically for individual substrates unless specified by Cee. Using substrates that the chucks are not design for can cause poor coating, cleaning, and developing results.

2.2. Spin Chuck Removal and Installation

1. Remove the porous insert. Depending on design there are 2 way. First check for 2 push pins on the backside of the wafer. Push up on these to lift the ceramic up and remove. If the chuck does not have push pins, screwdriver slots will be visible on the outside perimeter of the ceramic. Use these to lift the ceramic piece out.
2. Locate the spin chuck screw (located in the center of Vacuum chuck) and remove with a hex key wrench.
3. Grasp the spin chuck and pull up and remove vertically.
4. Place new spin chucks in the same orientation as old and ensure that the spindle pin/key aligns with chuck slot.
5. 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.
2. Center the substrate onto the chuck. The larger the substrate the more important this step. Porous chucks are made close to the substrate size so this can visually be done.
3. Start the recipe and follow the centering step instructions.
4. Once the process is complete, the vacuum automatically turns off and the substrate can be removed.

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.