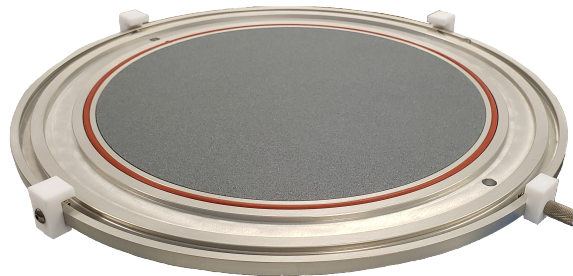


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Operators Manual

Film Frame 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. Film Frame Spin Chuck Use

Mechanical clamps and a porous ceramic insert are combined for spin coating or cleaning thinned substrates (< 250 µm) that have been taped to film frames. The ceramic insert ensures complete and uniform backside support while diffusing the vacuum source. This component utilizes both vacuum O-rings and mechanical clamps for securing the outer film frame to the chuck assembly. Cee® spin coaters and cleaners feature an industry-leading horsepower/torque motor drive system, which is required for maximum acceleration of this design.

2.1. Choosing a Chuck for the Substrate

Film frame 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 film frame with wafer onto the chuck surface. The mechanical clamps will center the substrate.
2. Start the recipe and follow the centering step instructions.
3. 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.