

# UNIVERSAL 8" COATING SYSTEM

# RC8 GYRSET

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FEB 14 1999

EQUIPMENT FOR TECHNOLOGY

TECHNICAL DESCRIPTION

## ADVANCED SPIN COATING

The SUSS RC8 Spin Coater is based on the patented GYRSET® closed cover system. It combines state of the art technology with an innovative concept.

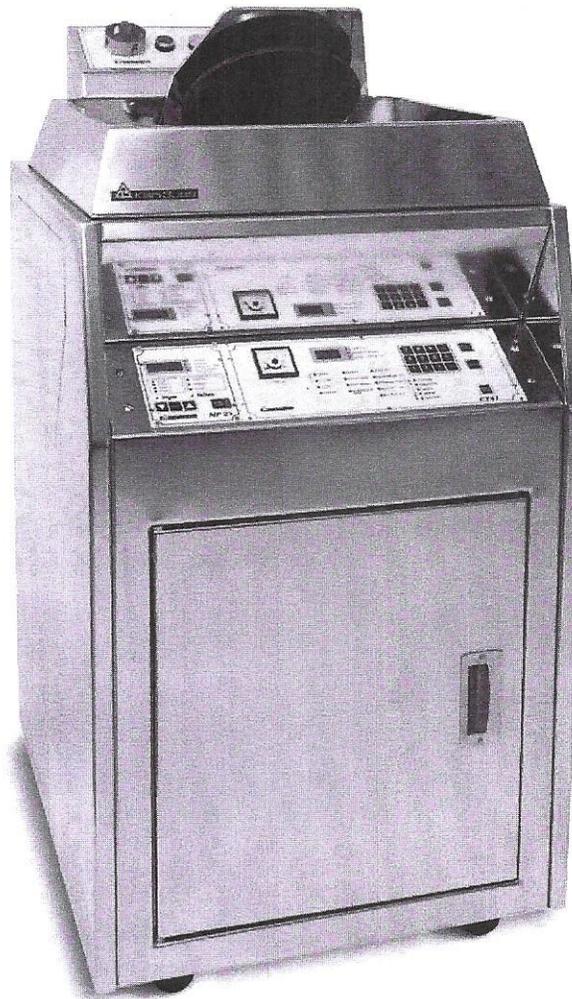
This unique design provides a better uniformity than conventional spin coaters. At the same time it significantly reduces resist consumption by up to 50% compared to conventional spin coating systems.

Better uniformity and less resist consumed make the SUSS RC8 spin coater the ideal tool from both financial and cost of ownership viewpoints.

The SUSS RC8 spin coater is extremely simple to operate, with fully programmable process parameters.

## FEATURES AND BENEFITS

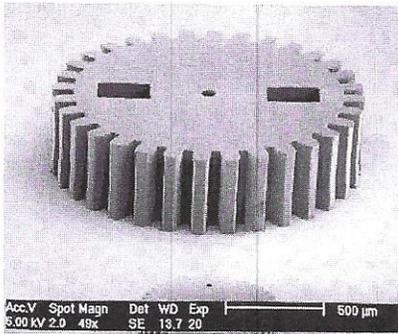
- ▲ Uses the GYRSET® closed cover spin coating system that offers uniform coatings with reduced consumption and less edge build-up particularly on square or rectangular substrates
- ▲ Microprocessor-based control system allows process parameters to be fully programmed with several process cycle and process steps
- ▲ Multi-size configuration with automatic GYRSET® cover size detection and automatic maximum spin speed limitation set up. It gives the flexibility to meet all major application types.
- ▲ Handles up to 8 inch round or 6 inch square substrates
- ▲ Memory backup and RS232C interface for remote control
- ▲ High and low viscosity SUSS dispenser pump configuration with a single controller afford accurate and precise dispense of resist, solvent and polyimide
- ▲ GYRSET® quick exchange system and removable stainless steel collector bowl. It gives easy cleaning of the process chamber and the application of multiple chemically incompatible resists without danger of cross contamination
- ▲ Meets current SEMI-Spec ergonomic and safety requirements



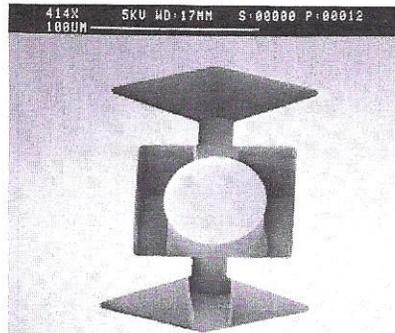
SUSS RC8 GYRSET® (with cabinet option)

# GYRSET® – THE PATENTED SOLUTION

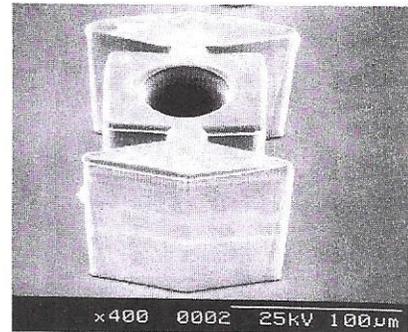
## APPLICATIONS



Photoplastic gear, 450 µm high SU-8 resist  
Courtesy: SFIT (EPFL) and IBM (CH)



Photoresist pattern of 57 µm thickness



NiFe rotor element, 85 µm high, single shot coating

The SUSS RC 8 is capable of processing:

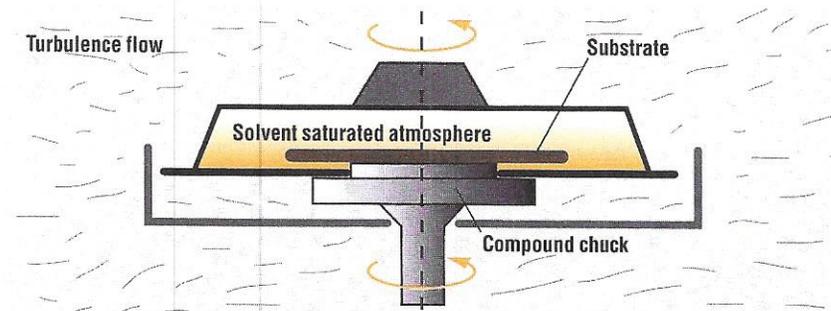
- ▲ Si and GaAs wafers and substrates
- ▲ Polyimide/SOG/adherence promoters
- ▲ Microsystem technology
- ▲ Rectangular substrates
- ▲ Flat panel display (passive, active, plasma, FED)
- ▲ Positive/negative photoresist
- ▲ Concave and convex lenses
- ▲ Photomasks
- ▲ Photocells
- ▲ Compact disks (ROM, audio, video)
- ▲ Glass mastering with thin layer coating
- ▲ Optical lenses, encoders, scales
- ▲ X ray masks
- ▲ Bumping applications for flip chip

## THE GYRSET® SYSTEM

The patented SUSS GYRSET® system is based on a simple but revolutionary concept. Compared to a conventional spin coating system it

has multiple unparalleled advantages. The GYRSET® system offers better uniformity and up to 50% resist cost saving.

The GYRSET® system with indexed bell-shaped cover excludes air turbulence inside the process chamber. This technique yields a uniform, consistent coating thickness without the usual spinning defects (no rebounding, no splashback, no striations, no comets, no corner effects).



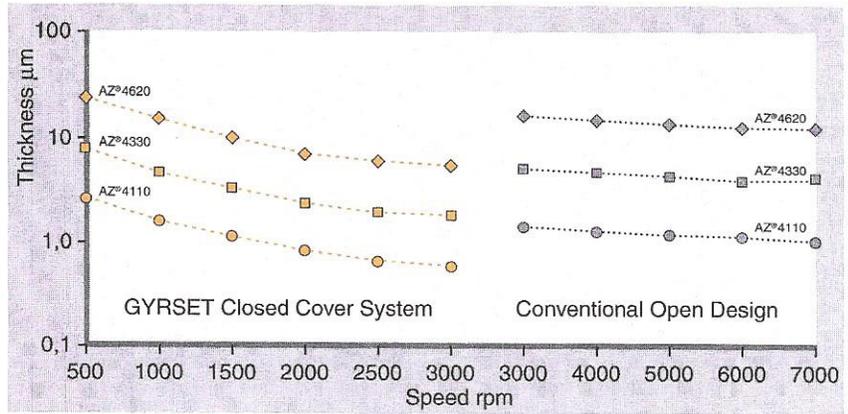
GYRSET® system design

Because of the solvent-saturated atmosphere inside the process chamber, less resist dry skin effect occurs. Consequently, better uniformity and process control for thick as well as for thin resist layers are produced.

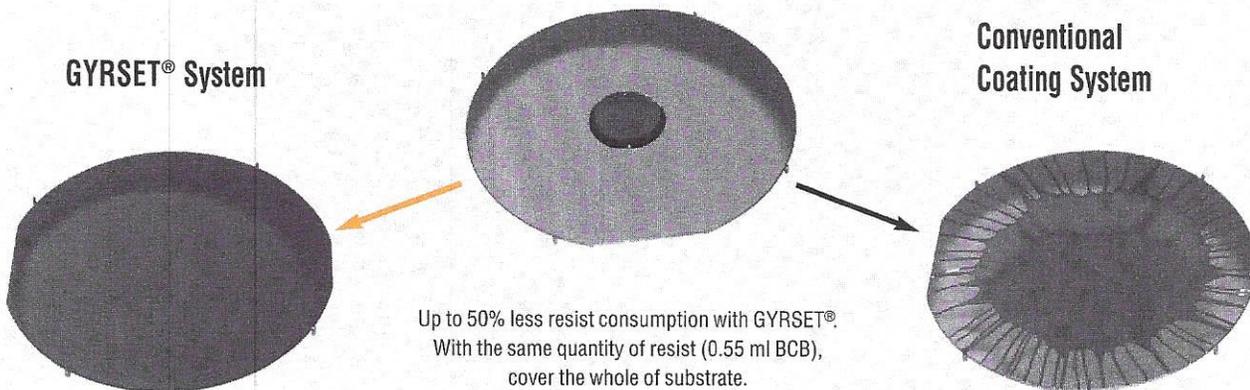
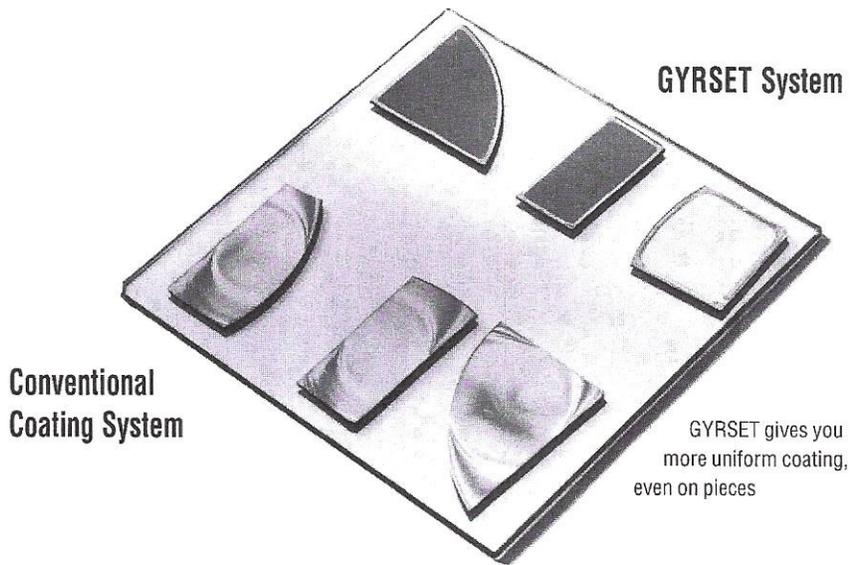
# BENEFITS OF OWNERSHIP

## SUSS RC8 GYRSET® – A WISE INVESTMENT

- ▲ Reliable, consistent and uniform material application at lower spin speeds
- ▲ Economic ownership costs including lower resist consumption and reduced waste disposal expenses
- ▲ Service that is a cornerstone of our products and our reputation in the industry
- ▲ Highly reproducible thick resist applications
- ▲ Uniform coverage even over severe topography
- ▲ A wider range of resist thicknesses requiring fewer resist types
- ▲ Warranty backed by SUSS with multiple world-wide locations
- ▲ Technology unsurpassed in the industry today



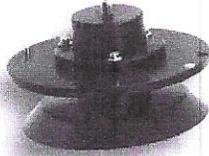
GYRSET offers an order of magnitude wider range at lower spin speeds



# SIMPLE AND FLEXIBLE

## GYRSET® CHOICES

7 000 rpm



RC8 GYRSET 3

5 000 rpm



RC8 GYRSET 5

3 000 rpm



RC8 GYRSET 8

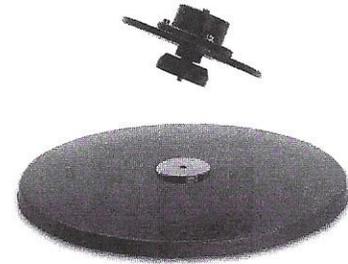
Interchangeable GYRSET Systems for 3", 5" and 8" parts

### MULTI-SIZE GYRSET®

The RC8 can be fitted with three different GYRSET® sizes: 3", 5" and 8". The configuration is automatically detected and the maximum speed set accordingly. With a change time of less than 5 minutes, the SUSS RC8 GYRSET® is the most flexible, upgradeable coater on the market.

### FIXED AND QUICK EXCHANGE

Choose between a fixed or quick exchange GYRSET® plate. For ease of removal for cleaning, the quick exchange GYRSET® plate is simply locked by magnet to the hub. The hub is attached to the cover with two easy-access screws.

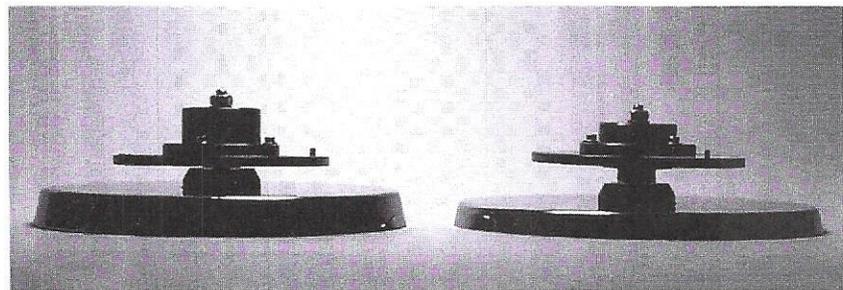


8" Quick Exchange GYRSET®

### MULTI-PROFILE GYRSETS

Select the GYRSET® height according to the thickness of your substrate. Use the table below to help you choose the correct size.

NOTE: For safety reasons, the high and extra high profile GYRSETS are only available with fixed hubs.



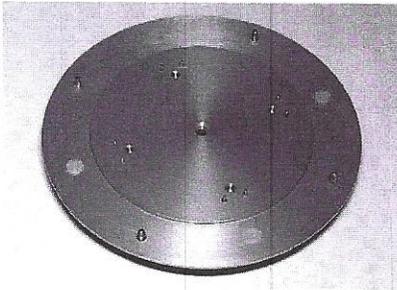
5" high profile and 5" standard profile GYRSETS

	STANDARD (Fixed for Quick Exchange)		HIGH (Fixed)		EXTRA HIGH (Fixed)	
	Maximum Substrate Thickness (mm)	Maximum Spin Speed (rpm)	Maximum Substrate Thickness (mm)	Maximum Spin Speed (rpm)	Maximum Substrate Thickness (mm)	Maximum Spin Speed (rpm)
RC8 GYRSET 8	4	3 000	12	3 000		
RC8 GYRSET 5	5	5 000	12	3 000	22	3 000
RC8 GYRSET 3	5	7 000	12	3 000		

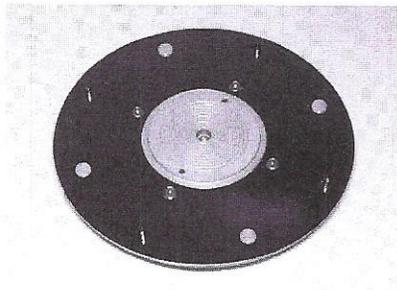
# SIMPLE AND FLEXIBLE

## CONFIGURATION CHOICES

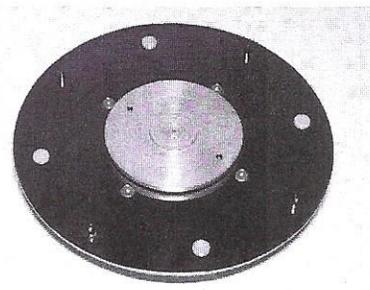
### CHUCK CHOICES



3" Double Side Chuck



3" Single Side Chuck



3" Single Side Chuck with Adapter

### DOUBLE SIDE AND SINGLE SIDE CHUCKS

Choose either double or single side chucks in 8", 5" or 3" sizes.

The substrates are vacuum-locked during processing.

The vacuum patterns, support pins and locating pins are designed according to your components and adapted to the options chosen.

### ADAPTERS FOR SMALL PIECES

Available in both double and single side formats, these chucks allow you to process pieces up to 2" when the chuck is set up for larger sizes.

### STANDARD PLATE

For safety reasons and to comply with EU regulations, the spin speed of the GYRSET is limited to 1000 rpm with the cover open. To solve this problem, SUSS offer a Standard Plate as an option to the GYRSET®. This system enables you to spin at high speeds, without the GYRSET effect. The GYRSET is simply replaced in the same way as changing between one GYRSET size and another.

Together with the standard plate, a range of three chucks is offered, depending on your requirements.

	818	819	824
<b>Outer diameter (mm)</b>	120	120	120
<b>Inner diameter (mm)</b>	80	45	88
<b>Wafer size (")</b>	4 - 8	2 - 4	4 - 8
<b>Pin lift compatible</b>	No	No	Yes
<b>Adapter compatible</b>	No	Yes	No

NOTE: These chucks are single side only.

# SIMPLE AND FLEXIBLE

## MODULAR OPTIONS

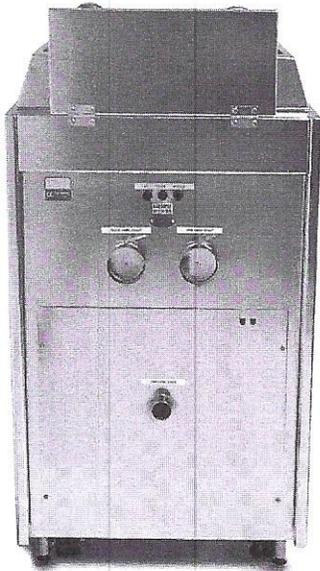
### DISPENSER ARMS

The SUSS RC 8 can be configured with multiple dispense capability dispenser arms, either pneumatic or motorised.

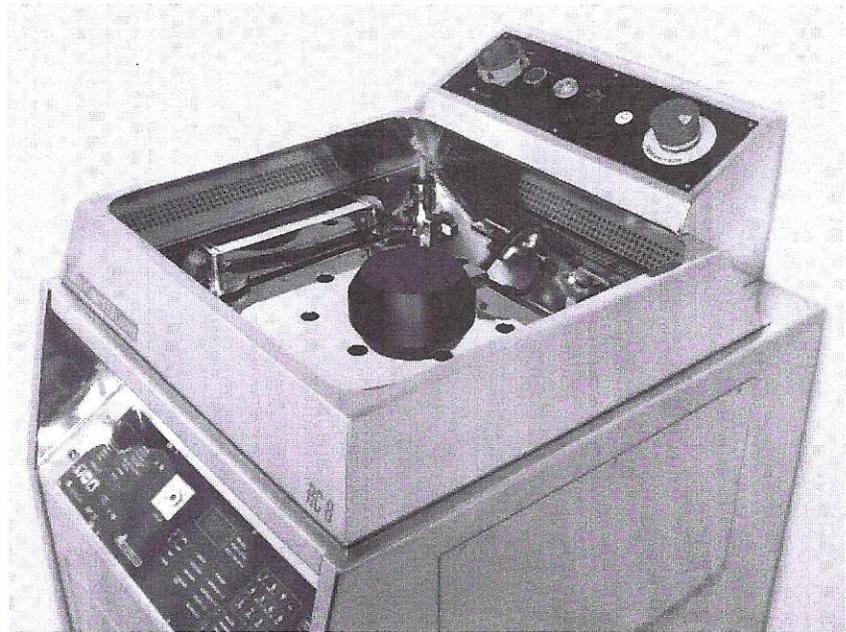
The PNEUMATIC DISPENSER ARM can be equipped with 2 resist lines and 2 solvent lines. The rest position and dispense position are factory adjusted.

The MOTORIZED DISPENSER ARM gives ultimate flexibility and the most sophisticated configuration.

With fully programmable speed and positioning, it can be fitted with up to 3 resist lines and 3 solvent lines. It is also required for the edge bead remover option and dynamic dispense with swing dispense process.



RC 8 Cabinet rear showing separate exhausts



RC8 Cabinet with Motorised Arm and Resist Nozzle Autoclean Options

### STAINLESS STEEL CABINET

Constructed of sturdy corrosion resistant stainless steel, it integrates the SUSS RC8 spin coater and options in a small footprint. The separate fluid storage, process area and electronics reduce the risk of contamination. A spill plate contains the liquids within the cabinet.

The upper safety barrier protects the operator and the additional flow grill provides laminar flow assuring proper ventilation through the process.

Easy installation is provided by the main connections at the back (nitrogen, vacuum, air, mains supply and exhausts).

### PROGRAMMABLE SOLVENT DISPENSE

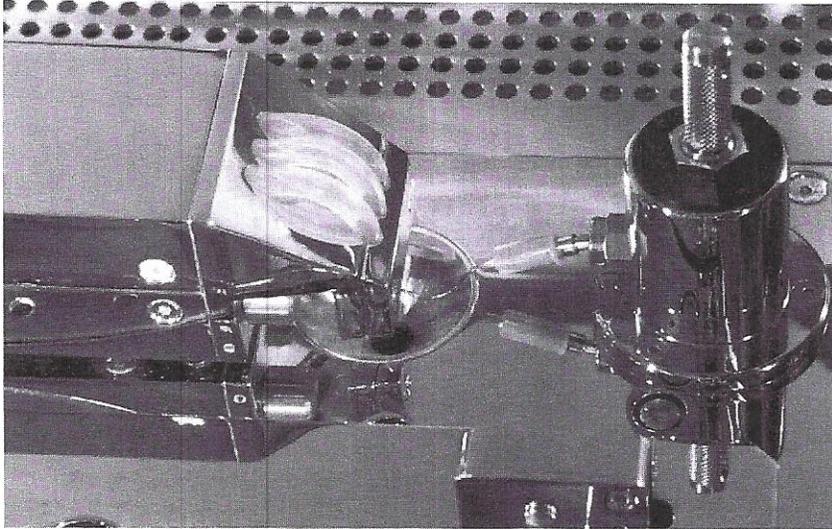
Includes a pressurized tank with Teflon® path and suck-back valve. Choose this option for spraying solvent for cleaning or developing and for adhesion promoter dispense.

### PROGRAMMABLE AUTOCLEAN

Programs a cleaning cycle. The auto-cleaning frequency is set either with time (sec.) or number of cycles. Before starting cleaning, a bip signal and a message inform the user that a cleaning cycle is about to start. It gives the user time to remove the wafer/substrate from the chuck if the machine is already loaded.

# SIMPLE AND FLEXIBLE

## MODULAR OPTIONS



Resist Nozzle Autoclean Option

### RESIST NOZZLE AUTOCLEAN

This fully programmable option injects solvent into the required dispense pipe, dissolving any residue and cleaning the inside of the pipe.

When used in conjunction with the pump pre-dispense, it provides a highly effective solution to dispense contamination, eliminating unwanted particles.

### CHUCK INDEXING AND SUBSTRATE LIFT UP/DOWN

Provides repeatable substrate loading positioning. At the end of the cycle the chuck is indexed and the substrate is lifted up, making loading and unloading easy.

### NITROGEN BLOW

Releases a jet of nitrogen across your component before processing. Helps to remove any dust and dirt particles from the surface, thereby cleaning the component.

### EDGE BEAD REMOVER

Removes the resist edge bead on round wafers and includes a pressurised tank with Teflon® path and suck-back valve. This requires the motorised dispenser arm option.

Fully programmable internal and external diameters, as well as dispense nozzle speed and solvent pressure, produce an optimum edge bead removing result.

### COTTON CANDY REMOVER

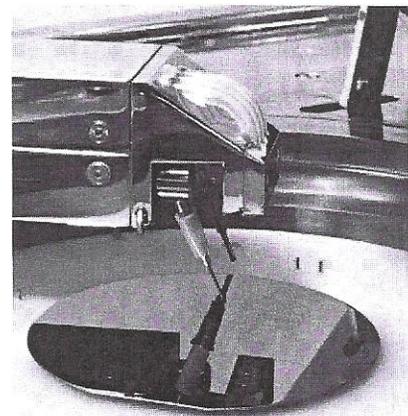
This programmable solvent dispense includes a pressurised tank with Teflon® path and suck-back valve.

One of three dedicated solvents is programmed in the set up menu. Then, if selected during a spin cycle, it will dispense solvent onto the GYRSET® cover to remove strings ("cotton candy") and to clean the process chamber before the cycle stops.

This option gives excellent results and reduces substrate pollution due to cotton candy effects.

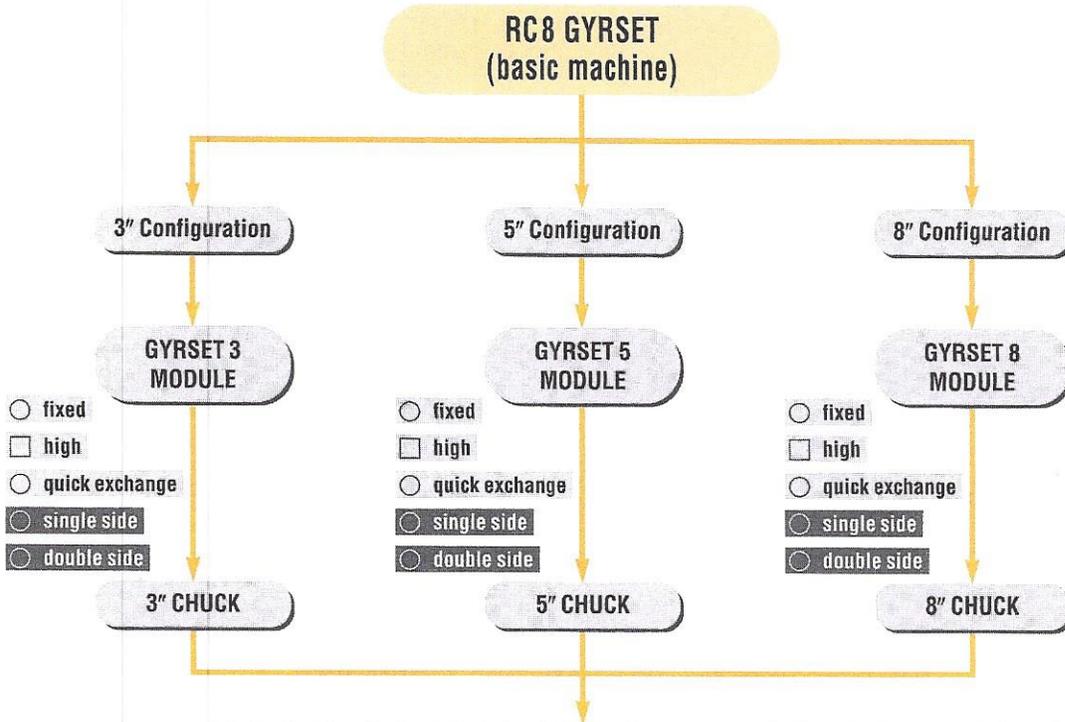
### PHOTORESIST SWING NOZZLE

Dispenses a separate ring of photoresist on the wafer's internal or external edge. Gives a higher positional accuracy than the standard arm.



Edge Bead Remover and Swing Nozzle Options

# CONFIGURATION



- fixed
- high
- quick exchange
- single side
- double side

- fixed
- high
- quick exchange
- single side
- double side

- fixed
- high
- quick exchange
- single side
- double side

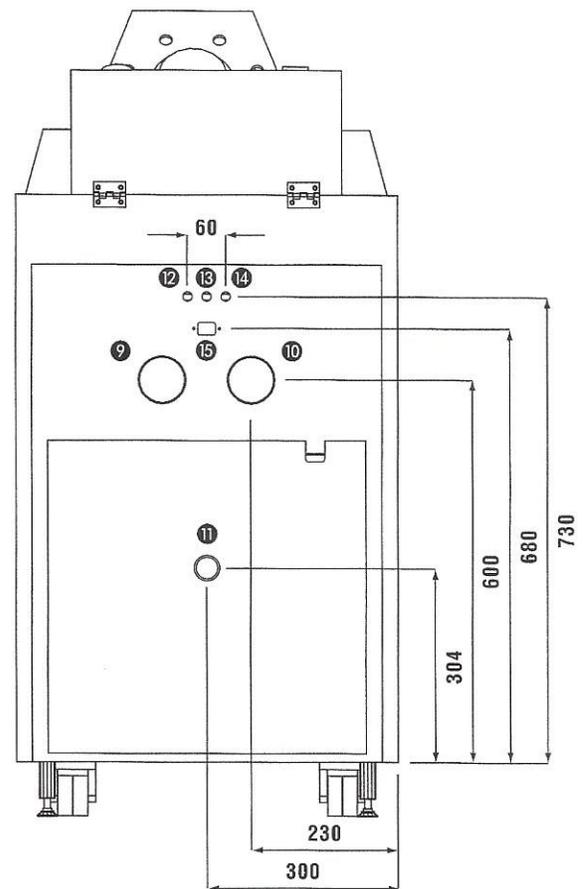
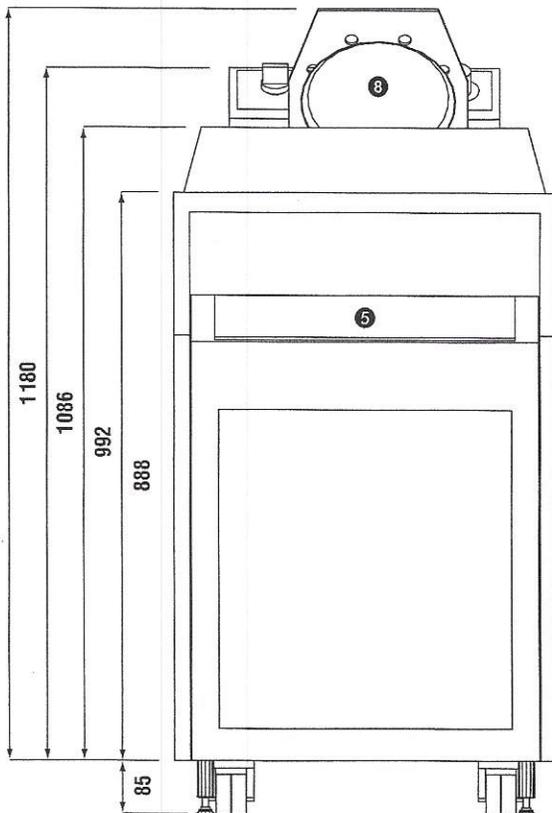
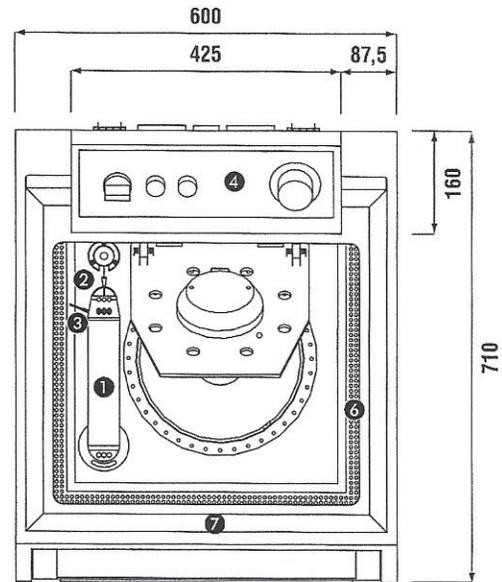
## OPTIONS

- |  |   |
|--|---|
| Stainless steel cabinet  | Nitrogen blow                                 |
| Pneumatic dispenser arm  | Dispense pump for low viscosity               |
| Motorised dispenser arm<br>(programmable speed<br>and position)  | Dispense pump for high<br>viscosity           |
| Programmable solvent<br>dispense                                 | Chuck indexing and substrate<br>lift-up/down  |
| Resist nozzle autoclean<br>with programmable solvent<br>dispense | Photoresist swing nozzle                      |
| Programmable autoclean<br>solvent                                | Adapter for small substrates,<br>single sided |
| Edge bead remover  | Adapter for small substrates,<br>double sided |
| Cotton candy remover   | Standard plate                                |
|  | Standard plate chucks                         |

# RC8

## CABINET

- ① Motorised Arm Option
- ② Resist Nozzle Autoclean Option
- ③ Edge Bead Remover Option
- ④ Isolation panel
- ⑤ Control panel
- ⑥ Flow grill
- ⑦ Safety barrier
- ⑧ GYRSET®
- ⑨ Process chamber exhaust 75 mm Ø
- ⑩ Upper cabinet exhaust 75 mm Ø
- ⑪ Lower cabinet exhaust 40 mm Ø
- ⑫ Compressed air 4–9 bar, 4 mm Ø
- ⑬ Vacuum –0.6 bar, 4 mm Ø
- ⑭ Nitrogen 4–9 bar, 4 mm Ø
- ⑮ Mains supply 115 V/5 A or 230 V/2.5 A 0.3 kW

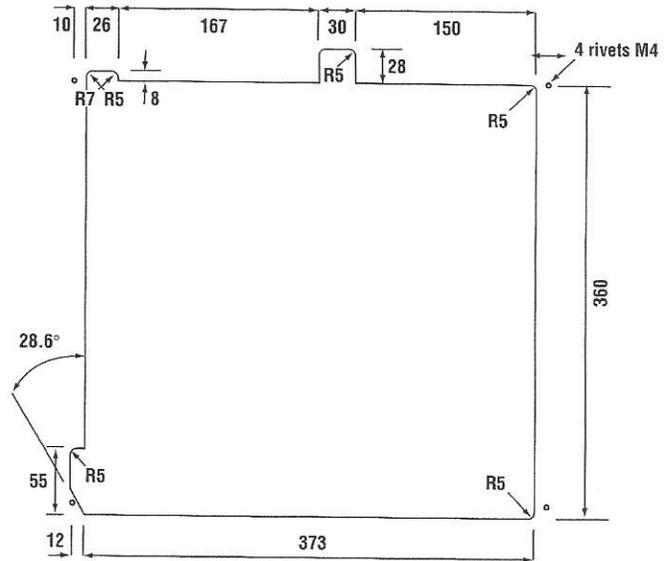
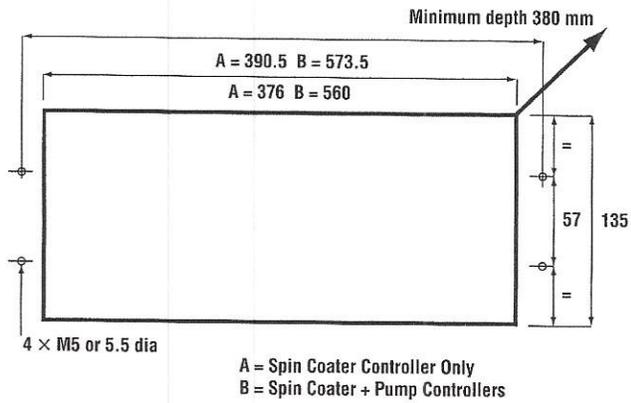


# RC8

## MECHANISM & INTEGRATION

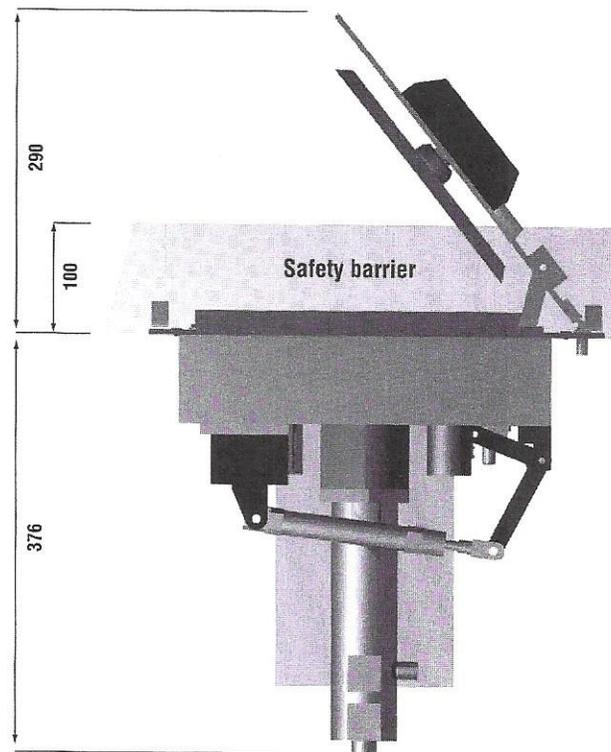
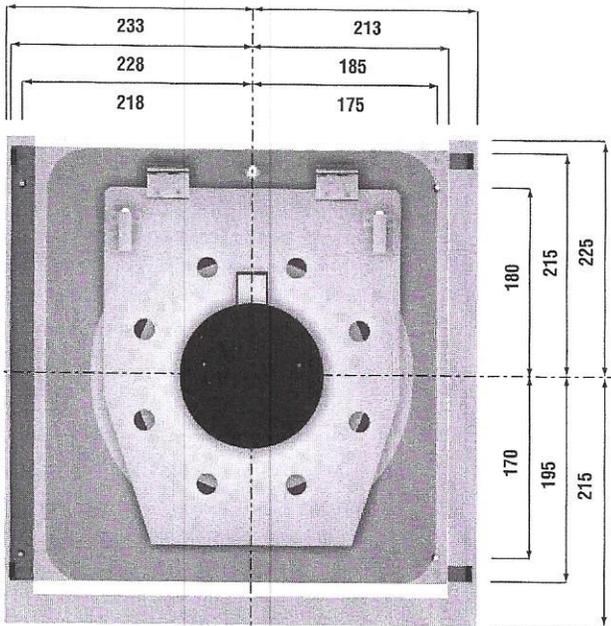
You may not have bought the cabinet option for your RC8 Spin Coater. In this case, you will need to integrate the mechanism, plus its controller, in a support.

The following diagrams give the dimensions necessary for correct integration.



Surface cut-out for RC8 mechanism

Surface cut-out for RC8 and pump controllers



## TECHNICAL DATA: SUSS RC8 UNIVERSAL 8" GYRSET® SPIN COATER

### Maximum Substrate Size

RC 8 GYRSET 3	up to 3" diagonal
RC 8 GYRSET 5	up to 4" × 4" or 125 mm diagonal
RC 8 GYRSET 8	up to 6" × 6" or 200 mm diagonal

### Maximum Speed (10 rpm steps)

RC 8 GYRSET 3	7 000 rpm
RC 8 GYRSET 5	5 000 rpm
RC 8 GYRSET 8	3 000 rpm
RC 8 Standard Plate	7 000 rpm
Maximum Acceleration	5 000 rpm

### Control

Time Range	0-999 s
Speed Regulation	Tachometric
Speed Control	Galvanometric

### Options

- Stainless Steel Cabinet
- Pneumatic Dispenser Arm
- Motorised Dispenser Arm
- Programmable Solvent Dispense
- Resist Nozzle Autoclean with Programmable Solvent Dispense
- Programmable Autoclean Solvent
- Edge Bead Remover
- Cotton Candy Remover
- Nitrogen Blow
- Dispense Pump for Low Viscosity
- Dispense Pump for High Viscosity
- Chuck Indexing and Substrate Lift-Up/Down
- Photoresist Swing Nozzle
- Adapter for Small Substrates, Single Sided
- Adapter for Small Substrates, Double Sided

### Utilities

Vacuum	- 0.6 bar
Air pressure	4-9 bar
Nitrogen	4-9 bar
Exhaust	600 l/min

### Power Requirements

Power	AC 110/230 V
Consumption	0.3 kW
Frequency	47-63 Hz

### Dimensions - Electronics

Width × Depth × Height:	410 × 370 × 140 mm, 16.7" × 15.1" × 5.7"
Weight	8 kg

### Dimensions - Mechanics

Width × Depth × Height:	410 × 410 × 370 mm, 16.7" × 16.7" × 15.1"
Weight	14 kg

### Dimensions - Cabinet (Option)

Footprint:	600 W × 720 mm D, 23.6" × 28.3"
Height	1000 mm, 40.8"
Weight	60 kg

### Conforming to:

- European Machine Norms CE certification
- EMC Electro magnetic compatibility
- SEMI Specifications

*Data can depend on individual process conditions and will vary with equipment configuration.*

Whatever your application, SUSS will help you find a solution. Our success is based on more than forty years of experience in production and research with a track record of proven quality.

**SUSS.**  
**WHERE SOLUTIONS SET**  
**STANDARDS**



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