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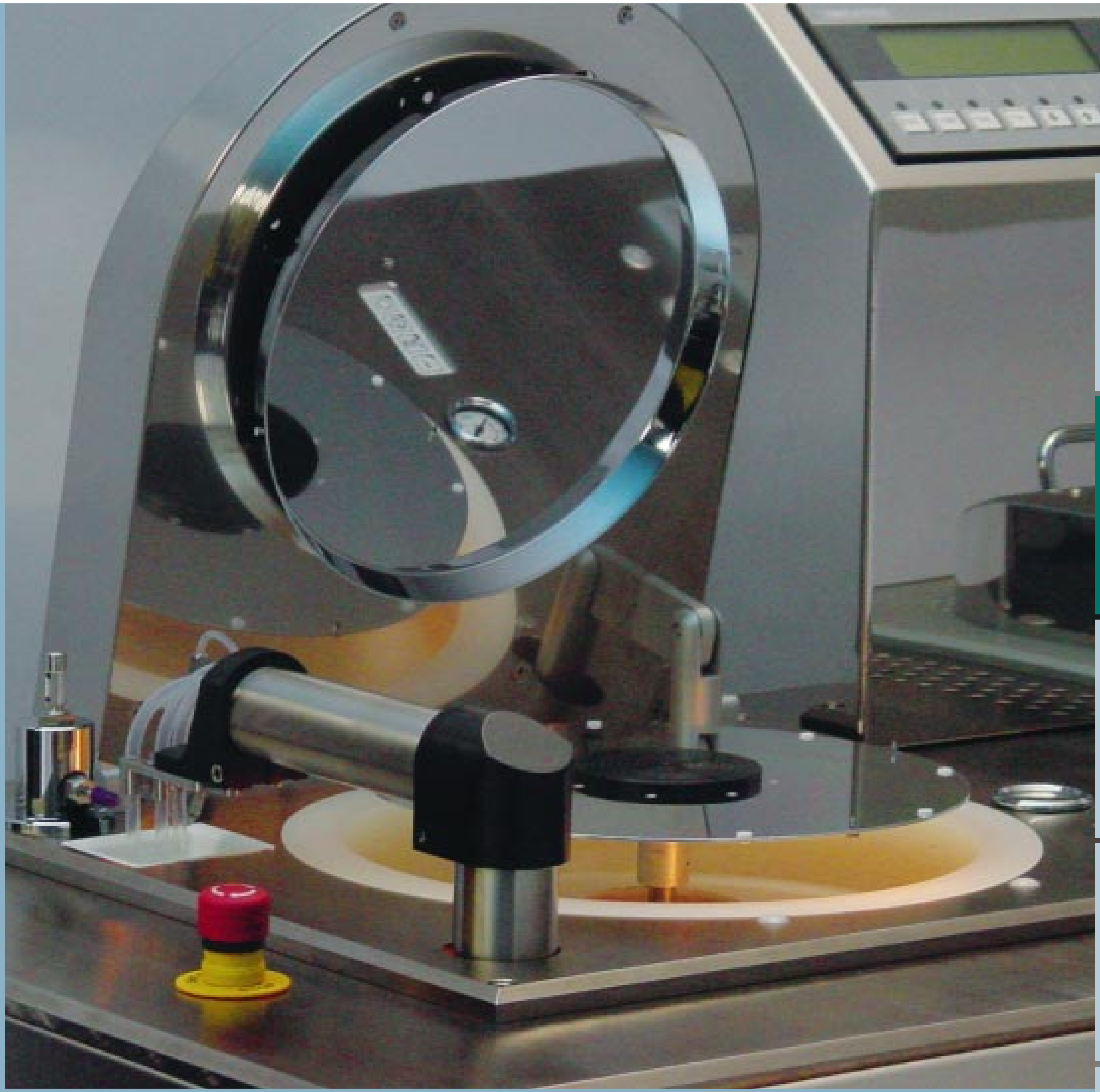
DELTA 80, WeAl, 08/2002, #1



Mask Aligners
Spin Coaters
Substrate Bonders
Flip Chip Bonders
Probe Systems

SPIN COATERS

DELTA 80 GYRSET®

www.suss.com

SÜSS MicroTec

DELTA 80 GYRSET®

Universal 8” Coating System / Advanced Spin Coating

The **DELTA 80** is the newest SUSS Spin Coater based on the well known SUSS patented GYRSET® closed cover coating technology. It combines state of the art technology with innovative excellence. The **DELTA 80** can process delicate wafer fragments, wafers up to ø 8” (ø 200 mm) or substrates up to 6” x 6” (150 x 150 mm).

The unique design of the **DELTA 80** process chamber provides a better uniformity than conventional open bowl spin coaters. At the same time it can significantly reduce resist consumption up to 60% for resists like Cyclotene™ (BCB) compared to conventional Spin Coating systems. The Delta 80 is also the ideal tool for coatings over high topography

Better uniformity and less resist consumption make the SUSS **DELTA 80** Spin Coater the ideal tool regarding the cost of ownership.

The SUSS **DELTA 80** Spin Coater is simple to operate with fully programmable process parameters. The system is available as a bench mounted module (BM) or for stand alone (T version) operation integrated into an attractive stainless steel cabinet. A variety of options are available.

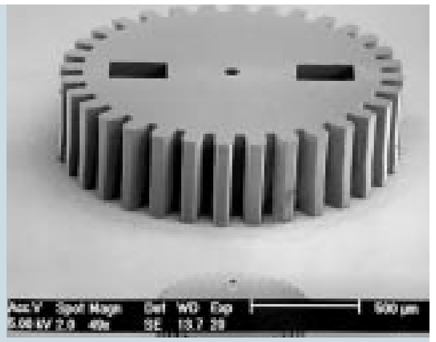
Features and Benefits

- *Uniform coatings with the SUSS patented GYRSET® technology, reduced resist consumption and less edge build-up are the guarantee for very high quality process and repeatability, especially on square or rectangular substrates*
- *Multi size configuration with automatic GYRSET® cover size detection and spin speed limitation set up provide the flexibility to meet all major application types*
- *GYRSET® quick exchange system, allows for easy change over between wafer sizes.*
- *The process bowl made of polypropylene is easily removed for cleaning the process chamber*
- *Wafer size up to ø 8” (ø 200mm) and substrates up to 6” x 6” (150 x 150mm)*
- *Spin speed from 1 up to 10.000 rpm (depends on GYRSET® size or Open Bowl option)*
- *Fully programmable process parameters with easy to use keyboard and clear text display*
- *Storage of 20 recipes with up to 40 steps at each recipe or **unlimited** numbers of recipes storable with laptop option*
- *For the programmable dispense arm different resist pumps, syringe systems and media nozzles for accurate and precise dispense are available*
- *Modular design, the ability to mount the modules into a wet bench or a stand alone stainless steel cabinet*
- *Chuck indexing for positioning the chuck accurately at the same position for easy load / unload*

THE PATENTED SOLUTION

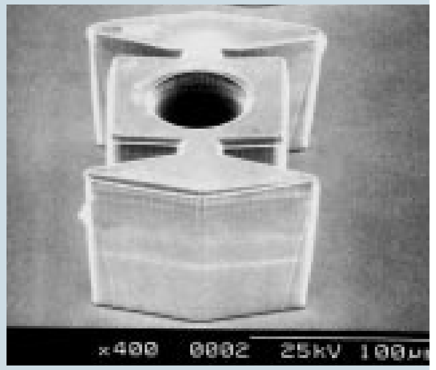
The SUSS DELTA 80
Is Capable Of Processing:

- Si and GaAs wafers and substrates
- Polyimide / SOG / adhesive 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



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

Photoresist pattern of 57 µm thickness

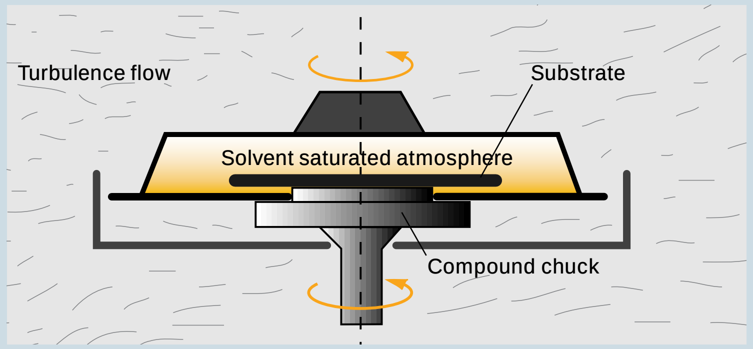


NiFe rotor element, 85 µm high, single shot coating

THE 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 60% resist cost saving (depending on resist).

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).
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.

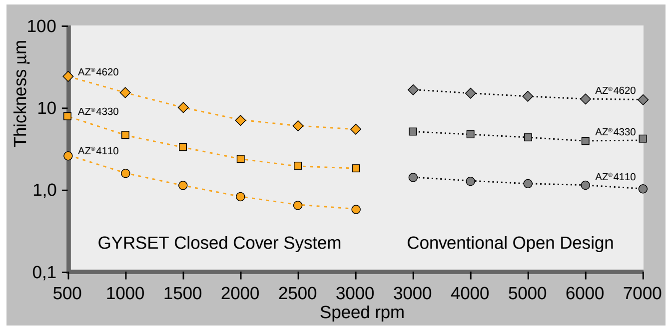


GYRSET® system design

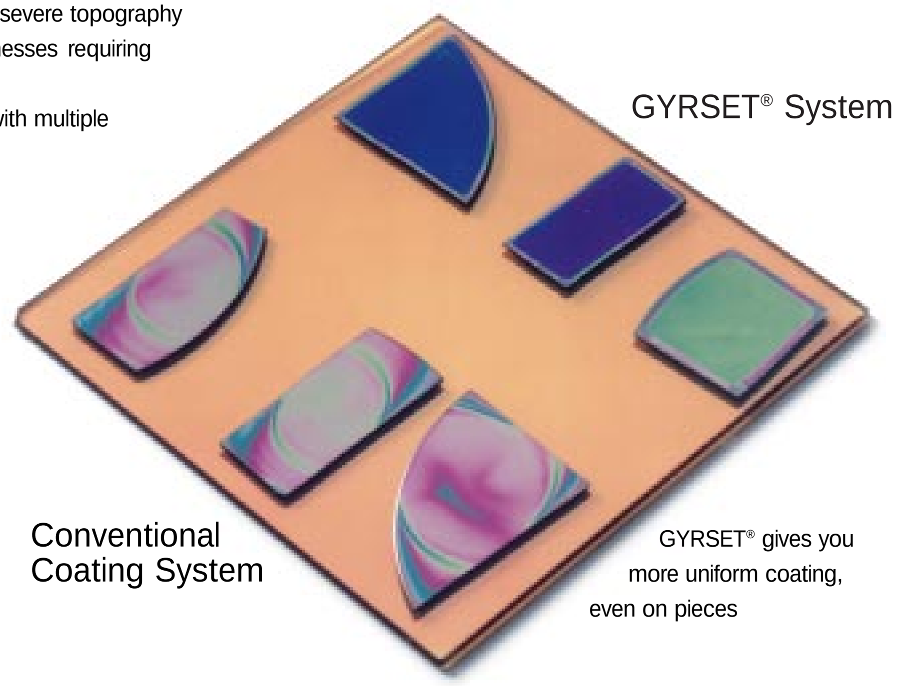
BENEFITS OF OWNERSHIP

SUSS DELTA 80 GYRSET®
A Wise Investment

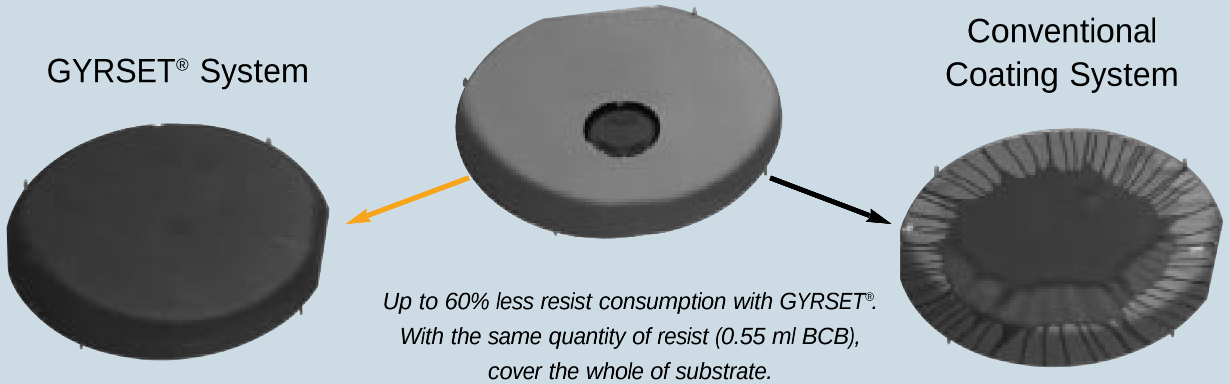
- Reliable, consistent and uniform material application at lower spin speeds
- Economic ownership costs including lower resist consumption and reduced waste disposal expenses
- Service that is a cornerstone of our products and our reputation in the industry
- Highly reproducible thick resist applications
- 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



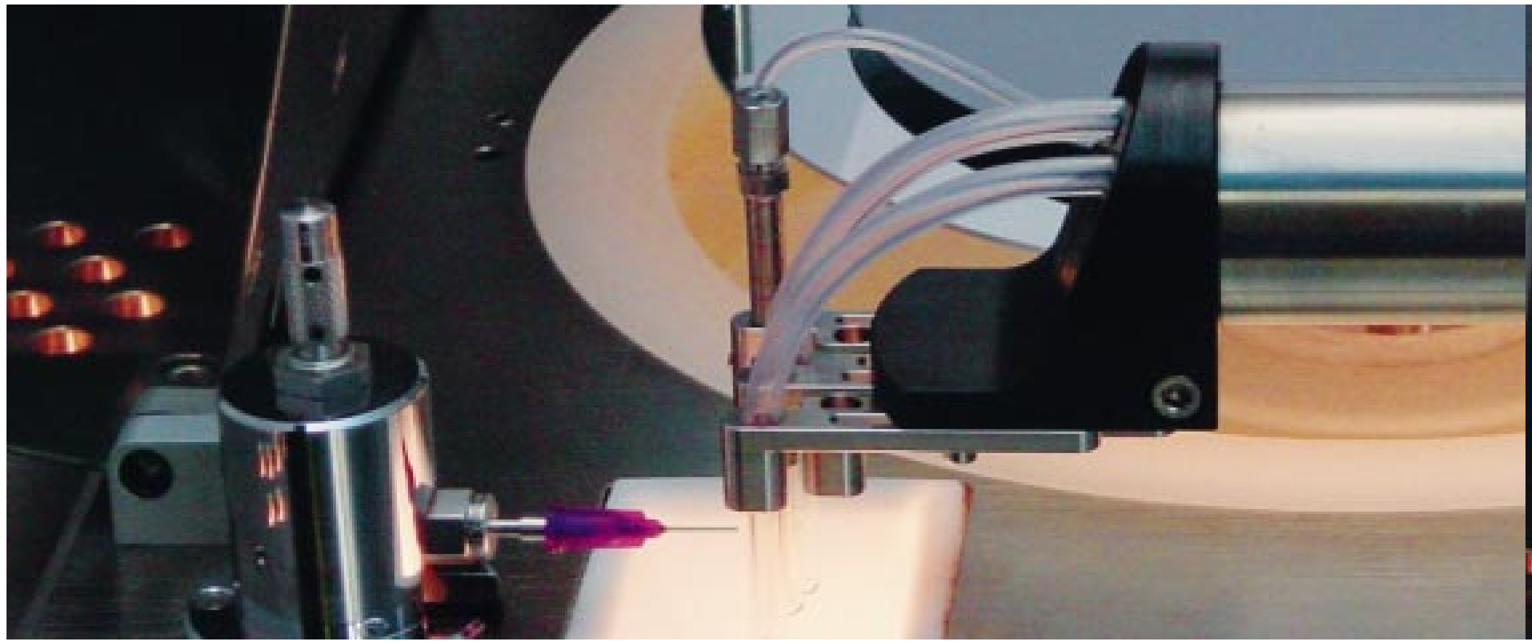
GYRSET® offers an order of magnitude wider range at lower spin speeds

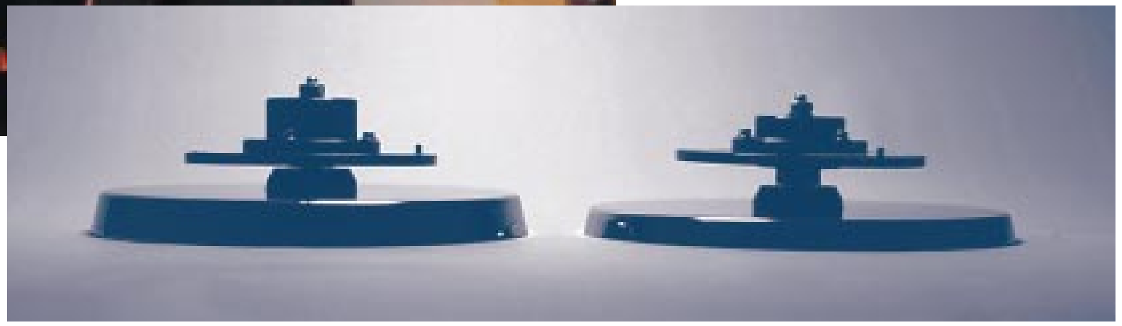


GYRSET® gives you more uniform coating, even on pieces



Up to 60% less resist consumption with GYRSET®. With the same quantity of resist (0.55 ml BCB), cover the whole of substrate.





5" high profile and 5" standard profile GYRSETS

SIMPLE AND FLEXIBLE

Multi-Size GYRSET®

The DELTA 80 can be equipped with three different GYRSET® sizes: 2" up to 8". The configuration is automatically detected and the maximum speed set accordingly. With a change over time of less than 5 minutes, the SUSS DELTA 80 GYRSET® is the most flexible and upgradeable coater on the market.

Fixed And Quick Exchange

Choose between a fixed or quick exchange GYRSET® plate. Easily removable for cleaning, the quick exchange GYRSET® plate is simply locked by magnet to the hub.

8" Quick Exchange GYRSET®

7 000 rpm — *Delta 80 GYRSET 3*

5 000 rpm — *Delta 80 GYRSET 5*

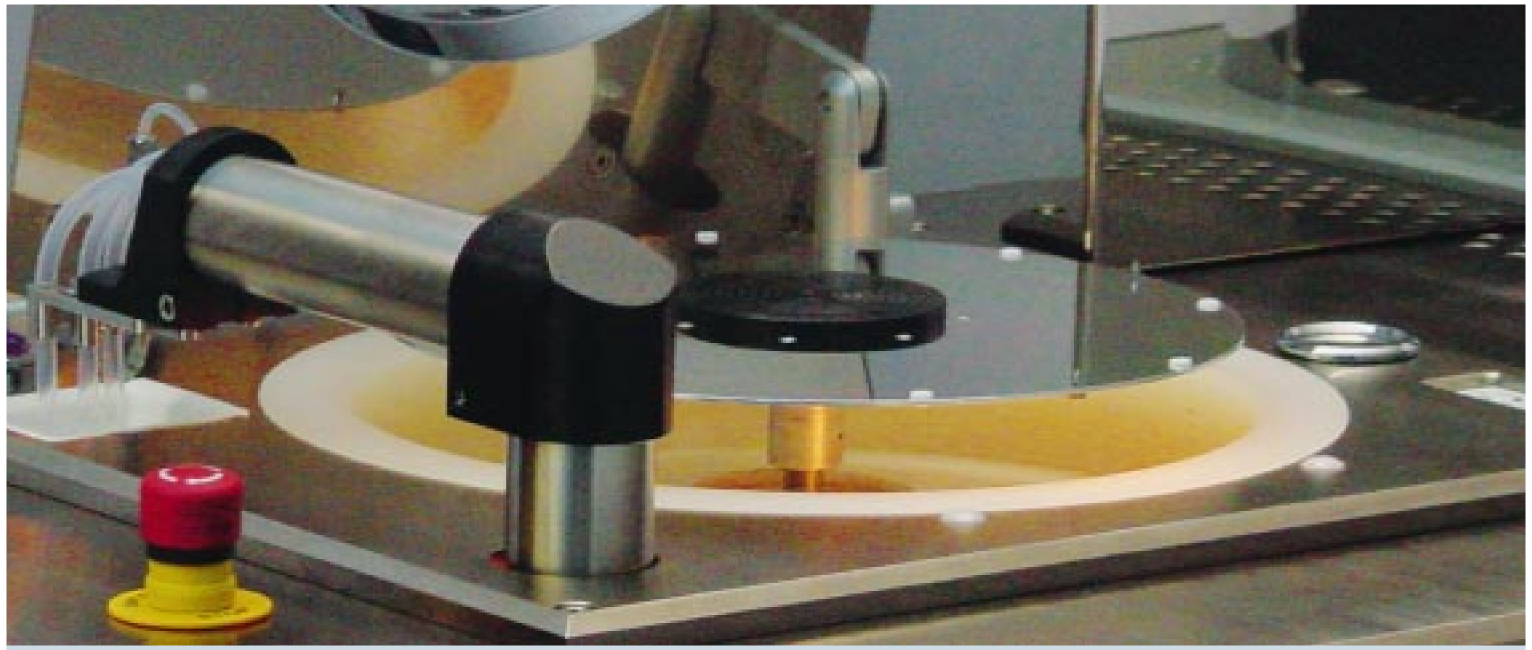
3 000 rpm — *Delta 80 GYRSET 8*

Interchangeable GYRSET® Systems for 2" up to 8" parts

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.

	STANDARD (Fixed or Quick Exchange)		HIGH (Fixed or Quick Exchange)	
	Maximum Substrate Thickness (mm)	Maximum Spin Speed (rpm)	Maximum Substrate Thickness (mm)	Maximum Spin Speed (rpm)
Delta 80 GYRSET 8	4	3 000	12	3 000
Delta 80 GYRSET 5	5	5 000	12	3 000
Delta 80 GYRSET 3	5	7 000	12	3 000



SIMPLE AND FLEXIBLE

Double Side (LC)* And Single Side Chucks

Choose either double or single side chucks in 8”, 2” or smaller 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.

3” Double Side Chuck

Adapters For Small Pieces

Available for single side chucks, these adapters allow you to process pieces up to 2” on a larger size chuck.

3” Single Side Chuck

3” Single Side Chuck with Adapter

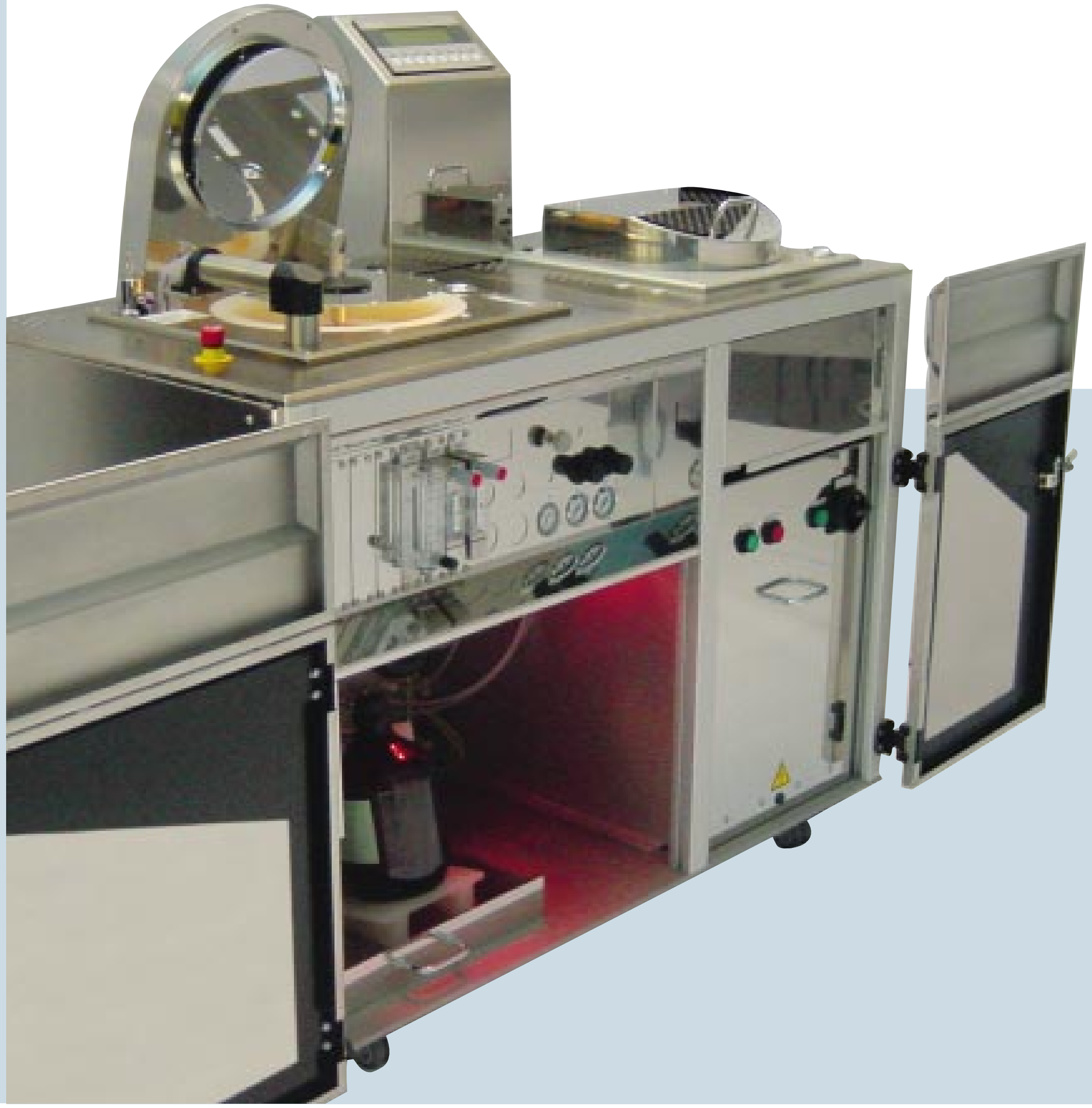
*Low Contact

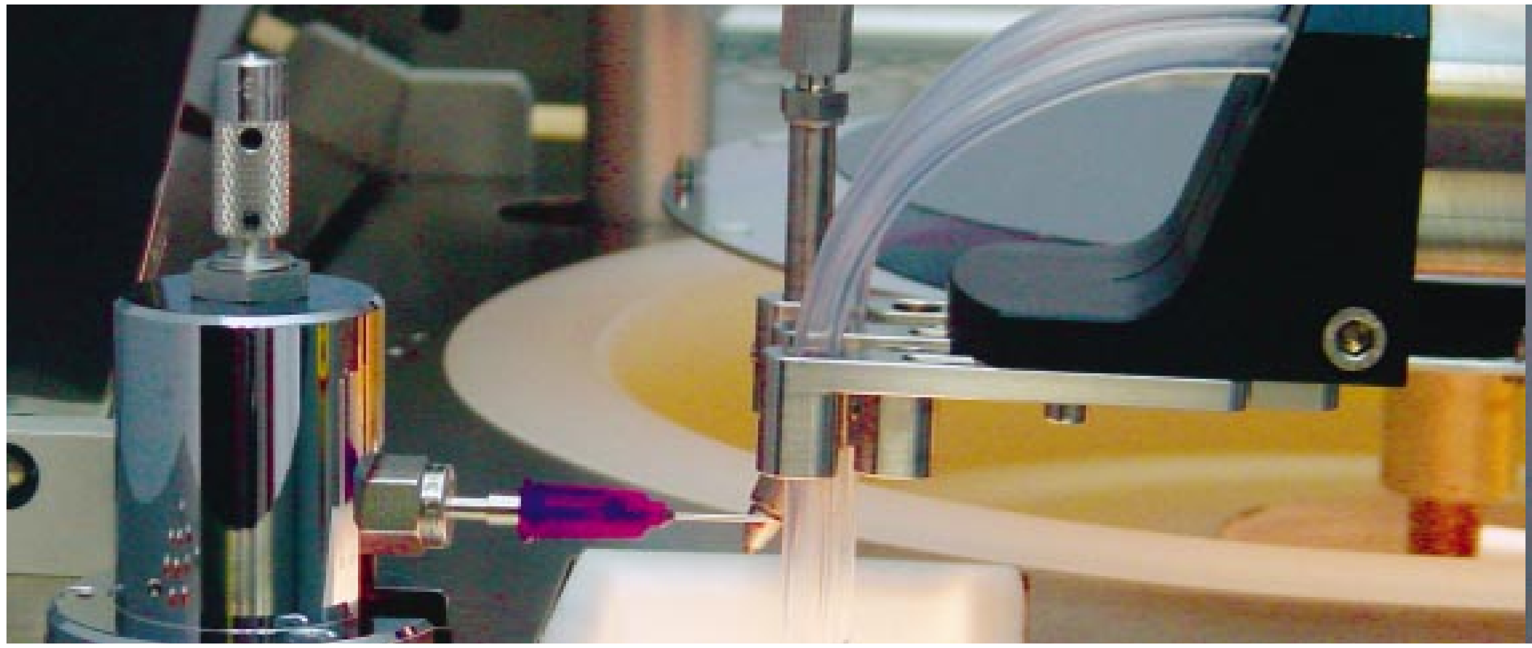
MODULAR OPTIONS

Dispense Arms (Options)

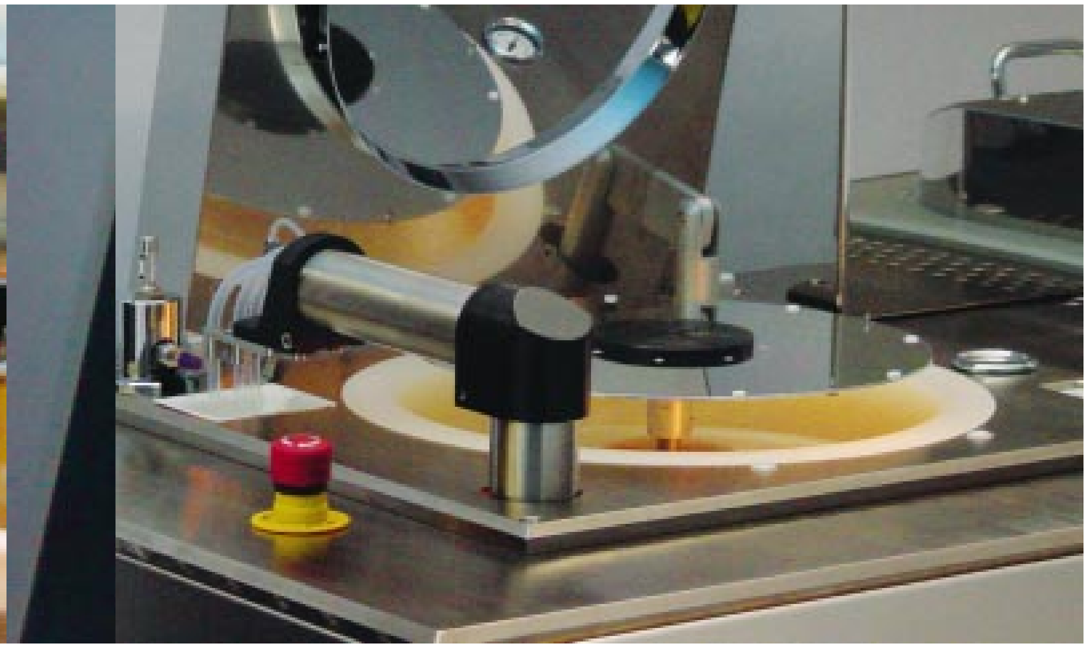
The DELTA 80 can be configured with two different dispense arms, either fully programmable electronic dispense or pneumatic driven dispense arm.

The programmable electronic dispense arm provides more flexibility. It is fully programmable in speed, acceleration and position and can be equipped with up to 6 media lines - maximum 4 resist lines and 2 solvent lines. It is also possible to fit the edge bead remover, nitrogen blow or bowl auto-clean option.
The pneumatic dispense arm can be equipped with only one resist line and has only two positions, home and dispense position.





Resist Nozzle Autoclean Option



Electronic Dispense Arm and Chuck Lift (up position)

Edge Bead Remover (Options)

This fully programmable option removes the resist build-up at the edge of the wafer. All tubing valves and flowmeters are included. Wafers up to 8” (200mm) in diameter can be processed.

Solvent Dispense Nozzle (Options)

Choose this programmable option for solvent cleaning or developing and for adhesion promoter dispense. It includes all tubing, valve and flowmeter.

Nitrogen Blow (Options)

Releases a jet of nitrogen across your wafer / substrate before processing and helps to remove any dust and dirt particles from the surface, thereby cleaning the component. Includes all tubing, valve and flowmeter.

Cotton Candy Remover (Options)

This programmable solvent nozzle dispenses solvent onto the GYRSET® cover to remove stringers (cotton candy). It also cleans the process chamber before the process stops.
It provides excellent results and reduces substrate contamination due to cotton candy effects.

Bowl Auto Clean (Options)

Programmable cleaning cycle cleans the chuck and the process bowl. The auto-cleaning frequency can be set either by time or numbers of cycles.

Resist Nozzle Auto Clean (Options)

This fully programmable option injects solvent onto the required dispense nozzle dissolving any residue and cleaning the inside of the nozzle.

Dispense Systems (Options)

Different high and low viscosity photo resist pumps are available. For more flexibility a programmable syringe dispense system is available.

Open Bowl (Options)

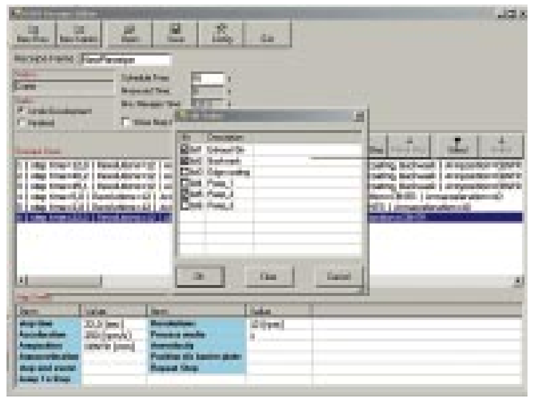
The open bowl option with the special sensor controlled adapter ring allows for conventional open bowl spin coating. The adapter permits speeds up to 10,000 rpm without GYRSET® cover and provides additional flexibility to process wafers or substrates.

Chuck Lift (Options)

Allows easy loading and unloading of the wafer combined with the standard chuck indexing for repeatable wafer positioning.

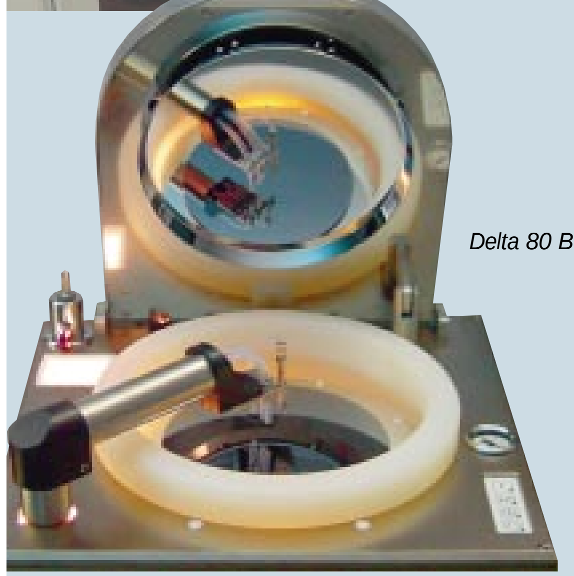
Laptop (Options)

The laptop option with a Windows® like user interface software allows for easy recipe programming and storage for an unlimited number of recipes.



Laptop Option

Delta 80 T2



Delta 80 BM

Stainless Steel Cabinet

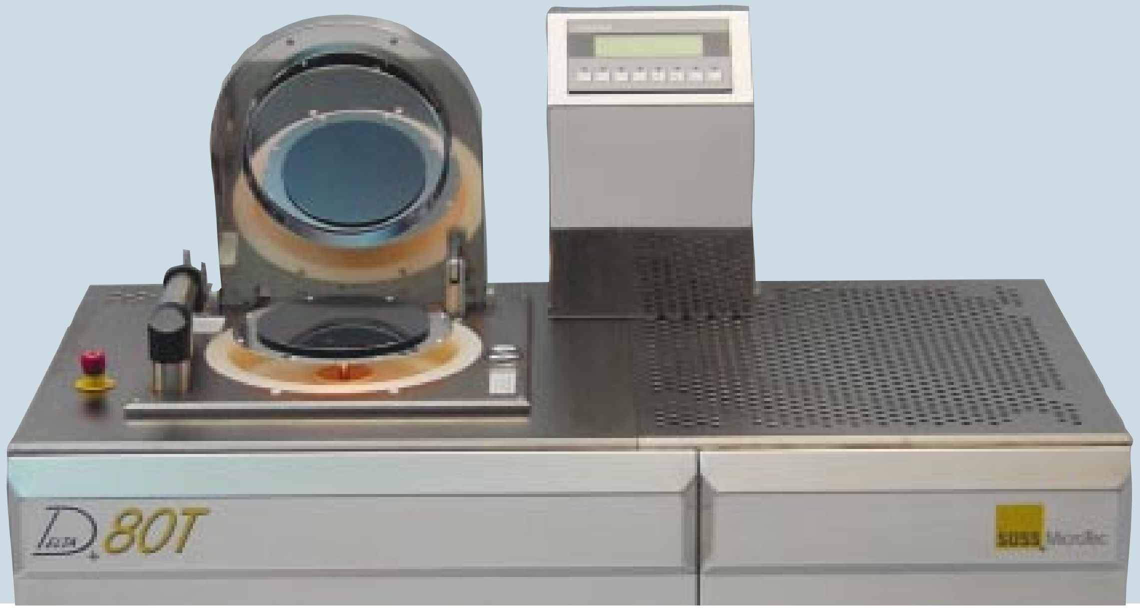
The stand alone cabinet integrates the SUSS **DELTA 80** Spin Coater with selected options, like our DELTA 150 / 200 BM Hotplate Modules into a small footprint. The top plate with the front panels of the cabinet are made of polished stainless steel. Side and back panels are made of brushed stainless steel and are easily removed allowing easy access to all components.

The perforated top plate provides a laminar flow assuring proper ventilation through the process. For added safety and reduced contamination the media and electronic controller are seperated. All connections for media and power are located on the back of the cabinet simplifying installation.

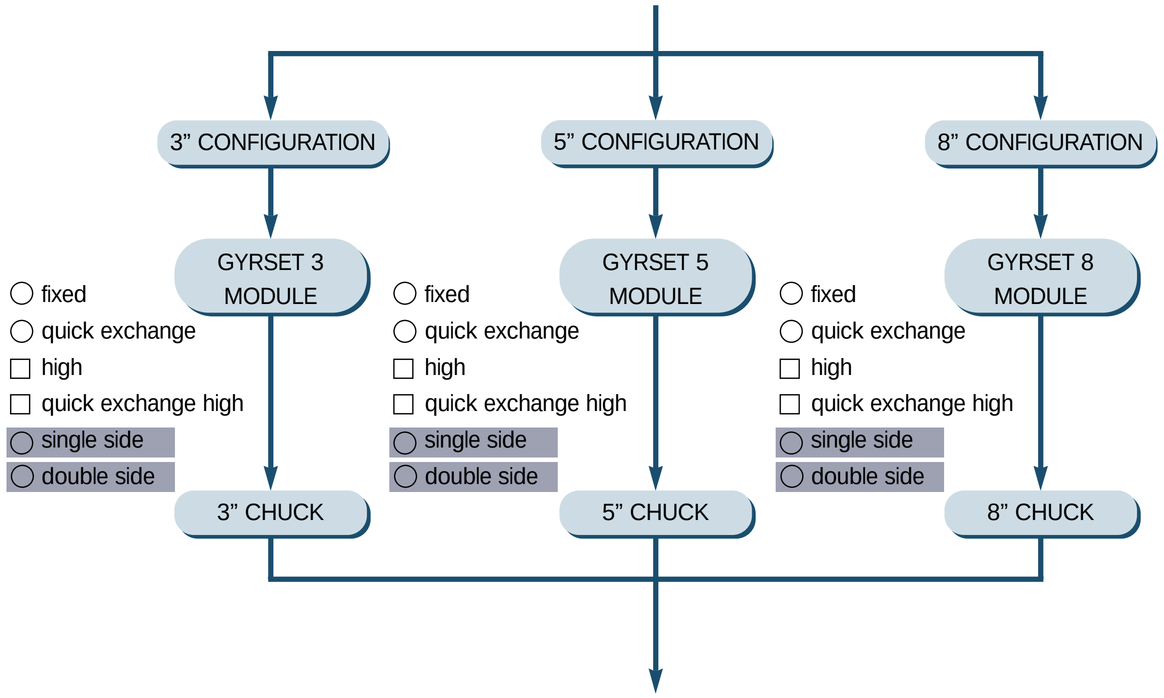
Special Requirements

If you have special requirements, the SUSS team will help you to define and support your particular need, whether for research or production.

Delta 80 T



DELTA 80 GYRSET®



3” CONFIGURATION

GYRSET 3 MODULE

○ fixed
○ quick exchange
☐ high
☐ quick exchange high
○ single side
○ double side

3” CHUCK

5” CONFIGURATION

GYRSET 5 MODULE

○ fixed
○ quick exchange
☐ high
☐ quick exchange high
○ single side
○ double side

5” CHUCK

8” CONFIGURATION

GYRSET 8 MODULE

○ fixed
○ quick exchange
☐ high
☐ quick exchange high
○ single side
○ double side

8” CHUCK

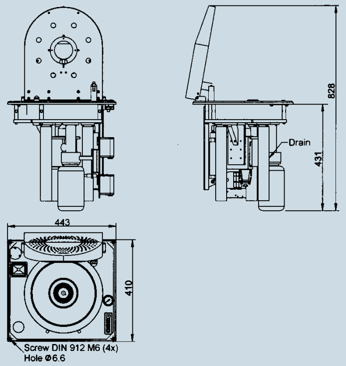
Options

- Stainless steel cabinet
- Programmable electronic dispense arm
- Pneumatic dispense arm
- Programmable solvent dispense
- Resist nozzle autoclean
- Programmable bowl autoclean
- Edge bead remover
- Cotton candy remover
- Nitrogen blow
- Dispense pumps
- Chuck lift-up / down
- Adapter for small substrates, up to 2”
- Laptop
- Motor flange cooling
- Open bowl spinning
- Pressure vessel systems + Media cabinet
- Media filter systems

TECHNICAL DATA

Wafer / Substrate Size

Wafer Size::	up to ø 8” (ø 200 mm)
Supstrate Size:	up to 6” x 6” (150 x 150 mm)



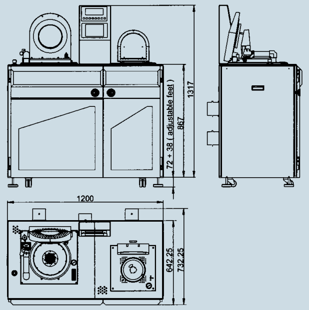
DELTA 80 BM

Requirements

Voltage:	230 VAC / 50 Hz / 16 A
Compressed air:	5 - 6 bar / tube OD 8 mm
Vacuum:	min. - 0.7 bar / tube OD 6 mm
Nitrogen:	4.5 bar / tube OD 6 mm
Exhaust:	OD 100 mm (1x)

Dimensions

Spinner module (W x D x H):	443 x 440 x 830* (17.4” x 17.3” x 32.7”*) *with open GYRSET® cover and waste bottle
Controller (W x D x H):	465 x 386 x 133 mm (18.3” x 15.2” x 5.2”)
Panel interface (W x D x H):	196 x 56 x 110 mm (4.3” x 7.7” x 2.2”)



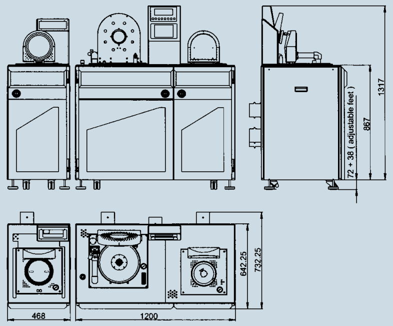
DELTA 80 T + T2

Requirements

Voltage:	400 VAC / 50 Hz / 16 A
Compressed air:	5 - 6 bar / tube OD 8 mm
Vacuum:	min. - 0.7 bar / tube OD 8 mm
Nitrogen:	4.5 bar / tube OD 8 mm
Exhaust:	OD 100 mm (3x)

Dimensions

Footprint (W x D x H):	1200 x 642 x 1317 mm (47.2” x 25.3” x 51.9”)



DELTA 80 T3

Requirements

Voltage:	400 VAC / 50 Hz / 16 A
Compressed air:	5 - 6 bar / tube OD 8 mm
Vacuum:	min. - 0.7 bar / tube OD 8 mm
Nitrogen:	4.5 bar / tube OD 8 mm
Exhaust:	OD 100 mm (3x)

Dimensions

Footprint (W x D x H):	1674 x 642 x 1317 mm (65.9” x 25.3” x 51.9”)

Data depend on individual process conditions and can vary according to equipment configurations. Not all specifications may be valid simultaneously. Illustrations in this brochure are not legally binding. Design and specification of custom built machines depend on individual conditions and can vary according to equipment configurations.

Syringe Dispense Option

DELTA SERIES

Semiautomated
Process Equipment

The SUSS Delta Series offers a wide range of laboratory equipment that can process wafers or substrates ranging from pieces up to 22” diameter or 16” square. The Delta Series includes process modules for the following applications:

- Substrate Dryers
- Coating Systems
- Hot Plates
- Cool Plates
- Develop and Etching Systems
- Cleaning Systems
- Vapor Priming (HMDS)

For stand alone operation the Delta Series modules can be integrated into attractive stainless steel cabinets. The cabinets can support from one up to three different process modules. For example, it is possible to have a coater, vapor prime and hot plate module located in a single cabinet. The modular design allows our customers a great deal of flexibility configuring process equipment while minimizing space.