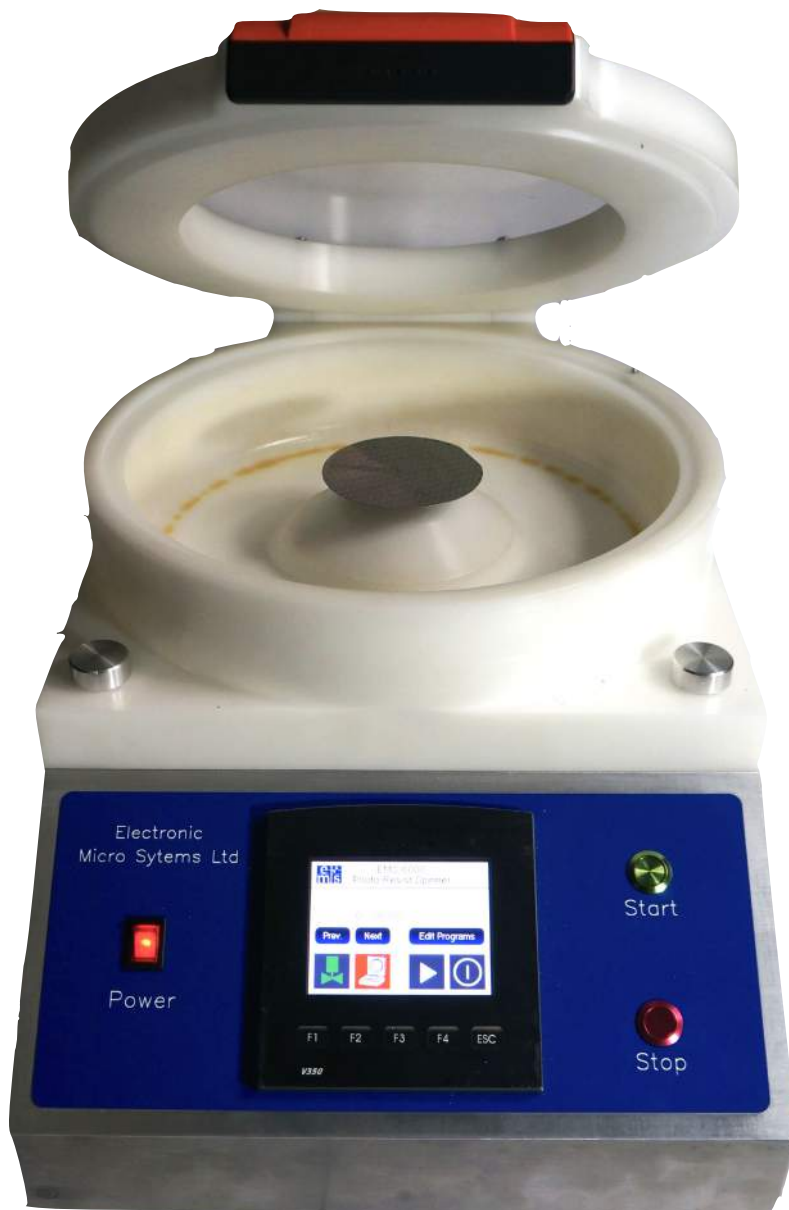


# EMS 6000 Photo Resist Spinner

## Manual



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## Introduction

The EMS 6000 Photo Resist Spinner provides a simple and economical means of applying highly accurate resist coatings to silicon wafers and ceramic substances. Spinning the wafers between 200 and 8,500 rpm using computer control ensures precise repeatability for production of batch wafers.

The EMS 6000 Photo Resist Spinner can either be configured as a stand alone resist spinner in a stainless steel case, or a bench top spinner unit and a separate control unit. The Unitronics Vision 350 Colour OPLC control unit is programmed through the touch screen interface (see Fig. 1).

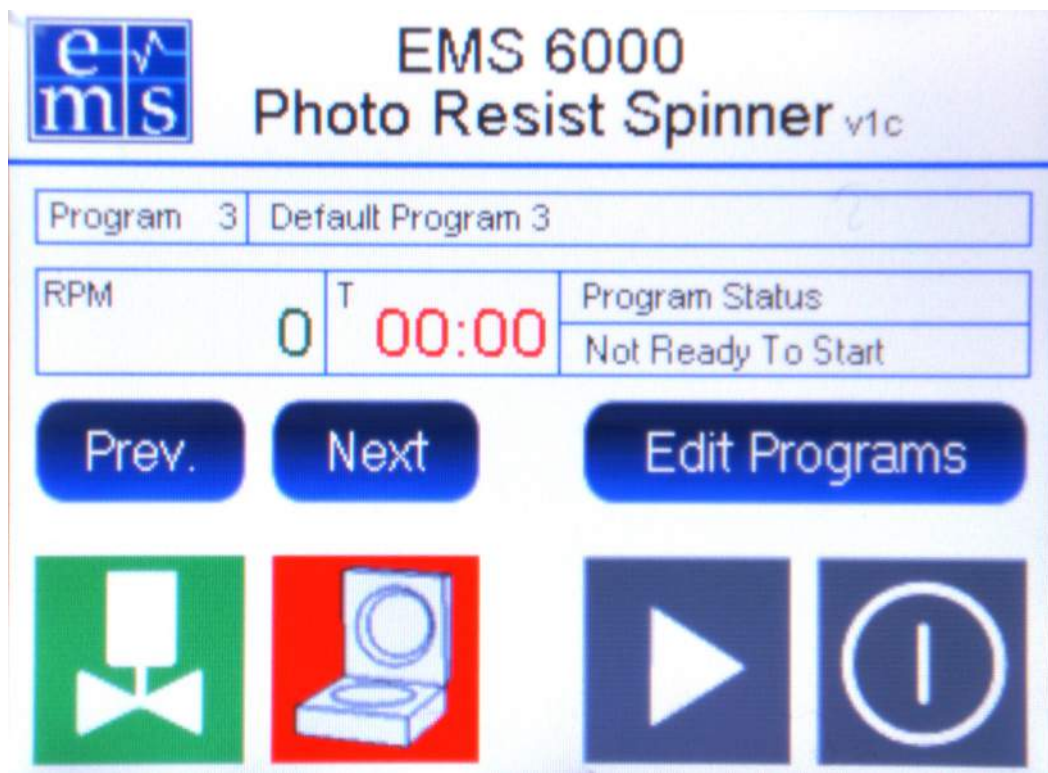
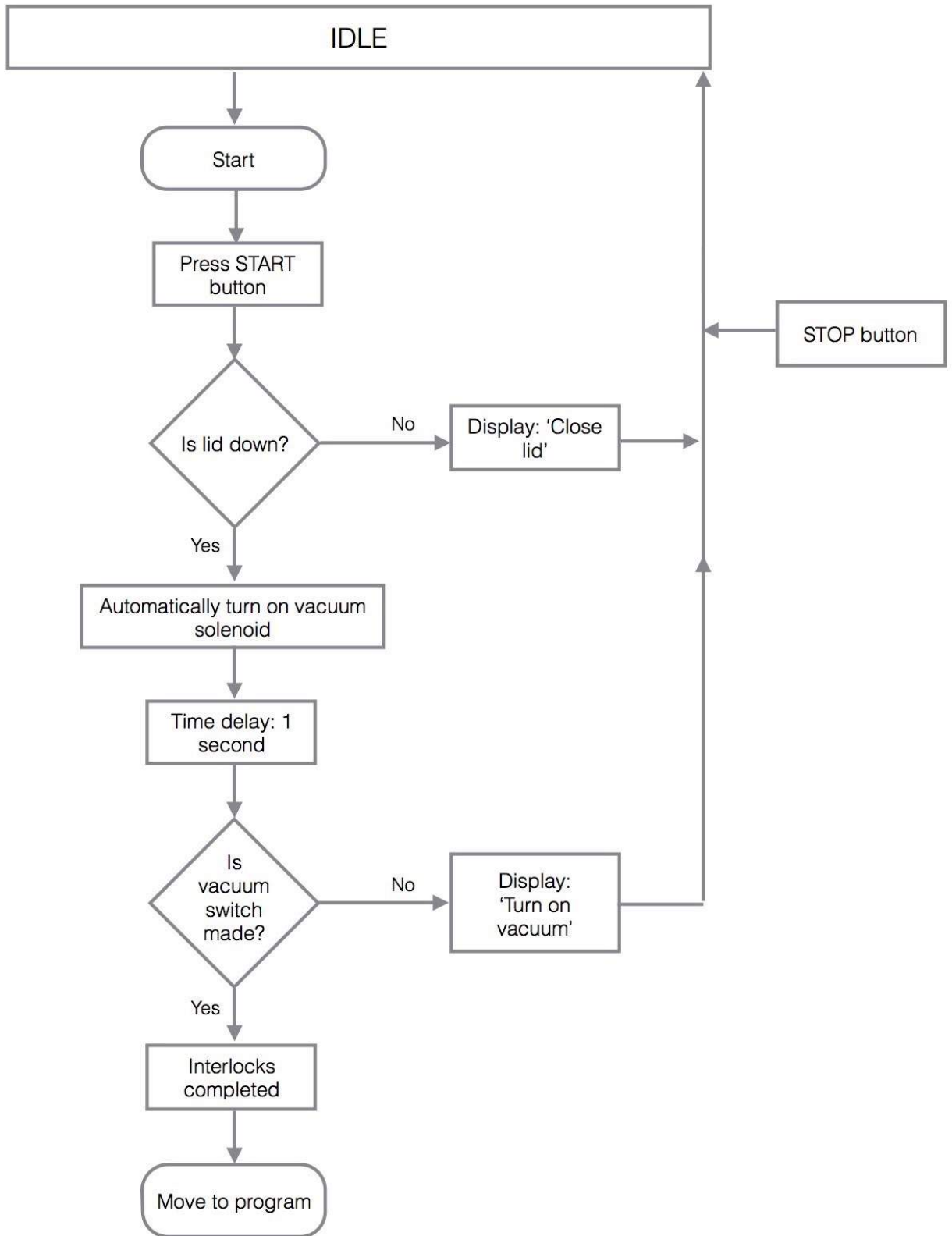


Figure 1: Start up display on user interface

### Interlock Flow Diagram



## Starting Up

Wafers of up to 6" inches in diameter are held by a vacuum on a chuck, and spun inside the polypropylene bowl. The bowl is held in place by four knurled screws so it can be easily removed for cleaning. If required, the bowl can be machined to have an external drain attached to allow the removal and collection of excess photoresist and fumes.

The interlock switches ensure that the chuck cannot spin unless the lid is in the closed position and that there is sufficient vacuum to hold the wafer securely. A vacuum reservoir in series with the vacuum line prevents resist from entering the vacuum system.


### Unitronics Control Unit

The following parameters can be set using the front panel display:

- Number of spin periods: 1 - 10
- Spin speed: 200 - 8,500 rpm
- Spin periods: 1 - 999 seconds
- Acceleration control: 1 - 9,999 rpm per second

There are 3 outputs that can be programmed on/off throughout the cycle which can be located on a 9-way D-connector on the rear panel of the bench mounted controller.

Before operation, the lid must be in the closed position (indicated on the front panel). When the sequence starts, the chuck vacuum turns on. Once the vacuum switch is energised, the program will start.

At the end of the program, a programmed deceleration occurs, followed by a programmed pause and the chuck vacuum can now be switched off. The vacuum can be switched off the vacuum using the vacuum button  .

### Sample Program

Program Name	1111						
Program No.	2						
	Step	Speed	Accel	Time	OP1	OP2	OP3
	1	250	300	5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	2	3250	9000	35	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	3	6500	9999	5	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	4	0					
	5						
	6						
	7						
	8						
	9						
	10						
	End	0	9999	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure 2: Example three-stage program (programming display)

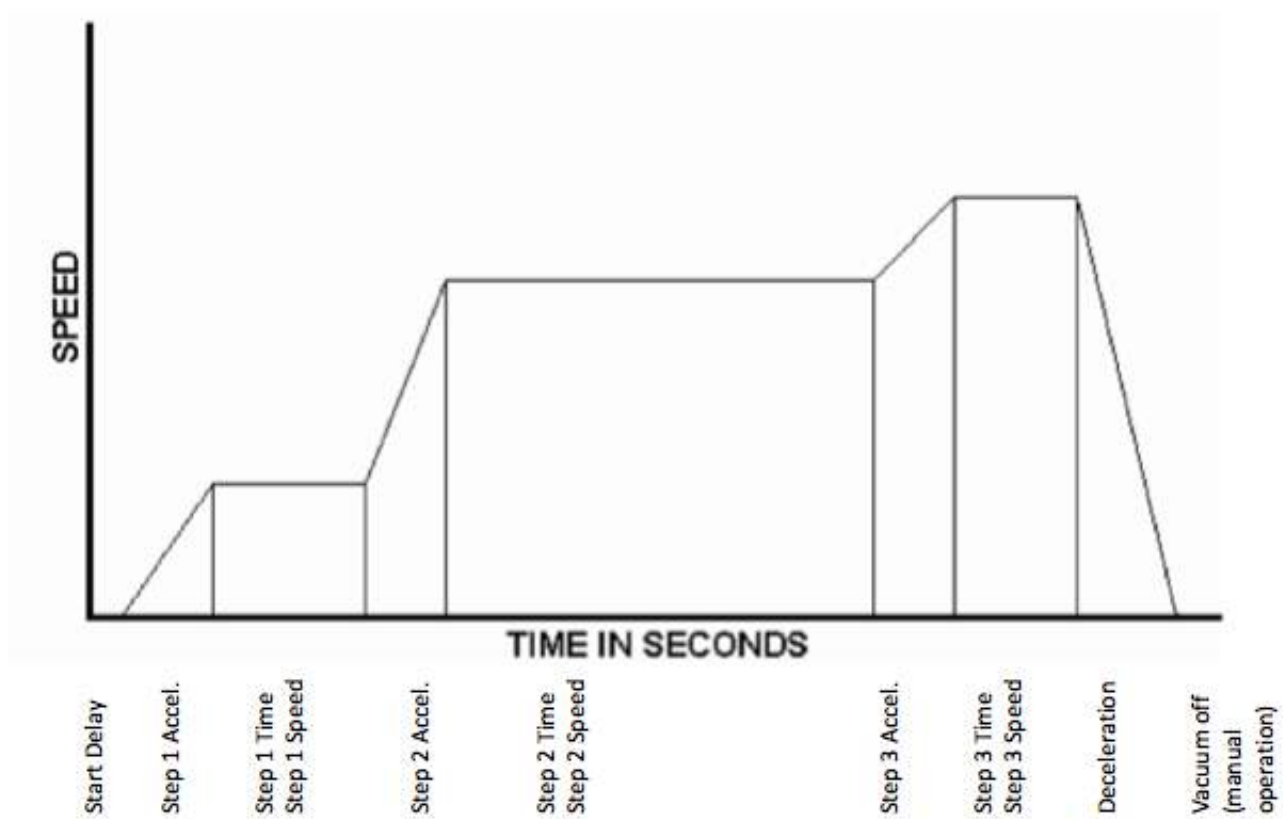


Figure 3: Example three-stage program time graph

### Manual and User Interface Controls

The front panel consists of a mains switch to turn the power on/off and 'Start' and 'Stop' buttons (see Fig. 4). Start and stop functions can also be accessed on the display.



Figure 4: Front Panel (Power switch, user display, Start and Stop buttons)



Figure 4: Typical startup user display



## User Display Controls and Indicators



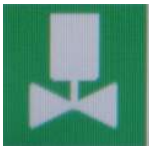
**Start.** Hold to start.



**Not ready to start**



**Stop.** Hold to stop during operation.



**Vacuum ready to start**



**No vacuum**



**Vacuum running.** Hold to switch off vacuum at the end of the sequence.



**Lid open**



**Lid closed**

Program	2	1111	
RPM	0	T 00:00	Program Status
			Not Ready To Start

Figure 5: Program information and status

**Program Number:** User predetermined program

**RPM:** Indicates number of revolutions per minute

**T:** Process countdown timer

**Program Status:** Indicates process status and error messages

### Generating Personalised Programs

Up to ten process steps can be input in the program (see grid in Figure 6). Each setting (Speed, Acceleration, Time and Outputs) can be changed to own specification by selecting the box, which opens the input keyboard (see Figure 7). The last step (End) is the final preset to slow the substrate (see Figure 6). After input has been selected and the program is complete, select **Save** and then 'Exit' to return to the main display.

Program No.	Step	Speed	Accel	Time	OP1	OP2	OP3
2	1	250	300	5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	2	3250	9000	35	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	3	6500	9999	5	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	4	0					
	5						
	6						
	7						
	8						
	9						
	10						
End	0	9999	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Figure 6: Input program

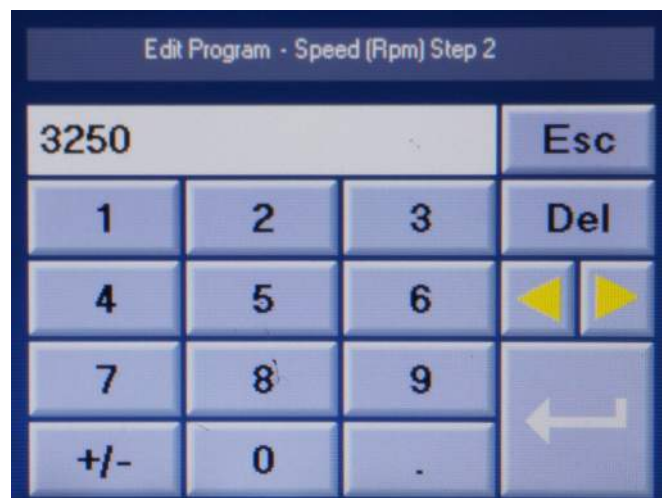


Figure 7: Input keyboard