

Preventive Maintenance Manual



ACS200 Gen3

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1.IMPORTANT INFORMATION

This Preventive Maintenance Manual is part of the User Manual.
Only qualified persons are permitted to carry out work on or with the tool.



Read Manual!

Read manual prior to starting maintenance work.

This manual is property of SUSS MicroTec and is licensed only to the purchasers or authorized users of the SUSS MicroTec product(s) described herein. The use of this manual is restricted to the maintaining of the described product(s) purchased from SUSS MicroTec Lithography GmbH.

Specifically, the purchaser is prohibited from copying this manual or disclosing its contents to any persons not involved in the use of the described product(s) purchased from SUSS MicroTec Lithography GmbH.

1.1. Safety Instructions

The tool described has been manufactured according to the technical standards, safety regulations and EC guidelines. If not installed properly or not used as directed, dangerous situations or damage might occur.

Safety hazards on the equipment that are known to SUSS at the time of this manual's publication are identified by safety labels located on or in the equipment in the immediate vicinity of the hazard. These labels signify the presence of a hazard or potential hazard which may be encountered during installation, maintenance, or operation of the equipment, or when in proximity to the equipment.

Do not remove or destroy warning labels. If a label may have become unreadable, renew the label by ordering it from SUSS. Warning labels are for users safety!



Read Instructions!

Read, understand and follow all safety instructions for proper use of this equipment.

Task-and equipment-specific cautions and instructions are included in the user documentation where appropriate.

Make sure these instructions and all other equipment documents are accessible to persons operating or servicing the equipment.

Read Operating Instructions of the corresponding vendors' parts!

This tool may be part of a production line. Therefore consider safety instructions of all adjacent tools.



Retain Instructions!/ Follow Warnings!/ Avoid Attachments!

The safety and operating instructions should be kept for future reference. Keep instructions as long as the equipment is operated.

Follow all warnings and instructions marked on the equipment or in the user manual.

Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

1.2. Lockout/Tagout Checklist

When performing lockout/tagout on circuits and equipment, you can use the checklist below.

- Identify all sources of electrical energy for the equipment or circuits in questions.
- Disable backup energy sources such as generators and batteries.
- Identify all shut-offs for each energy source.
- Notify all personnel that equipment and circuitry must be shut off, locked out, and tagged out. (Simply turning a switch off is NOT enough).
- Shut off energy sources and lock the main switch in the OFF position. Each worker should apply his or her individual lock. Do not give your key to anyone.
- Test equipment and circuitry to make sure they are de-energized. This must be done by a qualified person.*
- Deplete store energy by bleeding, blocking, grounding, etc. Apply a tag to alert other workers that an energy source or piece of equipment has been locked out. Make sure everyone is safe and accounted for before equipment and circuits are unlocked and turned back on. Note that only a qualified person may determine when it is safe to reenergize circuits.

*OSHA defines a „qualified person“ as someone who has received mandated training on the hazards and on the construction and operation of equipment involved in a task.

1.3. Qualification of Personnel

Only qualified workers shall perform work on electrical systems.

There should be an employee training program implemented to qualify workers in the safety-related work practices that pertain to their respective job assignments. (“Formal Training and Qualifications” on page 8)

Qualified personnel are persons, who on account of the training and instruction they have received and their experience and knowledge of relevant standards, specifications, accident prevention regulations and operating conditions, have been authorized by those responsible for the safety of the tool to carry out any

necessary work and who are able to recognize possible dangers.

Qualified workers are responsible for avoiding and preventing accidents while performing electrical work, repairs, or troubleshooting equipment. Personnel shall wear or use personal protective equipment (PPE), and protective clothing that is appropriate for safe performance of work.

All tool users are advised to become familiar with the contents of these safety instructions prior to operating the tool. They should have read and understood the operating instructions. In addition, always comply with local health and safety regulations and company safety requirements regarding safe usage of equipment.

Among other things, a knowledge of the first aid and the local rescue facilities is also required.

1.3.1. Formal Training and Qualifications

The customer’s management should establish formal training and qualifications for qualified workers before they are permitted to perform electrical work.

Refresher training is recommended at intervals not to exceed three years to provide an update on new regulations and electrical safety criteria.

The training shall be on-the-job and/or classroom type. The degree of training provided shall be determined by the risk to the employee.

This training shall be documented.

Qualified employees shall be trained and familiar with, but not be limited to, the following:

- Safety-related work practices, including proper selection and use of personal protective equipment (PPE), that pertain to their respective job assignments.
- Skills and techniques necessary to distinguish exposed live parts from other parts of electrical equipment.
- Skills and techniques necessary to determine the nominal voltage of exposed live parts, clearance distances, and the corresponding voltages to which the qualified person will be exposed.
- Procedures on how to perform their jobs safely and properly.
- How to lockout/tagout energized electrical circuits and equipment safely.
- Other types of training recommended for electrical workers include the following standards:
 - National Electrical Code (NEC),

- EN60204-1 (Safety of machinery. Electrical equipment of machines. General requirements.)
- National Electrical Safety Code (ANSI C2 / NESC)
- Use of personal protective grounds
- Use of testing and measuring equipment
- Work permit and work authorization procedures
- Use and care of personal protective equipment
- Proper clothing required for arc flash or arc blast protection
- First aid and CPR Refresher training is recommended at intervals not to exceed 3 years.

1.4. Maintenance

For safety reasons and in order to avoid disturbances maintenance work has to be carried out completely and in regular intervals.

The tool is carefully designed and solidly built to exacting standards in order to provide many years of reliable performance. To ensure continued optimum performance and a long operating life, proper routine maintenance and care are absolutely essential.

Furthermore, at all times be alert to any unusual machine noises, behavior or changes in operation or results which may be symptomatic of problems which could damage the machine if left uncorrected.

A proper and sustained maintenance schedule will result in longer operation, superior life performance, and extended period between downtime.

Only qualified, properly trained and authorized persons should perform any maintenance or repair procedures.



Note!

Ensure that tool is free of media before starting maintenance work. Turn off all media from tool. Draining and cleaning is to be performed before maintaining the tool. Never maintain tool with media in the media lines.



For all maintenance work applies:

Wear protective equipment.

Consider and observe the Material Safety Data Sheets. Use safety goggles, gloves and protective clothing!



Carefully consider and observe the safety instructions and signs on the tool and in the User Manual.

IMPORTANT INFORMATION

1.4.1. Maintenance Checklists

This chapter provides complete schedules and procedures for routine preventive maintenance of ACS200Gen3 tools to reduce unscheduled downtime.

The time spent performing the check described in the following sections will greatly improve the overall performance of the ACS200Gen3 tool.

Furthermore, at all times be alert to any unusual machine noises, behavior, or changes in operation or results which may be symptomatic of problems which could damage the machine if left uncorrected.

The checklist is a manufacturer recommended plan based on component design and lifetime.

Conformance to the plan will help ensure optimum operation of the tool throughout its lifetime.

Failure to comply to the manufacturer's recommended preventive maintenance could result in disruptions in operation and unnecessary downtime.

Intervals for the preventive maintenance checklist and the accompanying instructions are given in shifts.

The following table provides the conversion from shifts to time.

Interval/ Shift	Conversion (3 shifts, 7 days/ week)
20	weekly
100	monthly
200	every 2 months
300	quarter-annually
500	semi-annually
1000	annually
4000	every 4 years

1.4.2. Daily Maintenance Procedures - Visual Checks

It is most important to conduct a thorough visual check of the tool on a daily basis. Key areas include chucks, the robot(s) and other modules if so equipped.

These parts should be kept free of dust and residues.

Also inspect for scratches and other signs of wear since the use of scratched or damaged parts will result in poor equipment performance.

Daily preventive maintenance procedures, i.e. normal cleaning, checking of settings, recipe selections etc. are not included in this list.

We recommend checking hoses and hose connections as part of the routine maintenance. Check in regular intervals!

This also includes:

- Routine checking of media lines and areas for escaping liquid.
- Routine checking of external exhaust and drain connections.
- Routine checking of the central filling lines and connectors of media.
- Check tightness of plugs and fittings in regular intervals.

For more detailed and complete information about the safety installations the tool is equipped with, please also refer to page.

1.4.3. Spare Parts; Expandable Parts

SUSS MicroTec can provide all parts required for preventive maintenance.

To obtain additional information about parts for preventive maintenance, contact your local SUSS MicroTec Service Center.




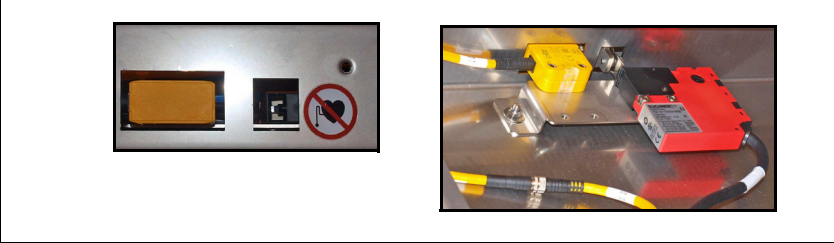
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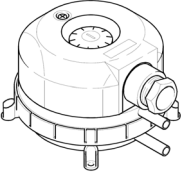
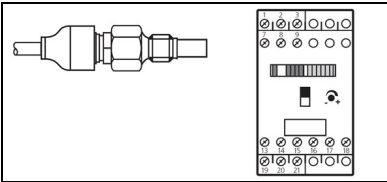

During warranty period only Suss MicroTec Lithography original spare parts have to be used.

1.4.4. Pre-Maintenance Procedures

- Notify other personnel in the area before the tool is shut down.

2.SAFETY CIRCUITS - Overview

View	Interval/ Shift	To Do	Description/ normal state	Time min.	Page
<p>2.1. Emergency Stop Button</p>  <p>Notice! The number of the Emergency Stop buttons depends on the tool configuration!</p>	500	<ul style="list-style-type: none"> Check function of Emergency Stop button 	<ul style="list-style-type: none"> Refer to chapter 4 <i>Safety Circuits</i> of the User Manual. 	15 per button	14
<p>2.2. Safety Door Switches</p>  <p>Note! For exact positions of the Safety Door Switches refer to the tool-specific Electrical Schematics.</p>	500	<ul style="list-style-type: none"> Check function of safety door switches. 	<ul style="list-style-type: none"> Refer to chapter 4 <i>Safety Circuits</i> of the User Manual. 	15 per switch	15

View	Interval/ Shift	To Do	Description/ normal state	Time min.	Page
<p>2.3. Gas Sensor</p> <p>sensor head for solvents</p>  <p>sensor head for HMDS</p>  <p>Controller</p> 	500	<ul style="list-style-type: none"> • Test 	<ul style="list-style-type: none"> • Refer to chapter 4 <i>Safety Circuits</i> of the User Manual. 	10 per sensor	15
<p>2.4. Exhaust monitoring Sensor</p> <p>Differential pressure switch</p>  <p>Flow sensor and control monitor</p> 	500	<ul style="list-style-type: none"> • Check function of exhaust control sensor • Clean flow sensor head. 	<ul style="list-style-type: none"> • Refer to chapter 4 <i>Safety Circuits</i> of the User Manual. 	2 per sensor	16
<p>2.5. Leakage Sensor</p> 	500	<ul style="list-style-type: none"> • Check function of leakage sensor. 	<ul style="list-style-type: none"> • Tool or media cabinet is switched OFF in case of a leakage alarm. 	2 per sensor	17

View	Interval/ Shift	To Do	Description/ normal state	Time min.	Page
2.6. Drain Overfull	500	<ul style="list-style-type: none"> Check function of overfull sensor 	<ul style="list-style-type: none"> Tool or media cabinet is switched OFF in case of a drain overfull alarm (EMO). 	2 per sensor	

2.7. Safety Circuits - Functional Description

2.7.1. Emergency Stop Button

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	10 per button	-	-	-

Consider Safety Instructions!

Description	What happens in case of an Emergency Stop?
<p>For testing Emergency STOP function:</p> <ul style="list-style-type: none"> • Push one of the tool's Emergency Stop buttons. • Use list below to check Emergency STOP Button for proper function. Emergency STOP button functions properly if all items of the list apply. 	<p>Also refer to chapter 4 <i>Safety Circuits</i> of the User Manual.</p> <p>To switch ON tool after an Emergency Stop refer to Chapter 4 <i>Safety Circuits</i> of the user documentation.</p> <p>The number of Emergency STOP buttons the tool is equipped with depends on tool configuration. For more information please also refer to the tool-specific electrical schematics.</p>

2.7.2. Gas Sensor

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	10 per sensor		Used solvents or IPA or acetone, clean-room cloths	-

Consider Safety Instructions!
Perform test only after you have received training!

Description	In case of a gas alarm:
<p>For testing gas sensors and controllers:</p> <ul style="list-style-type: none"> • Use list below to check gas sensor for proper function. • Please refer to the manufacturer's manual. 	<p>Also refer to chapter 4 <i>Safety Circuits</i> of the User Manual.</p> <p>To switch ON tool after a gas alarm refer to Chapter 4 <i>Safety Circuits</i> of the user documentation.</p> <ul style="list-style-type: none"> • Tool only can be switched ON if failure caused gas alarm is removed. • Tool can not be switched ON with defect gas sensor or controller. <p>The number of gas sensors installed in a tool depends on tool configuration. For more detailed and complete information please also refer to the tool-specific Electrical Schematics.</p>

**CAUTION!**

Tool damage possible!
A high concentration of combustible media destroys the gas sensor!

Always keep a distance of at least 10 cm (4 inch) between the gas sensor and your IPA/acetone/used media soaked cloth!
 Never clean the sensor head with a solvent soaked cloth.

1. Soak a cleanroom cloth with either the actual solvent used in the machine or IPA or acetone.
2. Bring the cleanroom cloth near to the sensor but keep a distance of 10–15 cm (4–6 inch) and wave the solvent vapors towards the sensor.
3. Observe the display of the sensor controller. The displayed value should increase and the solvent vapors should trigger a pre-alarm and finally an *emergency off*.
4. Wait for the solvent vapors to be exhausted away and restart the tool. See chapter 4 of the user manual.

2.7.3. Exhaust Control Sensor

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	2 per sensor	-	-	-

Consider Safety Instructions!

Description	What happens in case of an exhaust alarm?
<p>For testing the exhaust flow sensor and the differential pressure switch:</p> <ul style="list-style-type: none"> • Please refer to the manufacturer's manuals entitled <i>IFM Flows Controller VS2000Exi e.pdf</i> (page 6) and Beck Differential Pressure Switch-930.8x-Manual.pdf (page 8-9). • Pull the tube going to the exhaust from the each differential pressure switch. Verify the alarm. Push the tube back on the sensor. • For the exhaust flow control sensor: Close the exhaust damper in the facilities. A red LED should lit on the controller. Verify the alarm at the MMC. Reset • For more detailed and complete information please also refer to the tool-specific Electrical Schematics. 	<p>To switch ON tool after an exhaust alarm refer to Chapter 4 Safety Circuits of the user documentation.</p> <ul style="list-style-type: none"> • Tool can only be switched ON if failure caused exhaust alarm is removed. • Tool can not be switched ON if exhaust control is defect. <p>The number of exhaust control sensors installed in a tool depends on tool configuration. For more detailed and complete information please also refer to the tool-specific Electrical Schematics.</p>

2.7.4. Leakage Sensor

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	2 per sensor	<ul style="list-style-type: none"> Cleanroom wipes 	<ul style="list-style-type: none"> DI water 	Sensor

Consider Safety Instructions!

Description	What happens in case of a leakage alarm?
For testing Leakage Sensor: <ul style="list-style-type: none"> Wet the leakage sensor with some water. A leakage alarm should occur. Dry sensor after check 	To continue processing after a leakage alarm refer to Chapter 4 <i>Safety Circuits</i> of the user documentation. The number of leakage sensors installed in a tool depends on tool configuration. For more detailed and complete information please also refer to the tool-specific Electrical Schematics.

2.7.5. IO Door Interlock / Service Door Interlock

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	15 per switch			

Consider Safety Instructions!

Description	Opening the IO door with tool in production mode by releasing the IO Door Interlock button causes:
For testing the IO Door Interlock: <ul style="list-style-type: none"> Open the IO door with the door access button. Open and close the door Lock the door with the door access button. Check if the door is locked. 	Also refer to Chapter 4 <i>Safety Circuits</i> of the user documentation. For more detailed and complete information please also refer to the tool-specific Electrical Schematics

Description	
<p>For testing the door access function in the MMC software for Service Door Interlocks:</p> <ol style="list-style-type: none"> 1. Open the service doors and click the Request Door Access button in the Overview menu of the MMC. The icon next to the button should display: Door(s) Opened. The button should change to Release Door Access. 2. Open and close any service door. 3. Lock the door with the Release Door Access button. The icon next to the button should display: Door(s) Not Accessible. The button should change to Request Door Access. 4. Check if the door is locked. <p>A service door can be any upper glass door locked with an interlock.</p>	

3.MATERIAL HANDLING UNIT

The maintenance procedures described in this section should be performed on a routine basis or with the frequency or at the times indicated. Before carrying out any of these procedures, be sure to lower the pins (if module is equipped with).

Then - unless otherwise indicated in the specific procedure - turn the power of the tool off.

4xIO



Note!

For PM at the 4xIO module, refer to the external document [4xIO_ACS200Gen3_Rev0_13-07.pdf](#).



NOTE

Mechanical electrical and chemical hazards exist at the Material Handling Unit. Only qualified, properly trained and authorized persons are allowed to perform any maintenance or repair work.



WARNING!

HAZARDOUS VOLTAGE!

All power to the tool must be disconnected per the facilities' lockout/ tagout procedure before servicing to prevent the risk of electrical burn or shock. Access only for qualified and authorized persons and if the tool is switched off.



WARNING!

**Irritating/ Highly flammable media.
Health hazard due to contact and inhalation.**



Avoid skin and eye contact.
Do not inhale.
Keep sources of ignition away.



Wear safety goggles, gloves and protective clothing.



Consider and observe the Material Safety Data Sheets.



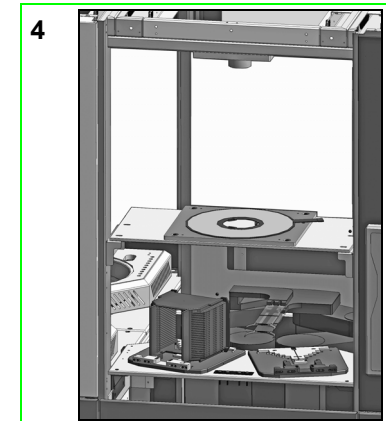
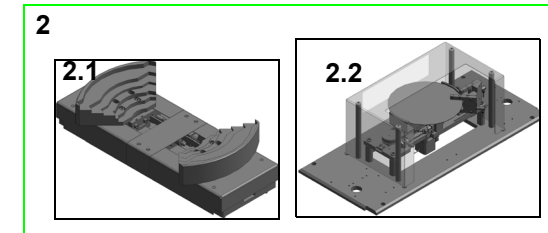
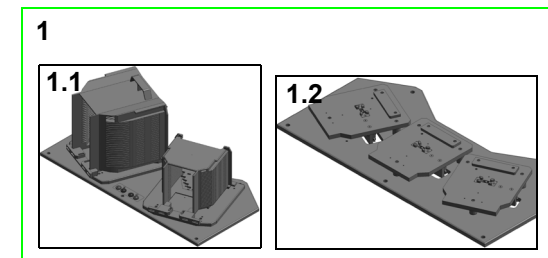
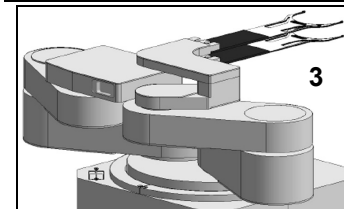
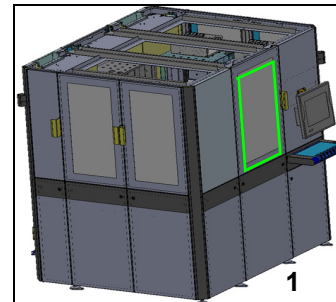
CAUTION!

Ergonomic hazard!

Risk of damage to the spine by lifting or moving heavy objects.

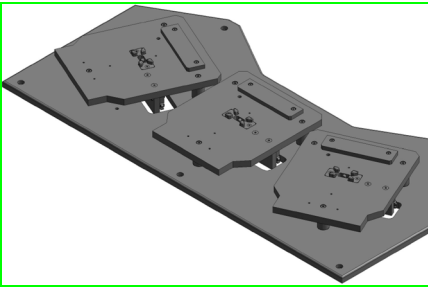
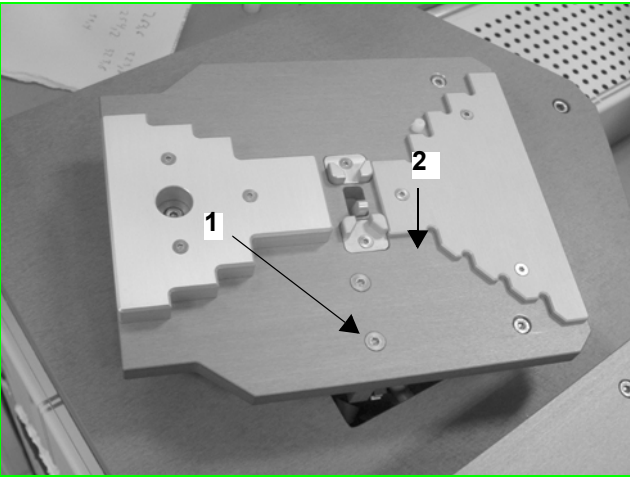
Use personnel or mechanical assistance for lifting heavy objects.

Use three-man lift to move a robot.



No. in Fig.	Denomination
1	IO module <ul style="list-style-type: none"> • Two-cassette station (1.1) • Three-cassette station (1.2)
2	Centering <ul style="list-style-type: none"> • without flat finder (2.1) • with flat finder (2.2)
3	Robot
4	Optical pre-aligner


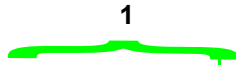
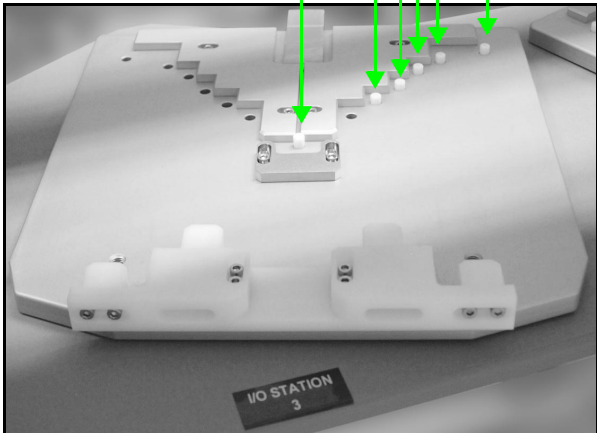
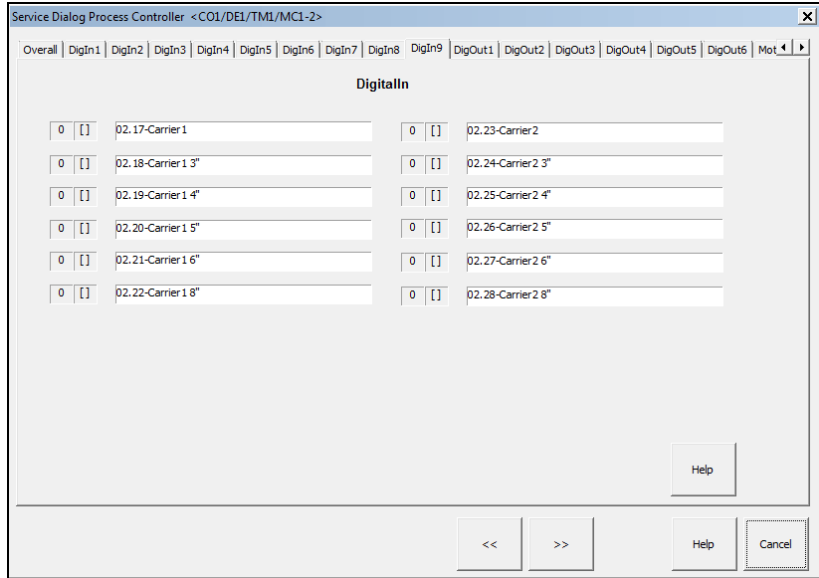
3.1. Preventive Maintenance Overview

View	Part	Interval/ Shifts	To Do	Description/ normal state	Time min.	Page
	Base plate	200	<ul style="list-style-type: none"> • Visually check the base plate of the cassette station for contamination; clean, if required. • Wipe with an IPA wetted wipe. 		10	
		Switches	500	<ul style="list-style-type: none"> • Check the switches for proper function: <ul style="list-style-type: none"> - Cassette presence detection switch (1) - Cassette size detection switch (2) 		10

3.1.1. Cassette Detection Switches: Check for proper function

Interval/Shifts	Required time (min)	Tools	Operating/ cleaning media	Spare parts
500	10	<ul style="list-style-type: none"> Check inputs in MMC Service mode. 		

Consider Safety Instructions!

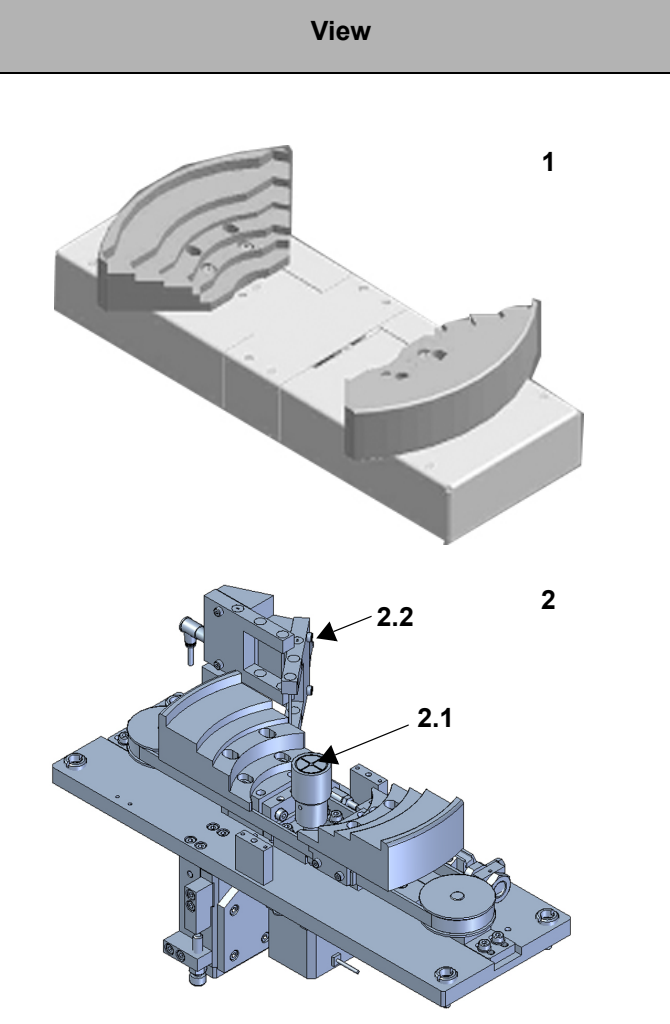
Description	
<p>To check the function of the cassette detection and size switches, proceed as follows:</p> <p>NOTE!  Determine Service Access permissions in the Tool Controller software.</p> <ol style="list-style-type: none"> Carefully push each switch (1) down until a clicking noise is noticed. Check respective input at the MMC. <div style="text-align: center;"> <p>1</p>  </div> 	

Example. Cassette stations can be different according to specifications.

3.2. Centering Station

3.2.1. Universal Centering Station


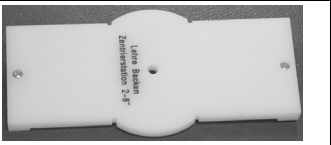
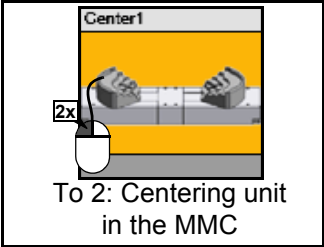
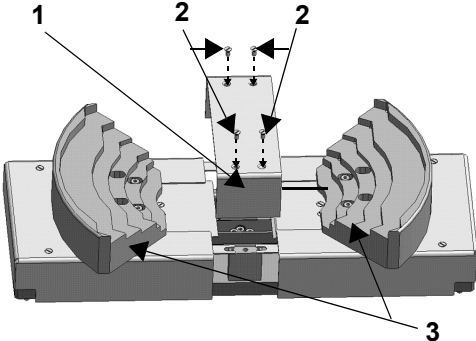
3.2.1.1. Preventive Maintenance Measures Overview

View	Part	Interval/ Shifts	To Do	Description/ normal state	Time min.	Page
	1 + 2 Centering	200	<ul style="list-style-type: none"> Clean the centering jaws. 	-		-
	1 Centering (standard)	500	<ul style="list-style-type: none"> Check and adjust the centering. Check the coupling belt. 		20	23
	2 Centering (with chuck + flat aligner)	500	<ul style="list-style-type: none"> Check and adjust the centering. Check the coupling belt. 		20	25
	Centering	1000	<ul style="list-style-type: none"> Clean and grease the centering linear bearing. 		20	27
	Centering	4000	<ul style="list-style-type: none"> Replace the cylinder, if required. Replace the sensor, if required. 		30	-
	2.1 Centering chuck	1000	<ul style="list-style-type: none"> Clean the chuck Replace the chuck, if required. 	The chuck has to be free of contaminations	20	29
	2.2 Fork light barrier for flat or notch alignment	20	<ul style="list-style-type: none"> Clean with a dry cloth. Check electrical connections 	The optical system has to be free of accumulations.	5	30

3.2.1.2. Universal Centering Station: Check and Adjust Centering

Interval/ Shifts	Required time (min)	Tools	Operating/ cleaning media	Spare parts
500	10	<ul style="list-style-type: none"> Centering Adjusting Gauge # 106089 Hexagonal wrench set (metric) Screw driver set 		

Consider Safety Instructions!

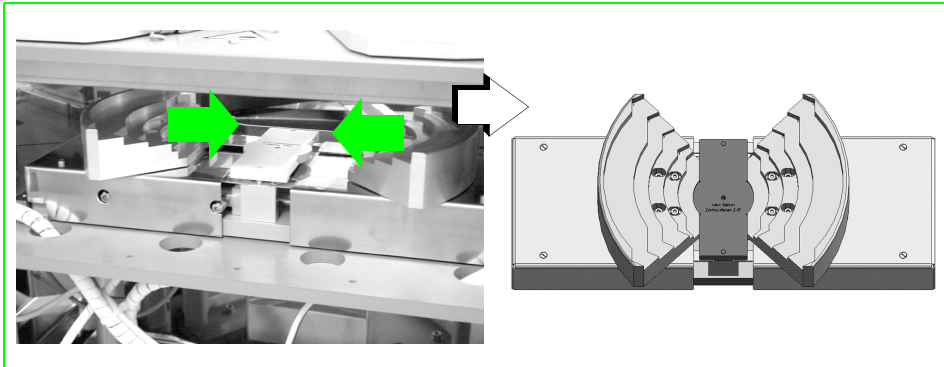
Description																
<p>Test Centering Function - Procedure:</p> <p> NOTE! Service Access permissions required!</p> <ol style="list-style-type: none"> Open the doors. Double-click on the centering unit in the MMC. The module submenu opens. Click Slot Service to open the Service Dialog of the module. See page 24. Select the tab Center. Click Open. Remove the cover plate (#105076) by loosening the corresponding screws (4x M3x6 DIN963, #1466). Install the setting gage (#106089) between the 2 centering jaws. <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="margin-right: 5px; font-weight: bold; font-size: 1.2em;">4</div>  </div>	<div style="text-align: center; margin-bottom: 20px;">  <p>To 2: Centering unit in the MMC</p> </div> <div style="text-align: center; margin-bottom: 20px;">  </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No. in Fig.</th> <th>Denomination</th> <th>Part no.</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Cover plate</td> <td>#105076</td> </tr> <tr> <td>2</td> <td>4x M3x6 DIN963</td> <td>#1466</td> </tr> <tr> <td>3</td> <td>Centering jaw</td> <td>#105380</td> </tr> <tr> <td>4</td> <td>Setting gage</td> <td>#106089</td> </tr> </tbody> </table>	No. in Fig.	Denomination	Part no.	1	Cover plate	#105076	2	4x M3x6 DIN963	#1466	3	Centering jaw	#105380	4	Setting gage	#106089
No. in Fig.	Denomination	Part no.														
1	Cover plate	#105076														
2	4x M3x6 DIN963	#1466														
3	Centering jaw	#105380														
4	Setting gage	#106089														

Description



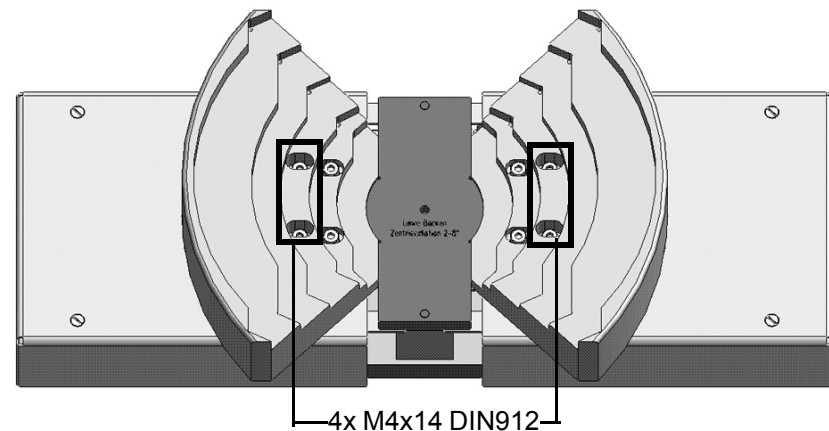
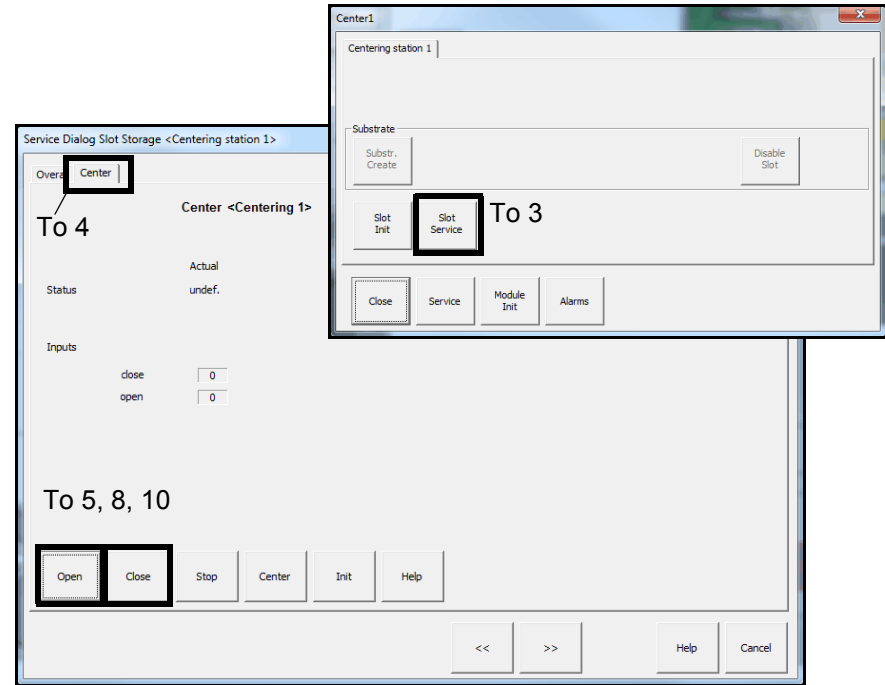
CAUTION!
Pinching hazard!
 Keep your hands away from the centering unit for step 7.

8. Click **Close** on the service dialog *Center*.
 The center jaws close until the jaws touch the setting gauge.



If jaws do not touch the setting gauge, calibration of the jaws is required. Therefore loosen the four fixation screws of the centering jaws and align the jaws properly to the setting gauge.


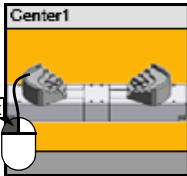

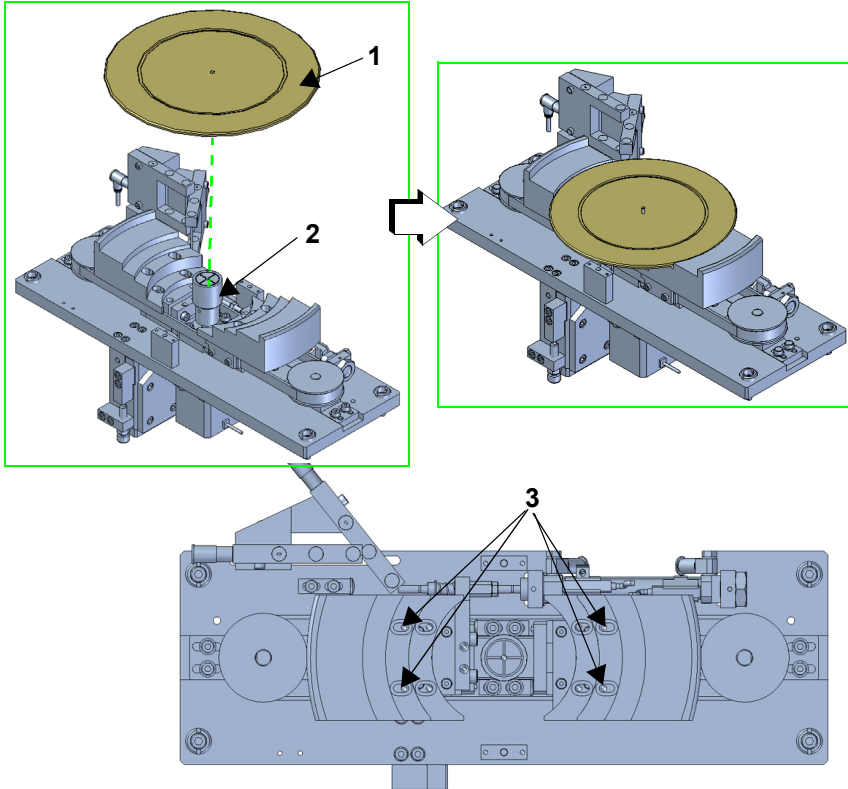
9. Tighten the 4 fixation screw to fix the jaws in this position.
 => Calibration of the centering jaws has been finished.
10. Click **Open** on the service dialog *Center*. Remove the setting gauge.
11. Assemble the cover plate between the centering jaws in adverse sequence to disassembly.
12. Close the tool doors.



3.2.1.3. Universal Centering Station: (Chuck and Flat Aligner) –
Check and Adjust Centering

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	10	<ul style="list-style-type: none"> Centering Adjusting Device Hexagonal wrench set (metric) 		

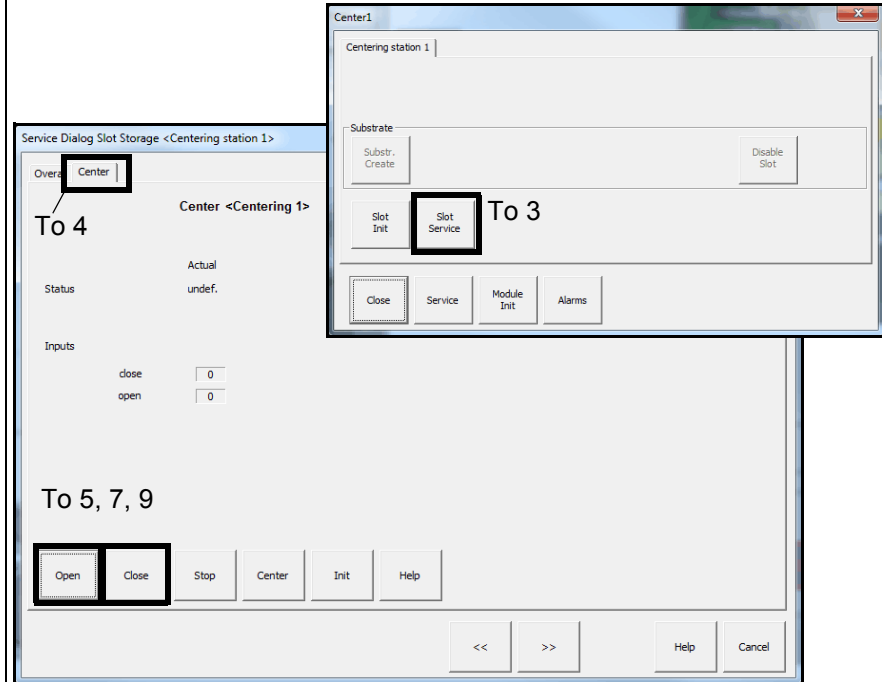
Consider Safety Instructions!

Description	
<p>Test Centering Function - Procedure:</p> <p> NOTE! Service Access permissions required!</p> <ol style="list-style-type: none"> Open the doors. Double-click on the <i>centering unit</i> in the MMC. The module submenu opens. Click Slot Service to open the Service Dialog of the module. See page 26. Select the tab Center. Click Open. <div data-bbox="808 805 1131 1054" style="border: 1px solid black; padding: 5px; margin: 10px 0;">  <p>To 2: Centering unit in the MMC</p> </div> <p> CAUTION! Pinching hazard! Keep your hands away from the centering unit for step 7.</p> <ol style="list-style-type: none"> Install the setting gauge (1) on the chuck (2) between the two centering jaws. 	

Description

7. Click **Close** on the service dialog *Center*.
The center jaws close until the jaws touch the setting gauge.
8. Fix the jaws in this position by tightening the four fixation screws.
=> Calibration of the centering jaws has been finished.
9. Click **Open** on the service dialog *Center*. Remove the setting gauge.
10. Close the tool doors.

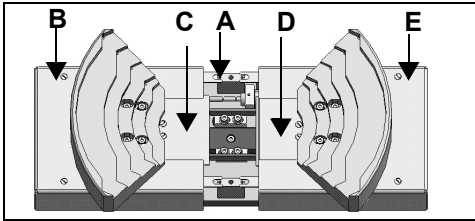
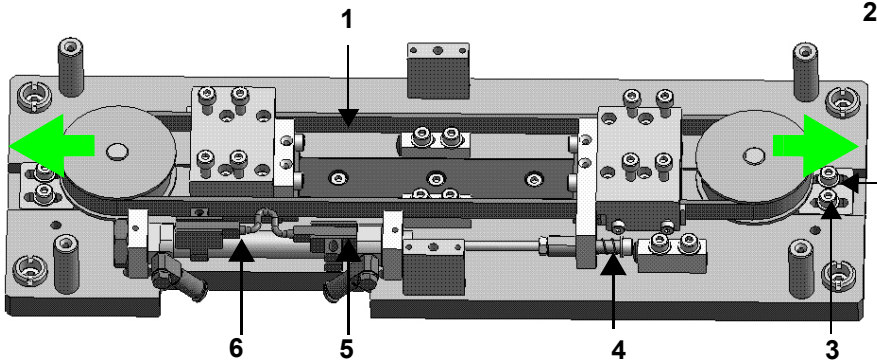
Required MMC dialogs for the centering test above.



3.2.1.4. Universal Centering Station (Standard): – Clean and Grease Centering Linear Bearing

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	20	<ul style="list-style-type: none"> Screw driver set Hexagonal wrench set (metric) 	<ul style="list-style-type: none"> Particle-free cleanroom wipes Synthetic grease with Teflon 	

Consider Safety Instructions!

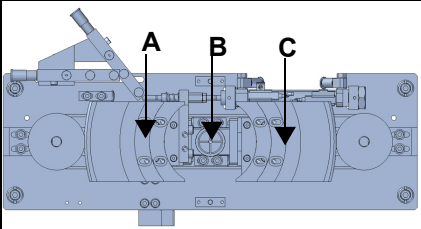
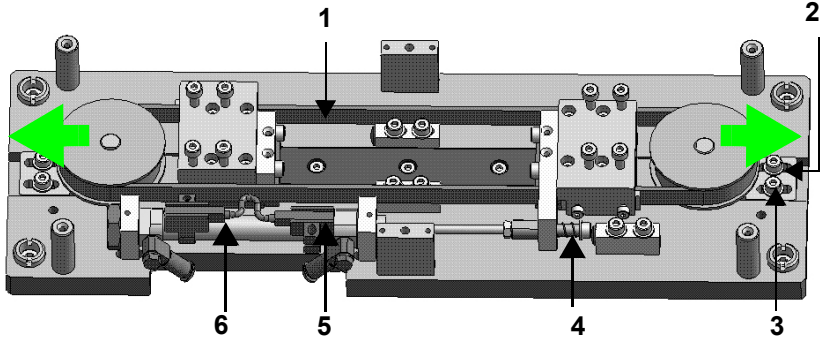
Description																						
<p>Procedure: Use Teflon based synthetic grease for greasing the linear bearing of the centering.</p> <ol style="list-style-type: none"> Switch off the tool: Turn the tool's main power switch to OFF. Switch off the tool's pressure: Turn OFF the main pressure supply. Open tool doors. Disassemble the covers A to E by loosening the corresponding screws.  <ol style="list-style-type: none"> Remove old grease from the linear bearing with a dry cleanroom wipe. Grease the linear bearing. (refer to the adjacent fig.) Check tension of toothed belt: Stretch toothed belt, if required. Therefore loosen the corresponding fixation screws (M4x12 DIN912)(3) at the bearing block (2). Stretch toothed belt in the directions illustrated by the green arrows in the adjacent Fig. Tighten the fixation screws. <p>NOTE! Having stretched the toothed belt requires checking and adjusting the centering jaws!</p>	 <table border="1"> <thead> <tr> <th>No. in Fig.</th> <th>Denomination</th> <th>Part no.</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Toothed belt</td> <td>#105102</td> </tr> <tr> <td>2</td> <td>Bearing block</td> <td>#105065</td> </tr> <tr> <td>3</td> <td>Fixation screw M4x12 DIN912</td> <td>#105103</td> </tr> <tr> <td>4</td> <td>Spring</td> <td>#647</td> </tr> <tr> <td>5</td> <td>Mounting kit for sensor Cylinder sensor #27707 Plug for sensor #513737</td> <td>#105697</td> </tr> <tr> <td>6</td> <td>Cylinder</td> <td>#105103</td> </tr> </tbody> </table>	No. in Fig.	Denomination	Part no.	1	Toothed belt	#105102	2	Bearing block	#105065	3	Fixation screw M4x12 DIN912	#105103	4	Spring	#647	5	Mounting kit for sensor Cylinder sensor #27707 Plug for sensor #513737	#105697	6	Cylinder	#105103
No. in Fig.	Denomination	Part no.																				
1	Toothed belt	#105102																				
2	Bearing block	#105065																				
3	Fixation screw M4x12 DIN912	#105103																				
4	Spring	#647																				
5	Mounting kit for sensor Cylinder sensor #27707 Plug for sensor #513737	#105697																				
6	Cylinder	#105103																				

MATERIAL HANDLING UNIT

3.2.1.5. Universal Centering Station (Chuck + Flat aligner) - Clean and Lubricate Centering Linear Bearing

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	20	<ul style="list-style-type: none"> Screw driver set Hexagonal wrench set (metric) 	<ul style="list-style-type: none"> Particle-free cleanroom wipes Synthetic grease with Teflon Isopropyl alcohol (IPA) 	




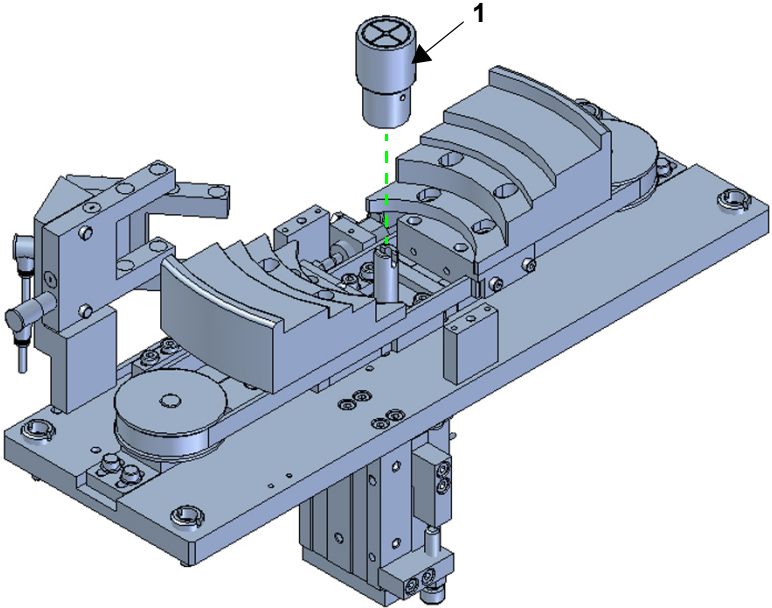
Consider Safety Instructions!

Description															
<p>Procedure:</p> <p>Use synthetic grease with Teflon for greasing linear bearing of centering.</p> <ol style="list-style-type: none"> Switch off tool: Turn the tool's main power switch to OFF. Switch off the pressure: Turn OFF the main pressure supply. Open the tool doors. Disassemble the parts A to C and all necessary covers to get access to the toothed belt.  <ol style="list-style-type: none"> Clean and grease the linear bearing. Check the tension of toothed belt. Stretch the toothed belt. Therefore loosen the corresponding fixation screws (M4x12 DIN912)(3) at the bearing block (2). Stretch toothed belt in the directions illustrated by the green arrows in the adjacent Fig. Tighten the fixation screws. <p>NOTE! Having stretched the toothed belt, requires checking and adjusting the centering jaws!</p>	<p>Example</p>  <table border="1"> <thead> <tr> <th>No. in Fig.</th> <th>Denomination</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Toothed belt</td> </tr> <tr> <td>2</td> <td>Bearing block</td> </tr> <tr> <td>3</td> <td>Fixation screw M4x12 DIN912</td> </tr> <tr> <td>4</td> <td>Spring</td> </tr> <tr> <td>5</td> <td>Mounting kid for sensor Cylinder sensor Plug for sensor</td> </tr> <tr> <td>6</td> <td>Cylinder</td> </tr> </tbody> </table>	No. in Fig.	Denomination	1	Toothed belt	2	Bearing block	3	Fixation screw M4x12 DIN912	4	Spring	5	Mounting kid for sensor Cylinder sensor Plug for sensor	6	Cylinder
No. in Fig.	Denomination														
1	Toothed belt														
2	Bearing block														
3	Fixation screw M4x12 DIN912														
4	Spring														
5	Mounting kid for sensor Cylinder sensor Plug for sensor														
6	Cylinder														

3.2.1.6. Universal Centering Station (Chuck + Flat aligner) -
Disassemble + Clean the Chuck

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
20	10	<ul style="list-style-type: none"> Chuck remover 	<ul style="list-style-type: none"> Particle-free cleanroom wipes Solvent 	<ul style="list-style-type: none"> Centering chuck

Consider Safety Instructions!


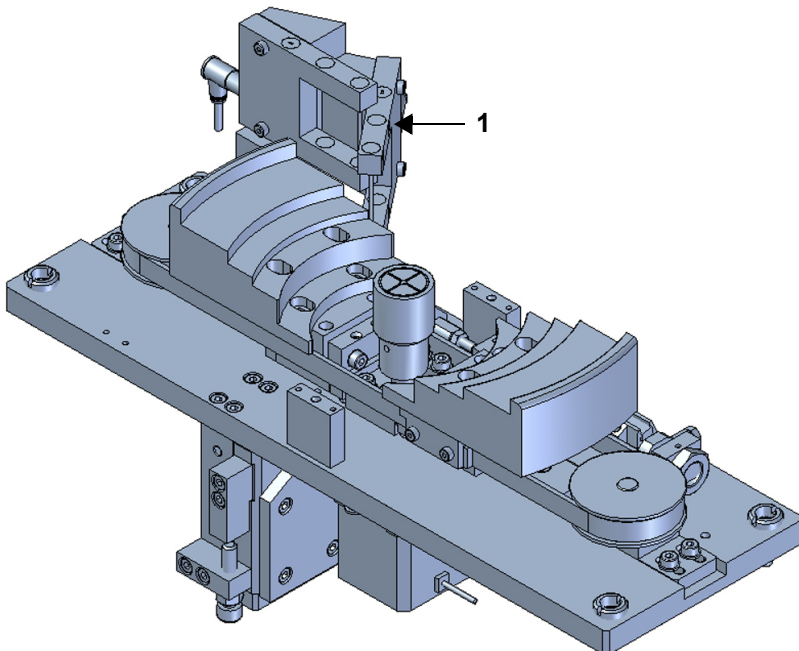
Description	
<p>Chucks are manufactured to very fine tolerances. Attention to quality standards should include inspection of chucks for cleanliness, mechanical integrity, and no residue of any kind as part as normal routine. The use of chucks that have scratches or signs of abuse can result in poor equipment performance. A visual inspection and routine cleaning with photo-resist solvent is usually all that is required.</p> <p>NOTE!  Check weekly for resist built-up!</p> <p>To clean the chuck (1), proceed as follows:</p> <ol style="list-style-type: none"> 1. Switch off the tool. 2. Open tool doors. 3. Remove the chuck using the appropriate chuck remover. Apply approximately 10lbs. of upward force. 4. Clean the chuck: Clean the chuck at an exhausted cleanroom work bench. Apply an appropriate solvent to a particle-free cleanroom cloth and wipe the chuck thoroughly. <p>NOTE!  If in doubt, whether a solvent can be used or not, please contact the tool manufacturer!</p> <ol style="list-style-type: none"> 5. After having cleaned the chuck, re-install the chuck. <p>NOTE!  Ensure that chuck is assembled in correct position!</p> <ol style="list-style-type: none"> 6. Close the tool doors and switch on the tool. 	

MATERIAL HANDLING UNIT

3.2.1.7. Universal Centering Station (Chuck + Flat aligner) -
Clean the Differential Fork Light Barrier

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
20	5	• none	• Particle-free cleanroom wipes	• none

Consider Safety Instructions!

Description	
<p>Differential fork light barriers operate according to the principle of two through beam sensors, linked together. Both through beam sensors are located in the forks of the same housing. They consist of one transmitter and one receiver each and form the reference and the measuring beam.</p> <p>The measuring beam is located at the fork opening. The beam direction from transmitter to receiver is marked with arrows on the housing forks. The infrared light beams which are emitted by the transmitters are firmly aligned to the appropriate receiver.</p> <p>If an object enters the measuring beam, a difference between measuring and reference beam occurs. This difference between the two beams triggers the output signal. The output state is displayed by a ring LED in the connector.</p> <p>NOTE!  Differential fork light barriers are largely maintenance-free. Weekly check for accumulations!</p> <p>To clean the differential fork light barrier (1), proceed as follows:</p> <ol style="list-style-type: none"> 1. Switch off the tool. 2. Open the tool doors. 3. Remove debris on the optical system of the sensor regularly with soft, particle-free cleanroom wipes. 	

3.2.2. Optical Centering Station

NO MAINTENANCE REQUIRED!

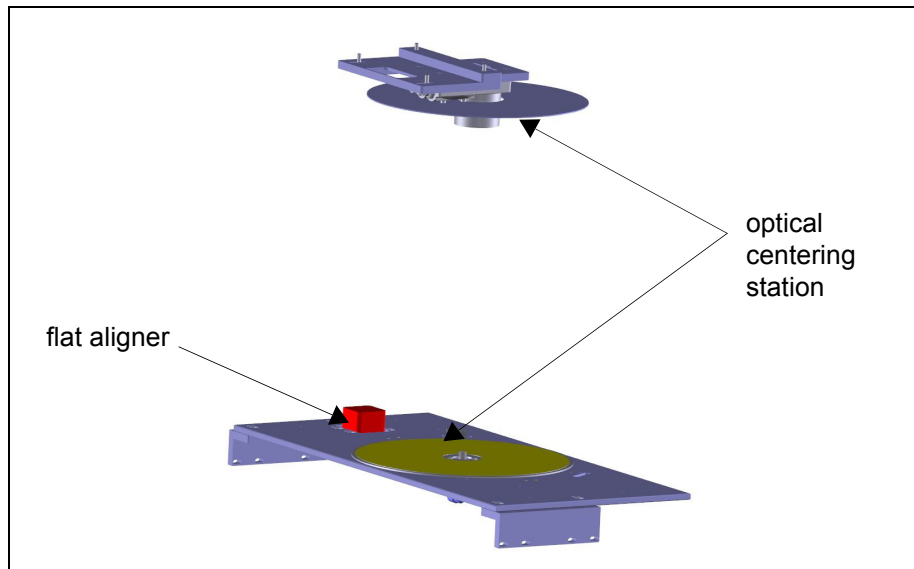


Fig.5 Optical centering station with flat aligner

3.2.2.1. Flat Aligner

NO MAINTENANCE REQUIRED!

3.3. Robot

4xIO

**Note!**

**No PM work on the robot except for the end effector!
Do not reattach the robot unless you have undergone robot training. Contact SUSS MicroTech for respective training classes.**

**Note!**

The robot is a precision machine.
Do not impose mechanical shocks on any part of the robot.
Do not step on the robot!

**WARNING!****Hazardous Voltage!**

Risk of electrical burn or shock.
Switch off the tool.
Disconnect all power to the system per the facilities' lockout/ tag out procedure before servicing.
Access only for qualified and authorized persons.

**WARNING!****Hazardous Materials!**

Risk of contamination.
The robot may be contaminated with hazardous materials.
To determine proper handling refer to the MSDSs (Material Safety Data Sheets).
Always wear personal protective equipment (safety goggles, gloves and protective clothing) when working with chemicals.

**CAUTION!****Ergonomic Hazard!****Risk of damage to the spine by lifting or moving heavy objects.**

Use personnel or mechanical assistance for lifting heavy objects



- < 18 kg (< 40 lb.) one person is required
- 18 - 32 kg (40 - 70 lb.) at least two persons are required
- 32 - 55 kg (70 - 120 lb.) at least three persons are required
- > 55 kg (> 120 lb.) a forklift is required.


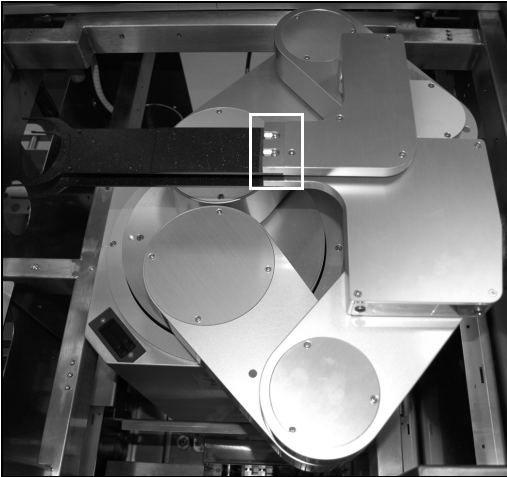
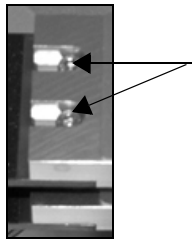
**Note!**

For robot PM and replacement at the 4xIO module, refer to the external document *4xIO_ACS200Gen3_Rev0_13-07.pdf*.

3.3.1. Robot - End Effector: Removal and Replacement

Interval/Shifts	Required time (min)	Tools	Operating/ cleaning media	Spare parts
As required	15			<ul style="list-style-type: none"> end effector

Consider Safety Instructions!

Description	
<p>To replace the end effector, process as follows:</p> <p>Replace the end effector, if:</p> <ul style="list-style-type: none"> you require a different end effector it shows significant wear it is damaged vacuum integrity is lost. <p>WARNING!  Personal injury caused by automatic robot operation! Always turn the machine off before changing the end effector.</p> <p>Repeated wafer transfers can result in abrasive wear of the end effector surface. => Replace the end effector, if necessary.</p> <p>Changing the end effector:</p> <ol style="list-style-type: none"> 1. Move the robot to an IO station. 2. Shutdown the machine. Log- and tagout the main switch. 3. Remove the end effector: Loosen both allen-head screws used for fixing the end effector to the robot. Carefully remove end effector. <ul style="list-style-type: none"> • You can move the robot handler horizontally if required. 4. Install the new end effector. Ensure that O-ring located between the two bolts is not lost. Fix the end effector using both hexagon head screws. 5. Restart tool. 	  <p>The o-ring seals the vacuum line and is located between the two bolts. If you need spare:</p> <ul style="list-style-type: none"> • O-ring: Perbunan 3x1mm, part no. #9564 • 2 screws to fix the end effector: 4x8mm, DIN912, part no. (1 screw) #1427. Also possible: 4x6mm, DIN912, part no. (1 screw) #706.

MATERIAL HANDLING UNIT

3.3.2. Dual End Effector Robot - End Effector: Inspection

Interval/Shifts	Required time (min)	Tools	Operating/ cleaning media	Spare parts
500	2			

Consider Safety Instructions!

Description	
<p>To inspect the surface of the end effector, proceed as follows:</p> <ol style="list-style-type: none"> 1. Extend the end effector into a viewing position. 2. Visually inspect the surface of the end effector for excessive wear or damage. 	

3.3.3. Dual End Effector Robot - End Effector: Cleaning

Interval/Shifts	Required time (min)	Tools	Operating/ cleaning media	Spare parts
100	10		<ul style="list-style-type: none"> • Cleanroom wipes • IPA • Swab 	


Consider Safety Instructions!

Description	
<p>To clean the end effector paddle surface, proceed as follows:</p> <ol style="list-style-type: none"> 1. Move the robot to an IO station. 2. Shutdown the machine. Log- and tagout the main switch. 3. Use a large swab soaked with IPA to clean the wear from the paddle(s) surfaces. Try to avoid cleaning of the vacuum holes, as they may clog and cause loss of vacuum. 4. Support the paddle from the bottom with your hand to avoid bending. Wipe the surface using gentle wipers. 5. Restart tool. 	


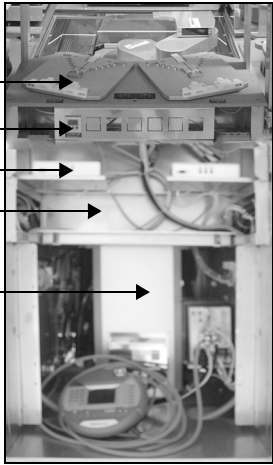
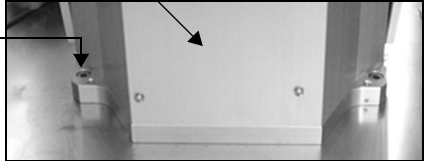
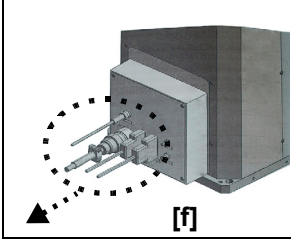
3.3.4. Robot Replacement



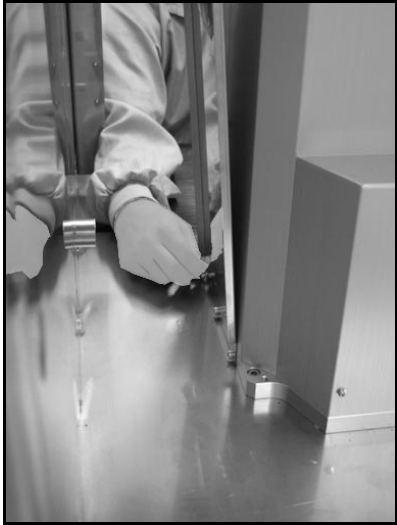
Interval/ Shifts	Required time (min)	Tools	Operating/ cleaning media	Spare parts
As required	(8 hours)	<ul style="list-style-type: none"> Hexagonal wrench set (metric) Lift truck 2 persons 		<ul style="list-style-type: none"> (Robot single/dual end effector)


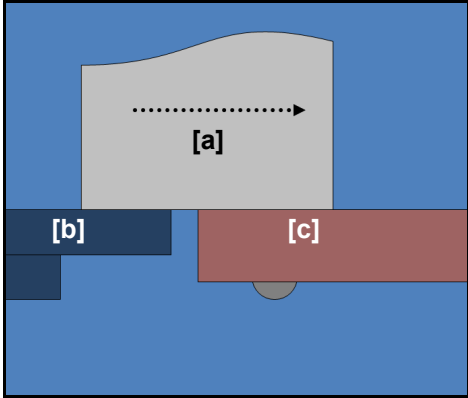
Consider Safety Instructions!



CAUTION
Tool Damage possible!
 Do not perform this procedure unless you have received special training classes for robot changing.
 This procedure is part of this manual to comply to various safety standards.
 Contact SUSS MicroTec service.

Description	
<p>To change the robot, proceed as follows: Replace the robot if a non-serviceable defect has occurred. A robot change is very unlikely as the robot is designed to supercede the life cycle of the overall machine. Nonetheless, the machine has features implemented to support a robot replacement.</p> <p> WARNING! Personal injury caused by automatic robot operation! Turn the machine off before working on the robot.</p> <ol style="list-style-type: none"> Shutdown the machine. Log- and tagout the main switch. At the front: Remove the IO station [a]. Remove the panel with vacuum switches [b]. Remove the optional pump controller [c]. Remove the barrier [d] to access the robot [e]. Remove all cables and tubes [f] from the robot. Put the robot control panel out of the way. Loosen and remove the screws [g], 4x, of the robot. The robot is tighten with these screws on the machine base plate. 	  

Description	
<p>5. Pull the robot towards the front. The robot can be moved with relatively little force. Mind cables and tubes.</p>	
<p>6. For safety reasons: Mount the transport frame on to the robot body. Mount 3 screws on both sides of the robot – lower side.</p> <p>7. Additionally, mount the upper brackets of the transport frame on to the robot body. 1 screw per side.</p> <p>8. Move the robot to the edge of the machine.</p> <p>9. Move the lift truck to the edge of the machine. Align the lift truck to the height of the machine base plate. Saveguard the lift truck (activate the brake) so it cannot move away.</p> <p> Note! The robot can also lifted using a normal lift. To do so, use a suitable lifting tool and mount it to the transport frame.</p>	

Description	
<p>10. Two persons: Move the robot [a] from the machine [b] to the lift truck [c].</p> <p> CAUTION Tool Damage Possible! While moving safeguard the robot tightly with your hands. The robot tends to tilt to the side!</p>	
<p>11. Install the new robot in reversed order.</p>	

4.COATER MODULE

The maintenance procedures described in this section should be performed on a routine basis or with the frequency or at the times indicated. Before carrying out any of these procedures, be sure to lower the pins (if module is equipped with).

Then - unless otherwise indicated in the specific procedure - turn the power of the tool off.

All power to the tool must be disconnected per the facilities' lockout/ tag out procedure before servicing to prevent the risk of electrical burn or shock. Access only for qualified and authorized persons and if the tool is switched off.

Only qualified, properly trained and authorized persons should perform any maintenance or repair procedure.

Mechanical hazards, electrical hazards, and chemical hazards exist on the Coater Module. The necessary procedures should only be performed by qualified persons. Operations of the tool should be performed within the limits set by the tool provider's procedures and safety precautions. Read and understand Chapter 1 'Safety Instructions' to be found in the User Manual before performing any procedure.



WARNING!

**Irritating/ Highly flammable media.
Health hazard due to contact and inhalation.**



Avoid skin and eye contact.
Do not inhale.
Keep sources of ignition away.



Wear safety goggles, gloves and protective clothing.



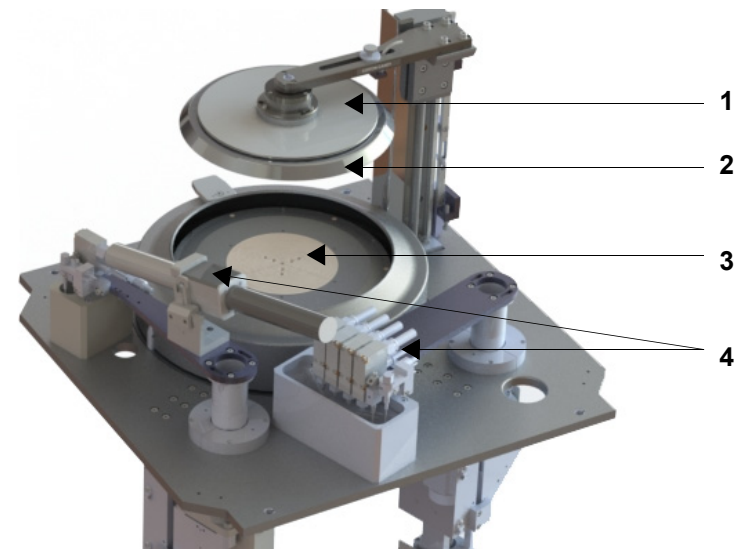
Consider and observe the Material Safety Data Sheets.

Before proceeding with any of the maintenance tasks described in the following, consult the Material Safety Data Sheets for the chemicals in use and observe all applicable safety precautions including, but not limited to, the use of personal protective equipment.



Warning!

All tool components have to cool down to ambient temperature before being cleaned.

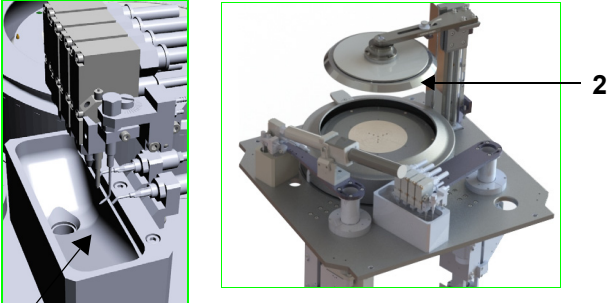
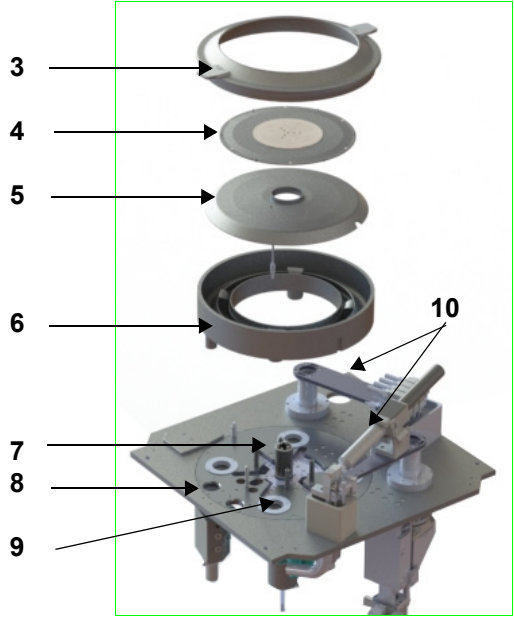


No. in Fig.	Denomination
1	Gyrset cover
2	Dispense arms
3	Chuck

4.1. Coater Module - Preventive Maintenance Overview

View	Part	Interval/Shifts	To Do	Description/normal state	Time min.	Page
	1 + 3 Resist nozzle + tubes	20	<ul style="list-style-type: none"> Check nozzle for damage or deformation. Check vertical position of nozzle. Check dispense characteristic: exact emission of resist stream. 	Resist nozzle must have precise vertical position. Otherwise replace nozzle by new one. Resist stream is smooth without deviation. In case of malfunction or dripping: <ol style="list-style-type: none"> Clean nozzle. Vent filters and supply lines. Check nozzle for leakages; replace if necessary Adjust suckback via pump controller. (See Appendix (pump description)) 	2 per nozzle	44
	1 + 3 Resist nozzle + tubes	as required	<ul style="list-style-type: none"> Clean nozzle/ tube. 		10	45
	1 + 3 Resist nozzles + tubes	as required	<ul style="list-style-type: none"> Replace nozzle when damaged. 		10	45
	2 Edge Bead Removal (EBR) nozzle	20	<ul style="list-style-type: none"> Check nozzle for damage or deformation. Check functionality of nozzle. Adjust nozzle. 	Nozzle does not drip. If dripping occurs, increase suckback vacuum. Replace nozzle, if required.	10	47
	2 EBR nozzle	as required	<ul style="list-style-type: none"> Replace nozzle. 		45	48
	4 Prewet nozzle	as required	<ul style="list-style-type: none"> Check nozzle for damage or deformation. Check functionality of nozzle. Replace nozzle, if required. 	Nozzle does not drip. If dripping occurs, increase suckback vacuum. Replace nozzle, if required.	45	49

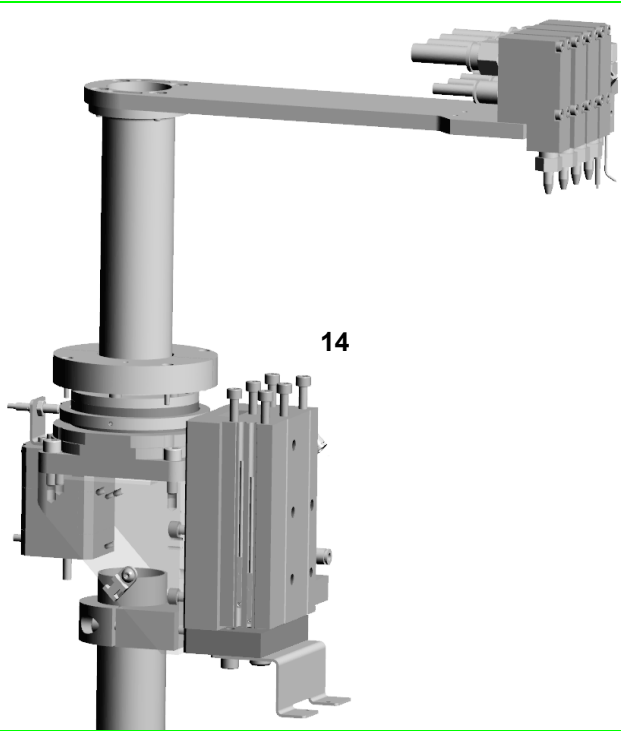
Coater Module - Preventive Maintenance Overview Cont'd

View	Part	Interval/ Shifts	To Do	Description/ normal state	Time min.	Page
<p>Insert</p> 	1 Solvent Bath	20	<ul style="list-style-type: none"> Check for contamination. Clean, if required. 		5	48
	4 (Gyrset®) chuck (option)	20	<ul style="list-style-type: none"> Check resist built-up on the upper surface of the chuck. 	Chuck surface is free of resist build-up.	2	51
	4 (Gyrset®) chuck (option)	as required	<ul style="list-style-type: none"> Clean chuck. 		10	51
	4 (Gyrset®) chuck (option)	as required	<ul style="list-style-type: none"> Replace chuck (Assemble/disassemble chuck) 		10	52
	2 Gyrset® cover (option)	20	<ul style="list-style-type: none"> Check resist built-up on the bottom surface of the cover. 	Bottom cover surface is free of resist build-up	2	54
	2 Gyrset® cover (option)	as required	<ul style="list-style-type: none"> Clean cover. 		10	55
	3 Splash ring	as required	<ul style="list-style-type: none"> Clean splash ring (6). 		5	57
	5 Insert ring	20	<ul style="list-style-type: none"> Check resist built-up on the upper surface of the insert ring. 	Insert ring is free of resist build-up.	2	56
	Insert ring adapter (only in case of open bowl configurations 4-6 inch and 6-8 inch)	500	<ul style="list-style-type: none"> Check for contamination. 	Ensure that there is no solvent or resist in the labyrinth.	10	

Coater Module - Preventive Maintenance Overview Cont'd

View	Part	Interval/Shifts	To Do	Description/normal state	Time min.	Page
	6 Coater bowl	as required	• Clean bowl.		20	59
	7 Lift pins assembly	500	• Clean and grease lift unit		15	76
	9 Exhaust (prev. page)	500	• Visually check exhaust.	Exhaust is free of media built-up.	2	62
	9 Exhaust	as required	• Clean exhaust.		10	63
	14 Airflow sensor	100	• Clean sensor, if required.			64
	8 Process chamber drain	20	• Visually check for blockage.		2	66
	12 Process chamber drain	as required	• Clean process chamber drain. • Replace drain hoses.		20	66
	Solvent filter (in media area) (option)	500	• Replace filter.		20	68
	Vacuum filter (in media area)	1000	• Replace filter.		10	71
	Resist filter (in media area)	500	• Replace filter.		20	70
	Nitrogen filter (in media area)	1000	• Replace filter.		10	71

Coater Module - Preventive Maintenance Overview Cont'd

View	Part	Interval/ Shifts	To Do	Description/ normal state	Time min.	Page
 <p>14</p>	Media lines	20	<ul style="list-style-type: none"> • Visually check for leakage. • Visually check flowmeter. • Backside rinse • Vapor bath • Solvent dispense (bowl cleaning) 	All lines are free of leakage and air bubbles.	5	72
	13 Vacuum reservoir (spin motor)	20	<ul style="list-style-type: none"> • Visually check for fluids and contamination. 	Vacuum reservoir and hose of the process motor has to be completely empty.	1	73
	Chuck motor: Test motor (spin motor)	1000	<ul style="list-style-type: none"> • The motor should be tested (insulation of windings, ball bearing noise, seat of the nuts on the terminal board). 	If problems with the process motor arise, call SUSS MicroTec Service. Optional, ask for a training for motor servicing. No work on the motor without respective training	60	74
	10 Drive unit dispense arm	500	<ul style="list-style-type: none"> • Clean and grease lift rail. 	Free of debris and old grease build-up.	15	75
	Drive unit for lift pins (up/ down)	500	<ul style="list-style-type: none"> • Clean and grease lift spindle 	Free of debris and old grease build-up	15	76


4.2. Resist Tube: Check Tube Position and Function

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
20	1 per tube			


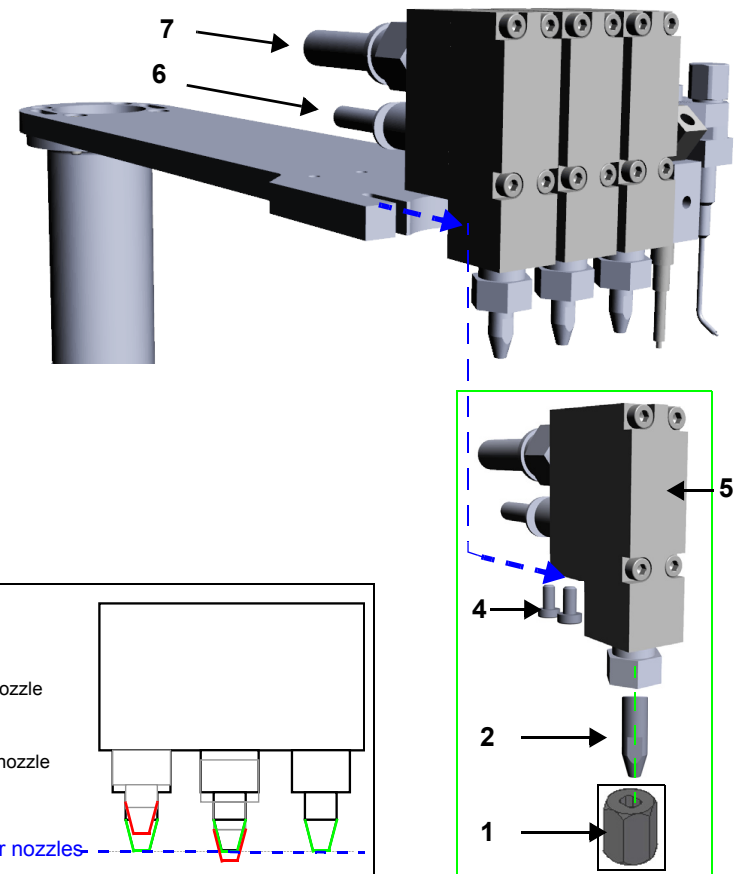
Consider Safety Instructions!

Description																																		
<p>Visually check nozzle position: During normal operation the resist stream contacting the wafer must be vertical and smooth. If it is not, ensure that the nozzle is vertical in the resist arm as shown in the right figure. Otherwise the nozzle has to re-adjusted. Deformed or damaged nozzles must be replaced.</p> <p>Note! Normal position of nozzle: nozzle (1) is installed vertically in the resist arm (2).</p> <p>Visually check nozzle function:</p> <ol style="list-style-type: none"> 1. Ensure that tool is in teach mode. 2. Load and start recipe. <p>Note! When checking nozzle function, keep a distance of at least 200mm from the nozzle.</p> <ol style="list-style-type: none"> 3. Check resist flow (stream) from the nozzle. Normal flow is smooth and vertical without deviation. If a malfunction or dripping occur, proceed as follows: <ul style="list-style-type: none"> • Clean the nozzle. • Vent the filters and supply lines. • Adjust the suckback via the pump controller or the pump. • If necessary, clean or replace nozzle, if dirty or damaged. (refer to page 45) 	<div style="display: flex; align-items: center;"> <div style="flex: 1;"> <p>Front View</p> </div> <div style="flex: 1;"> <table border="1"> <thead> <tr> <th>Part No.</th> <th>Denomination</th> <th>Material</th> </tr> </thead> <tbody> <tr> <td colspan="3">Nozzles with Thread [a]</td> </tr> <tr> <td>#65633</td> <td>Nozzle M6x19.4 ID=1.5</td> <td>PFA</td> </tr> <tr> <td>#65632</td> <td>Nozzle M6x19.4 ID=2.0</td> <td>PFA</td> </tr> <tr> <td>#74680</td> <td>Nozzle M6x19.4 ID=3.5</td> <td>PFA</td> </tr> <tr> <td>#65632</td> <td>Nozzle wrench</td> <td>PVC</td> </tr> <tr> <td colspan="3">Tube Nozzles for Tubes with ID4mm [b]</td> </tr> <tr> <td>#300595</td> <td>Nozzle ID=0.8</td> <td>PFA</td> </tr> <tr> <td>#300596</td> <td>Nozzle ID=1.5</td> <td>PFA</td> </tr> <tr> <td>#109217</td> <td>Nozzle ID=1.5</td> <td>PFA</td> </tr> <tr> <td>#109218</td> <td>Nozzle ID=2.0</td> <td>PFA</td> </tr> </tbody> </table> </div> </div>	Part No.	Denomination	Material	Nozzles with Thread [a]			#65633	Nozzle M6x19.4 ID=1.5	PFA	#65632	Nozzle M6x19.4 ID=2.0	PFA	#74680	Nozzle M6x19.4 ID=3.5	PFA	#65632	Nozzle wrench	PVC	Tube Nozzles for Tubes with ID4mm [b]			#300595	Nozzle ID=0.8	PFA	#300596	Nozzle ID=1.5	PFA	#109217	Nozzle ID=1.5	PFA	#109218	Nozzle ID=2.0	PFA
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#109218	Nozzle ID=2.0	PFA																																

4.3. Resist Nozzle: Replace or Clean Nozzles

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
as required	10	<ul style="list-style-type: none"> Nozzle wrench (part no. #66760) 	<ul style="list-style-type: none"> Particle-free cleanroom wipes PTFE sealing tube 	<ul style="list-style-type: none">

Consider Safety Instructions!

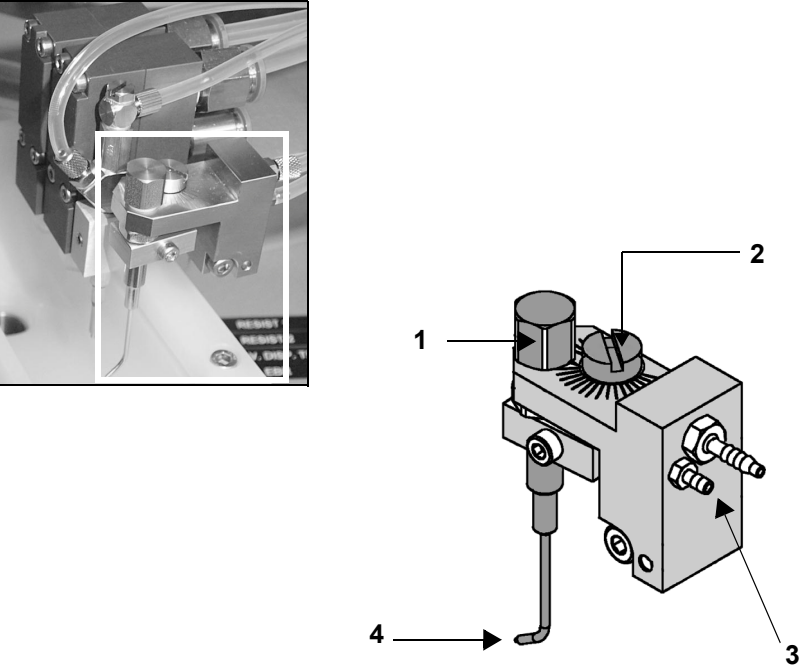
Description	
<p>The tips of the resist dispense nozzles will tend to accumulate dried resist, especially after three or more hours of non-use and the pre-dispense option alone will not clean off all of this material. The dispense nozzles should also be cleaned whenever a build-up of residue is observed on them. To clean the dispense nozzles, spray them with appropriate solvent until all visible contaminants have been removed and then execute 3 to 5 predisperse operations for each pump.</p> <p>WARNING!  Risk of nozzle damage. Never wipe the nozzles! Wiping places pressure on the arm and may also leave particles.</p> <p>To replace a nozzle (1), proceed as follows:</p> <ol style="list-style-type: none"> 1. Ensure that tool is in teach mode. 2. Move the dispense arm up and over the center of the chuck (via the service dialog of the MMC control). 3. Switch off the tool and open tool doors. 4. Cover chuck with dry cleanroom wipes. 5. Use the special nozzle wrench (1) to remove the nozzle (2). 6. Clean the nozzle or replace it, if necessary. Properly dispose the old nozzle. 7. Wrap the end of the new (or cleaned) nozzle with PTFE-sealing tape (2 layers). 8. Install and hand-tighten the nozzle (without force). 9. Tighten the nozzle using the nozzle wrench until it is level with the other nozzles as shown in the adjacent figure (3). 10. Re-assemble all covers, followed by switching on the tool. 11. Run several test wafers to ensure proper operation. 	 <p>The diagram illustrates the nozzle replacement process. It shows a side view of the nozzle assembly with labels 6 and 7 pointing to the nozzle and the nozzle wrench respectively. A detailed view shows the nozzle being removed (2) and replaced (1) using the nozzle wrench (5). A comparison of nozzle positions shows a 'Wrong nozzle position' (red) and a 'Correct nozzle position' (green) relative to a 'Level line for nozzles' (blue dashed line). A legend indicates that red lines represent the wrong position and green lines represent the correct position.</p>

Description	
<p>Optional: To replace the nozzle tempering (5), proceed as follows:</p> <p>12. Loosen both respective tubes. (6) and (7)</p> <p>13. Loosen both M3x6 screws (4) to remove the tempering unit inclusive nozzle.</p> <p>14. Install new nozzle tempering.</p> <p>15. Connect tubes.</p>	

4.4. EBR Nozzle: Check and Adjust Nozzle

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
20	10	<ul style="list-style-type: none"> Hexagonal wrench set (metric) Open-end fork wrench set (metric) Screw driver (-) 	<ul style="list-style-type: none"> Particle-free cleanroom wipes 	

Consider Safety Instructions!

Description	
<p>The edge bead removal nozzle must be adjusted so that the solvent stream squirts from the wafer in the direction of the splash guard ring. Set the width of the edge bead to be removed according to the specific manufacturer's (users) specifications by adjusting the angle of the spray nozzle.</p> <p>If the edge bead nozzle is damaged or deformed, it must be replaced. Therefore refer to section 'EBR Nozzle: Replace Nozzle' on page 48.</p> <p>To adjust the edge bead removal nozzle, proceed as follows:</p> <ol style="list-style-type: none"> 1. Ensure that tool is in teach mode. 2. Move the dispense arm into top position and over the center of the chuck (via the service dialog of the MMC control). 3. Switch off the tool. 4. Open tool doors and remove the dispense arm housing. 5. Cover chuck with dry cleanroom wipes. 6. Loosen the top nut. (1) 7. Set nozzle (4) to desired position by rotating the eccentric screw (2). 8. If nozzle is in desired position, tighten the top nut. 9. Re-assemble all covers, close the tool doors and return the arm to its home position (via the MMC software). 10. Check nozzle function on a few test wafers to ensure proper seating and correct adjustment. <p>((3): Media supply EBR nozzle)</p>	

4.5. EBR Nozzle: Replace Nozzle

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
as required	10	<ul style="list-style-type: none"> Hexagonal wrench set (metric) Open-end wrench set (metric) 	<ul style="list-style-type: none"> Particle-free cleanroom wipes 	<ul style="list-style-type: none"> EBR nozzle

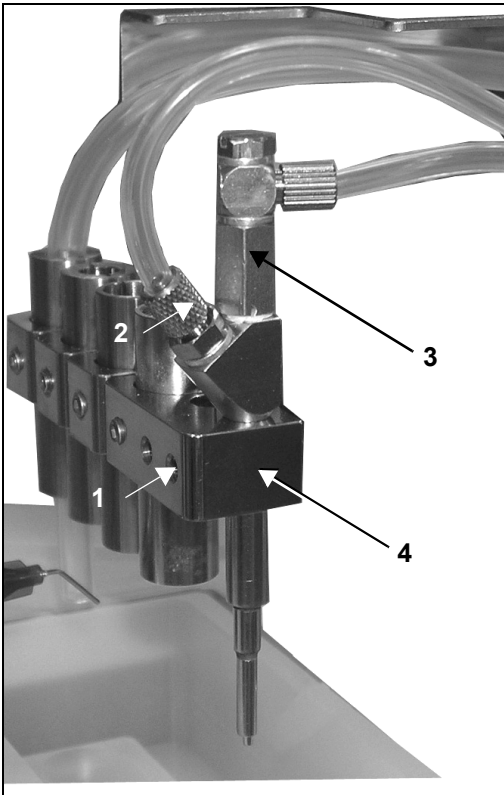
Consider Safety Instructions!

Description	
<p>To replace the EBR nozzle, proceed as follows:</p> <ol style="list-style-type: none"> 1. Ensure that tool is in teach mode. 2. Lift arm to top at home position with the service dialog of the MMC control. 3. Switch off the tool. 4. Open tool doors. 5. Cover chuck with dry cleanroom wipes. 6. Remove the top nut (1) using an open-end wrench (10mm). 7. Remove the nozzle assembly from the nozzle mount (2) by carefully pulling it downwards. If required, rotate eccentric screw (3). 8. Loosen the retaining screw (5) using an hexagonal wrench and separate the old EBR nozzle (4) from the clamping plate (6). 9. Dispose the used nozzle according to the corresponding local and environmental law. 10. Slide the new O-rings over the top of the new nozzle and insert the nozzle into the clamping plate (5). Fix it by tightening the retainer screw. 11. Insert the nozzle assembly into the nozzle mount and secure loosely with the top nut. 12. Adjust the nozzle. Refer to refer to section 'EBR Nozzle: Check and Adjust Nozzle' on page 47. 13. Close the tool doors and switch on the tool. 	

4.6. Prewet Nozzle: Replacing the Nozzle

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
as required	45	<ul style="list-style-type: none"> Hexagonal wrench 2.5 mm Open-end wrench 10 mm 	<ul style="list-style-type: none"> Particle-free cleanroom wipes 	<ul style="list-style-type: none"> Prewet nozzle with sealings




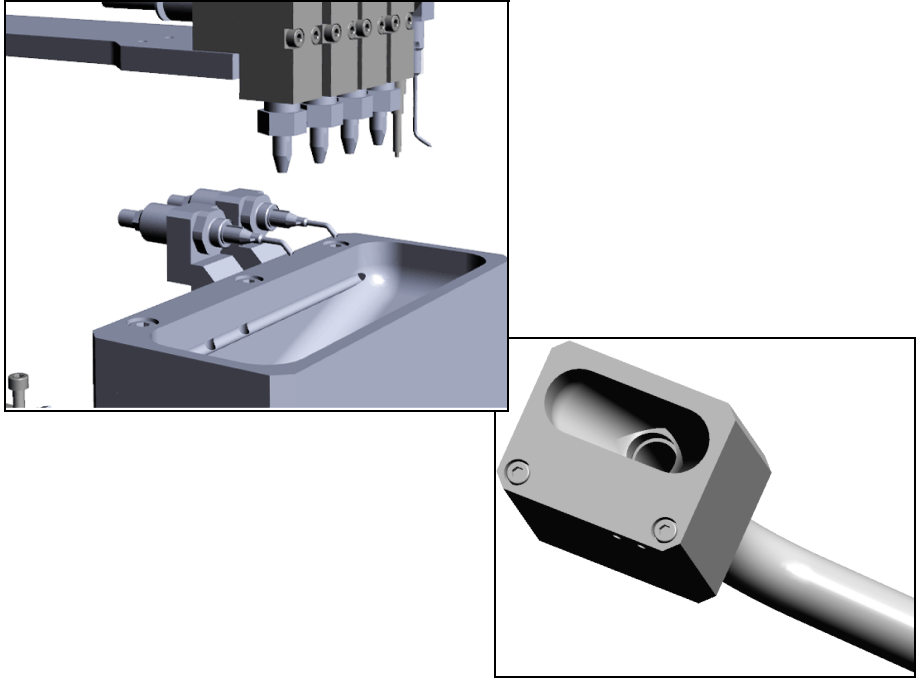
Consider Safety Instructions!

Description	
<p>To replace the prewet nozzle, proceed as follows:</p> <ol style="list-style-type: none"> 1. Ensure that tool is in teach mode. 2. Move the dispense arm into top position (via the service dialog of the MMC control). 3. Switch off the tool. 4. Open tool doors. 5. Loosen the retainer screw (1). 6. Remove the tube fittings (2) + (3). 7. Remove the nozzle from the nozzle mount (4). 8. Dispose the used nozzle according to the corresponding local and environmental law. 9. Slide the new O-ring (3) over the end of the new nozzle and insert it into the nozzle mount (4). 10. Secure nozzle with the set screw (1). 11. Adjust nozzle, if required. 12. Close tool doors and switch on the tool. 	

4.7. Solvent Bath: Cleaning

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
20	5		<ul style="list-style-type: none"> Particle-free cleanroom wipes 	


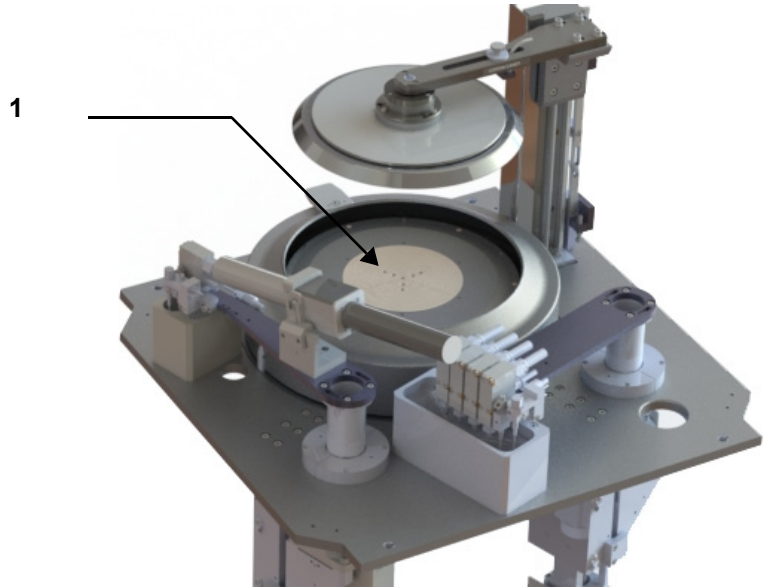
Consider Safety Instructions!

Description	
<p> Note! Weekly check for resist built-up!</p> <p>To clean the drain bowl of the solvent bath, proceed as follows: Wear protective equipment.</p> <p> Consider and observe the Material Safety Data Sheets.</p> <p></p> <ol style="list-style-type: none"> 1. Move arm into top position in the MMC. 2. Switch off the tool. 3. Open tool doors. 4. Cover chuck with dry cleanroom wipes. 5. Carefully move the dispense arm by hand toward the center of the chuck until it is clear of the solvent bath cup. 6. Clean the drain bowl of the solvent bath and the nozzle using particle-free cleanroom wipes and appropriate solvent. 7. After cleaning has been finished close the tool doors and switch on the tool. 	


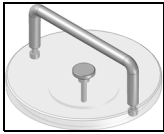
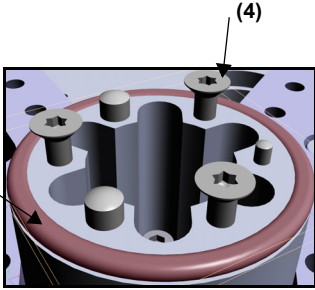
4.8. Chuck: Cleaning

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
as required	2		<ul style="list-style-type: none"> • Particle-free cleanroom wipes • Solvent 	



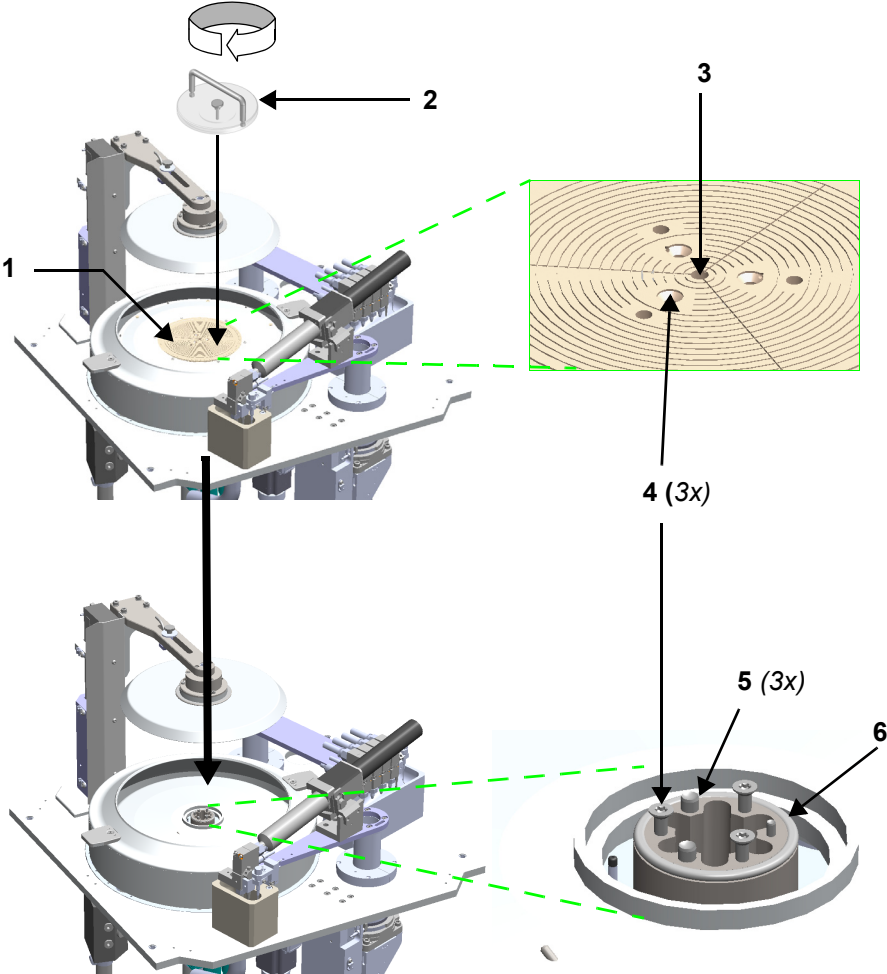
Consider Safety Instructions!

Description	
<p>Chucks are manufactured to very fine tolerances. Attention to quality standards should include inspection of chucks for cleanliness, mechanical integrity, and evidence of residue of any kind as part as normal routine. The use of chucks that have scratches or show signs of abuse can result in poor equipment performance. A visual inspection and routine cleaning with solvent is usually all that is required.</p> <p> Note! Check weekly for resist built-up!</p> <p>To clean the chuck (1), proceed as follows:</p> <ul style="list-style-type: none"> • With the use of a cleaning program: <ul style="list-style-type: none"> • In case of resist built-up, run a cleaning cycle (conventionally the cleaning nozzle is mounted on the EBR arm, if available). <p>In case of heavier contamination or if no cleaning program is available:</p> <ol style="list-style-type: none"> 1. Switch off the tool. 2. Open tool doors. 3. In case of visible resist built-up clean the chuck with solvent and cleanroom wipes. Do not rub resist into vacuum, lift pin holes or vacuum grooves. 	

4.9. Chuck: Assembly/ Disassembly

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
as required	10	<ul style="list-style-type: none"> Torx wrench TX10  Chuck remover  		<ul style="list-style-type: none"> Screw M3x10 DIN 965TX, TX10, part no. #100022448 (4) O-ring, part no. 109074 (6)  <p>(Chuck holder)</p>

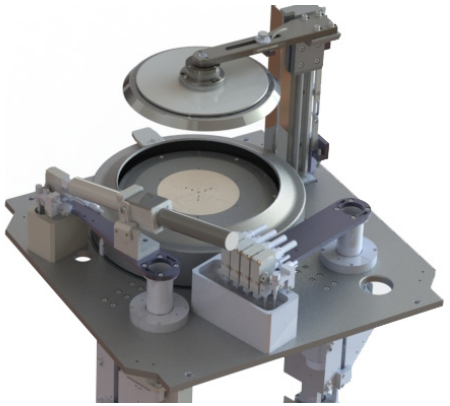
Consider Safety Instructions!

Description	
<p> Note! Clean the chuck in regular intervals!</p> <p>To disassemble the chuck (1), proceed as follows:</p> <ol style="list-style-type: none"> 1. Ensure that the tool is in teach mode. 2. Move pins in „down“ position in the MMC software service. Double click on respective coater > Slot Service button > Pins tab > Low button. 3. Switch off the tool and open the tool doors. 4. Unscrew the three torx screws (4) from the chuck. 5. Remove the chuck using the appropriate chuck remover. (2) Insert the chuck remover in the center hole (3) of the chuck. Fix the chuck remover by turning its screw (3) into the center hole of the chuck until it stops. Slowly pull the chuck remover vertically upwards until the chuck is clear of the shaft. Apply approximately 10lbs. of upward force. Remove the chuck remover and the chuck from the tool. Take care not to touch the dispense arm! 6. Remove the chuck from the chuck remover. 7. Clean the chuck by wiping it thoroughly with an appropriate solvent underneath an exhausted cleanroom working bench. Apply the appropriate solvent to a particle-free cleanroom wipe. <p> Note! In case of doubt, whether a solvent can be used or not, please contact the tool manufacturer!</p> <ol style="list-style-type: none"> 8. Check the o-ring (6). Replace if necessary. 9. After having cleaned the chuck, re-install the chuck. Observe the alignment pins (5), 3x and place the chuck accordingly on to the chuck fitting. One alignment pin is smaller than the other 2. 	

4.10. Gyrset® Cover (option): Check for Resist Build-up

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
20	2			


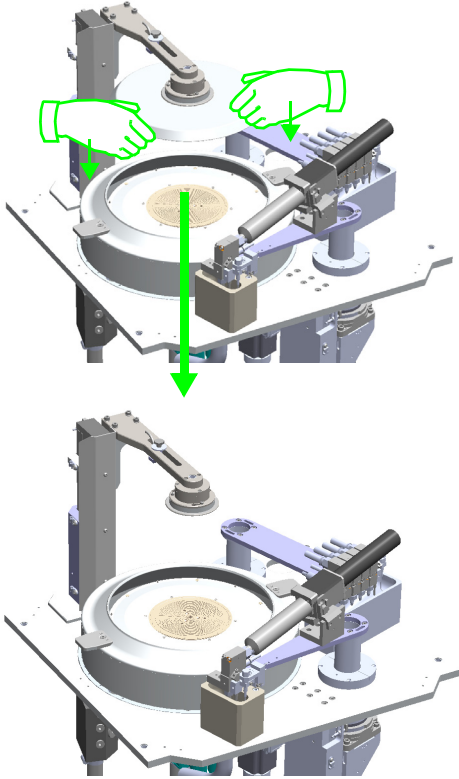
Consider Safety Instructions!

Description	
<p>To check for resist built-up at the Gyrset® cover, proceed as follows:</p> <ol style="list-style-type: none"> 1. Put the tool into service mode and open the Gyrset® using the MMC. 2. Open tool door. 3. Visually check the Gyrset® cover in- and outside for resist build-up. 4. If required clean the cover following the next procedure on page 55. 5. Close the tool door and return the tool into production mode. 	

4.11. Gyrset® Cover (option): Cleaning

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
as required	10		<ul style="list-style-type: none"> • Particle-free cleanroom wipes • Solvent • Exhausted cleanroom working bench 	


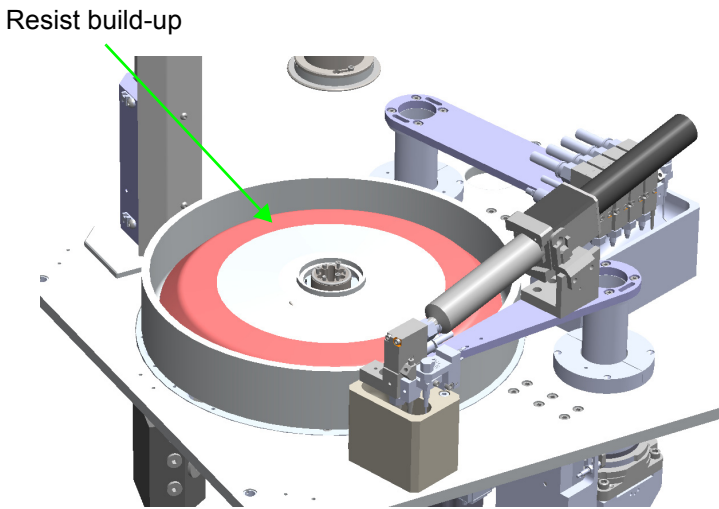
Consider Safety Instructions!

Description	
<p>To clean the Gyrset® cover, proceed as follows:</p> <ol style="list-style-type: none"> 1. Switch off the tool. 2. Open tool door. 3. Remove the Gyrset® cover. 4. Clean inner and outside surface of the Gyrset® cover using cleanroom wipes and solvent. 5. Install the Gyrset® cover. <p>Note!  Ensure that the cover is assembled correctly and evenly!</p> <ul style="list-style-type: none"> • Close tool door. 	

4.12. Coater Bowl: Check Insert Ring

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
20	2			

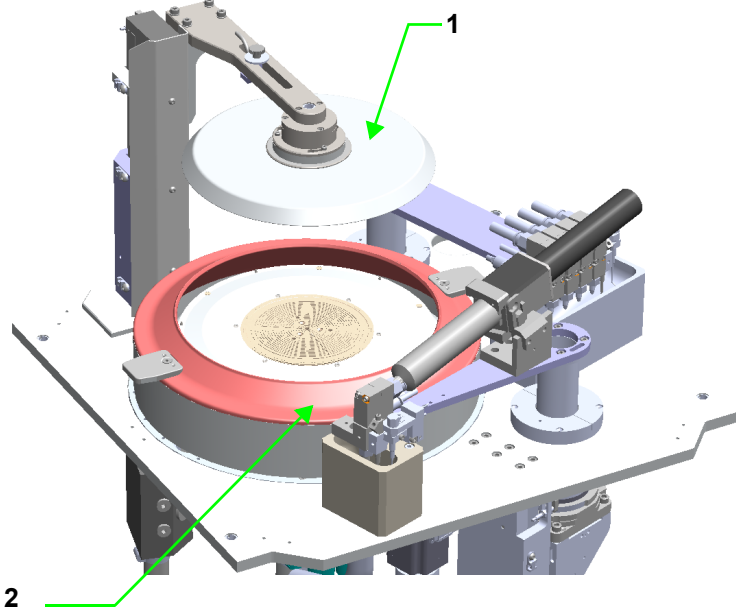
Consider Safety Instructions!

Description	
<p>Visually check cleanliness of Coater Bowl</p> <p>Note!  During normal operation check cleanliness of bowl in regular intervals.</p> <p>When approximately 30% of the splash guard insert is covered with resist build-up dismantle the splash guard insert. Remove and clean the bowl as described on the following pages. For more details about disassembling the splash guard insert also refer to section 'Coater Bowl: Clean Splash Ring' on page 57.</p>	 <p>Resist build-up</p>

4.13. Coater Bowl: Clean Splash Ring

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
as required	5		<ul style="list-style-type: none"> • Particle-free cleanroom wipes • Closed transport box for splash ring • Solvent bath 	


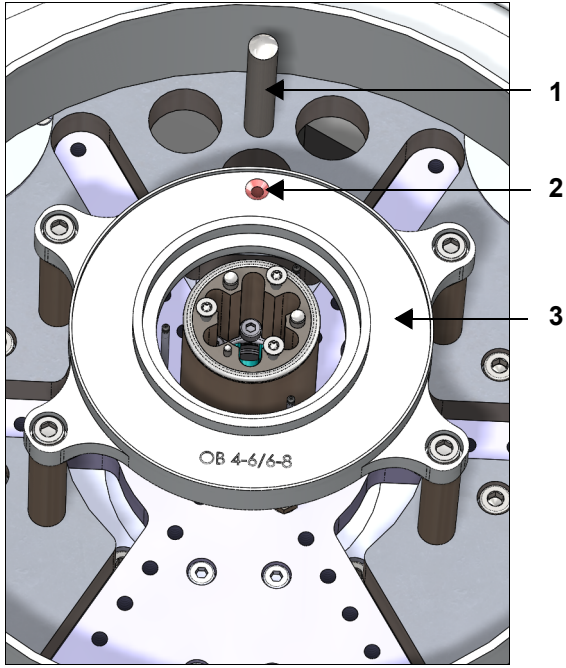
Consider Safety Instructions!

Description	
<p>To clean the splash guard ring, proceed as follows:</p> <ol style="list-style-type: none"> 1. Ensure that tool is in teach mode. 2. In case of Gyrset® Coater: Open the Gyrset® cover.(1) (via the MMC software) 3. Move the dispense arms in home position (via the MMC software). 4. Switch off the tool. 5. Open the tool doors. 6. Lift off the splash guard ring (2) using both hands and carefully slide it out and away from the dispense arms. 7. Be careful not to damage the underside of the splash guard ring. Place the splash guard ring topside-down when it is out of the bowl! 8. Apply an appropriate solvent to a particle-free cleanroom wipe and clean away any contamination of the top and splash guard ring. <p>Note! In case of doubt if a certain solvent can be used or not, please contact the SUSS MicroTec service!</p> <ol style="list-style-type: none"> 9. Inspect the bowl and the bowl insert for contamination! If bowl is strongly contaminated additional bowl cleaning is required! For bowl cleaning also refer to section 'Coater Bowl: Clean Insert Ring and Coater Bowl' on page 59. 10. Re-install the splash guard ring. 11. Close the tool doors and restore power to the tool. 	

4.14. Coater Bowl: Check insert ring adapter

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	10		<ul style="list-style-type: none"> • Particle-free cleanroom wipes • Solvent bath 	

Consider Safety Instructions!

Description	
<p>Note!  Only required for open bowl configurations 4-6 inch and 6-8 inch.</p> <p>Check that there is no solvent or resist in the labyrinth.</p> <p>Ensure, that the orientaion of the adapter (3) is correct, e.g. hole (2) on 12:00 clock (next to the ø8 mm pin (1) for the insert ring).</p>	

4.15. Coater Bowl: Clean Insert Ring and Coater Bowl

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
as required	20	-	<ul style="list-style-type: none"> • Particle-free cleanroom wipes • Cleaning bath 	<ul style="list-style-type: none"> • If required: Coater cup

Consider Safety Instructions!

Description	
<p>To clean Coater Bowl, proceed as follows:</p> <ol style="list-style-type: none"> 1. Ensure that the tool is in teach mode. 2. In case of Gyrset® coater: Open the Gyrset® cover.(1) (via the MMC software) 3. Move the dispense arm in home position (via the MMC software). 4. Switch off the tool. 5. Open the tool doors. 6. Lift off the splash guard ring.(2) 7. Remove the chuck (3). Unscrew the three screws and remove the chuck using the chuck remover. 8. Lift off the insert ring (4) and carefully slide it out and away from the dispense arms. 9. Disconnect quick coupling for backside rinse (5) underneath the insert ring. <p>Note! Optional Gyrset® cover is not displayed in the exploded assembly drawing.</p>	

Description



CAUTION

Risk of tool damage.

Never use any hard objects when removing the bowl and the insert ring. A damaged bowl/ insert ring may not be re-used in the tool.

- 10. Lift out the process bowl (6) by carefully pulling it upwards with both hands.
- 11. Check all three lift pins (not shown) for contaminations and clean them, if necessary.
Removal of lift pins is not recommended because the subsequent height alignment of the 3 lift pins is difficult to achieve.
Lift pin alignment is out of the scope of this manual.



CAUTION

Risk of tool damage.

If you must remove a lift pin: **Remember from which bore hole of the lift pin carrier (7) you have removed the lift pin from!**
Returning the lift pin into the wrong bore hole can lead to tool damage.



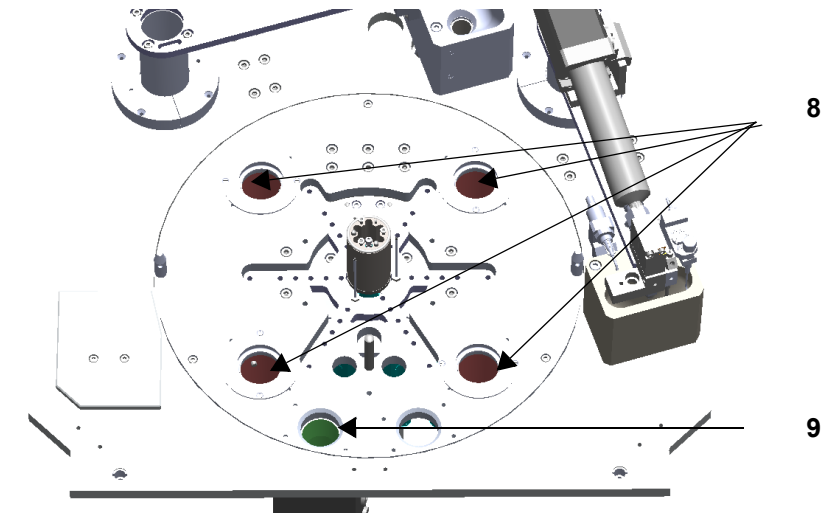
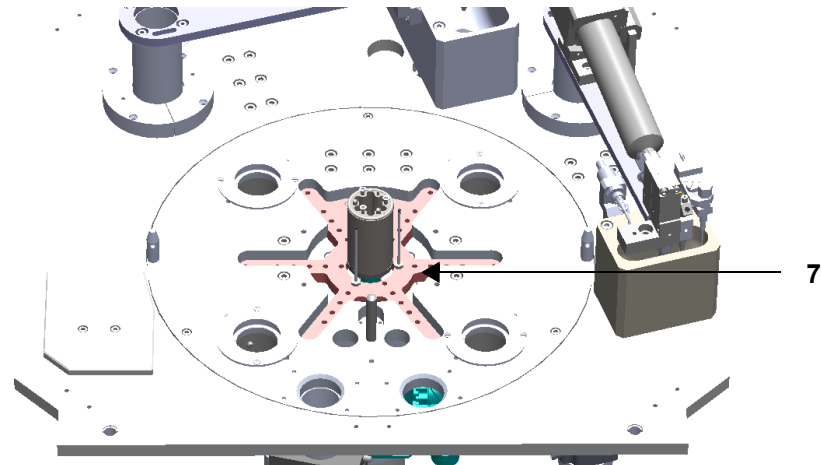
Note!

Handle lift pins with great care!

- 12. Clean the process bowl, the insert ring, the splash guard ring and the lift pins using cleanroom wipes.

Check exhaust and drain for contamination:

- 13. After having removed process cup, also check exhaust (8) and chamber drain (9) for contamination and clean them, if required. (also refer to section 'Check Exhaust' on page 62 and refer to section 'Process Chamber Drain: Visually Check Drain' on page 66.)
Check, if exhaust functions properly by placing, for example a piece of paper, on top of the exhaust stud.

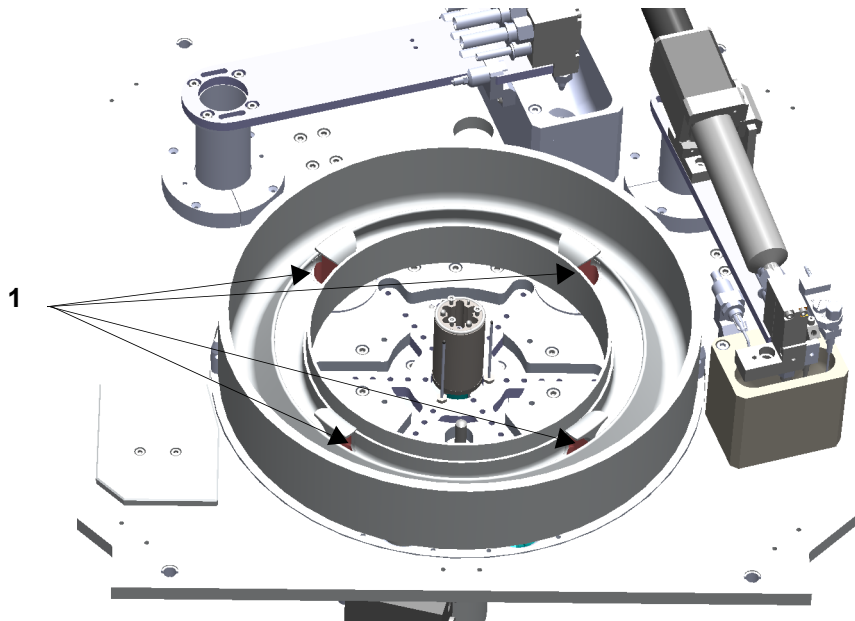


Description	
<p>Re-assembly of the module components has to be carried out in reverse order to disassembly.</p> <p>14. Place the bowl (6, rear view) on to the baseplate. Ensure that the notches on the bowl (10) match with the corner pins mounted on the baseplate (11). Ensure that the exhaust hole (9) is aligned with the hole in the bowl (12).</p> <p>15. Connect the quick coupling for backside rinse (5) underneath the insert ring (4). Place the insert ring into the bowl. Thereby, ensure that the alignment pin (13) goes into the hole underneath the insert ring (14).</p> <p>16. Install the chuck using the chuck remover and fix it with the three chuck screws. Also see page 52.</p> <p>17. Install the splash guard ring. Also see page 57.</p> <p>18. After the module components have been re-assembled close the tool doors and restore power to the tool.</p> <p>19. Move pins in 'Up' position via the tool controller to check chuck for correct position (only applies if your tool is equipped with them)! Be careful not to damage the pins! To move pins up in the MMC: Double click on respective coater > Slot Service button > Pins tab > Up button.</p>	<p>The image contains two technical diagrams illustrating the re-assembly process. The top diagram shows a bowl (6) being positioned above a baseplate (11). Callouts include 10 (2x) pointing to notches on the bowl, 12 pointing to a hole in the bowl, and 9 pointing to an exhaust hole in the baseplate. Green dashed lines and arrows indicate alignment. The bottom diagram shows the bowl (6) with an insert ring (4) inside. Callouts include 14 pointing to an alignment pin, 5 pointing to a quick coupling, and 13 pointing to another alignment pin. Green dashed lines and arrows indicate alignment.</p>

4.16. Check Exhaust

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	2			

Consider Safety Instructions!

Description	
<p>To check exhaust, proceed as follows:</p> <ol style="list-style-type: none"> 1. Ensure that tool is in teach mode. 2. In case of Gyrset® coater: Open the Gyrset® cover via MMC software. 3. Move the dispense arm in home position (via the MMC software) 4. Switch off the tool and open the doors. 5. Remove the splash guard ring, remove the chuck, the insert ring and the process bowl. Also refer to section 'Coater Bowl: Clean Insert Ring and Coater Bowl' on page 59. 6. Visually inspect exhaust (1) from above for contamination. 7. Check exhaust lines for proper seating and tightness. 8. Check exhaust during bowl cleaning. <p>In case of contaminations:</p> <ol style="list-style-type: none"> 9. Clean or replace exhaust tubes. Also refer to section 'Clean Exhaust' on page 63. <p>Re-assembly of the module components has to be carried out in reverse order to dis-assembly.</p> <ol style="list-style-type: none"> 10. After the module components have been re-assembled close the tool doors and restore power to the tool. 	 <p>The image shows a 3D CAD model of the coater module's internal components. A callout labeled '1' points to the exhaust area, which is the central part of the process bowl assembly. The model includes the splash guard ring, chuck, insert ring, and process bowl, along with various mechanical parts and a dispense arm.</p>

4.17. Clean Exhaust

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
as required	10		<ul style="list-style-type: none"> • Particle-free cleanroom wipes • Solvent 	<ul style="list-style-type: none"> • Exhaust Tube




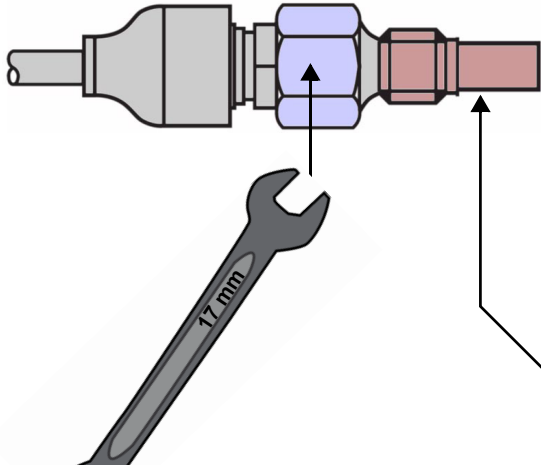

Consider Safety Instructions!

Description	
<p>Call SUSS Service!</p> <ol style="list-style-type: none"> 1. Switch off the tool and open the doors. 2. Disassemble the exhaust tubes from below the process chamber by loosening the corresponding screws. 3. Clean exhaust tubes with solvent. Use particle-free cleanroom wipe to dry the tubes. 4. If media is detected in the exhaust tube, open tool's rear side to check the exhaust from this side. Therefore loosen all corresponding screws. 5. Then re-assemble the cleaned tubes or replace them by new ones, if required. 6. Close the tool doors. 7. Restore power to the tool. 	<p>below process cup</p>

4.18. Exhaust: Cleaning Air Flow sensor

Interval	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
100	10	<ul style="list-style-type: none"> Open end wrench 17mm 	<ul style="list-style-type: none"> Particle-free cleanroom wipes Solvent 	<ul style="list-style-type: none"> None

Consider Safety Instructions!

Description	
<p>Call SUSS Service!</p> <p>The process chamber exhaust flow is controlled by a sensor and the corresponding control monitor (evaluation unit). The evaluation unit has to be adjusted to the tool-specific value (pre-adjusted by the manufacturer).</p> <p>WARNING! Irritating/ Highly flammable media. Health hazard due to contact and inhalation. Avoid skin and eye contact. Do not inhale. Keep sources of ignition away.</p> <p> Wear safety goggles, gloves and protective clothing.</p> <p> Consider and observe the Material Safety Data Sheets.</p> <p>1. Ensure that tool is in teach mode.</p> <p>Note!  The airflow sensor contains a sensor element which is sensitive to mechanical loading and which must not be touched with hard and pointed objects.</p> <p>2. Loosen the screw of the sensor head with an open-end wrench. 3. Remove the sensor head. Clean it with solvent and dry it afterwards. 4. Install the sensor head back and fasten it with the wrench.</p>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Air flow sensor</p>  </div> <div style="text-align: center;"> <p>Control monitor</p>  </div> </div> <p style="text-align: right;">Sensor head</p>

Description

For more detailed information about the sensor also refer to the corresponding manufacturer's manual.

5. After sensor has been cleaned or replaced the calibration of the airflow monitoring sensor may be necessary.

Calibration of the Airflow Monitoring Sensor



Note!

Connection and calibration must be performed by properly authorized and qualified personnel!

Prerequisite for calibration of the airflow monitoring are:

- sensor already has to be installed
- electrical power is supplied
- exhaust is switched on.



6. Set the selector switch to gaseous media:

7. Apply the operating voltage.

After the power-on delay time (approx. 30s) has elapsed the unit is ready for operation; (during this time flow may be indicated).

8. Close exhaust to the machine or remove the exhaust duct.

9. Adjust the setting potentiometer (4) until the 1st or 2nd red LED comes on.

10. Open exhaust to the machine or reinstall the exhaust duct.

11. Set the present flow and keep it constant.

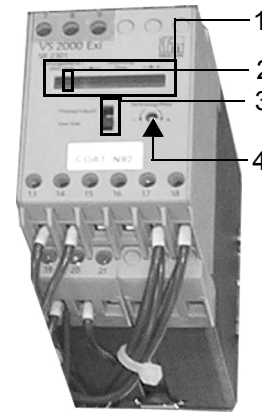
12. Close the exhaust flap at the MMC software: Go to **Overview** and double-click on the respective coater. On the pop-up menu, click on **Service** and tab *DigOut1^a*. Enable **Exhaust Coa(n) Close**.

13. Check the LED display. If required, fine tune the setting potentiometer (4) until less than half of the green LED lights are illuminated.

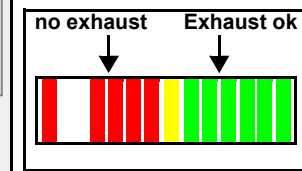
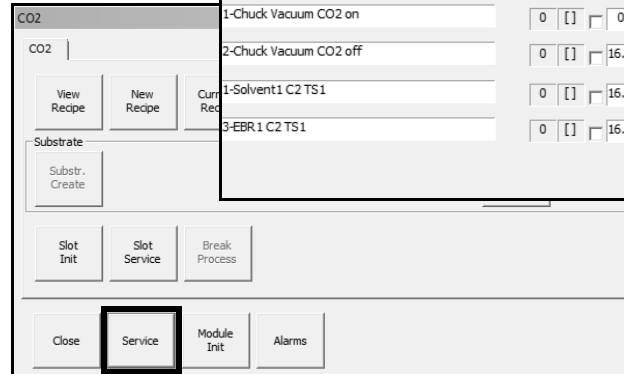
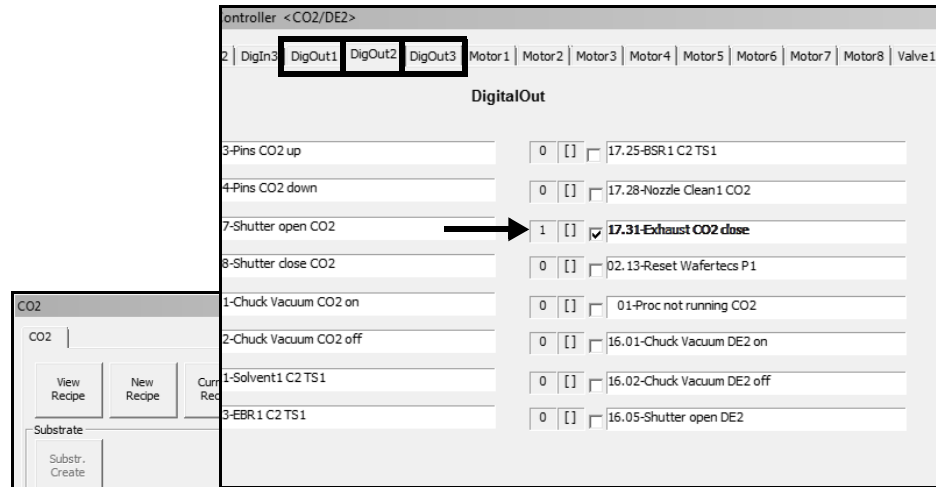
14. Open and close the exhaust flap several times with the MMC and verify that the controller never displays a red LED.

→ A closed exhaust flap must not trigger an exhaust alarm.

For more detailed information about the evaluation unit also refer to the corresponding manufacturer's manual.



No. in Fig.	Denomination	Function
1	Row of Led	<ul style="list-style-type: none"> • red LED is lit: flow below the switch point • yellow LED is lit: relay is energized; flow has reached the switch point. • green LED is lit: flow above the switch point
2	LED red	is lit in case of wire break or short circuit
3	Selector switch medium	
4	Setting potentiometer for switch point	

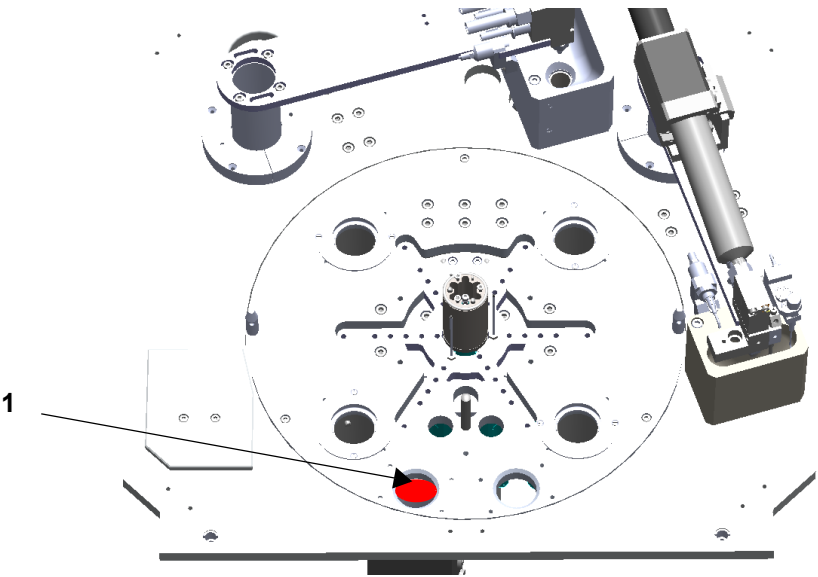


a. There can be more than one DigOut tab (DigOut1, DigOut2, etc.). Click through tabs until you find the particular output.

4.19. Process Chamber Drain: Visually Check Drain

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
20	2			

Consider Safety Instructions!

Description	
<p>To check drain, proceed as follows:</p> <ol style="list-style-type: none"> 1. Ensure that tool is in teach mode. 2. In case of Gyrset® coater: Open the Gyrset® cover. (via the MMC software) 3. Move the dispense arm in home position (via the MMC software) 4. Switch off the tool and open the doors. 5. Remove the splash guard ring, remove the chuck, the bowl insert, the exhaust distributor ring and the process bowl. (refer to refer to section 'Coater Bowl: Clean Insert Ring and Coater Bowl" on page 59) 6. Visually inspect exhaust (1) from above for contamination. 7. Check drain for proper seating and tightness. <p>In case of contaminations:</p> <ol style="list-style-type: none"> 8. Clean or replace drain hoses. (refer to section 'Process Chamber Drain: Visually Check Drain" on page 66) <p>Re-assembly of the module components has to be carried out in reverse order to dis-assembly.</p> <ol style="list-style-type: none"> 9. After the module components have been re-assembled close the tool doors and restore power to the tool. 	

4.20. Visually Check and Empty Drain Bottle (optional)

Interval	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
20	5			•

Consider Safety Instructions!



Note!
The drain bottle is optional.

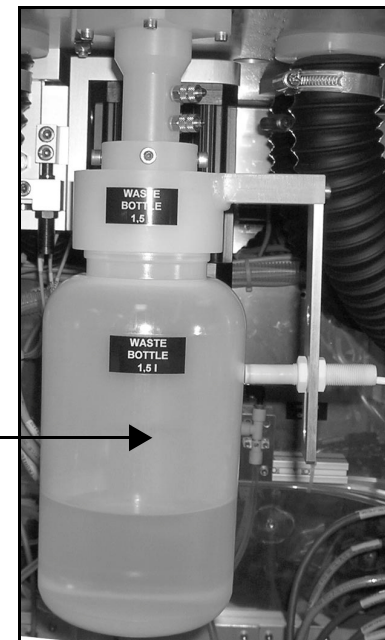


Note!
Also called *waste bottle*.

To check and clean the drain bottle, proceed as follows:

1. Open tool door below the corresponding process module
 2. Visually check media level of drain bottle.
- If the drain bottle is empty, the procedure is completed.*
If the drain bottle is full, continue the procedure to empty the bottle.
3. Ensure that no process is running when removing the drain bottle.
 4. Place cleanroom wipes below the drain bottle to prevent media from dripping into the tool.
 5. Unscrew drain bottle and remove it from the tool.
 6. Drain the bottle.
 7. Dispose the drained media according to the corresponding local and environmental law.
 8. Check the bottle for damages and change bottle if required.
 9. Assemble empty drain bottle.


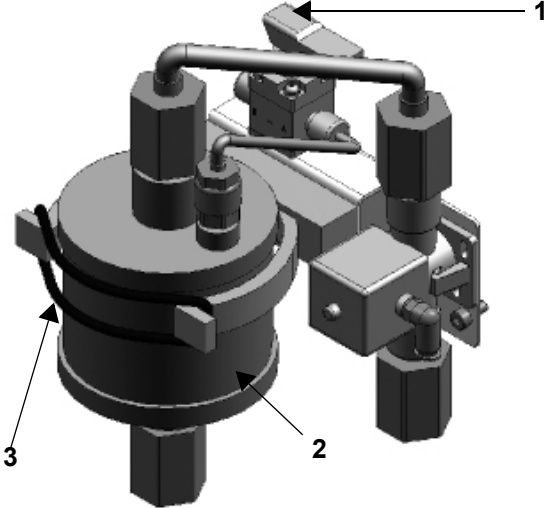
Drain bottle



4.21. Solvent Filter: Replace Filter

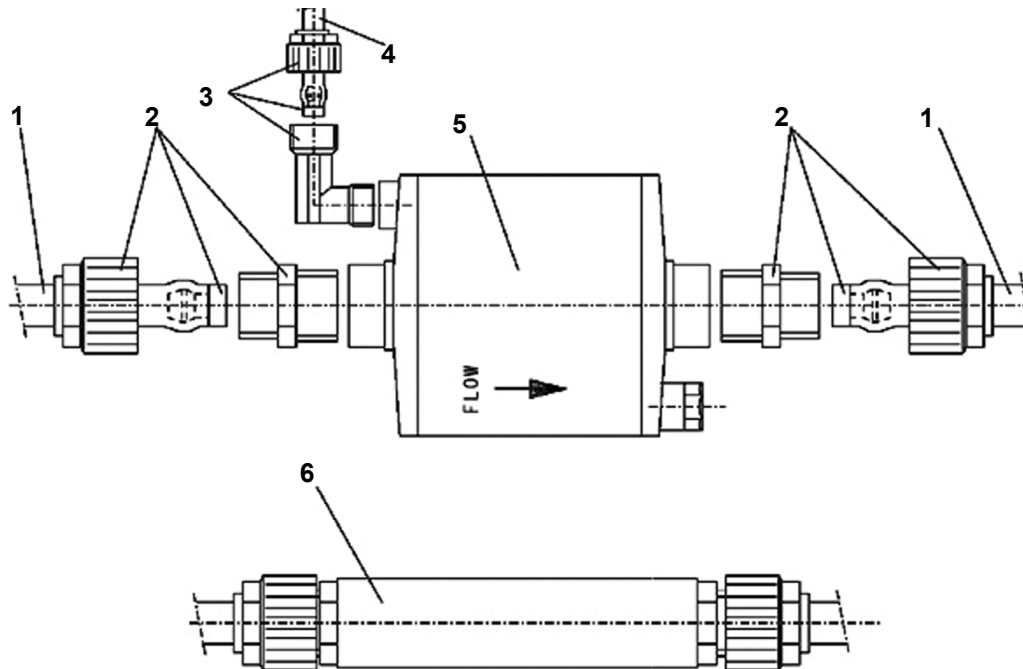
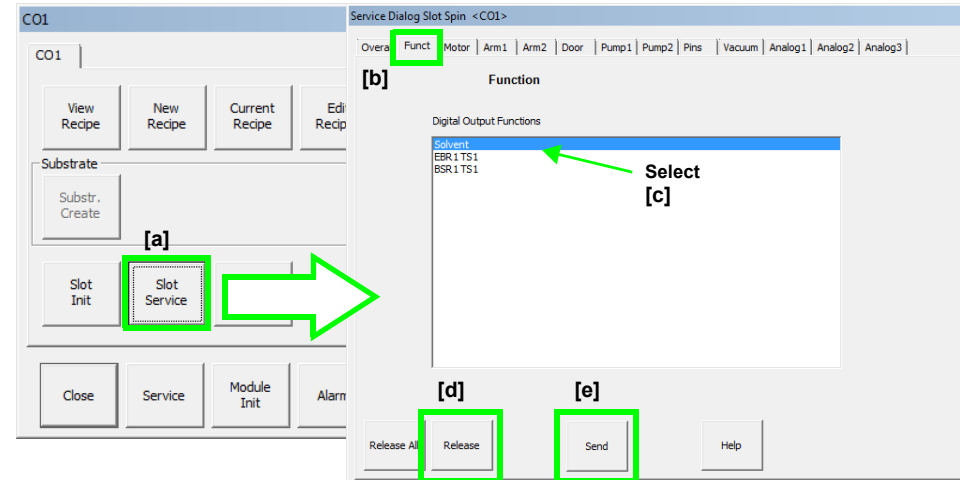
Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	20	<ul style="list-style-type: none"> Open-end wrench set 	<ul style="list-style-type: none"> Particle-free cleanroom wipes Solvent 	<ul style="list-style-type: none"> MILLIPORE Filter Waferguard 0.05µm # 100408

Consider Safety Instructions!

Description	
<p>Call SUSS Service! To replace solvent filter (1), proceed as follows:</p> <p>Note!  Filters are of none de-wetting hydrophobic PTFE. Prewet is not required but the filters should be drained prior installation. Do not allow the filter to dry out.</p> <ol style="list-style-type: none"> Ensure that tool is in teach mode. Open tool door. Depressurize the solvent supply. => Bring the corresponding flip switch in OFF position. Place cleanroom wipe below filter (2). Remove all tubes and fittings from the filter. Remove old teflon tape from the fittings. Remove the rubber band retainer.(3) Remove and properly dispose of the old filter. Dispose used filter according to the relevant local and environmental laws and regulations. Insert the new filter and secure it with the rubber band retainer. Reattach the tubes and fittings. Install fittings with teflon tape. Ensure that fittings are tight. 	

Description

12. Switch the pressure on.
13. Vent the filter using the corresponding venting valve (1).
14. Switch the pressure off and wait for 30 minutes.
15. Switch the pressure on.
16. Vent filter with the venting valve (1).
17. Manually dispense media.
At the MMC go to the **Slot Service** [a] of the respective module.
Select tab **Func.** [b]. Select nozzle from the list [c] and click **On** [d]. Click **Off** [e] to stop dispensing.
18. Check filter visually. If required, vent again.
19. Close the tool door.
20. Module is now ready for operation.




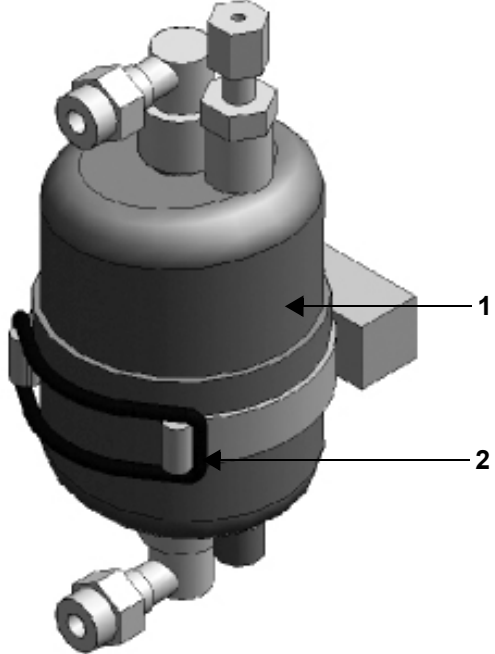


No. in Fig.	Denomination	Part no.
1	PFA Tube ID6/OD8	#101364
2	Fitting PFA	#101320
3	Fitting PFA	#101379
4	PFA Tube ID3/OD4	#101362
5	MILLIPORE Filter Waferguard 0.05µm	#100408
6	Coupling	#102967

4.22. Resist Filter: Replace Filter

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
1000	60	<ul style="list-style-type: none"> Open-end wrench set Pump manufacturer OEM manual(s) Maintenance wafer 	<ul style="list-style-type: none"> Particle-free cleanroom wipe Solvent 	<ul style="list-style-type: none"> Pall Filter DFA 0,2 µm # V28593 Pall Filter DFA 1,0 µm # 100005546




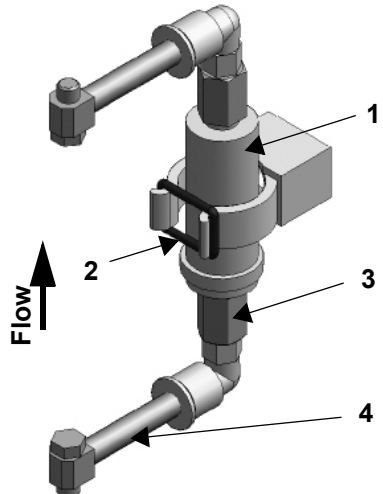
Consider Safety Instructions!

Description	
<p>Replace filter at systems with Wafertec pumps</p> <p>Note!  Procedure is not sufficient for a resist change.</p> <p>Call SUSS Service! To replace a resist filter (1), proceed as follows:</p> <ol style="list-style-type: none"> 1. Ensure that tool is in teach mode. 2. Open tool door. 3. Start the pump program Filter Change. See Wafertec OEM manual. Follow the procedure outlined in the Wafertec OEM manual. <p><i>optional: [a] Turn the CHANGE FILTER mode at the pump controller on. [b] Empty the internal reservoir and the filter by doing many dispenses.</i></p> <ol style="list-style-type: none"> 4. Place cleanroom wipe below filter (1). 5. Remove all tubes and fittings from the filter and mount the fittings to the new filter 6. Secure the new filter with the rubber band retainer.(2) <p>Note!  Dispose of the used filter according to the relevant local and environmental laws and regulations.</p> <p>Note!  To replace resist filters for other pumps follow the OEM manual of the respective pump.</p>	

4.23. Chuck Vacuum Filter: Replace Filter

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
1000	10	<ul style="list-style-type: none"> Open-end wrench set 		<ul style="list-style-type: none"> Vacuum filter: Millipore Filter WGGB 01KPO 0.1µm #2640

Consider Safety Instructions!

Description																
<p>To replace the chuck vacuum filter (located below the process module at the motor), proceed as follows:</p> <ol style="list-style-type: none"> 1. Ensure that tool is in teach mode. 2. Open tool door. 3. Remove the tubes and fittings from the filter. (1) 4. Remove the rubber band retainer (2) and remove the filter. 5. Properly dispose of the old filter. <p>Note!  Dispose used filter according to the relevant local and environmental laws and regulations.</p> <ol style="list-style-type: none"> 6. Insert the new filter. <p>Note!  Filters have arrows to indicate direction of flow! When inserting filter ensure arrows point towards the module!</p> <ol style="list-style-type: none"> 7. Fix the filter by the rubber band retainer and reconnect the tubes and fittings. <p>Note!  When mounting new filter ensure that fittings are tight and free of leaks.</p> <ol style="list-style-type: none"> 8. Close tool door. 9. Module is now ready for operation. 	 <table border="1"> <thead> <tr> <th>No. in Fig.</th> <th>Denomination</th> <th>Part no.</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Millipore Filter WGGB 01KPO 0.1µm</td> <td>#2640</td> </tr> <tr> <td>2</td> <td>Band retainer</td> <td></td> </tr> <tr> <td>3</td> <td>Reducing coupling</td> <td>#56681</td> </tr> <tr> <td>4</td> <td>Tube and fitting corresponding to the pneumatic schematics</td> <td>-</td> </tr> </tbody> </table>	No. in Fig.	Denomination	Part no.	1	Millipore Filter WGGB 01KPO 0.1µm	#2640	2	Band retainer		3	Reducing coupling	#56681	4	Tube and fitting corresponding to the pneumatic schematics	-
No. in Fig.	Denomination	Part no.														
1	Millipore Filter WGGB 01KPO 0.1µm	#2640														
2	Band retainer															
3	Reducing coupling	#56681														
4	Tube and fitting corresponding to the pneumatic schematics	-														

4.24. Media Lines: Visually Check Media Lines

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
20	5			


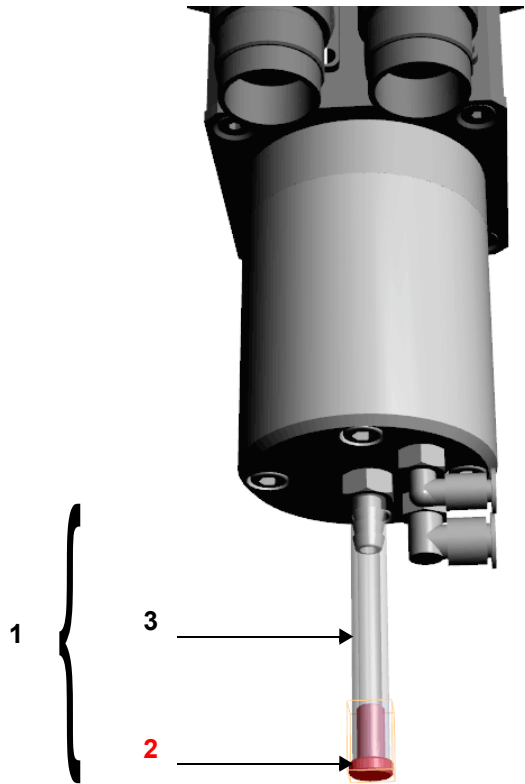
Consider Safety Instructions!

Description	
<ol style="list-style-type: none"> 1. Visually check all media lines for leakages. 2. Visually check all media lines for gas bubbles. 3. Check media area for liquid. 4. If required, vent filters and supply lines located in the media area of the tool. 	

4.25. Vacuum Reservoir: Check Reservoir

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
20	1	Tube cutter (optional)	<ul style="list-style-type: none"> • Particle-free cleanroom wipes • Detergent 	Silicone tube OD=8, ID=5, length=0.06m (=2.4 inch / optional)

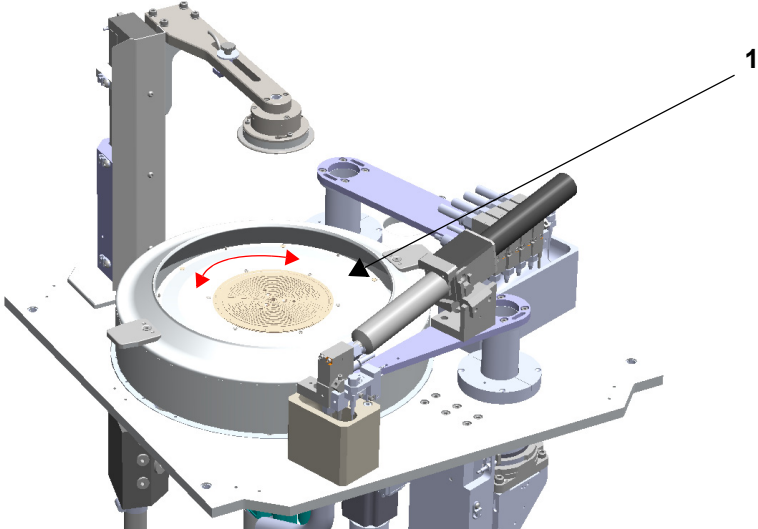
Consider Safety Instructions!

Description	
<p>To check reservoir visually, proceed as follows:</p> <p> Note! Vacuum reservoir (1) must be completely empty.</p> <p>Possible reasons for medium within the vacuum reservoir:</p> <ul style="list-style-type: none"> • Media flows into vacuum reservoir • Chuck is not tight (vacuum leak) • Nozzles are not adjusted properly; nozzle position not correct. <p>In case of contaminations:</p> <ol style="list-style-type: none"> 1. Check vacuum reservoir for liquid. <p>If liquid is found:</p> <ol style="list-style-type: none"> 2. Get some cleanroom cloths. Hold them below the reservoir. 3. Remove the plug (2) to clear tube. 4. Only if required: Replace tube (3). Thereby, clean the tube fitting. 5. Clean plug and put plug back on to the tube end. 	

4.26. Chuck: Test Motor

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
1000	5			

Consider Safety Instructions!

Description	
<p>Check Bearings:</p> <ol style="list-style-type: none"> 1. Ensure that tool is in teach mode. 2. In case of Gyrset coater: Open the Gyrset cover.(via the MMC software) 3. Move the dispense arm in home position (via the MMC software) 1. Switch off tool. 2. Open the tool door. 3. Remove the module housing cover. 4. Turn the chuck (1) by hand. Ensure that rotational movement of chuck is smooth and without noises. 	

4.27. Drive Unit for Dispense Arms: Clean and Grease Pneumatic Lift Unit

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	15		<ul style="list-style-type: none"> Particle-free cleanroom wipes 	<ul style="list-style-type: none"> Soap-free synthetic grease (suitable for cleanroom environment)

Consider Safety Instructions!

Description	
<p>To clean and grease the pneumatic lift unit for the dispense arms, proceed as follows:</p> <ol style="list-style-type: none"> 1. Move the lift to a low position. 2. Switch off tool. <p>Note! Maintenance access to the spindle is via tool's media area.</p> <ol style="list-style-type: none"> 3. Clean the guide shaft (1) using <i>dry</i> cleanroom wipes. (The right drawing shows the slide (2) transparent.) <p>Note! Do not use IPA or other solvent. Components may corrode.</p> <ol style="list-style-type: none"> 4. Apply a thin layer of grease to the parts mentioned above (1). <p>Note! Do not over-lubricate parts! Excessive lubricant causes damage and overspill.</p> <ol style="list-style-type: none"> 5. Re-assemble the module components. 6. Close the tool doors and restore power to the tool. 	

4.28. Drive Unit for Lift Pins: Clean and Grease Lift Unit

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	15		<ul style="list-style-type: none"> Particle-free cleanroom wipes 	<ul style="list-style-type: none"> Soap-free synthetic grease (suitable for cleanroom environment)

Consider Safety Instructions!

Description	
<p>To clean and grease the drive unit for the lift pins, proceed as follows:</p> <ol style="list-style-type: none"> 1. Move pins down (via MMC software). 2. Switch off tool. <p>Note! Maintenance access to the spindle is via tool's media area.</p> <ol style="list-style-type: none"> 3. Clean the guide shaft using dry cleanroom wipes. (The right drawing shows the slide (2) transparent.) <p>Note! Do not use IPA or other solvent. Components may corrode.</p> <ol style="list-style-type: none"> 4. Apply a thin layer of grease to the parts mentioned above (1). <p>Note! Do not over-lubricate parts! Excessive lubricant causes damage.</p> <ol style="list-style-type: none"> 5. Re-assemble the module components. 6. Close the tool doors and restore power to the tool. 	

5. DEVELOPER MODULE

The maintenance procedures described in this section should be performed on a routine basis or with the frequency or at the times indicated. Before carrying out any of these procedures, be sure to lower the pins (if module is equipped with).

Then - unless otherwise indicated in the specific procedure - turn the power of the tool off.

Only qualified, properly trained and authorized persons should perform any maintenance or repair procedure.

Mechanical hazards, electrical hazards, and chemical hazards exist on the Developer Module. The necessary procedures should only be performed by qualified persons. Operations of the tool should be performed within the limits set by the tool provider's procedures and safety precautions.

Read and understand Chapter 1 'Safety Instructions' to be found in the User Manual before performing any procedure.



WARNING!

Corrosive media.

Health hazard due to contact and inhalation.

Avoid skin and eye contact.

Do not inhale.



Wear safety goggles, gloves and protective clothing.



Consider and observe the Material Safety Data Sheets.

Before proceeding with any of the maintenance tasks described in the following, consult the Material Safety Data Sheets for the chemicals in use and observe all applicable safety precautions including, but not limited to, the use of personal protective equipment.

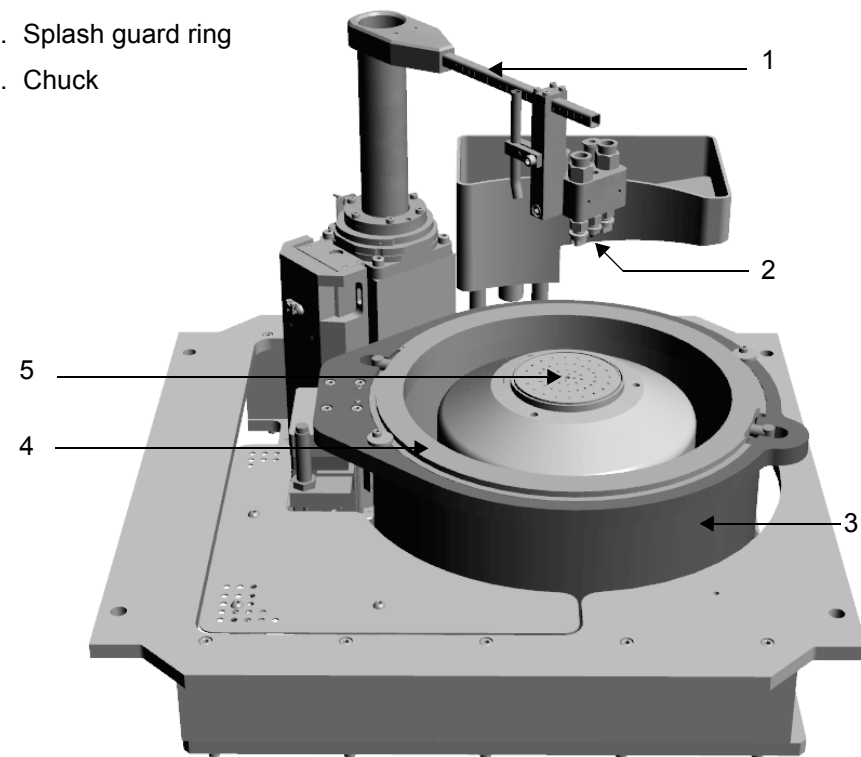


Warning!

All tool components have to cool down to ambient temperature before being cleaned.

All power to the tool must be disconnected per the facilities' lockout/ tagout procedure before servicing to prevent the risk of electrical burn or shock. Access only for qualified and authorized persons and if the tool is switched off.

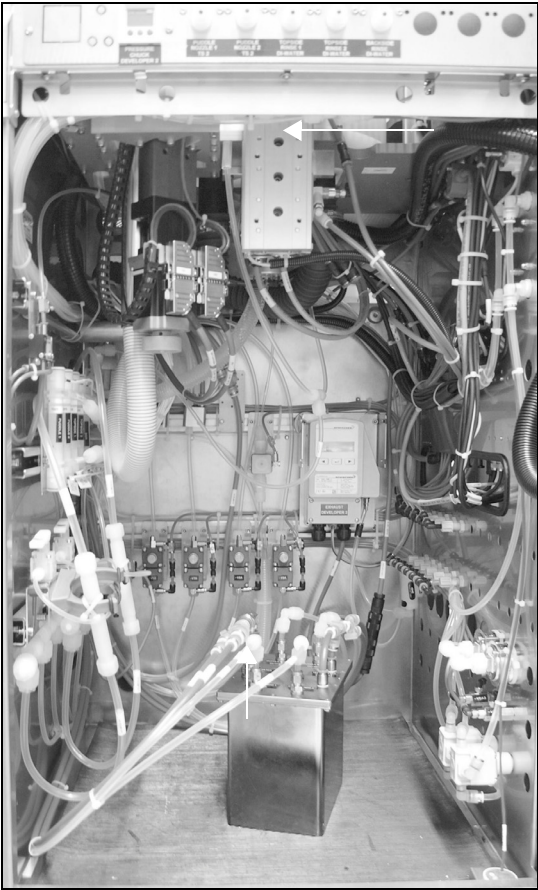
1. Dispense arm
2. Dispense nozzle
3. Process chamber
4. Splash guard ring
5. Chuck



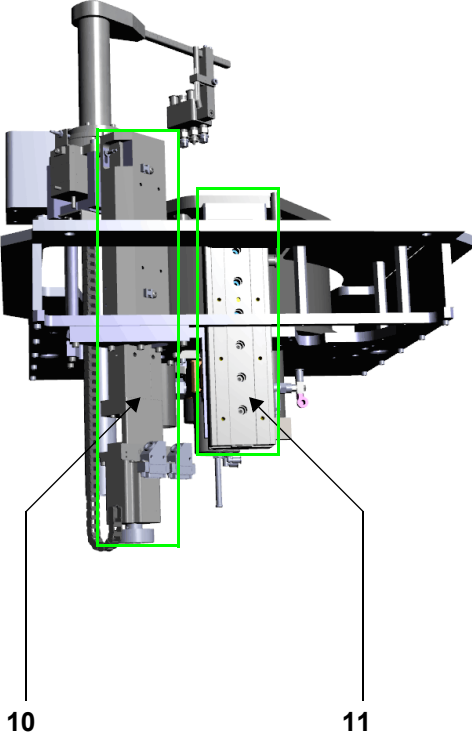
5.1. Preventive Maintenance Overview

View	Part	Interval/ Shifts	To Do	Description/ normal state	Time min.	Page
	1 Nozzles	20	<ul style="list-style-type: none"> • Check nozzles for damage or deformation. • Check vertical position of nozzles. • Check dispense characteristic: exact emission of resist stream. • Check suckback. 	Nozzles must have precise vertical positions, with medium dispense in a solid stream. In case of malfunction or dripping: 1. Vent filters and supply lines. 2. Clean supply lines. 3. Adjust suckback pressure.)	5	81
	1 Nozzles	as required	<ul style="list-style-type: none"> • Clean nozzles. 	Spray nozzle: 20 min.	10	82
	2 Developer bowl	500	<ul style="list-style-type: none"> • Check media built-up on the upper surface of the splash guard ring. • Clean chuck. 		2	83
	2 Developer bowl	as required	<ul style="list-style-type: none"> • Clean bowl/ Splash guard ring. 		10	87
	3 Exhaust	500	<ul style="list-style-type: none"> • Visually check exhaust. 	Exhaust is free of media built-up.	2	89
	3 Exhaust	as required	<ul style="list-style-type: none"> • Clean exhaust. 		10	90
	4 Process chamber drain	20	<ul style="list-style-type: none"> • Visually check for potential clogging. 	No visible residues in the hose.	2	91

Developer Module - Preventive Maintenance Overview

View	Part	Interval/ Shifts	To Do	Description/ normal state	Time min.	Page
	4 Process chamber drain	500	<ul style="list-style-type: none"> • Clean drain. • Replace drain hoses. 		20	92
	5 DI water filter (media area)	500	<ul style="list-style-type: none"> • Replace filter. 		20	93
	6 Nitrogen filter (media area)	1000	<ul style="list-style-type: none"> • Replace filter. 		20	97
	7 Vacuum filter (media area)	1000	<ul style="list-style-type: none"> • Replace filter. 		10	99
	8 Developer filter (media area)	500	<ul style="list-style-type: none"> • Replace filter. 		60	95
	9 Media lines (media area)	50	<ul style="list-style-type: none"> • Visually check for leakage. • Visually check flow-meters. • Backside rinse • Bowl cleaning 	All lines are free of leakage and air bubbles. If necessary, vent filters and supply lines.	5	100
	10 Vacuum tube (spin motor)	50	<ul style="list-style-type: none"> • Visually check for fluids. 	Vacuum tube of the process motor has to be completely empty.	1	101
	Chuck motor (spin motor)	1000	<ul style="list-style-type: none"> • Check ball bearing noise. 		60	102

Developer Module - Preventive Maintenance Overview

View	Part	Interval/ Shifts	To Do	Description/ normal state	Time min.	Page
	10 Drive unit dispense arms	500	<ul style="list-style-type: none"> Clean and grease lift spindle. 	Free of debris and old grease build-up.	15	103
	11 Drive unit for process chamber	1000	<ul style="list-style-type: none"> Clean and grease lift spindle. 	Free of debris and old grease build-up.	10	103

5.2. Media Nozzle: Check Position and Function

Interval	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
20	1			

Consider Safety Instructions!

Visually check nozzle position:

During operation medium stream must be vertical and smooth when contacting the wafer. Otherwise the nozzle has to be re-adjusted.

The nozzle must be vertical to the nozzle arm as shown in adjacent Figure. Deformed or damaged nozzles must be replaced.



Note!

Normal position of nozzle: nozzle (1) is installed vertically in the resist arm (2).

Visually check nozzle function:

1. Ensure that tool is **in teach mode**.
2. Load and start recipe.



Note!

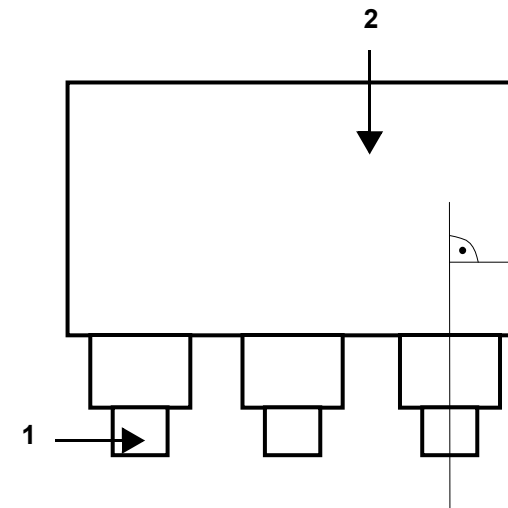
When checking nozzle function, keep a distance of at least 500mm from the nozzle.

3. Check media flow (stream) from the nozzle.
Normal flow is smooth and vertical without deviation. If a malfunction or dripping occur, proceed as follows:
 - Clean the nozzle.
 - Vent the filters and supply lines.
 - Adjust the suckback via the pump controller or the pump.
 - If necessary, clean or replace nozzle, if dirty or damaged, refer to page 82.



Note!


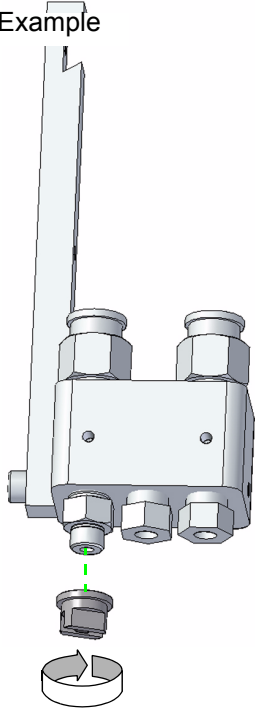
Never wipe the nozzles! Wiping places pressure on the arm and may also leave particles.



5.3. Nozzle: Replace or Clean Nozzles

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
as required	10	<ul style="list-style-type: none"> Open-end wrench set 	<ul style="list-style-type: none"> Particle-free cleanroom wipes PTFE sealing tape 	<ul style="list-style-type: none"> Nozzles (type: see your spare parts list)


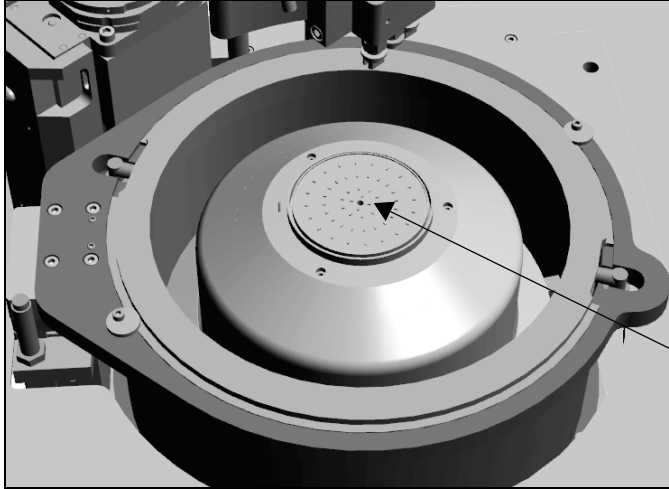
Consider Safety Instructions!

Description	
<p> CAUTION! Risk of nozzle damage. Never wipe the nozzles! Wiping places pressure on the arm and may also leave particles.</p> <p>To replace a nozzle (1), proceed as follows:</p> <ol style="list-style-type: none"> 1. Ensure that tool is in teach mode. 2. Move the dispense arm up and over the center of the chuck (via the service dialog of the MMC control). 3. Switch off the tool. 4. Open tool doors, lift off the module housing cover. 5. Cover chuck with dry cleanroom wipes. 6. Remove the nozzle with an open-end wrench. 7. Clean the nozzle or replace it, if necessary. Properly dispose of the old nozzle. 8. Wrap the end of the new (or cleaned) nozzle with PTFE-sealing tape (2 layers). 9. Install and hand-tighten the nozzle (without force). 10. Tighten the nozzle using the nozzle wrench until it is level with the other nozzles as shown in the adjacent figure. 11. Re-assemble all covers, close tool doors and restore power to the tool. 12. Run several test wafers to ensure proper operation. 	<p style="text-align: center;">Example</p> 


5.4. Chuck: Cleaning

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
as required	10		<ul style="list-style-type: none"> • Particle-free cleanroom wipes • Solvent, detergent, water 	


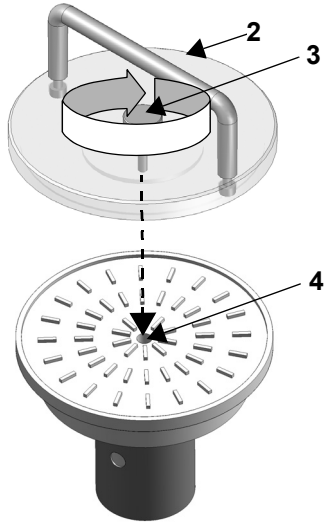
Consider Safety Instructions!

Description	
<p>Chucks are manufactured to very fine tolerances. PM should include inspection of chucks for cleanliness, residue of any kind and mechanical integrity. The use of chucks that have scratches or show signs of abuse can result in poor equipment performance. A visual inspection and routing cleaning with photoresist solvent is usually sufficient.</p> <p> Note! Weekly check for resist particles!</p> <p>To clean the chuck (1), proceed as follows:</p> <ol style="list-style-type: none"> 1. Ensure that tool is in teach mode. 2. Move the process chamber down (via the service dialog of the MMC control). 3. Switch off the tool. 4. Open tool doors. 5. Visually check the chuck for media built-up. 6. In case of media built-up or contamination, disassemble the chuck. Therefore refer to section 'Chuck: Assembly / Disassembly' on page 84. 	

5.5. Chuck: Assembly / Disassembly

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
as required	10	<ul style="list-style-type: none"> Chuck remover 		<ul style="list-style-type: none"> Developer chuck 200 mm

Consider Safety Instructions!

Description	
<p>Chucks are manufactured to very fine tolerances. Attention to quality standards should include inspection of chucks for cleanliness, mechanical integrity, and evidence of residue of any kind as part as normal routine. The use of chucks that have scratches or how signs of abuse can result in poor equipment performance. A visual inspection and routing cleaning with photoresist solvent is usually all that is required.</p> <p>Note!  Weekly check for resist built-up!</p> <p>To clean the chuck (1), proceed as follows:</p> <ol style="list-style-type: none"> 1. Ensure that tool is in teach mode. 2. Move the chamber down (via the service dialog of the MMC control). 3. Switch off the tool and open the doors. 4. Disassemble the chuck using the appropriate chuck remover. (2) Insert the chuck remover in the center hole (4) of the chuck. Fix the chuck remover by turning its screw (3) into the center hole of the chuck until it stops. Slowly pull the chuck remover vertically upwards until the chuck is clear of the shaft. Apply approximately 10lbs. of upward force. Remove the chuck remover and the chuck from the tool. Take care not to disturb or knock the dispense arm! 5. Remove the chuck from the chuck remover. 	
Description	

6. Clean the chuck by wiping it thoroughly with an appropriate solvent underneath an exhausted cleanroom working bench.
Apply the appropriate solvent to a particle-free cleanroom wipe.

**Note!**

In case of doubt, whether a solvent can be used or not, please contact the tool manufacturer!

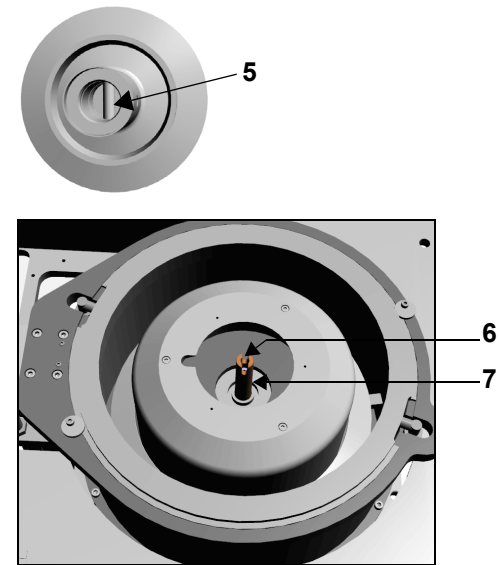
7. After having cleaned the chuck, re-install the chuck.

**Note!**

Ensure that chuck is assembled in correct position!
Otherwise the chuck could be damaged!
Chuck can only be installed in the position shown in the adjacent figure.
Ensure that the pin (5) is aligned to the groove (6) in the motor shaft (7)!

8. Close the tool doors and switch on the tool.


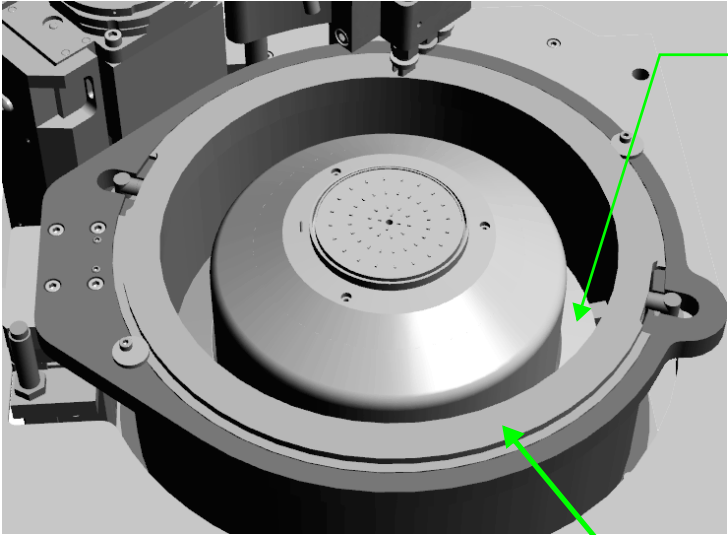
Chuck - rear side



5.6. Developer Bowl: Check Splash Ring

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
20	2			

Consider Safety Instructions!

Description	
<p>Visually check cleanliness of Splash Ring.</p> <p>Note!  During normal operation check cleanliness of bowl in regular intervals.</p> <p>When approximately 30% of the splash ring (1) is covered by media build-up, dismantle the cover ring (2) and remove and clean the splash ring as described on the following pages.</p> <p>For more details about disassembling the Splash Guard Ring also refer to refer to section 'Developer Cup: Clean Splash Ring' on page 87.</p>	<p>Example</p> 

5.7. Developer Cup: Clean Splash Ring

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
as required	5	<ul style="list-style-type: none"> Hexagon head wrench 4.0 mm 	<ul style="list-style-type: none"> Particle-free cleanroom wipes 	


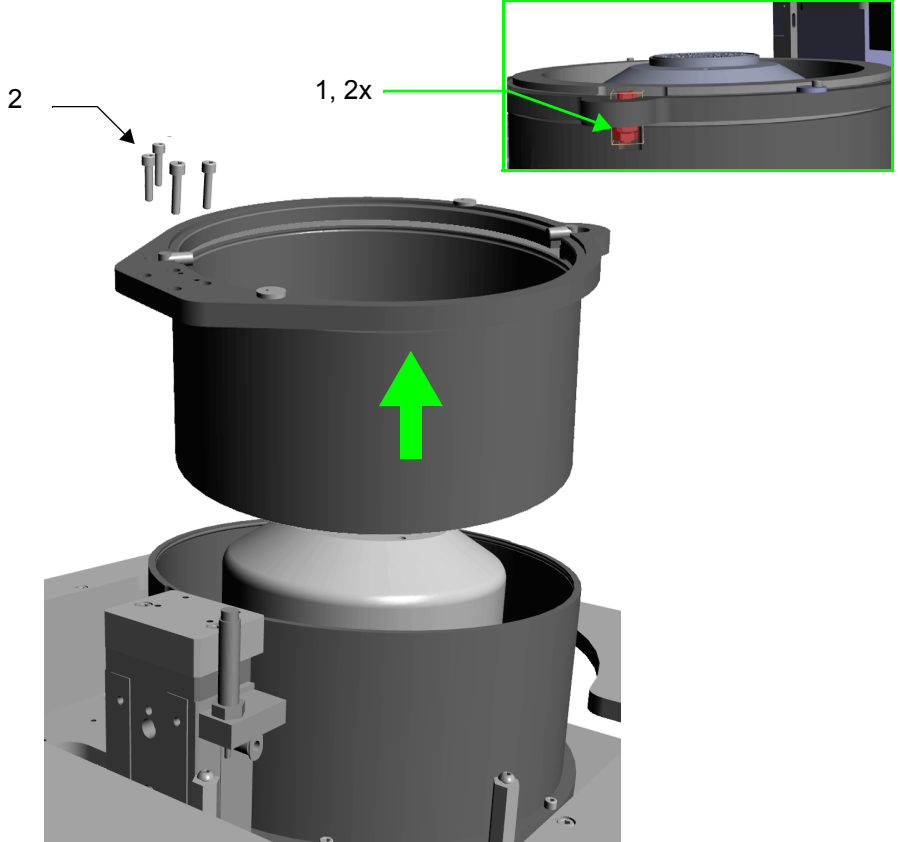
Consider Safety Instructions!

Description	
<p>Prerequisites for removing the splash guard ring:</p> <ol style="list-style-type: none"> 1. Move the developer arm to home position. 2. Remove power from the tool. <p>To clean the splash guard ring, proceed as follows:</p> <ol style="list-style-type: none"> 3. Open tool door. 4. Remove the chuck. 5. Loosen the two screws (1), move the eccentric washer away from the cover ring (2). Remove the cover ring. 6. Remove the splash ring (3). Rotate the splash ring CCW (counterclockwise) by about 15 deg. The splash ring is mounted with a bayonet lock. 7. Clean splash guard ring (on top and rear side) using cleanroom wipes, detergent or solvent and water or replace the splash guard insert by a new one. <p>Note! Inspect bowl for contamination! In case of a strongly contaminated internal bowl an additional bowl cleaning is required! See page 88.</p> <p>Assembly is done in adverse sequence to disassembly.</p> <ul style="list-style-type: none"> • After having re-assembled splash ring, chuck and cover ring, close tool door. <p>Place the recess (3x) at the bottom of the splash ring (3) on to the rectangular bold (4, 3x). Rotate splash ring CW to lock bayonet.</p>	

5.8. Developer Cup: Clean entire internal bowl

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
as required	25	<ul style="list-style-type: none"> Hexagon head wrench 4.0 mm 	<ul style="list-style-type: none"> Particle-free cleanroom wipes 	


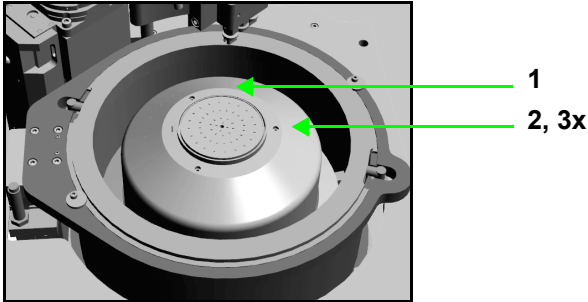
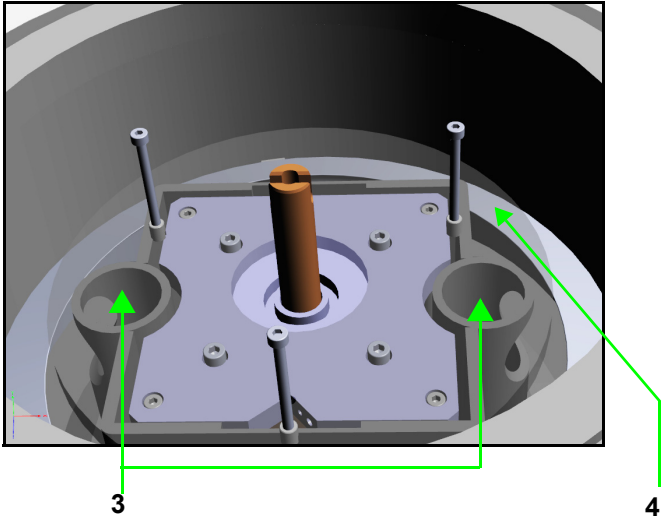
Consider Safety Instructions!

Description	
<p>Note!  Cleaning the internal bowl is only required when certain media is being used that cannot be sufficiently removed by the chamber clean. In most cases the splash ring cleaning function is sufficient. See page 87.</p> <p>Prerequisites for removing the bowl:</p> <ol style="list-style-type: none"> 1. Move the developer arm to home position. 2. Remove power from the tool. <p>To clean the bowl, proceed as follows:</p> <ol style="list-style-type: none"> 3. Open tool door and remove the chuck. 4. Remove the splash ring. See page 87. 5. Loosen the chamber rinse fittings (1), 2x, and remove tubes. Use cleanroom wipes to prevent water from draining out. 6. Disassemble the splash guard ring. Loosen the four fixation screws (2) of the support of the inner bowl and carefully lift off the complete unit; slide it out and away from the dispense arm. Be careful not to damage the dispense arm and the nozzles. 7. Clean splash guard ring (on top and rear side) using cleanroom wipes, detergent or solvent and water or replace the splash guard insert by a new one. <p>Assembly is done in adverse sequence to disassembly.</p> <ul style="list-style-type: none"> • After having re-assembled Splash Guard Ring, chuck and chamber rinse fittings, close tool door. 	

5.9. Check Exhaust and Drain

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	10			

Consider Safety Instructions!

Description	
<p>To check exhaust, proceed as follows:</p> <ol style="list-style-type: none"> 1. Ensure that tool is in teach mode. 2. Move the process chamber to its low position and the developer arms to home position (via the MMC software). 3. Switch off the tool. 4. Open tool doors, lift off the module housing cover. 5. Remove chuck and splash ring. 6. Remove the motor shaft covers (1) by loosening its 3 screws (2) and remove it. Unplug backside rinse (option). Be very careful with the lift pins. 7. Visually inspect exhaust (3) for contamination. 8. Check exhaust for proper seat and tightness. 9. Check the drain. <p>In case of contaminations:</p> <ol style="list-style-type: none"> 10. Clean or replace exhaust tubes. Also refer to section 'Clean Exhaust' on page 90. 11. After cleaning has been finished, re-assemble the module components. <p>Re-assembly of the module components has to be carried out in reverse order to disassembly.</p> <ol style="list-style-type: none"> 12. After the module components have been re-assembled close the tool doors and restore power to the tool. <p>Note!  The round disc (4) is shown transparent on the right drawing for illustration, only. Usually, it is nontransparent and welded to the parts below. The disc cannot be removed.</p>	 

5.10. Clean Exhaust

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
as required	10	<ul style="list-style-type: none"> Hexagonal wrench set, metric 	<ul style="list-style-type: none"> Particle-free cleanroom wipes Solvent 	<ul style="list-style-type: none"> Exhaust Tube

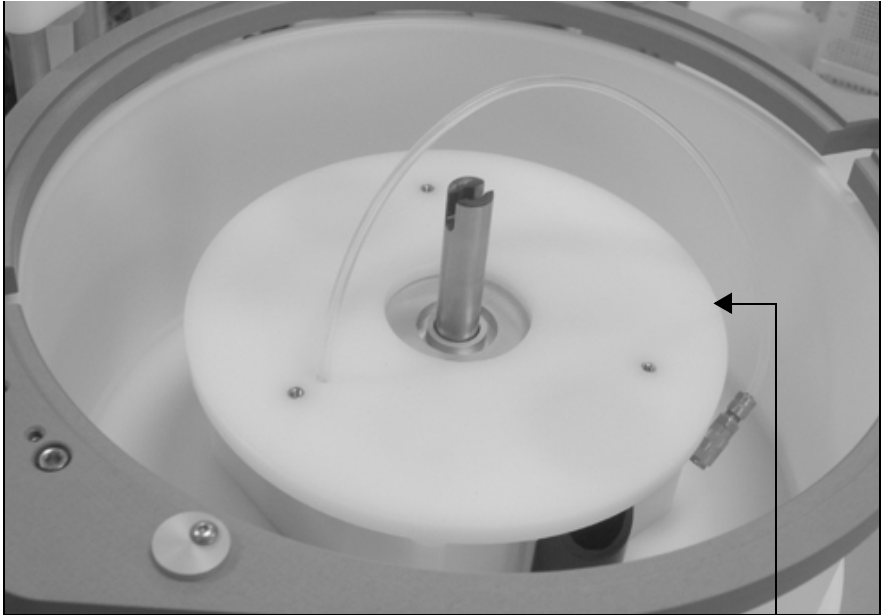
Consider Safety Instructions!

Description	
<p>Call SUSS Service!</p> <ol style="list-style-type: none"> Switch off the tool. Open tool door below the corresponding process module. Disassemble the exhaust tube below process cup by loosening the corresponding tube clamp. Place cleanroom wipes below the exhaust to prevent media from dripping into the media drawer. Clean exhaust tubes with solvent. Use particle-free cleanroom wipe to dry tubes. If media is detected in the exhaust tube, open rear side of the tool to check exhaust from this side. Therefore loosen all screws of the corresponding tool cover you want to remove. Then re-assemble cleaned tubes or replace by new ones, if required. Dispose off the media and used cleanroom wipes according to the local and environmental regulations. 	

5.11. Process Chamber Drain: Visually Check Drain

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
20	2	<ul style="list-style-type: none"> • Chuck remover • Hexagonal wrench set, metric 		



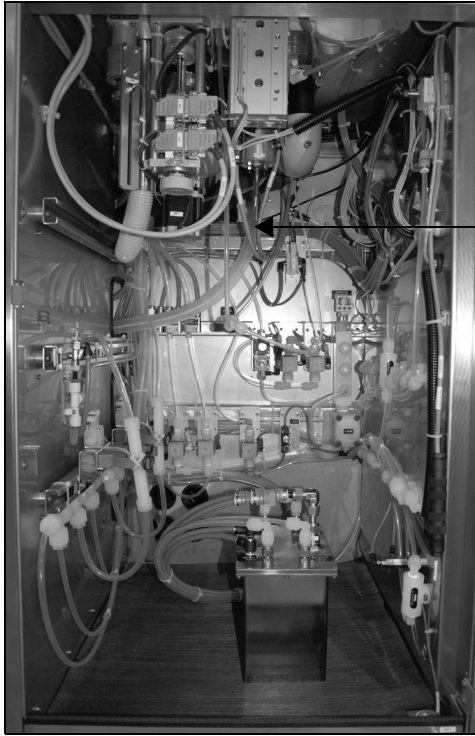
Consider Safety Instructions!

Description	
<p>To check drain, proceed as follows:</p> <ol style="list-style-type: none"> 1. Ensure that tool is in teach mode. 2. Move the process chamber to its low position and the developer arms to home position (via the MMC software). 3. Switch off the tool. 4. Open tool doors, lift off the module housing cover. 5. Remove chuck, exhaust distributor and splash guard ring. 6. Visually inspect drain (1) from above for contamination. 7. Check exhaust for proper seat and tightness. 8. Check exhaust during cup cleaning. See page 88. 9. Check drain for proper seat and tightness. 10. Check drain during cup cleaning. See page 88.2 <p>In case of contaminations:</p> <ol style="list-style-type: none"> 11. Disassemble drain tube. (refer to refer to section 'Process Chamber Drain: Clean Drain" on page 92) 12. Clean or replace drain tubes. 13. After cleaning has been finished, re-assemble the module components. <p>Re-assembly of the module components has to be carried out in reverse order to disassembly.</p> <ol style="list-style-type: none"> 14. After the module components have been re-assembled close the tool doors and restore power to the tool. 	 <p style="text-align: right;">drain</p>

5.12. Process Chamber Drain: Clean Drain

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
as required	20		<ul style="list-style-type: none"> • Cleanroom wipes • Solvent 	<ul style="list-style-type: none"> • Flexible pipe • Kalrez O-ring

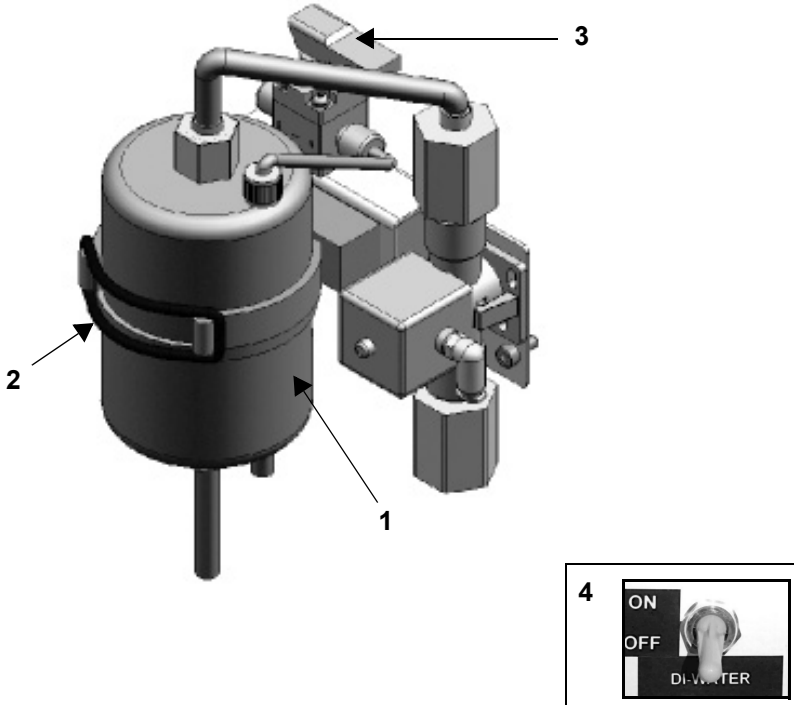
Consider Safety Instructions!

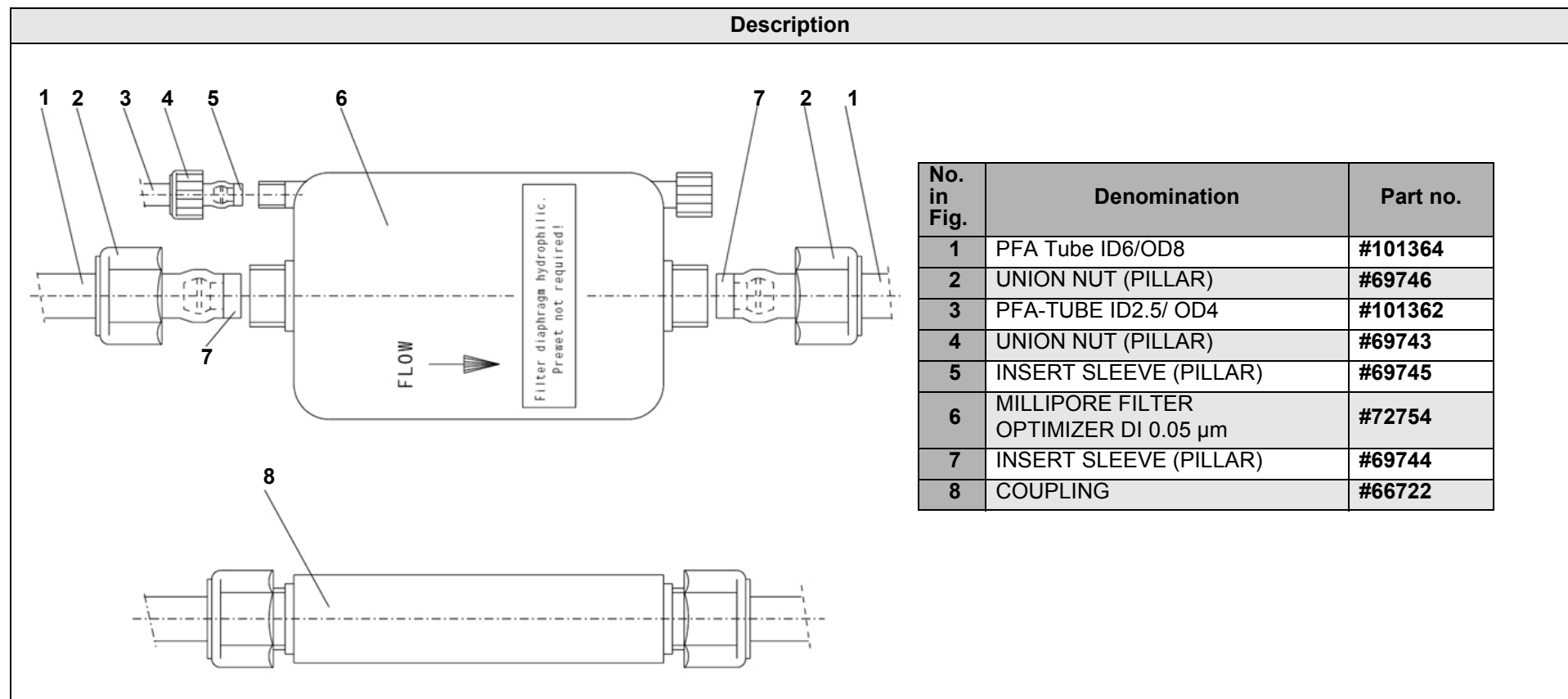
Description	
<p>To clean process chamber drain, proceed as follows:</p> <ol style="list-style-type: none"> 1. Switch off the tool. 2. Open the tool doors. <p>Note!  Place cleanroom wipes below the exhaust to prevent media from dripping into the media drawer.</p> <ol style="list-style-type: none"> 3. Dis-assemble the drain pipe below process module. 4. Clean drain pipe(1) with solvent. Use particle-free cleanroom wipe to dry pipe. 5. Then re-assemble pipe or replace by a new one, if required. <p>Note!  Properly dispose off the media and used cleanroom wipes according to the local and environmental regulations.</p>	

5.13. DI Water Filter: Replace Filter

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	20	<ul style="list-style-type: none"> Open wrench set 	<ul style="list-style-type: none"> Particle-free cleanroom wipes 	<ul style="list-style-type: none"> MILLIPORE Filter OPTIMIZER DI 0.05 µm; # 72754

Consider Safety Instructions!

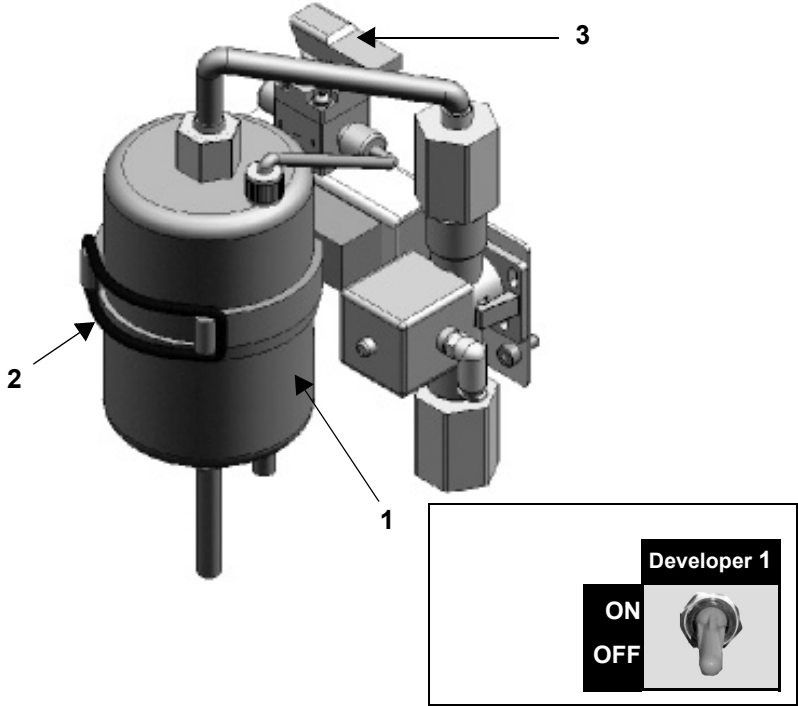
Description	
<p>Call SUSS Service! To replace DI water filter (1), proceed as follows:</p> <ol style="list-style-type: none"> 1. Ensure that tool is in teach mode. 2. Open tool door. 3. Depressurize the DI water supply by switching off the DI water supply shut-off valve. (4) 4. Place cleanroom wipe below filter (1). 5. Remove the tubes and fittings from the filter. 6. Remove the rubber band retainer (2). 7. Remove and properly dispose the old filter. <p>Note! Dispose used filter according to the relevant local and environmental laws and regulations.</p> <ol style="list-style-type: none"> 8. Insert the new filter and secure it with the rubber band retainer. Use teflon tape. 9. Reattach the tubes and fittings. <p>Note! When mounting new filter ensure that fittings are tight and free of leaks.</p> <ol style="list-style-type: none"> 10. Switch ON the DI water supply (flip switch in ON position). 11. Vent the filter using the corresponding vent button (3) or valve. 12. Slowly fill up the new filter with DI water. 13. Vent the dispense lines. 14. Close tool door. 15. Module is now ready for operation. 	



5.14. Developer Filter: Replace Filter

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	60	<ul style="list-style-type: none"> Open wrench set 	<ul style="list-style-type: none"> Particle-free cleanroom wipe 	<ul style="list-style-type: none"> MILLIPORE Filter OPTIMIZER DEV 0.05 µm; # 100483

Consider Safety Instructions!


Description	
<p>Call SUSS Service! To replace developer filter (1), proceed as follows:</p> <ol style="list-style-type: none"> 1. Ensure that tool is in teach mode. 2. Depressurize the developer supply. => Bring the corresponding flip switch in OFF position. 3. Open tool door. 4. Place cleanroom wipe below filter (1). 5. Remove the tubes and fittings from the filter. Remove old teflon tape from the fittings. 6. Remove the rubber band retainer. (2) 7. Remove the filter. 8. Dispose used filter according to the relevant local and environmental laws and regulations. 9. Insert the new filter and secure it with the rubber band retainer. Use teflon tape. 10. Reattach the tubes and fittings. 11. Check that the fittings are tight and free of leaks. 12. Re-pressurize the developer supply (flip switch in ON position). 13. Vent the filter using the corresponding venting valve. (3) Venting is finished as soon as the output line is free of air bubbles. 14. Slowly fill up the new filter with developer medium. 15. Vent dispense lines. 16. Close tool door. 17. Module is now ready for operation. 	

Description																												
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #cccccc;"> <th style="text-align: center;">No. in Fig.</th> <th style="text-align: center;">Denomination</th> <th style="text-align: center;">Part no.</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>PFA Tube ID6/OD8</td> <td style="text-align: center;">#101364</td> </tr> <tr> <td style="text-align: center;">2</td> <td>UNION NUT PILLAR</td> <td style="text-align: center;">#69746</td> </tr> <tr> <td style="text-align: center;">3</td> <td>PFA-TUBE ID2.5/ OD4</td> <td style="text-align: center;">#101362</td> </tr> <tr> <td style="text-align: center;">4</td> <td>UNION NUT PILLAR</td> <td style="text-align: center;">#69743</td> </tr> <tr> <td style="text-align: center;">5</td> <td>INSERT SLEEVE PILLAR</td> <td style="text-align: center;">#69745</td> </tr> <tr> <td style="text-align: center;">6</td> <td>MILLIPORE FILTER OPTIMIZER DEV 0.05 μm</td> <td style="text-align: center;">#100483</td> </tr> <tr> <td style="text-align: center;">7</td> <td>INSERT SLEEVE PILLAR</td> <td style="text-align: center;">#69744</td> </tr> <tr> <td style="text-align: center;">8</td> <td>COUPLING</td> <td style="text-align: center;">#66722</td> </tr> </tbody> </table>	No. in Fig.	Denomination	Part no.	1	PFA Tube ID6/OD8	#101364	2	UNION NUT PILLAR	#69746	3	PFA-TUBE ID2.5/ OD4	#101362	4	UNION NUT PILLAR	#69743	5	INSERT SLEEVE PILLAR	#69745	6	MILLIPORE FILTER OPTIMIZER DEV 0.05 μm	#100483	7	INSERT SLEEVE PILLAR	#69744	8	COUPLING	#66722
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7	INSERT SLEEVE PILLAR	#69744																										
8	COUPLING	#66722																										

5.15. Nitrogen Filter: Replace Filter

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
1000	20	<ul style="list-style-type: none"> • Open-end wrench • Screw driver 		<ul style="list-style-type: none"> • Nitrogen filter: PALL - FILTER FLF 6001 V002PV 0.02 µm # 11983

Consider Safety Instructions!


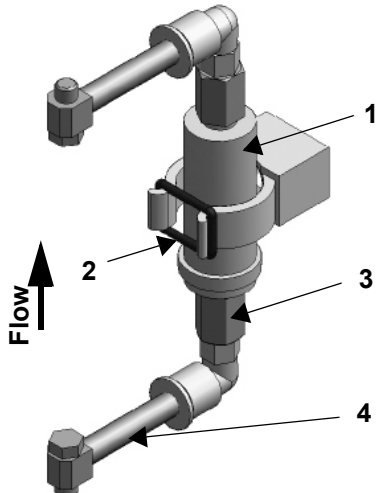
Description	
<p>To replace nitrogen filter, proceed as follows:</p> <ol style="list-style-type: none"> 1. Ensure that tool is in teach mode. 2. Open tool door. 3. Remove all inlet and outlet lines and fittings from the filter. 4. Remove the rubber band retainer and remove the filter. 5. Properly dispose of the old filter. 6. Dispose used filter according to the relevant local and environmental laws and regulations. 7. Insert the new filter. <p> Note! Filters have arrows to indicate direction of flow! When inserting filter ensure arrows point towards the module!</p> <ol style="list-style-type: none"> 8. Fix the filter by the rubber band retainer and reconnect the supply lines and fittings. 9. Ensure that the line ends fit properly. 10. Close tool door. 11. Module is now ready for operation. 	

Description		
No. in Fig.	Denomination	Part no.
1	PFA Tube ID4/OD6	#101363
2	SMC FITTING PP	#101134
3	PFA - TUBE ID6/ OD8 Tube length 30mm	#101364
4	STRAP	#100423
5	PALL - FILTER FLF 6001 V002PV 0.02 µm	#11983
6	STRAIGHT FITTING	#26648

5.16. Vacuum Filter: Replace Filter

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
1000	20	<ul style="list-style-type: none"> Open wrench set Screw driver 		<ul style="list-style-type: none"> Vacuum filter: Millipore Filter WGGB 01KPO 0.1µm # 2640

Consider Safety Instructions!

Description																
<p>To replace chuck vacuum filter (located below the process module at the motor), proceed as follows:</p> <ol style="list-style-type: none"> 1. Ensure that tool is in teach mode. 2. Open tool door. 3. Remove the tubing from the filter. (1) 4. Remove the rubber band retainer (2) and remove the filter. 5. Properly dispose of the old filter. 6. Dispose used filter according to the relevant local and environmental laws and regulations. 7. Insert the new filter. <p>Note!  Filters have arrows to indicate direction of flow! When inserting filter ensure arrows point towards the module!</p> <ol style="list-style-type: none"> 8. Fix the filter by the rubber band retainer and reconnect the lines and fittings. 9. Ensure line ends fit properly. 10. Close tool door. 11. Module is now ready for operation. 	 <table border="1"> <thead> <tr> <th>No. in Fig.</th> <th>Denomination</th> <th>Part no.</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Millipore Filter WGGB 01KPO 0.1µm</td> <td>#2640</td> </tr> <tr> <td>2</td> <td>Band retainer</td> <td></td> </tr> <tr> <td>3</td> <td>Reducing coupling</td> <td>#56681</td> </tr> <tr> <td>4</td> <td>Tube and fitting corresponding to the pneumatic schematics</td> <td>-</td> </tr> </tbody> </table>	No. in Fig.	Denomination	Part no.	1	Millipore Filter WGGB 01KPO 0.1µm	#2640	2	Band retainer		3	Reducing coupling	#56681	4	Tube and fitting corresponding to the pneumatic schematics	-
No. in Fig.	Denomination	Part no.														
1	Millipore Filter WGGB 01KPO 0.1µm	#2640														
2	Band retainer															
3	Reducing coupling	#56681														
4	Tube and fitting corresponding to the pneumatic schematics	-														

5.17. Media Lines: Visually Check Media Lines

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
20	10			


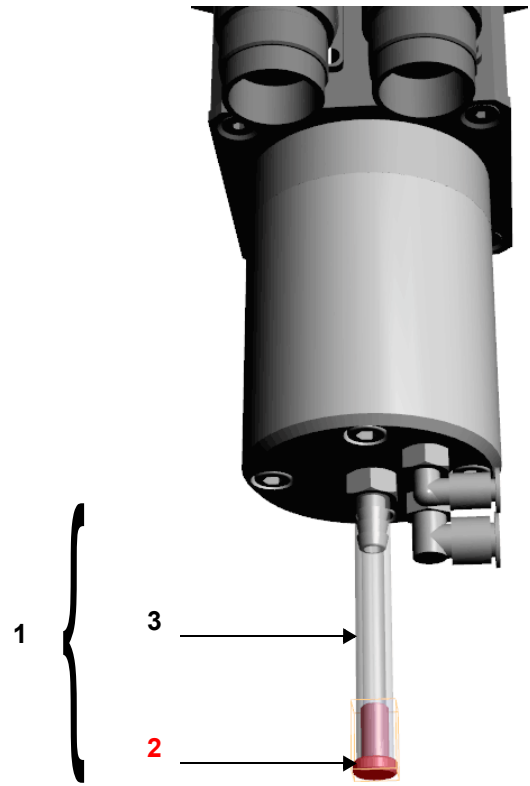
Consider Safety Instructions!

Description	
<p>Procedure:</p> <ul style="list-style-type: none"> • Visually check all media lines for leakages. • Visually check all media lines for gas bubbles. • Check media drawer for liquid. • If required, vent filters and supply lines located in media cabinet. 	

5.18. Vacuum Reservoir: Check Reservoir

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
20	1		<ul style="list-style-type: none"> • Particle-free cleanroom wipes • Detergent 	

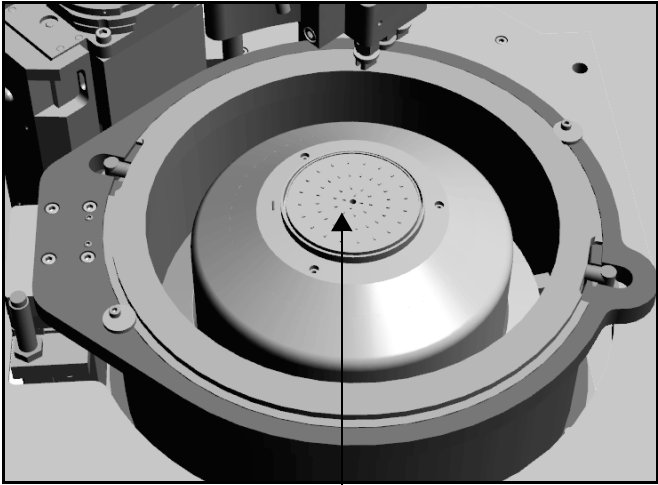
Consider Safety Instructions!

Description	
<p>To check reservoir visually, proceed as follows:</p> <p> Note! Vacuum reservoir (1) must be completely empty.</p> <p>Possible reasons for medium within the vacuum reservoir:</p> <ul style="list-style-type: none"> • Media flows into vacuum reservoir • Chuck is not tight (vacuum leak) • Nozzles are not adjusted properly; nozzle position not correct. <p>In case of contaminations:</p> <ol style="list-style-type: none"> 1. Check vacuum reservoir for liquid. <p>If liquid is found:</p> <ol style="list-style-type: none"> 2. Get some cleanroom cloths. Hold them below the reservoir. 3. Remove the plug (2) to clear tube. 4. Only if required: Replace tube (3). Thereby, clean the tube fitting. 5. Clean plug and put plug back on to the tube end. 	

5.19. Chuck: Test Motor

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
1000	10			

Consider Safety Instructions!

Description	
<p>Check Bearings:</p> <ol style="list-style-type: none"> 1. Switch off tool. 2. Open the door. 3. Turn the chuck (1) by hand. Ensure that rotational movement of chuck is smooth and without noises. 	 <p>1</p>

5.20. Arm Drive Unit: Clean and Grease Spindle

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
2000	15		<ul style="list-style-type: none"> Particle-free cleanroom wipes 	<ul style="list-style-type: none"> Soap-free synthetic oil Oil gun


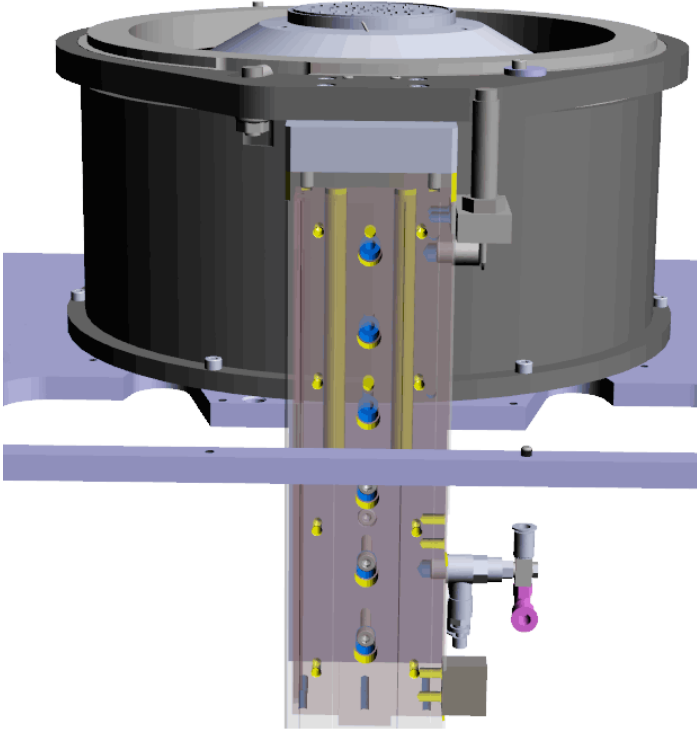
Consider Safety Instructions!

Description	
<p>To clean and grease the drive unit proceed as follows:</p> <ol style="list-style-type: none"> 1. Drive the arm to the min. position. 2. Turn off the machine. 3. Clean the arm axis (1) using dry cleanroom wipes. 4. Clean the angular linear ball spindle (2) and guide shaft (3) using dry cleanroom wipes. <p>Note! Do not use IPA or other solvent. Components may corrode.</p> <ol style="list-style-type: none"> 5. Apply grease to the nipple (4) at the top of the carriage. <p>Note! Drawing (A) shows the carriage. The rotational motor mounted on the carriage is not shown.</p>	

5.21. Drive Unit for Process Chamber: Clean and Grease Compact Cylinder

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
—	—		<ul style="list-style-type: none"> • Particle-free cleanroom wipes (option) 	<ul style="list-style-type: none"> • Turbine oil (option)

Consider Safety Instructions!

Description	
<p> Note! The cylinder requires no greasing. If, for whatever reason, greasing becomes required, use turbine oil only. Other oil types damage the cylinder.</p>	

6.SPRAYCOATER MODULE

The maintenance procedures described in this section should be performed on a routine basis or with the frequency indicated. Before carrying out any of these procedures, be sure to lower the pins. Then, unless otherwise indicated in the specific procedure, turn the power of the tool off.

Then - unless otherwise indicated in the specific procedure - turn the power of the tool off.

All power to the tool must be disconnected per the facilities' lockout/ tagout procedure before servicing to prevent the risk of electrical burn or shock. Access only for qualified and authorized persons and if the tool is switched off.

Mechanical hazards, electrical hazards, and chemical hazards exist on the Spray Coater Module. The necessary procedures should only be performed by qualified persons. Operations of the tool should be performed within the limits set by the tool provider's procedures and safety precautions.

Read and understand Chapter 1 'Safety Instructions' to be found in the User Manual before performing any procedure.



CAUTION!

Hot Surfaces!

Risk of burns caused by touching.

Wait until surface has cooled down below 40°C.

Wear protective gloves when touching it!



Wear protective equipment.

Consider and observe the Material Safety Data Sheets.



Before proceeding with any of the maintenance tasks described in the following, consult the Material Safety Data Sheets for the chemicals in use and observe all applicable safety precautions including, but not limited to, the use of personal protective equipment.

Only qualified, properly trained and authorized persons should perform any maintenance or repair procedure.



Caution - Pinch Point + Mechanical Entanglement Hazard!
Do not touch the inside of the process chamber during operation - rotating chuck, wafer and moving arm within the process chamber. Danger of crushing by process chamber closing mechanism. Risk of being hit by a wafer or being entangled by the chuck. Access only for qualified and authorized personnel and if the tool is switched off.



WARNING!
Corrosive media.
Health hazard due to contact and inhalation.
Avoid skin and eye contact.
Do not inhale.



Wear safety goggles, gloves and protective clothing.



Consider and observe the Material Safety Data Sheets.



WARNING!
Irritating/ Highly flammable media.
Health hazard due to contact and inhalation.



Avoid skin and eye contact.
Do not inhale.
Keep sources of ignition away.



Wear safety goggles, gloves and protective clothing.

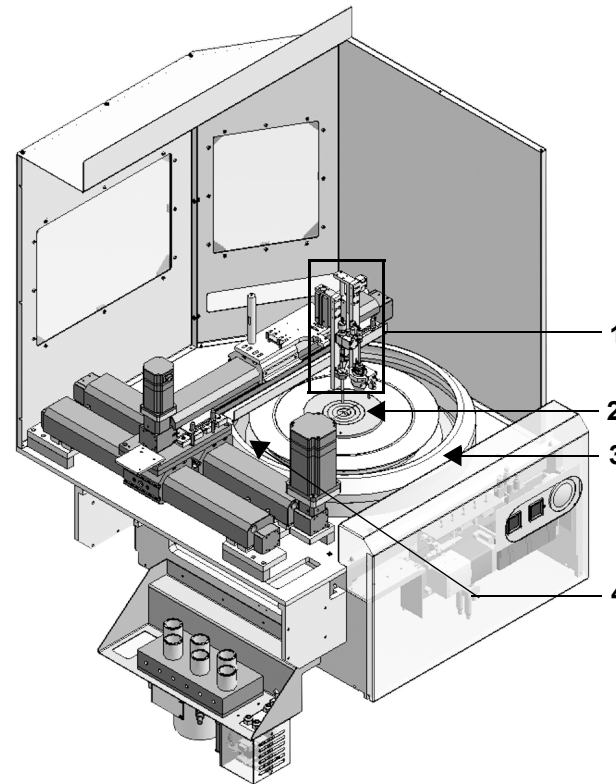


Consider and observe the Material Safety Data Sheets.



Warning!
Dry running may damage the micro pump! Avoid particle contamination of the inner parts of the pump! Pump can be damaged! Costs for repairing or exchanging the pump due to failures caused by particles are excluded of warranty and will not be covered by SUSS. Read the corresponding manufacturer's manual!

Spraycoater Module (example)

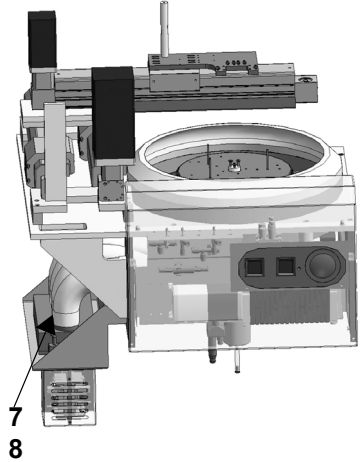




No. in Fig.	Denomination
1	Dispense axis (sled) incl. nozzles
2	Chuck
3	Splash ring
4	Insert ring

6.1. Preventive Maintenance Overview

View	Part	Interval	To Do	Description/ normal state	Time min.	Page
	1 Spray nozzle (resist)	daily	<ul style="list-style-type: none"> Clean nozzle tips. 		10	109
	2 Tubes above the nozzle	200	<ul style="list-style-type: none"> Check tubes and clean surface, if required. 			110
	3 Chuck	after every wafer	<ul style="list-style-type: none"> Check resist built-up on the upper surface of the chuck. Clean chuck. 	Chuck surface is free of resist build-up.	10	111
	4 Chuck check sensor	daily	<ul style="list-style-type: none"> Check sensor for cleanliness and proper function. Clean sensor, if necessary using dry cleanroom wipes and an appropriate detergent. 		2	-
	Heater surface (below the chuck)	weekly	<ul style="list-style-type: none"> Clean heater surface using acetone, if required. (Resist dust deposits on the surface causing vacuum problems) 	Heater surface is free of resist dust.		113
	5 Coater bowl	daily	<ul style="list-style-type: none"> Check resist built-up on the upper surface of the splash guard insert. 	Splash guard insert is free of resist build-up.	2	115
	5 Coater bowl	20	<ul style="list-style-type: none"> Clean bowl, if required. 		10	116
6 Airflow sensor	100	<ul style="list-style-type: none"> Clean sensor, if required. 				118




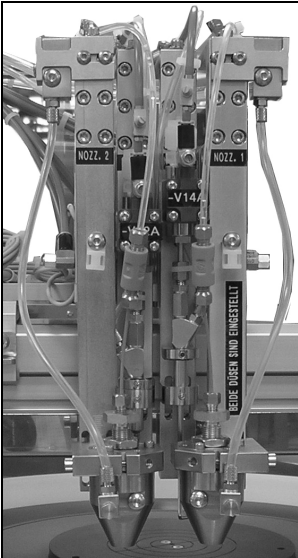
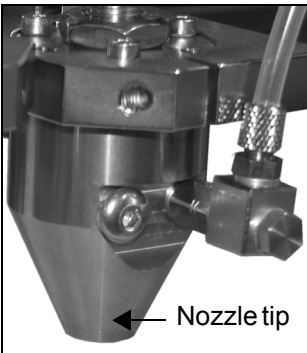
Spraycoater Module - Preventive Maintenance Overview Cont'd

View	Part	Interval	To Do	Description/ normal state	Time min.	Page
 	7 Exhaust	as required	<ul style="list-style-type: none"> Visually check exhaust. Replace exhaust tubes, if heavily contaminated. 	Exhaust is free of media built-up.	60	118
	8 Process chamber drain	20	<ul style="list-style-type: none"> Visually check for blockage. 		2	120
	8 Process chamber drain	as required	<ul style="list-style-type: none"> Clean process chamber drain. Replace drain hoses. 		20	120
	Resist lines	after every wafer	<ul style="list-style-type: none"> Visually check for leakage. Visually check flowmeters. Backside rinse Solvent dispense (bowl cleaning) 	All lines are free of leakage and air bubbles.	10	121
	Resist filter	1000	<ul style="list-style-type: none"> Replace filter. 		20	124
	Nitrogen filter	1000	<ul style="list-style-type: none"> Replace filter. 		10	127
	9 Dispense pump	as required	<ul style="list-style-type: none"> Check pump for proper functioning; replace, if required. 	 CAUTION! Dry running may damage the micro pump! Avoid particle contamination of the inner parts of the pump! Pump can be damaged! Read the corresponding manufacturer's manual!		

6.2. Spray Nozzle (resist): Clean Nozzle Tips

Interval	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
daily	10	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Particle-free cleanroom wipes Solvent Nozzle Clean function 	<ul style="list-style-type: none"> None

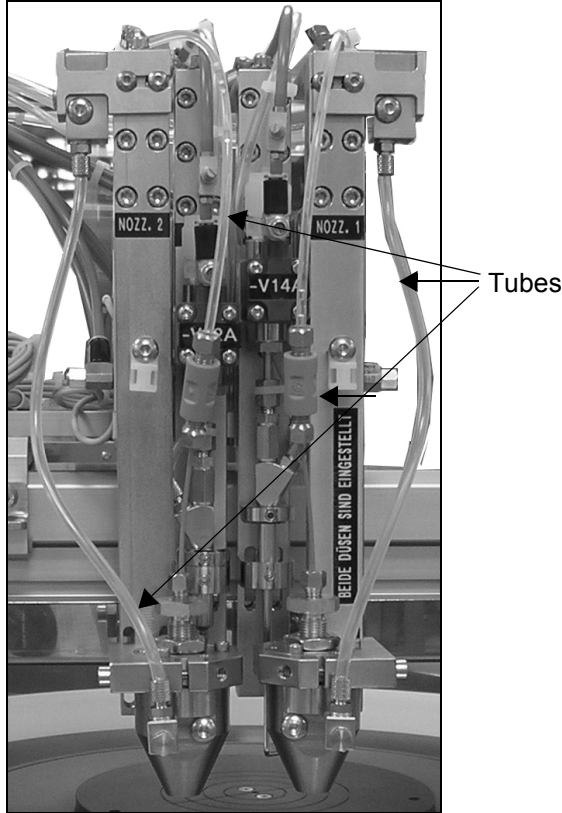
Consider Safety Instructions!

Description	
<p>Only to be carried out by authorized trained personnel or SUSS MicroTec Service!</p> <p>The nozzle tips will tend to accumulate dried resist, especially after three or more hours of non-use. To clean the nozzle tips use particle-free cleanroom wipes and the nozzle clean function on the tool. Be careful not to damage the nozzles!</p> <p> Wear safety goggles, gloves and protective clothing.</p> <p> Consider and observe the Material Safety Data Sheets.</p> <p>Carry out Nozzle cleaning:</p> <ul style="list-style-type: none"> every day before start-up, during processing after 1 to 5 wafers, and after resist change. <p>For more detailed information about the nozzle cleaning function refer to the manual entitled Nozzle Cleaning - User Information - Rev03.pdf.</p> <p> Note! The assembled nozzle should not be disassembled. Suss will not take over the warranty for a disassembled nozzle! Furthermore no process repeatability will be guaranteed by SUSS with an unscrewed nozzle.</p>	 

6.3. Tubes Above Nozzle: Clean tubes

Interval	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
200	10	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Particle-free cleanroom wipes Solvent 	<ul style="list-style-type: none"> None






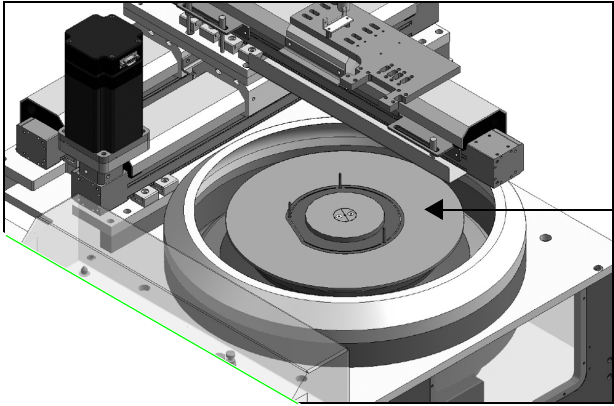
Consider Safety Instructions!

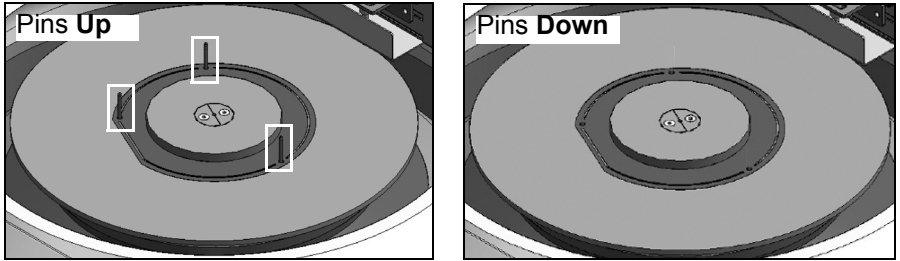
Description	
<p>Only to be carried out by authorized trained personnel or SUSS MicroTec Service!</p> <p>1. Clean the surface of the tubes above the nozzle using particle-free cleanroom wipes (humid tissue).</p> <p>Wear safety goggles, gloves and protective clothing.</p> <p>Consider and observe the Material Safety Data Sheets.</p> <p>Note! The assembled nozzle should not be unscrewed. Suss will not take over the warranty for a disassembled nozzle! Furthermore no process repeatability will be guaranteed by SUSS with any unscrewed nozzle.</p>	

6.4. Chuck: Cleaning

Interval	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
after every wafer	2		<ul style="list-style-type: none"> • Particle-free cleanroom wipes • Solvent 	<ul style="list-style-type: none"> • None

Consider Safety Instructions!





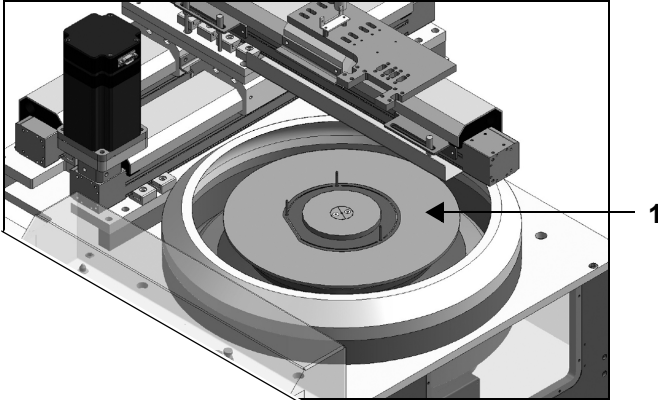
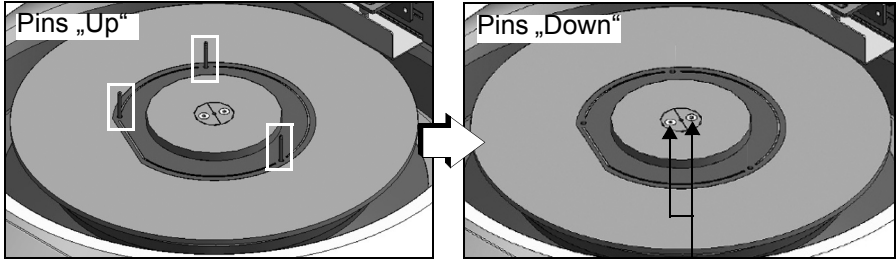
Description	
<p>Chucks are manufactured to very fine tolerances. Attention to quality standards should include inspection of chucks for cleanliness, mechanical integrity, and evidence of residue of any kind as part as normal routine. The use of chucks that have scratches or how signs of abuse can result in poor equipment performance. A visual inspection and routing cleaning with photo-resist solvent is usually all that is required.</p> <p> Note! Check for contamination after every wafer!</p> <p>Cleaning Procedure:</p> <p> WARNING! Irritating/ Highly flammable media. Health hazard due to contact and inhalation.</p> <p> Avoid skin and eye contact. Do not inhale. Keep sources of ignition away.</p> <p> Wear safety goggles, gloves and protective clothing.</p> <p> Consider and observe the Material Safety Data Sheets.</p>	

Description	
<p>In case of resist built-up:</p> <ul style="list-style-type: none"> • either use Autoclean function or • clean the chuck with solvent and particle-free cleanroom wipes. If required, disassemble chuck for cleaning. <p>Prerequisites for chuck cleaning:</p> <ol style="list-style-type: none"> 1. Move pins in Down position via software. 2. Move the Y axis to its end (away from the chuck) to get access to the chuck („Service Mode“). 3. Switch off power. 4. Open system door. <p>Cleaning procedure:</p> <ol style="list-style-type: none"> 1. Carefully clean fixed chuck using appropriate solvent and particle-free cleanroom wipes. 2. After the chuck cleaning has been finished, close system doors. 3. Switch on power of the system and bring pins in Up position via the tool controller. 4. Continue processing. 	

6.5. Heater Surface: Cleaning

Interval	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
weekly	15	<ul style="list-style-type: none"> Hexagonal wrench set 	<ul style="list-style-type: none"> Particle-free cleanroom wipes solvent Acetone 	<ul style="list-style-type: none"> None

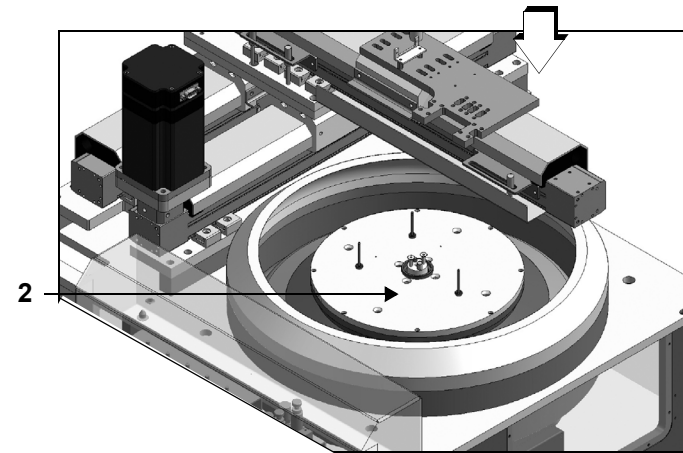
Consider Safety Instructions!

Description	
<p>WARNING! Irritating/ Highly flammable media. Health hazard due to contact and inhalation.</p> <p> Avoid skin and eye contact. Do not inhale. Keep sources of ignition away.</p> <p> Wear safety goggles, gloves and protective clothing.</p> <p> Consider and observe the Material Safety Data Sheets.</p> <p> Note! Before cleaning the heater surface disassemble the chuck!</p> <p>Prerequisites for cleaning the heater surface:</p> <ol style="list-style-type: none"> Bring pins in Down and chuck in Up position via software. Move the Y axis to the end to get access to the chuck („Service Mode“). Switch off power. Open system door. Ensure that pins are in Down position prior to disassembling the chuck. Otherwise pins could be damaged! Disassemble chuck (1) by loosening the corresponding chuck fixation screws using an appropriate Allen wrench. Carefully remove chuck from its support. Ensure that nozzles will not be damaged when removing the chuck! 	  <p>Loosen these screws for disassembling the chuck</p>

Description

To clean the heater surface, proceed as follows:


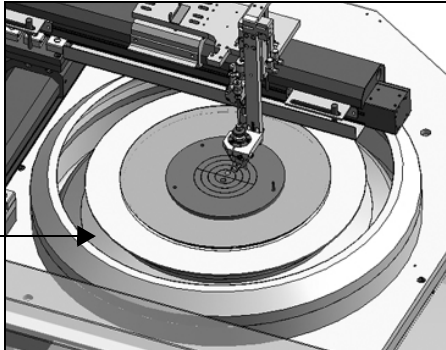
- Carefully clean chuck (top and rear) using appropriate solvent and particle-free cleanroom wipes.
- Carefully clean heater surface (**2**) using appropriate solvent and particle-free cleanroom wipes.
- After the chuck and heater surface have been cleaned, re-assemble the chuck. Re-assembly is done in adverse sequence to dis-assembly!
- Dispose contaminated cleanroom wipes according the local and environmental laws!
- Ensure that chuck is assembled in correct position! Otherwise the chuck and the pins could be damaged!
- Switch on system power and bring pins in **Up** and chuck in **Down** position via the tool controller. Check for correct chuck position.
- Close tool doors.
- Continue processing.



6.6. Coater Bowl: Check Insert Ring

Interval	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
daily	2	• None	• None	• None

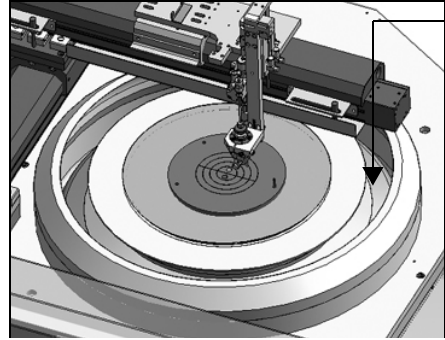
Consider Safety Instructions!





Description	
<p>Visually check cleanliness of Coater Bowl</p> <p> Note! During normal operation check cleanliness of bowl in regular intervals.</p> <p>With approximately 30% of the insert ring (1) covered by resist cleaning of the coater bowl is required.</p>	

6.7. Bowl: Cleaning

Interval	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
20	2	<ul style="list-style-type: none"> Hexagonal wrench set 	<ul style="list-style-type: none"> Particle-free cleanroom wipes Acetone 	<ul style="list-style-type: none"> None

Consider Safety Instructions!




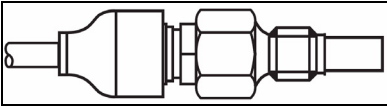

Description	
<p>Note! Clean coater bowl once per week!</p> <p>CAUTION Risk of tool damage. When cleaning bowl be careful not to damage the nozzles!</p> <ul style="list-style-type: none"> For cleaning coater bowl either <ul style="list-style-type: none"> use chuck cleaning function and run a cleaning cycle For more detailed information about software function refer to the corresponding MMC manual. or clean bowl by hand using appropriate solvent and particle-free cleanroom wipes. Disassembling the chuck prior to cleaning the coater bowl is recommended. <p>Prerequisites for disassembling the chuck:</p> <ol style="list-style-type: none"> Bring pins in Down and chuck in Up position via software. Move the Y axis to the end to get access to the chuck („Service Mode“). Switch off power. Open system door. 	<div style="text-align: right; margin-bottom: 10px;">  </div> <p>Warning! - Irritating/ Flammable Media! Flammable media within the module which can cause injury or death, if ignited. Keep all sources of ignition away. Contact with these chemicals and/or inhalation of their vapors may result in severe health risk or death. Only properly trained personnel should be engaged in handling these media! After chemical spillage or leakage, or exhaust system failure, evacuate the area immediately, notify your supervisor, and consult the appropriate Material Safety Data Sheet for further instructions.</p>

Description	
<p>To clean the process bowl, proceed as follows:</p> <p> CAUTION Risk of tool damage. Ensure that pins are in Down position before disassembling the chuck. Otherwise pins could be damaged!</p> <p>5. Loosen the corresponding chuck fixation screws using an appropriate Allen wrench.</p> <p>6. Carefully remove chuck from its support and clean it, if required.</p> <p> CAUTION Risk of tool damage. Ensure that nozzles will not be damaged when removing the chuck!</p> <p>7. Clean bowl carefully using appropriate solvent and particle-free cleanroom wipes.</p> <p>8. After the bowl has been cleaned, re-assemble the chuck. Re-assembly is done in adverse sequence to dis-assembly!</p> <p> CAUTION Risk of tool damage. Ensure that chuck is assembled in correct position! Otherwise the chuck and the pins could be damaged!</p> <p>9. Switch on system power and bring pins in Up and chuck in Down position via the tool controller.</p> <p> CAUTION Risk of tool damage. Be careful not to damage the pins!</p> <p>10. Close tool doors.</p> <p>11. Continue processing.</p>	

6.8. Exhaust: Cleaning Air Flow Sensor

Interval	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
100	10	<ul style="list-style-type: none"> Screwdriver for recessed head screws 	<ul style="list-style-type: none"> Particle-free cleanroom wipes Solvent 	<ul style="list-style-type: none"> None

Consider Safety Instructions!

Description	
<p>Call SUSS Service!</p> <p>The process chamber exhaust flow is controlled by a sensor and the corresponding control monitor (evaluation unit). The evaluation unit has to be adjusted to the tool-specific value (pre-adjusted by the manufacturer)</p> <p>WARNING! Irritating/ Highly flammable media. Health hazard due to contact and inhalation. Avoid skin and eye contact. Do not inhale. Keep sources of ignition away.</p> <p> Wear safety goggles, gloves and protective clothing.</p> <p> Consider and observe the Material Safety Data Sheets.</p> <p>1. Ensure that tool is in teach mode.</p> <p>Note!  The airflow sensor contains a sensor element which is sensitive to mechanical loading and which must not be touched with hard and pointed objects.</p> <p>2. Any cleaning that may be necessary is possible in water (also with addition of detergents). Let the unit drip off and dry renewed start-up.</p>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Air flow sensor</p>  </div> <div style="text-align: center;"> <p>control monitor</p>  </div> </div>

Description

For more detailed information about the sensor also refer to the corresponding manufacturer's manual.

- After sensor has been cleaned or replaced the calibration of the airflow monitoring sensor may be necessary.

Calibration of the Airflow Monitoring Sensor



Note!

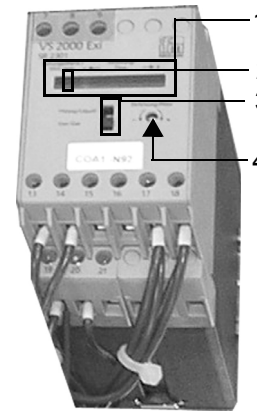
Connection and calibration must be performed by properly authorized and qualified personnel!

Prerequisite for calibration of the airflow monitoring are:

- sensor already has to be installed
- electrical power is supplied
- exhaust is switched on.

- Set the selector switch to gaseous media:
- Apply the operating voltage.
After the power-on delay time (approx. 30s) has elapsed the unit is ready for operation; (during this time flow may be indicated).
- Close exhaust to the machine or remove the exhaust duct.
- Adjust the setting potentiometer (4) until the 1st or 2nd red LED comes on.
- Open exhaust to the machine or reinstall the exhaust duct.
- Set the present flow and keep it constant.
- Close the exhaust flap at the MMC software: Go to **Overview** and double-click on the respective coater. On the pop-up menu, click on **Service** and tab *DigOut1^a*. Enable **Exhaust Coa(n) Close**.
- Check the LED display. If required, fine tune the setting potentiometer (4) until less than half of the green LED lights are illuminated.
- Open and close the exhaust flap several times with the MMC and verify that the controller never displays a red LED.
→ A closed exhaust flap must not trigger an exhaust alarm.

For more detailed information about the evaluation unit also refer to the corresponding manufacturer's manual.



No. in Fig.	Denomination	Function
1	Row of Led	<ul style="list-style-type: none"> red LED is lit: flow below the switch point yellow LED is lit: relay is energized; flow has reached the switch point. green LED is lit: flow above the switch point
2	LED red	is lit in case of wire break or short circuit
3	Selector switch medium	
4	Setting potentiometer for switch point	

The screenshot shows the MMC software interface for a CO2/DE2 controller. The 'DigitalOut' section is active, showing a list of outputs with checkboxes and status indicators. An arrow points to the '17.31-Exhaust CO2 close' output, which is checked and has a '1' in the status column. Below the software interface, a 'CO2' menu is visible with 'Service' highlighted. At the bottom right, a diagram of the LED display shows a row of 10 LEDs: the first two are red, the third is yellow, and the remaining seven are green. Arrows point to the first red LED labeled 'no exhaust' and the yellow LED labeled 'Exhaust ok'.

a. There can be more than one DigOut tab (DigOut1, DigOut2, etc.). Click through tabs until you find the particular output.

6.9. Process Chamber Drain: Clean Drain

Interval	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
as required	20	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Particle-free cleanroom wipes Solvent 	<ul style="list-style-type: none"> Flexible tube PFA

Consider Safety Instructions!

Description	
<p>Call SUSS Service!</p> <ol style="list-style-type: none"> 1. Ensure that system is switched off. 2. Open system door of the corresponding process module and pull out the media drawer. 3. Switch off the system. 4. Check drain tube for proper seat and tightness. 5. Place cleanroom wipes below the exhaust to prevent media from dripping into the media drawer. 6. Disassemble the drain tube below process module by loosening the corresponding screws. 7. Clean drain tube with solvent. Use particle-free cleanroom wipe to dry tube. 8. Then re-assemble tube or replace by a new one, if required. 9. Dispose the media and used cleanroom wipes according to the local and environmental regulations. 10. Pull in the media drawer and close the system doors. 11. Restore power to the system. 	

6.10. Resist Lines: Visually Check Resist Lines

Interval	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
after resist change	10	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None


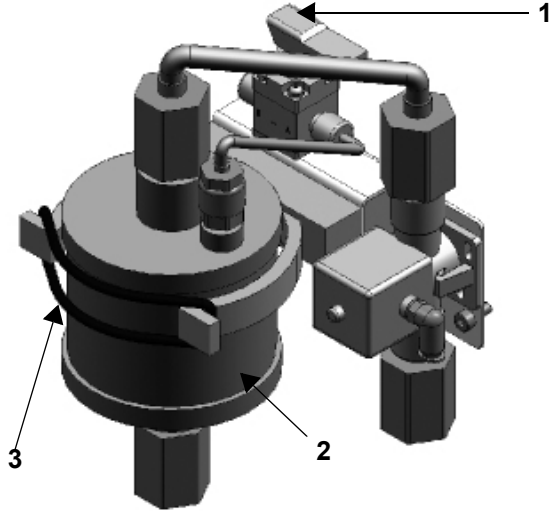
Consider Safety Instructions!

Description	
<ul style="list-style-type: none"> Visually check all resist lines for leakages. Visually check all resist lines for gas bubbles. Check media area for liquid. If required, vent filters and supply lines located below the process modules. 	

6.11. Solvent Filter: Replace Filter

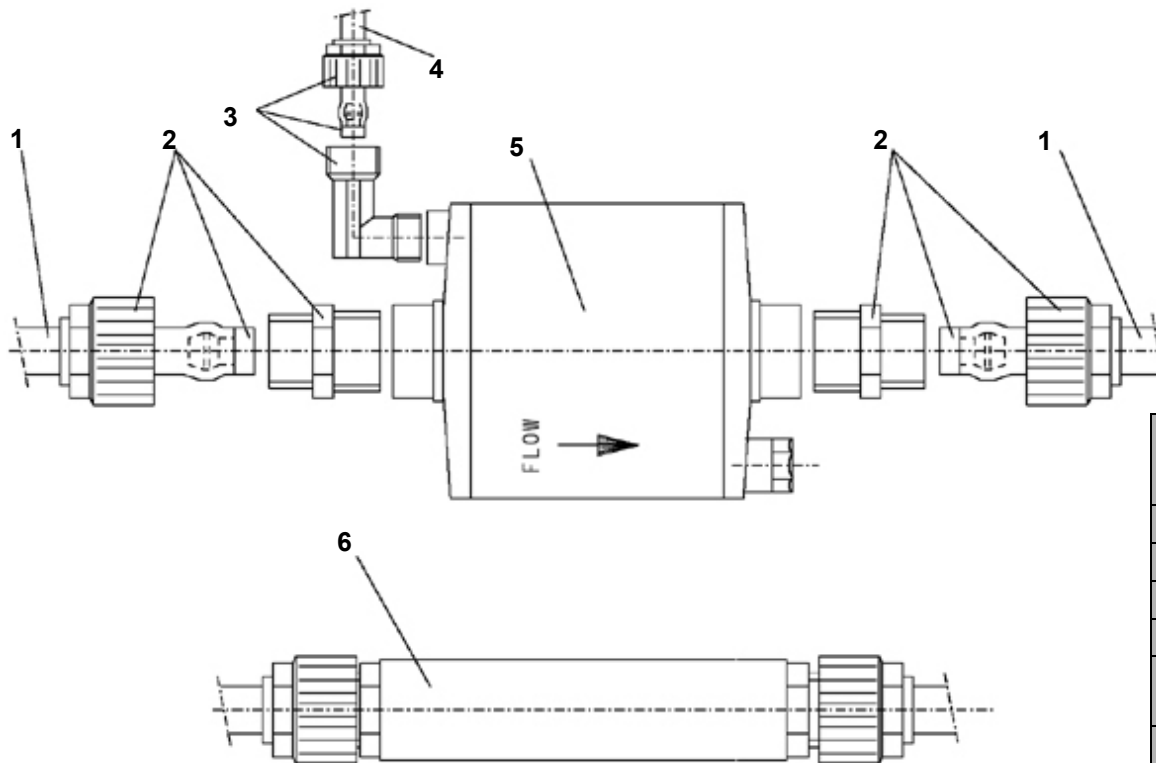
Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	20	<ul style="list-style-type: none"> Open-end wrench set 	<ul style="list-style-type: none"> Particle-free cleanroom wipes Solvent 	<ul style="list-style-type: none"> MILLIPORE Filter Waferguard 0.05µm # 100408

Consider Safety Instructions!

Description	
<p>Call SUSS Service! To replace solvent filter (1), proceed as follows:</p> <p>Note!  Prewet new filter by filling it up with solvent for at least 30 minutes before installation. For prewetting we recommend to use the same solvent which is used in the system for the corresponding process.</p> <ol style="list-style-type: none"> 1. Ensure that system is in teach mode. 2. Open system door. 3. Depressurize the solvent supply. => Bring the corresponding flip switch in OFF position. 4. Place cleanroom wipe below filter (2). 5. Remove all tubes and fittings from the filter. 6. Remove the rubber band retainer.(3) 7. Remove and properly dispose of the old filter. 8. Dispose used filter according to the relevant local and environmental laws and regulations. 9. Insert the new filter and secure it with the rubber band retainer. 10.Reattach the tubes and fittings. 	
Description	

Note!
 When mounting new filter ensure that fittings are tight and free of leaks.

11. Vent the filter using the corresponding venting valve (1).
12. Re-pressurize the solvent supply (flip switch in ON position).
13. Vent the dispense lines.
14. Close system door.
15. Module is now ready for operation.

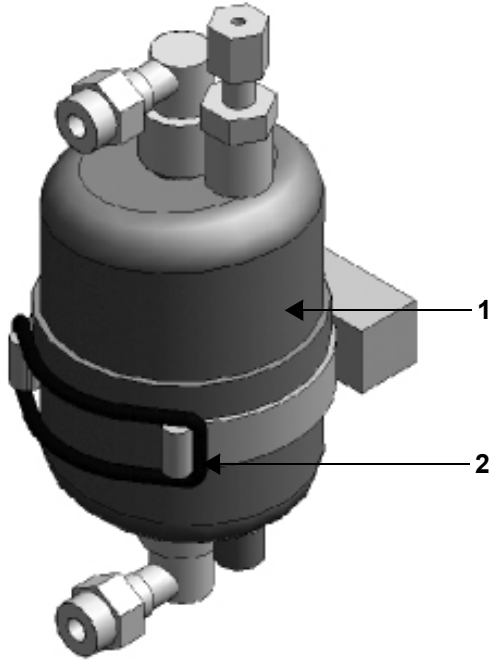


No. in Fig.	Denomination	Part no.
1	PFA Tube ID6/OD8	#101364
2	Fitting PFA	#101320
3	Fitting PFA	#101379
4	PFA Tube ID3/OD4	#101362
5	MILLIPORE Filter Waferguard 0.05µm	#100408
6	Coupling	#102967


6.12. Resist Filter: Replace Filter

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	60	<ul style="list-style-type: none"> Open-end wrench set 	<ul style="list-style-type: none"> Particle-free cleanroom wipe Solvent 	<ul style="list-style-type: none"> Resist filter 0,05 µm

Consider Safety Instructions!

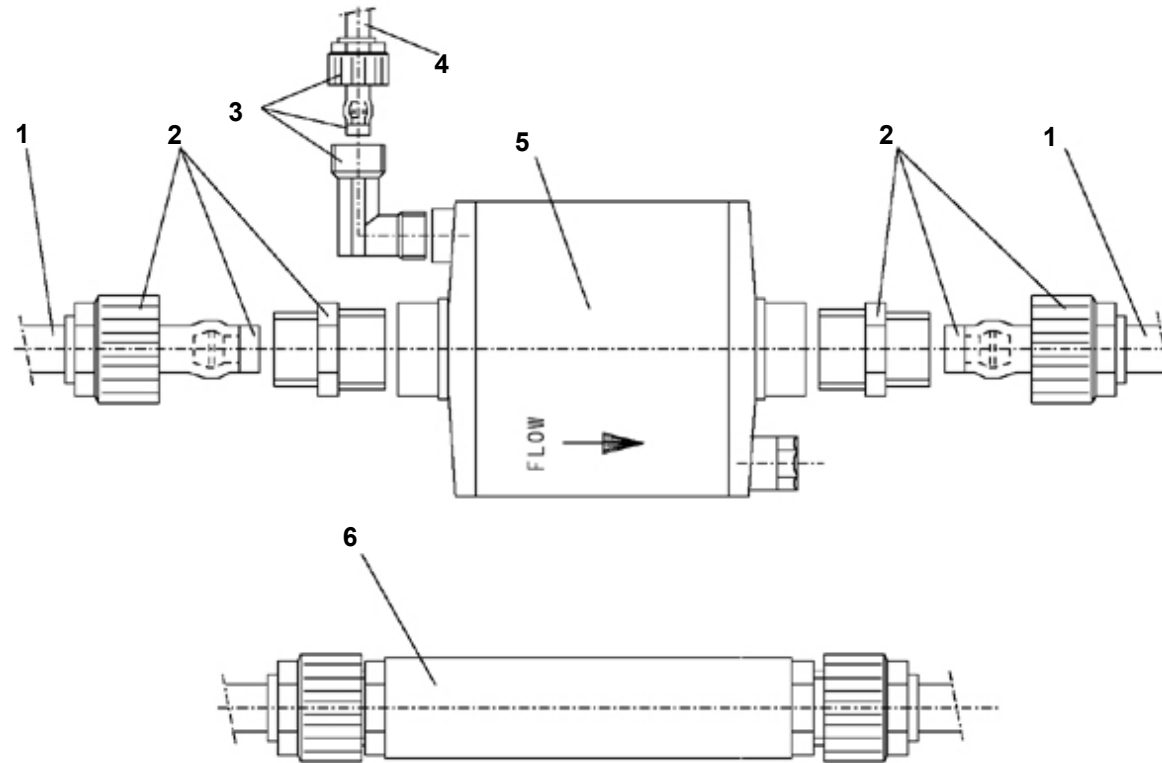
Description	
<p>Call SUSS Service! To replace solvent filter (1), proceed as follows:</p> <ol style="list-style-type: none"> 1. Open system door. 2. Empty the reservoir by using the pump. 3. Disconnect the resist bottle from the reservoir. 4. Place cleanroom wipe below filter (1). 5. Remove all tubes and fittings from the filter. 6. Remove the rubber band retainer.(2) 7. Remove the filter, 8. Dispose the used filter according to the relevant local and environmental laws and regulations. 9. Clean the pump using solvent (suitable to media used, for example acetone). 	



Description	
<p>10. Insert the new filter and secure it with the rubber band retainer.</p> <p>11. Reattach the tubes and fittings.</p> <p>12. Hook-up the resist bottle and fill the reservoir.</p> <p> Note! When mounting new filter ensure that fittings are tight and free of leaks.</p> <p>13. Turn on the pump. The pump sucks the resist through the filter. Continue pumping until no more air bubbles come out of the pump.</p> <p>14. Repeat this procedure until the filter and the complete dispense system is free of air.</p>	

SPRAYCOATER MODULE

Description





No. in Fig.	Denomination	Part no.
1	PFA Tube ID6/OD8	#101364
2	Fitting PFA	#101320
3	Fitting PFA	#101379
4	PFA Tube ID3/OD4	#101362
5	MILLIPORE Filter Waferguard 0.05µm	#100408
6	Coupling	#102967

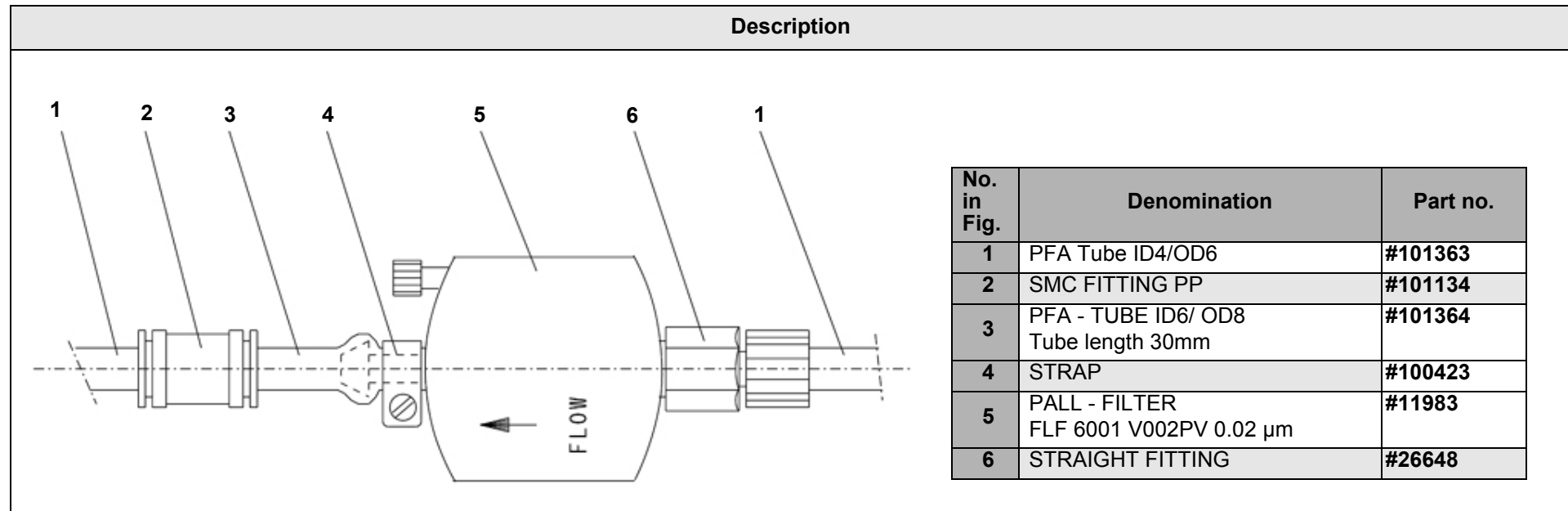
6.13. Nitrogen Filter: Replace Filter

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
1000	10	<ul style="list-style-type: none"> • Open-end wrench set • Screw driver (—) 		<ul style="list-style-type: none"> • Nitrogen filter: PALL - FILTER FLF 6001 V002PV 0.02 µm # 11983

Consider Safety Instructions!

Description	
<p>To replace nitrogen filter, proceed as follows:</p> <ol style="list-style-type: none"> 1. Open system door. 2. Remove all tubes and fittings from the filter. 3. Remove the rubber band retainer and remove the filter. 4. Properly dispose of the old filter. 5. Dispose used filter according to the relevant local and environmental laws and regulations. 6. Insert the new filter. <p> Note! Filters have arrows to indicate direction of flow! When inserting filter ensure arrows point towards the module!</p> <ol style="list-style-type: none"> 7. Fix the filter by the rubber band retainer and reconnect the tubes and fittings. <p> Note! When mounting new filter ensure that fittings are tight and free of leaks.</p> <ol style="list-style-type: none"> 8. Close system door. 9. Module is now ready for operation. 	

SPRAYCOATER MODULE



7. TEMPERATURE MODULE

The maintenance procedures described in this section should be performed on a routine basis or with the frequency or at the times indicated. Before carrying out any of these procedures, be sure to lower the pins (if module is equipped with).

Then - unless otherwise indicated in the specific procedure - turn off the power of the tool.



Warning!

All power to the tool must be disconnected per the facilities' lockout/ tag-out procedure before servicing to prevent the risk of electrical burn or shock. Access only for qualified and authorized persons and if the tool is switched off.



Note!

For details about disposal after lifetime refer to chapter 1, section 1.11 of the User Manual.

Only qualified, properly trained and authorized persons should perform any maintenance or repair procedure.



Warning!

Mechanical hazards, electrical hazards, and chemical hazards exist on the Temperature Stack. The necessary procedures should only be performed by qualified persons. Operations of the tool should be performed within the limits set by the tool provider's procedures and safety precautions. Read and understand Chapter 1 'Safety Instructions' to be found in the User Manual before performing any procedure.

Before proceeding with any of the maintenance tasks described in the following, consult the Material Safety Data Sheets for the chemicals in use and observe all applicable safety precautions including, but not limited to, the use of personal protective equipment.



CAUTION!

Hot Surfaces!

Risk of burns caused by touching.

Wait until surface has cooled down below 40°C.

Wear protective gloves when touching it!



Warning! - Heavy Weights

When performing maintenance or repair work observe the weight of one hotplate cassette is approx. 5 kg. Handle only with carrying units and/ or the help of a second person.



WARNING!

Irritating/ Highly flammable media.

Health hazard due to contact and inhalation of remaining media.



Avoid skin and eye contact.

Do not inhale.

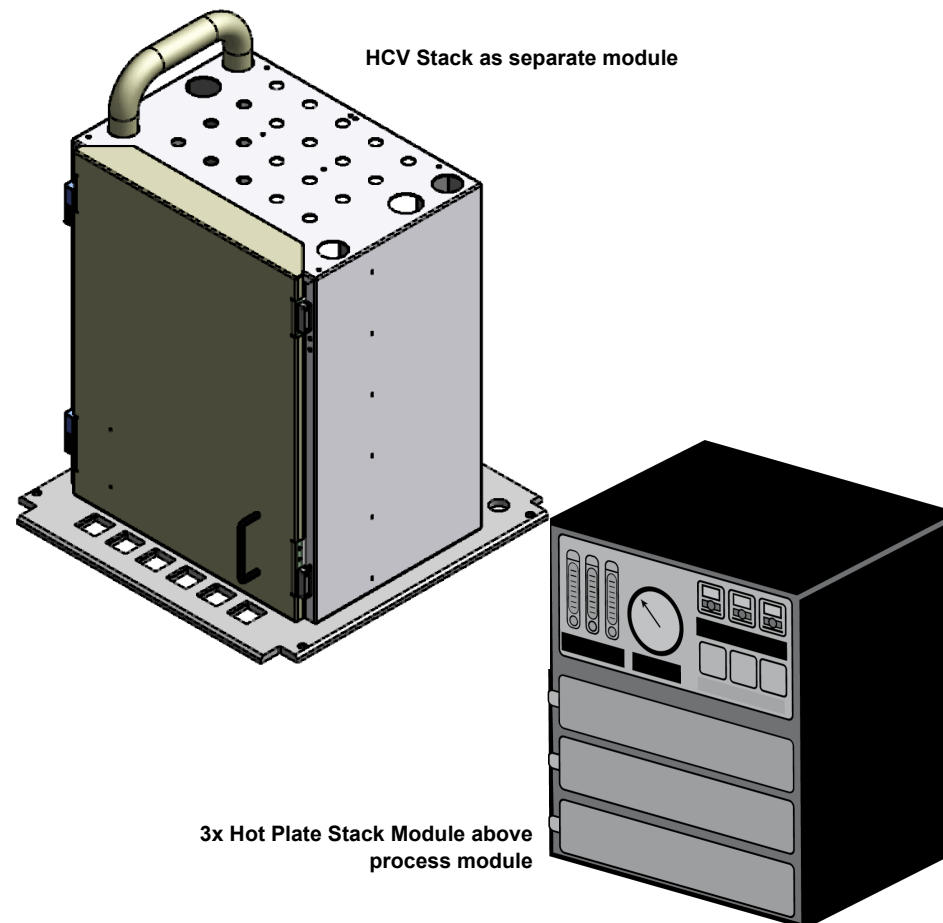
Keep sources of ignition away.



Wear safety goggles, gloves and protective clothing.



Consider and observe the Material Safety Data Sheets.



7.1. Remove and Install Hotplate/Coolplate/HMDS Cassettes



CAUTION!

Hot Surfaces!

Risk of burns caused by touching.

Wait until surface has cooled down below 40°C.
Wear protective gloves when touching it!

Preparation

1. If required, move pins in **Down** position via the tool controller.
2. Switch off the heating system. Press the button **HEATING OFF**.
3. Let hotplates cool down before disassembling the chambers. Surface temperature below 40°C.
4. Switch off tool via main switch and open tool and module doors.

Remove Hotplate / Coolplate Chambers

1. Disconnect the vacuum supply (green line), compressed air supply (red line) and nitrogen supply (blue line) at [1] ¹.
Remove the stepper motor plug, the sensor plug and the heating plug at [2].
Follow the labels on plugs and sockets.

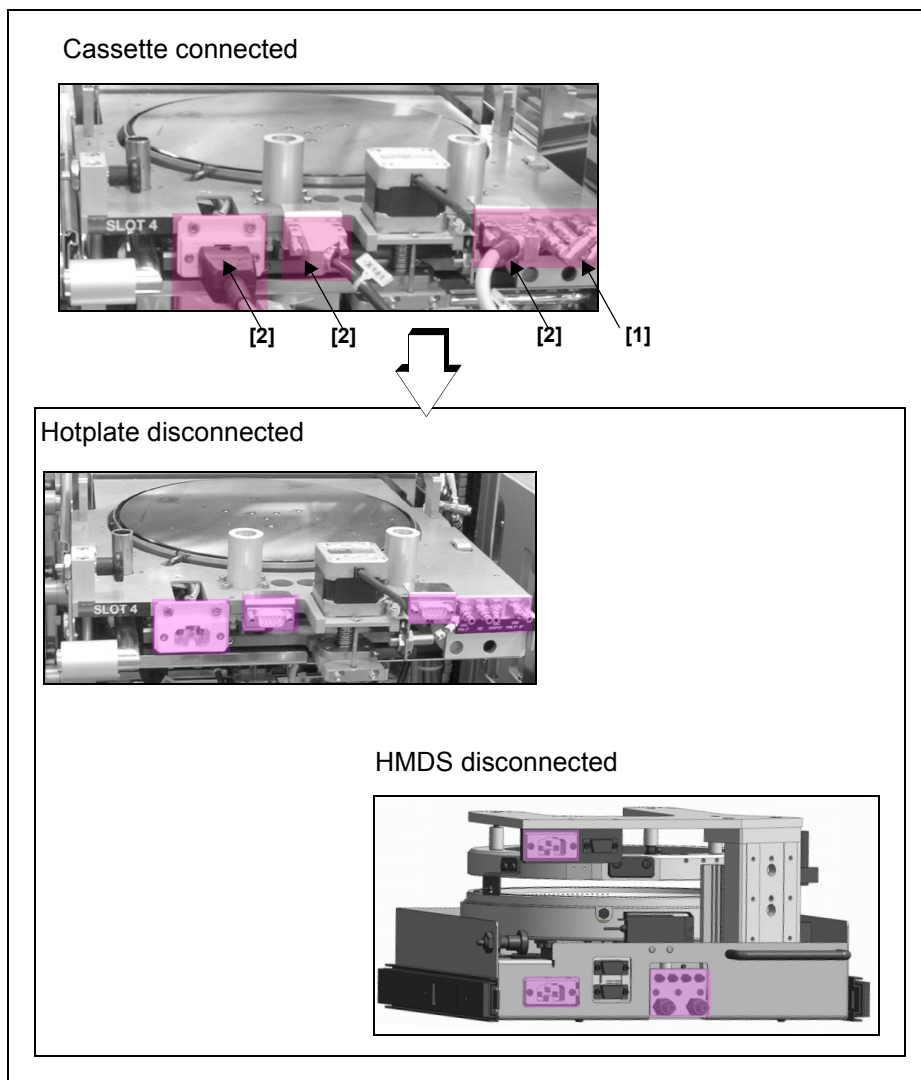


Fig.1 Connections of hotplate

1. Instead of different colors, tubes can also be labeled with the facility names.

- In case of PI Hotplate:
Additionally disconnect the connections for the lid's heater power and the temperature sensors (indicated in the following figure).

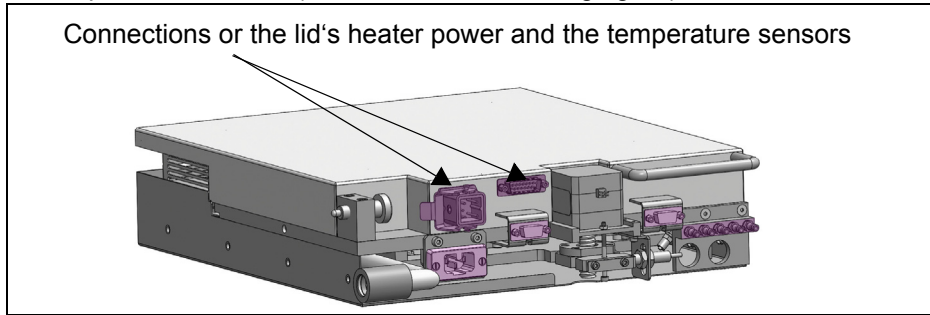


Fig.2 PI hotplate disconnected

- In case of COOLPLATE CHAMBERS:
Disconnect the cooling water inlet and outlet tube (green and blue tube).
- To loose the chamber from its fixation pull the securing bolt (1) in the direction of the arrow (a).
Disconnect the exhaust connector (2).
Pull the chamber towards you until it stops.
The chamber is still supported by the rails.

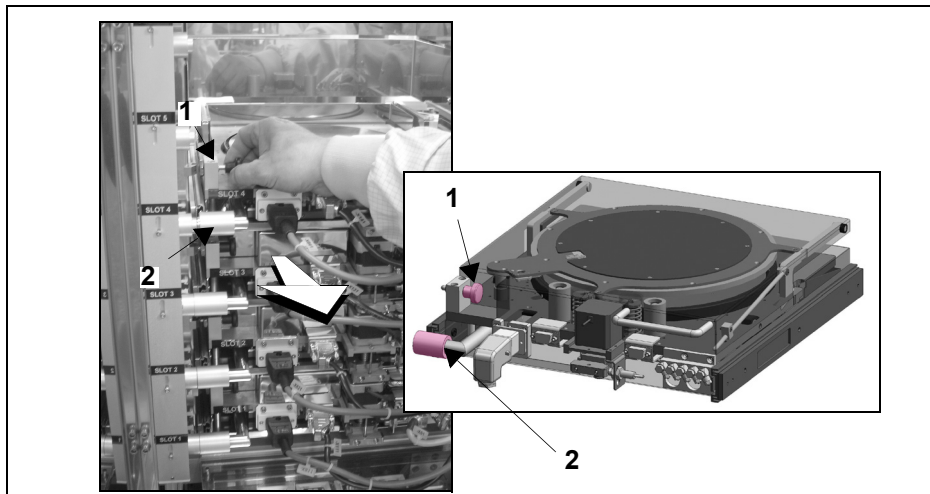


Fig.3 Remove cassette from stack

- Remove the chamber from their rails:
 - Press the springs (3) on both sides of the rail.
 - Pull out the chamber (away from the machine).



CAUTION!

Risk of material damage and personal injury.

Chamber may fall down, when removed from the rails.
Remove the chamber with care.
For removing chamber from HCV stack two qualified service technicians are required.

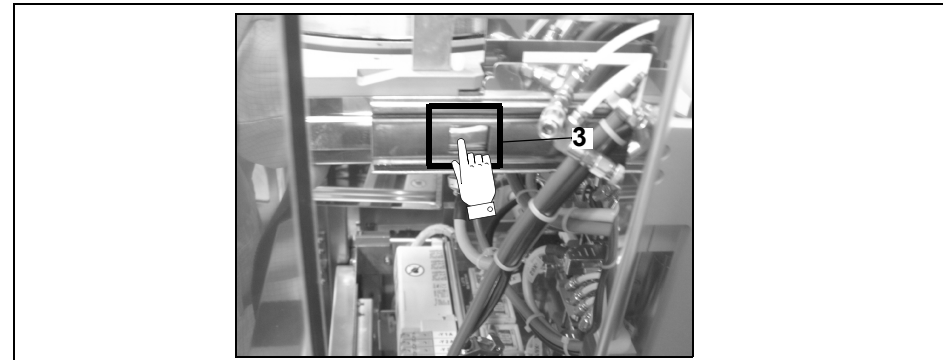


Fig.4 Remove the cassette from the rail

Assembly is done in reverse sequence to disassembly.

When installing the chamber back, ensure that the spring locks the chamber when inserted in the rails.
Prior to restart tool make sure that the exhaust gates (4) to used hotplates are open and to unused are closed (closed = positioned on bottom).
Each gate can be adjusted individually for best baking performance.

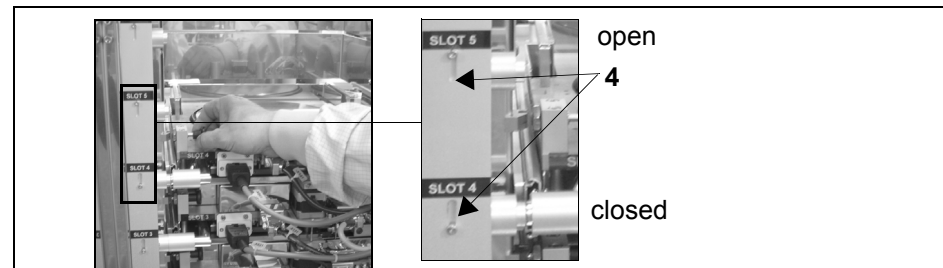
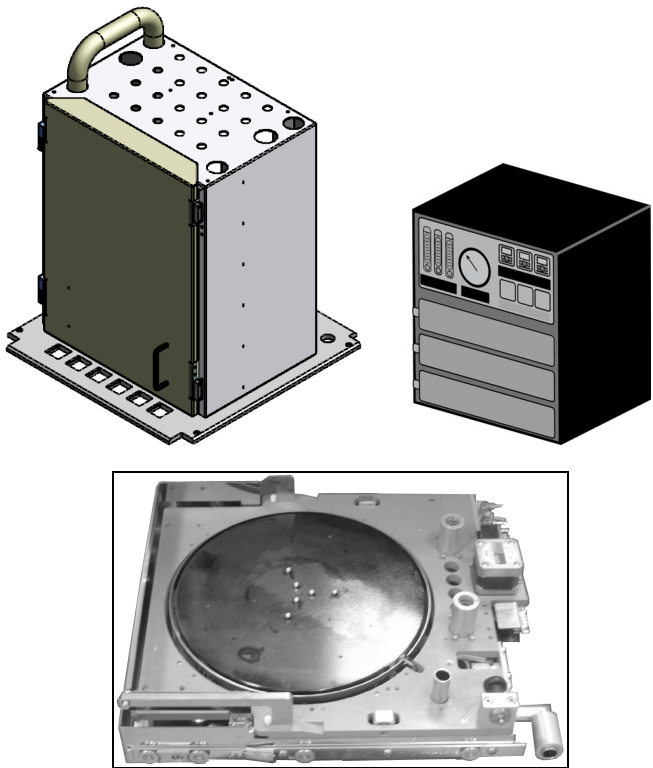


Fig.5 Exhaust gates

7.2. Hot- and Coolplate Cassettes

Note!
For HMDS cassette PM refer to page 139.

7.2.1. Preventive Maintenance Overview

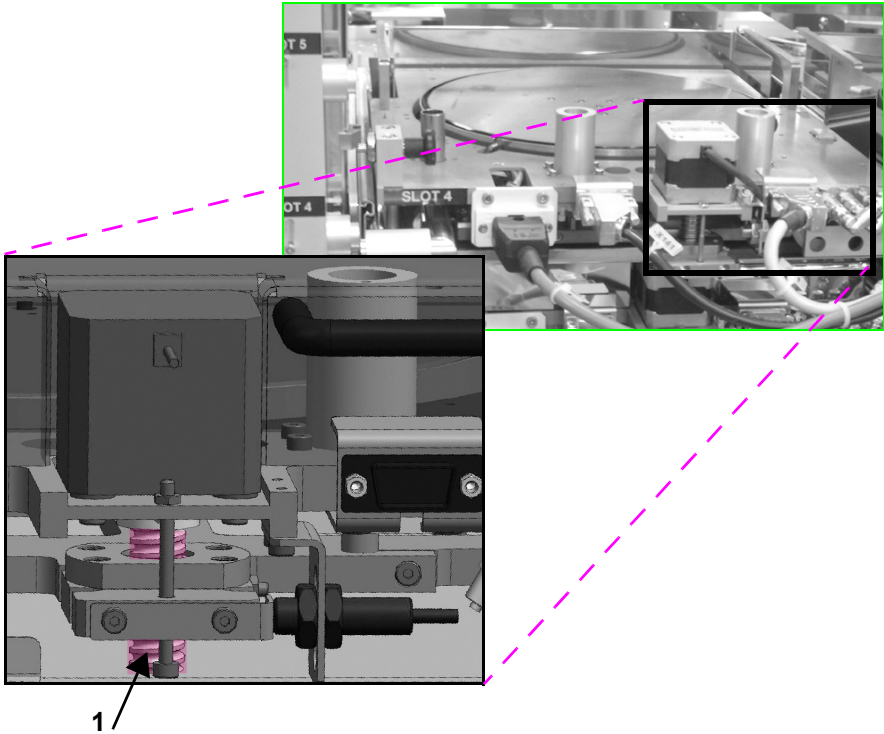
View	Part	Interval/ Shifts	To Do	Description/ normal state	Time min.	Page
	Hotplate/ Coolplate Cassettes	500	<ul style="list-style-type: none"> Clean and grease spindle on wafer lift assembly. 		15	133
	Hotplate/ Coolplate Cassettes	500	<ul style="list-style-type: none"> Check shutter movement. 		20	
	Hotplate/ Coolplate Cassettes	20	<ul style="list-style-type: none"> Check nitrogen/CDA purge. 		2	
	Hotplate/ Coolplate Cassettes	20 (weekly)	<ul style="list-style-type: none"> Test pin vacuum. 		1	136
	Hotplate/ Coolplate Cassettes	500	<ul style="list-style-type: none"> Clean chamber and cover. 		60	137
	Coolplate Cassettes	20 (weekly)	<ul style="list-style-type: none"> Check coolant lines and fittings for leakage. 		2	

View	Part	Interval/ Shifts	To Do	Description/ normal state	Time min.	Page
	Exhaust	500	<ul style="list-style-type: none"> Visually check exhaust hose for debris build-up. 	Hose should be free of debris build-up.	10	
	Exhaust	20	<ul style="list-style-type: none"> Visually check gate position for each slot: <ul style="list-style-type: none"> closed for unused slots open or individually adjusted for used slots 			
	Exhaust manifold	20 (weekly)	<ul style="list-style-type: none"> Clean exhaust manifold 	Exhaust manifold should be free of resist build-up.	20	138

7.2.2. Clean and Grease Spindle and Guide


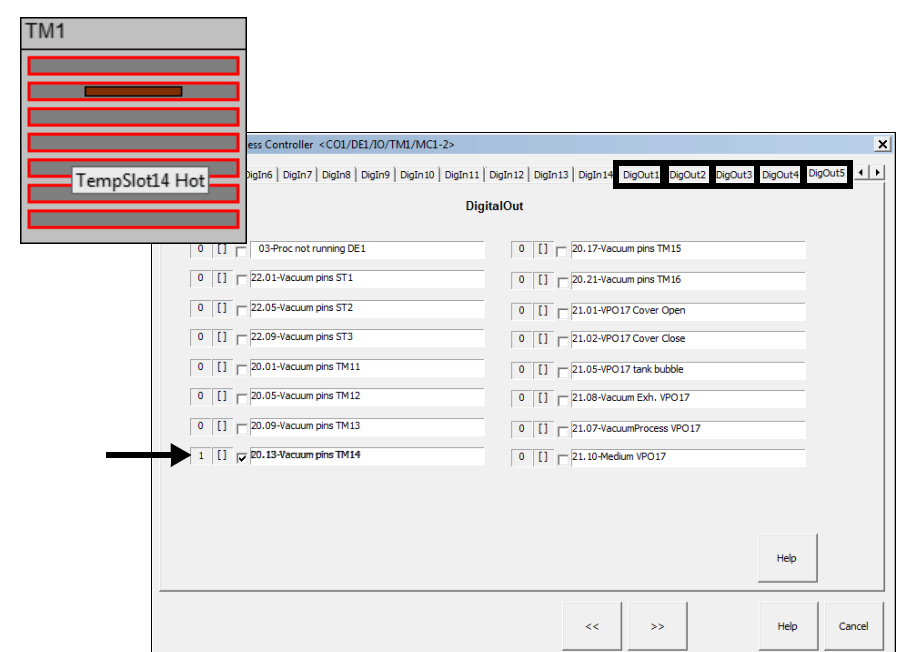
Interval	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	15	<ul style="list-style-type: none"> Hexagonal wrench 2.5 mm 	<ul style="list-style-type: none"> Particle-free dry cleanroom wipes IPA Synthetic high-temperature grease 	

Consider Safety Instructions!

Description	
<p>To clean and grease the spindle and the guides, proceed as follows:</p> <ol style="list-style-type: none"> 1. Move pins down via tool controller. 2. Shut tool off. Press the button TOOL OFF. 3. Open tool and module doors. 4. Clean the spindle (1) and the guides using dry cleanroom wipes. 5. Sparsely apply new grease directly to the spindle and the guides. 6. Move pins manually up and down for 3 times. 7. Remove excess grease from the spindle and the guides. 8. Close the tool and module doors. 9. Switch on the tool. <p>Set the Pin Vacuum: Calibrate the SMC vacuum sensor (type: ZSE40-01-62L)</p> <ul style="list-style-type: none"> • Setpoint N1 = -0.320 bar <p>Test the Pin Vacuum:</p> <p>▶ Refer to section 7.2.3. 'Test Pin Vacuum' on page 136.</p>	 <p>The image shows a photograph of a machine's internal components with a green border and a 3D CAD model of the same components with a black border. A dashed pink line connects the two images. In the 3D model, a red arrow points to a specific part labeled '1'.</p>

7.2.3. Test Pin Vacuum

Interval	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	15	<ul style="list-style-type: none"> Hexagonal wrench 2.5 mm Maintenance wafer. 	•	



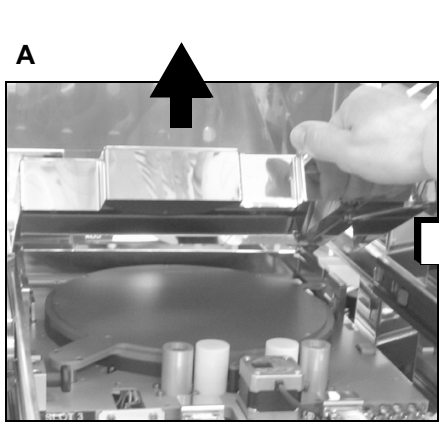
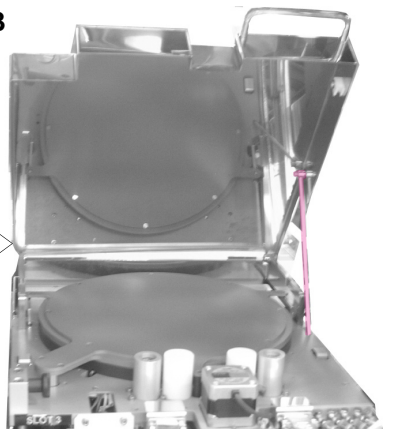
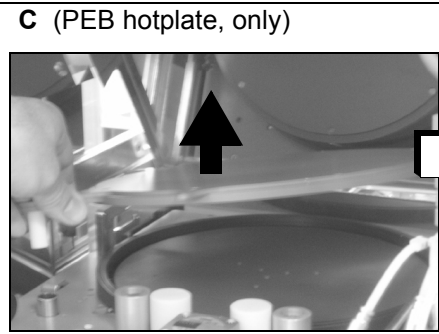
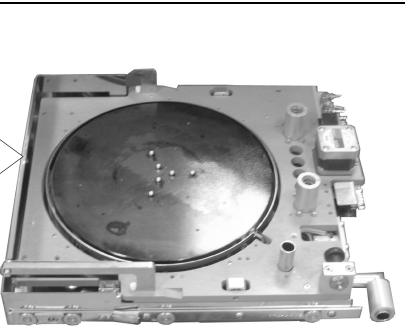
Description	
<p>Note!  Testing is only possible with SEMI standard wafers.</p> <p>Precondition: Main vacuum is connected to hotplate/ coolplate Hotplate-Coolplate vacuum: about -0.8 bar (-0.7 – 0.9 bar is acceptable).</p> <ul style="list-style-type: none"> Without Wafer: <ul style="list-style-type: none"> Switch on vacuum valve. Via Tool Controller: Double-click on a module. Click Service > tab <i>DigOut1</i>^a. <i>Enable checkbox</i> of respective hotplate or coolplate. Vacuum value has to be below < -0.200 bar. With Wafer: <ul style="list-style-type: none"> Switch on vacuum valve Via Tool Controller. See above. Vacuum value has to be about -0.8 bar (-0.7 – -0.9 bar is acceptable). 	 <p>The screenshot shows the Tool Controller interface. At the top, a 'TM1' module is displayed with several slots. The 'TempSlot14 Hot' slot is highlighted with a red box. Below this, a 'DigitalOut' window is open, showing a table of digital outputs. The table has two columns: a status column (0 or 1) and a description column. The row for '20.13-Vacuum pins TM14' is selected, and its status is '1'. An arrow points to this row. The table also includes other outputs like '20.17-Vacuum pins TM15', '20.21-Vacuum pins TM16', '21.01-VPO17 Cover Open', etc.</p>

a. There can be more than one DigOut tab (DigOut1, DigOut2, etc.). Click through tabs until you find the particular output.

7.2.4. Clean Chamber and Cover

Interval	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	60	<ul style="list-style-type: none"> Hexagonal wrench 2.5 mm Screw driver (—) 	<ul style="list-style-type: none"> Particle-free dry cleanroom wipes IPA (Isopropyl alcohol) Clean compressed air pistol 	

Consider Safety Instructions!

Description	
<p>To clean the chamber, proceed as follows:</p> <p> Note! The procedure described in the following applies to standard, PEB and PI hotplates.</p> <ol style="list-style-type: none"> 1. Move pins in Down position via the tool controller. 2. Switch off the tool and open the tool and module access door. 3. Remove the chamber from the temperature stack - refer to page 131. 4. Open the chamber cover (A) and secure the cover with the support pin (B). <i>For PEB hotplates: Carefully lift off the cassette cover. (C)</i> 5. Clean the Hotplate/ Coolplate, the cassette and chamber cover using cleanroom wipes and IPA. 6. Blow out with clean compressed air. 7. Check lift pins for damage. 8. After having cleaned and checked the chamber, re-install the chamber into the temperature stack. <p> Chamber and cover cleaning has been finished.</p>	   

7.2.5. Clean Exhaust Manifold

Interval	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
20 (weekly)	20	<ul style="list-style-type: none"> Hexagonal wrench 1.5 mm 	<ul style="list-style-type: none"> Particle-free dry cleanroom wipes Appropriate cleaning media 	

Consider Safety Instructions!**Description**

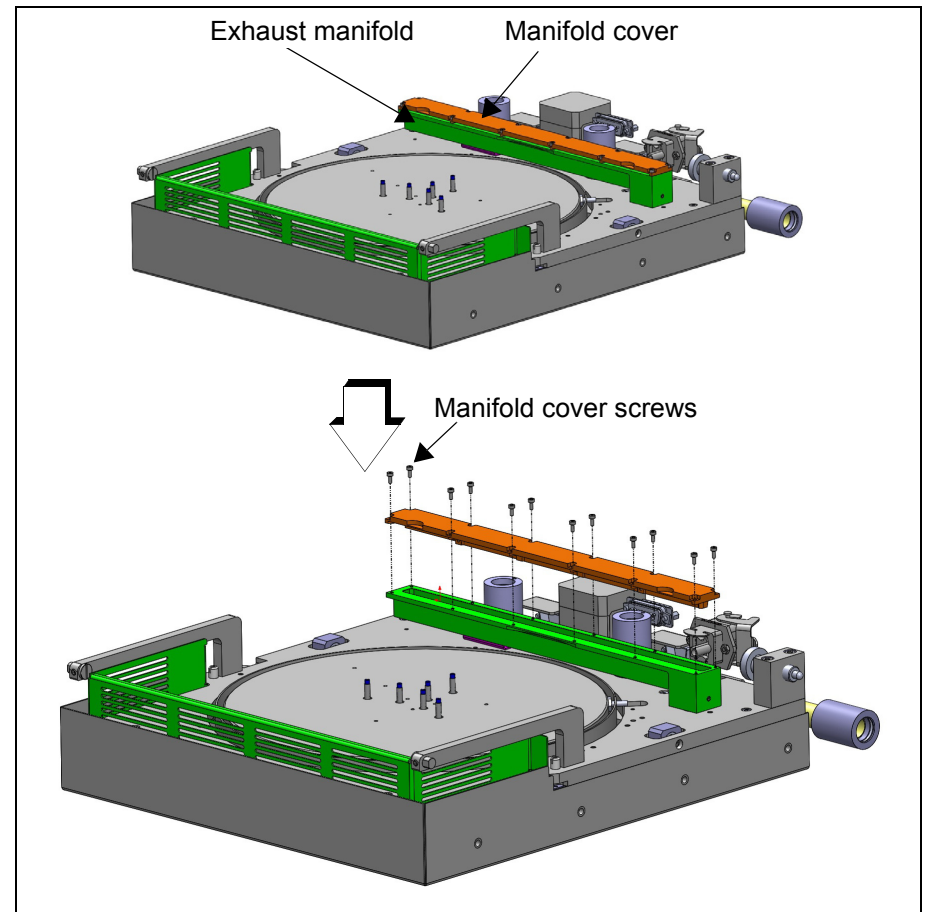
To clean the exhaust manifold, proceed as follows:

**Note!**

Manifold cleaning is typically only required with PI processes.

1. Move pins in **Down** position via the tool controller.
2. Switch off the tool and open the tool and module access door.
3. Remove the chamber from the temperature stack - refer to page 131.
4. Open the chamber cover and secure the cover with the support pin.
5. Using the 1.5mm hex wrench to remove the manifold cover screws (12x).
6. Remove the manifold cover.
7. Inspect cover and manifold base for solvent build up.
Primary areas of concern are the mating surfaces between the base and the cover. These must be free of obstructions.
8. Clean cover and base accordingly with cleanroom wipes and the appropriate cleaning media
9. Re-install the manifold cover.
10. After having cleaned and checked the chamber, re-install the chamber into the temperature stack.

Exhaust manifold cleaning has been finished.



7.3. HMDS Cassette

**Note!**

For Hotplate and Coolplate cassette PM refer to page 133.

For details about disposal after lifetime refer to chapter 1, section 1.11 of the User Manual.

**WARNING!**

Toxic/ Flammable/ Corrosive media.

Health hazard due to contact and inhalation of remaining media.



Avoid skin and and eye contact.

Do not inhale.

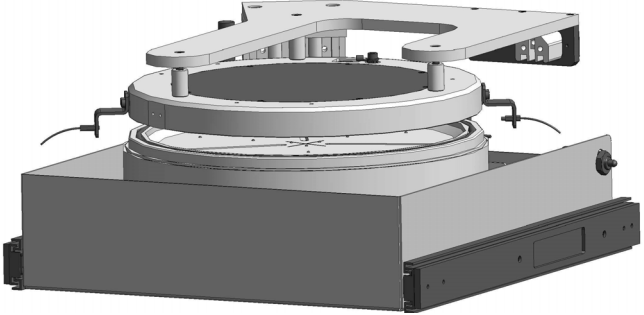


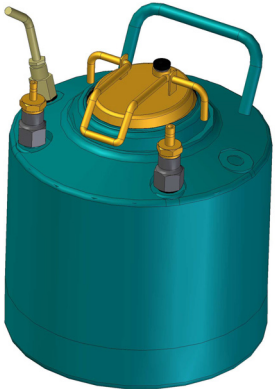
Wear safety goggles, gloves and protective clothing.



Consider and observe the Material
Safety Data Sheets.

7.3.1. Preventive Maintenance Overview

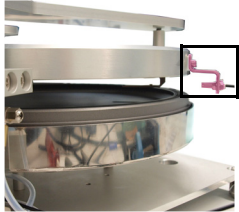
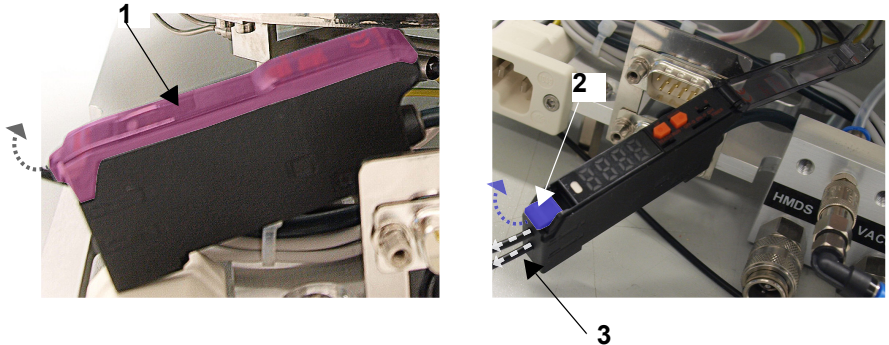
View	Part	Interval/ Shifts	To Do	Description/ normal state	Time min.	Page
	HMDS cassette	500	<ul style="list-style-type: none"> • Clean chamber, cover and wafer supporting elements. • In combination with the chamber cleaning <ul style="list-style-type: none"> • visually check the cover sealing and replace, if required. • Clean and grease the drive unit. 	The chamber and the cover should be without contamination	15	142
	Drive Unit	500	<ul style="list-style-type: none"> • Clean and lubricate the drive unit. 		15	142 + 145
	Drive Unit	500	<ul style="list-style-type: none"> • Check movement of drive unit. • If required, adjust speed via the 2 throttles for up and down movement located at the drive unit. 		10	

View	Part	Interval/ Shifts	To Do	Description/ normal state	Time min.	Page
<p>HMDS tank</p> 	HMDS tank (located in the media area of the tool)	500	<ul style="list-style-type: none"> Visually check the condition of the O-rings. Replace O-rings, if required. 	The O-ring is non-porous and not damaged or deformed.	5	146
	HMDS tank (located in the media area of the tool)	1000	<ul style="list-style-type: none"> Drain tank and fill with fresh HMDS liquid. 		10	147
	Exhaust	500	<ul style="list-style-type: none"> Visually check of exhaust hose for debris build-up. 	Hose should be free of debris build-up.	10	-
	Fittings	500	<ul style="list-style-type: none"> Check all fittings for tightness. 	All fittings are tight.	2	-
	Optical wafer detection	500	<ul style="list-style-type: none"> Visually check, if both sensors are aligned to each other. To adjust call SUSS Service. 	Call SUSS Service!	2	-
	All media connections	500	<ul style="list-style-type: none"> Check all media connections and seals for leakage, tighten if required. 	All connections are tight and free of leakage.	10	

7.3.2. Clean HMDS Chamber

Interval	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	60	<ul style="list-style-type: none"> Allen key for M6x12 screws 	<ul style="list-style-type: none"> Particle-free dry cleanroom wipes Isopropyl alcohol (IPA) Clean compressed air pistol 	Cover sealing ring: part no.: V111787

Consider Safety Instructions!

Description	
<p>To clean the chamber, proceed as follows:</p> <ol style="list-style-type: none"> Switch off the tool and open the tool and module access doors. Dis-assemble the chamber from the HCV stack. - Refer to section 'Remove and Install Hotplate/Coolplate/HMDS Cassettes" on page 131. <p>Note! Do not loosen or remove the fixation plate of the light barrier.</p>  <p>CAUTION! Risk of damage of the fibre optics. Do not bend the fibre optic cables! Do not use force! Handle the fibre optic cables with care!</p> <p>Note! Before removing the fibre optics from the amplifier, mark them for easy identification in case of later assembly.</p> <ol style="list-style-type: none"> Disconnect the light barrier: Open the cover of the amplifier (1). Pull the lock lever (2) for fixing the 2 fibre optic cables upwards. Carefully remove both fibre optic cables (3) from the amplifier and store them safely. 	

Description

4. Remove the chamber cover assembly (4) (marked pink in the drawing):

Loosen the 2x M6x12 screws (4a) with the appropriate allen key. Keep the screws for later assembly.

5. Carefully lift off the chamber cover assembly using both hands.



CAUTION!
Risk of damage of the light barrier.

Handle chamber cover assembly with care and place it top down on a clean and even surface!
Do not bend the fibre optics!

6. Place chamber cover assembly top down on a clean and even surface.

7. Clean the HMDS chamber (6), the wafer supports (7) and the chamber cover (5) using cleanroom wipes and IPA.

8. Blow out with clean compressed air.

9. Visually check the condition of the cover sealing ring (part no.:V111787).(8) Make sure that the sealing ring is non-porous and not damaged or deformed. Otherwise replace the cover sealing ring.

10. In combination with chamber cleaning also clean and lubricate the drive unit of the chamber cover.



Refer to section 'Clean and Lubricate Chamber Cover Drive Unit' on page 145.

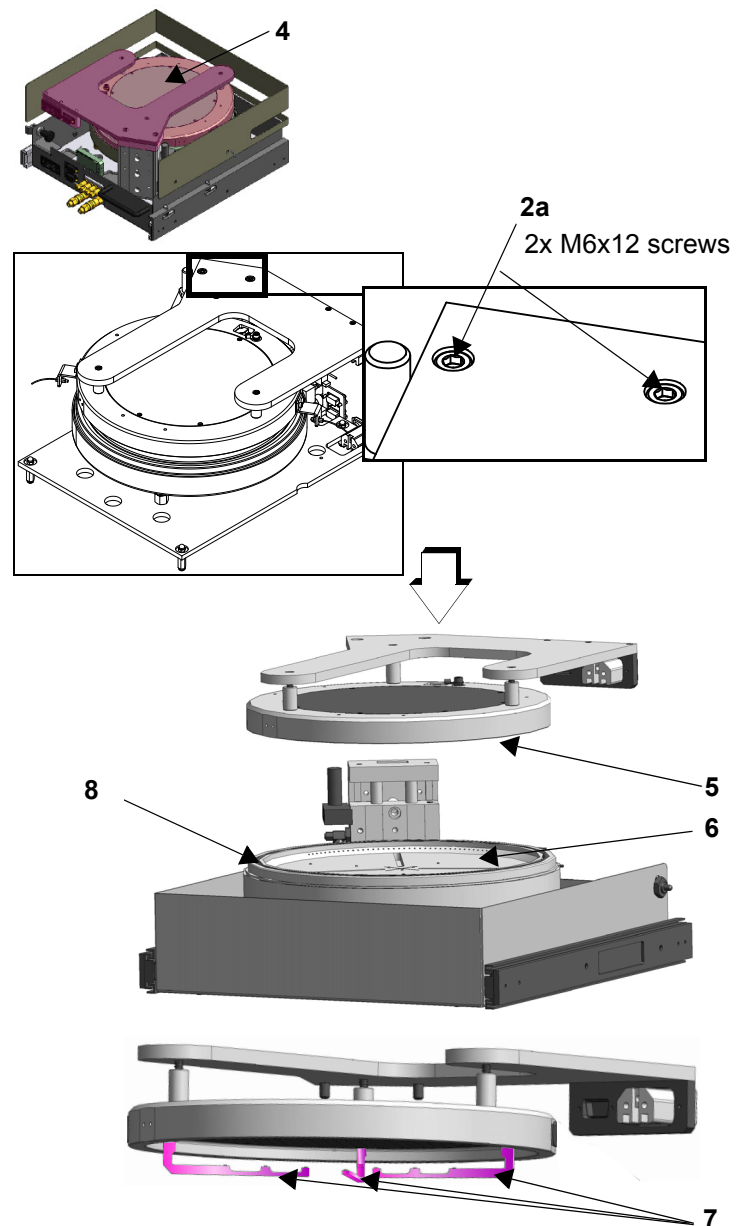
11. After having cleaned chamber, cover and wafer supports and after having lubricated the drive unit, assemble all parts in reverse order to dis-assembly.



CAUTION!
Risk of damage to the wafer supports.

If wafer supports and their pockets are not aligned accurately, wafer supports will be damaged when moving down chamber cover.

► Ensure exact alignment.



Description

5

12. Before tightening the 2x M6x12 screws (4a) to fix the chamber cover carefully check that the wafer supports exactly fit into the corresponding pockets in the HMDS plate. Refer to the adjacent figure.
If not, readjust chamber cover until wafer supports and pockets are exactly aligned.

13. Tighten the screws to fix the chamber cover.

14. Connect the fibre optic cables to the amplifier.

15. Re-install the chamber into the HCV stack.

16. After the module components have been assembled, close the tool doors and restore power to the tool.

17. Carry out the following tests before starting processing to ensure proper operation of the HMDS chamber:

- Test opening/ closing movement of the HMDS chamber.



7.3.6. 'Test the Opening/ Closing Movement of the HMDS Chamber' on page 149.

- Carry out a robot handling test.
- Carry out a functional test of the light barrier.



7.3.8. 'Carry out a Functional Test of the Light Barrier' on page 150.

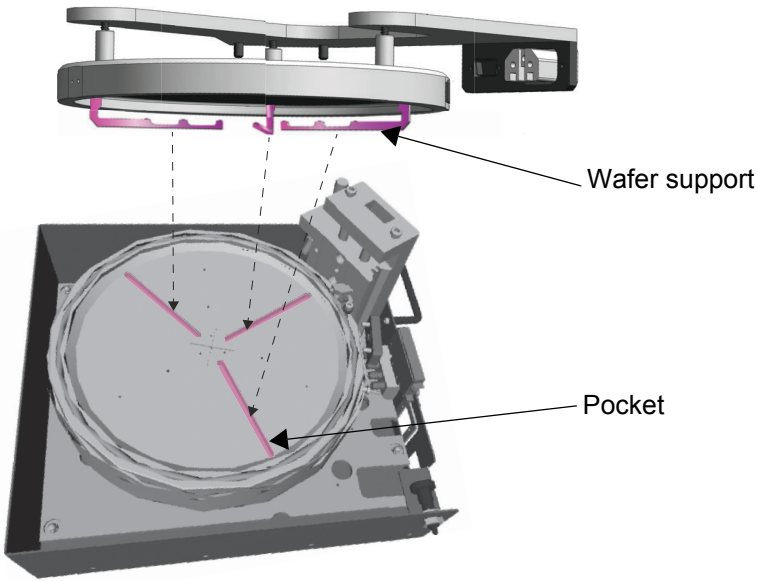
- Carry out a chamber leak test.



7.3.7. 'Carry out a HMDS Chamber Leak Test' on page 149.

18. If all of the tests listed above are positive, HMDS chamber can be used for processing.




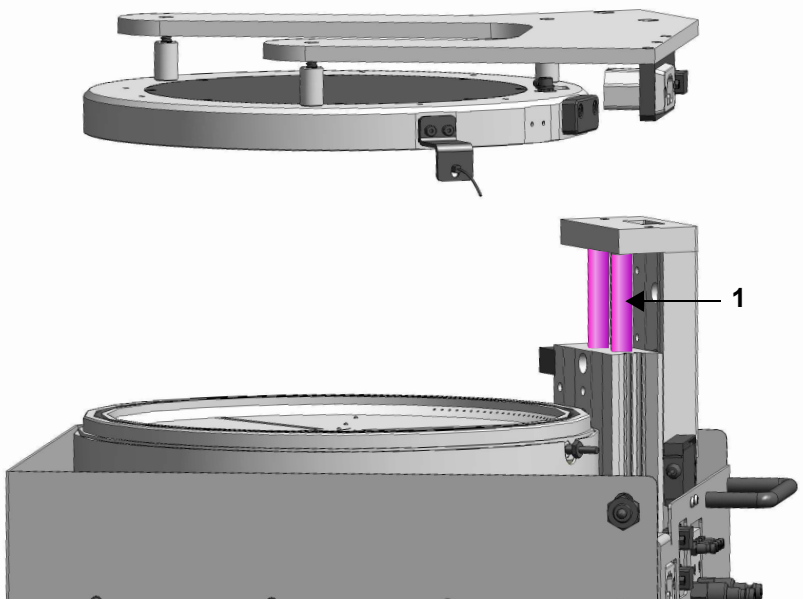
If one of the tests is negative, call SUSS service!



7.3.3. Clean and Lubricate Chamber Cover Drive Unit

Interval/Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	15		<ul style="list-style-type: none"> Particle-free cleanroom wipes 	<ul style="list-style-type: none"> Soap-free synthetic grease (suitable for cleanroom environment)



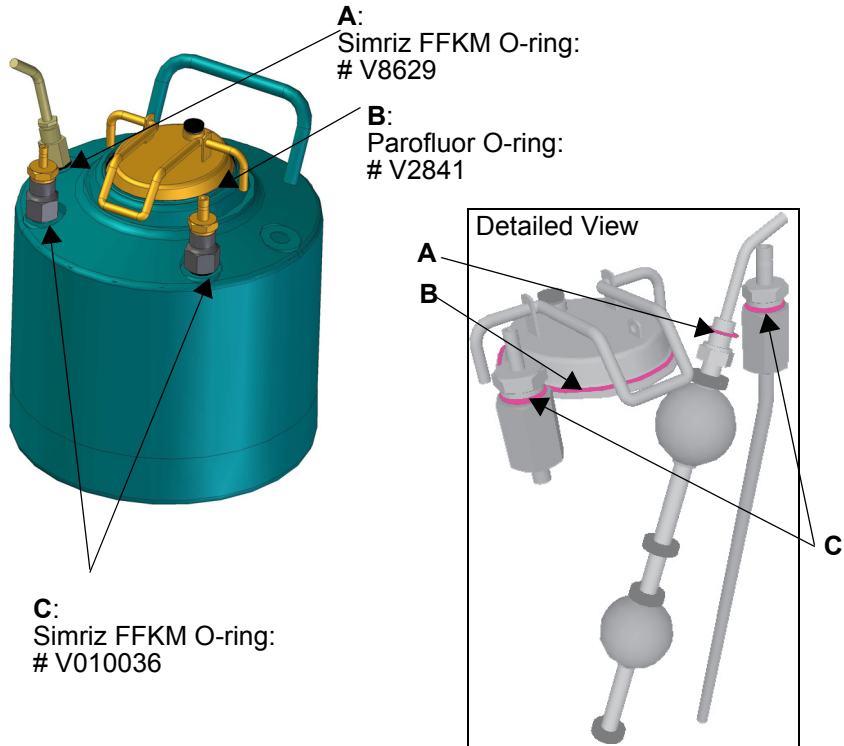
Consider Safety Instructions!

Description	
<p>To clean and grease the pneumatic lift unit for the cover, proceed as follows:</p> <p> Note! Carry out this procedure in combination with the chamber cleaning. Refer to section 'Clean HMDS Chamber' on page 142.</p> <ol style="list-style-type: none"> Clean the guide shafts (1) using dry cleanroom wipes. Apply a thin layer of grease to the guide shafts (1). <p> Note! Do not overlubricate parts! Excessive lubricant causes damage.</p> <p>Assembly of the module components has to be carried out in reverse order to dis-assembly.</p> <p> Refer to section 'Clean HMDS Chamber' on page 142.</p>	 <p>The diagram illustrates the chamber cover drive unit. The top part shows the cover assembly with a pneumatic lift unit. The bottom part shows the drive unit with two vertical guide shafts highlighted in pink and labeled with the number '1'. An arrow points to these shafts from the label '1'.</p>

7.3.4. HMDS Tank: Check O-Rings

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	10		<ul style="list-style-type: none"> Personal Protective Equipment according to the corresponding Material Safety Data Sheet (MSDS) 	<ul style="list-style-type: none"> 1x Simriz FFKM O-ring part number: V8629 1x Parofluor O-ring: part number: V2841 2x Simriz FFKM O-rings: part number: V010036



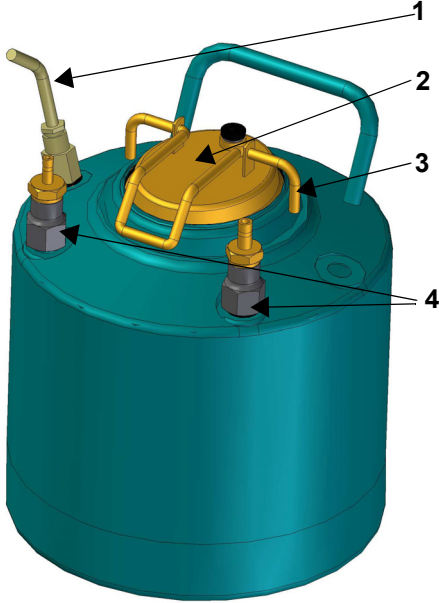
Consider Safety Instructions!


Description	
<p> Note! Ensure that tank is depressurized before starting maintenance work. Bring flip switch of pressure tank in OFF position. Ensure that zero pressure is indicated on tank pressure indicator prior to continuing.</p> <ol style="list-style-type: none"> 1. Visually check the condition of all O-rings. 2. Make sure that the O-rings are non-porous and not damaged or deformed. Replace O-rings, if required. <p> For details about pressure tanks refer to chapter 6 of the User Manual.</p>	 <p>A: Simriz FFKM O-ring: # V8629</p> <p>B: Parofluor O-ring: # V2841</p> <p>C: Simriz FFKM O-ring: # V010036</p> <p>Detailed View</p>

7.3.5. HMDS Tank: Drain the Tank

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
500	10		<ul style="list-style-type: none"> Personal Protective Equipment according to the corresponding Material Safety Data Sheet (MSDS) 	<ul style="list-style-type: none"> Fresh HMDS liquid

Consider Safety Instructions!

Description	
<p> Note! Ensure that tank is depressurized before starting maintenance work. Bring flip switch of pressure tank in OFF position. Ensure that zero pressure is indicated on tank pressure indicator prior to continuing.</p> <ol style="list-style-type: none"> After the tank has been depressurized remove all supply lines and conductions: Remove the pressure line first, followed by the media line. (4) Remove the connector of the sensor cable. (1) (=> an error message is displayed on the tool controller surface) Remove the depressurized and still closed tank from the media area of the tool. Place tank in the area especially designed to be used for filling/ draining of tanks. A fume hood is required. Open tank. Move the clamping bracket (3) and remove the lid (2) by a rotary/ tilting motion. <p> Note! If it is not possible to open the tank, tank is still pressurized! Reconnect tank and depressurize completely!</p>	

5. Empty the tank:
Use an appropriate device for pumping the media out of the tank.
In case of spilling take up media with liquid-absorbent material!
Refer to the corresponding MSDS!
6. Dispose of the media according to the local regulations for the disposal of chemicals or residues - contact the authorities in charge or approved waste disposal companies which will advise you in how to dispose of special waste.
Refer to the respective Material Safety Data Sheet of the supplier.
7. Remove the pumping device from the tank as soon as the tank is empty.
8. Fill the tank with fresh HMDS.
 For details about filling pressure tanks refer to chapter 6 section *6.8 Filling of Media Supply Tanks* of the User Manual.

7.3.6. Test the Opening/ Closing Movement of the HMDS Chamber



Note!

For carrying out the following procedure Service access rights for the tool controller are required!

Carry out the following steps to test the opening/ closing movement of the HMDS chamber:

1. Ensure that tool is in *PAUSE* mode.
2. Open the *Slot Service* of the HMDS chamber. (*Slot Service/ Chamber*)
3. Check the check box **Open** to open the HMDS chamber.
4. Check the check box **Close** to close the HMDS chamber.
The cover moves smoothly and evenly within 4-5 seconds.

7.3.7. Carry out a HMDS Chamber Leak Test

- ▶ Load and start a recipe, so that the wafer is enclosed in the HMDS chamber for at least 60 seconds.
During this period of time, monitor the vacuum value (-0.8bar) displayed at the SMC sensor.

Recipe Step No.	Description
1	Chamber evacuation to 0.800bar
2	HMDS gas inlet until SMC displays -0.300bar
3	Wait for 60 seconds

Maximum leak rate: 5mbar per minute

- The HMDS chamber is leak tight.
The vacuum value must not decrease more than 5mbar/minute (during the 60 seconds wait time).
- The HMDS chamber is **not** leak tight,
if the vacuum value decreases for more than 5mbar/minute during the 60 seconds wait time.
Call SUSS service for further actions!

7.3.8. Carry out a Functional Test of the Light Barrier

**Note!**

Observe the sequence of the following steps!

1. Ensure that tool is in *PAUSE* mode and **no** wafer is loaded.
2. Initialize HMDS slot via **<Slot Init>**.
3. Ensure that no wafer is detected by the light barrier.
4. Handle a wafer into the HMDS chamber per Drag&Drop.
5. Graphically remove wafer from the tool controller surface via **<Remove Substrate>**.
The wafer is no longer displayed on the tool controller surface, but physically still is inside the HMDS slot.
6. Initialize HMDS slot via **<Slot Init>**. The light barrier functions:
 - *correctly* if the light barrier detects the wafer in the slot.
 - *incorrectly* if the light barrier detects no wafer in the slot.

Further actions will be necessary, like checking the light barrier or the parameters of the amplifier.
In this case call SUSS service!

8.MEDIA SUPPLY

Only qualified, properly trained persons should perform any maintenance or repair procedures.

Mechanical hazards, electrical hazards, and shock hazards exist on the Media Supply units. The necessary procedures should only be performed by qualified persons. Read and understand chapter 'Safety Instructions' before performing any procedure.



Warning! - Pressurized system

Media can escape from supply lines and fittings not sealed properly. Maintenance work is only to be carried out in conformance with all safety rules and regulations.



Note!

When working with media always wear safety goggles and protective clothing and gloves!
See corresponding Material Safety Data Sheets for further information.



Note - Tank Weights!

When handling tanks observe the following weights:

- 10 l steel tank filled : 13.6 kg
- empty : 3.6 kg
- 5 l plastic tank filled : 6.8 kg
- empty : 1.8 kg



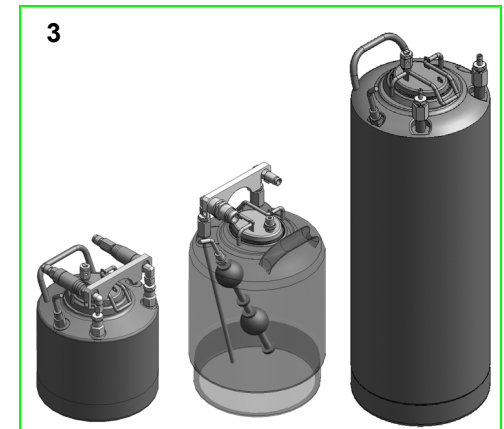
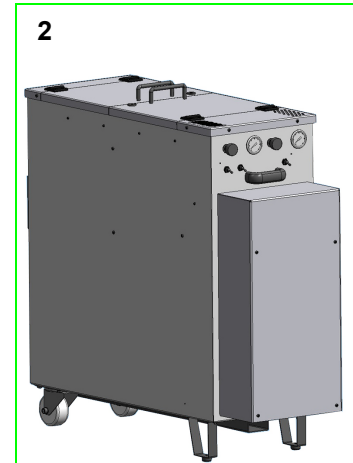
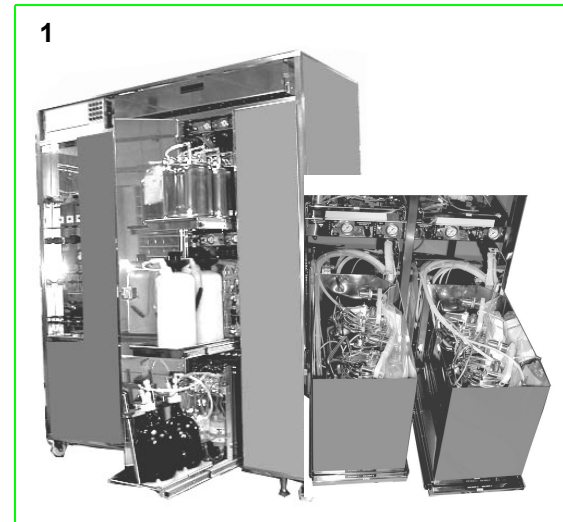
Warning!

All power to the tool must be disconnected per the facilities' lockout/tagout procedure before servicing to prevent the risk of electrical burn or shock.
See worksheets for detailed information.



Warning!

All tool components have to cool down to ambient temperature before being cleaned.



No. in Fig.	Denomination
1	Media supply cabinet with media drawers
2	Media storage
3	Media supply tanks

8.1. Preventive Maintenance Overview

View	Part	Interval/ Shifts	To Do	Description/ normal state	Time min.	Page
	All media supply lines	20 (weekly)	<ul style="list-style-type: none"> Visually check lines and fittings for tightness and leaks. Visually check media drawers for leaking media. 	Hoses may: <ul style="list-style-type: none"> - not be pinched - not have loose fittings - not be dirty. 	10	-
	Media and pressure distribution	20 (weekly)	<ul style="list-style-type: none"> Check pressure indicators (N2, DI-water, vacuum, compressed air) during system operation 		1	-
	Media inlets and outlets	500 (biannual)	<ul style="list-style-type: none"> Check lines and fittings for leaks. Check for proper and tightened fittings. Check for cleanliness. 		10	-
	Over-pressure valves on tanks and resist bottles	500 (biannual)	<ul style="list-style-type: none"> Dismantle and check trigger pressure. <p>Testing of triggering pressure is only to be performed by trained personnel.</p>	Prior to starting work make sure that cabinet components are vented and all inlet valve are shut off. Over-pressure valves open with: <ul style="list-style-type: none"> - 3 bar on steel tanks - 3 bar on plastic tanks - 0.8 bar on resist bottles 	15 per valve	-
	Venting filter for resist bottles	500 (biannual)	<ul style="list-style-type: none"> Replace filter. (# V2640) 	Warning! Prior to starting work ensure that pressure has been released from media cabinet.	2 per filter	-

9. TEMPERATURE CONTROL UNITS

Only qualified, properly trained and authorized persons should perform any maintenance or repair procedures.



Warning!
Electrical Hazard!

Before performing maintenance on the Temperature Control Units (TCUs), verify that the power plug is disconnected from the mains socket. Prevent humidity from entering into circuit.



Warning!
Electrical Hazard!

All power to the tool must be disconnected per the facilities' lock-out/ tagout procedure before servicing to prevent the risk of electrical burn or shock. See worksheets for detailed information.



Caution!

All system components have to cool down to ambient temperature before being cleaned.



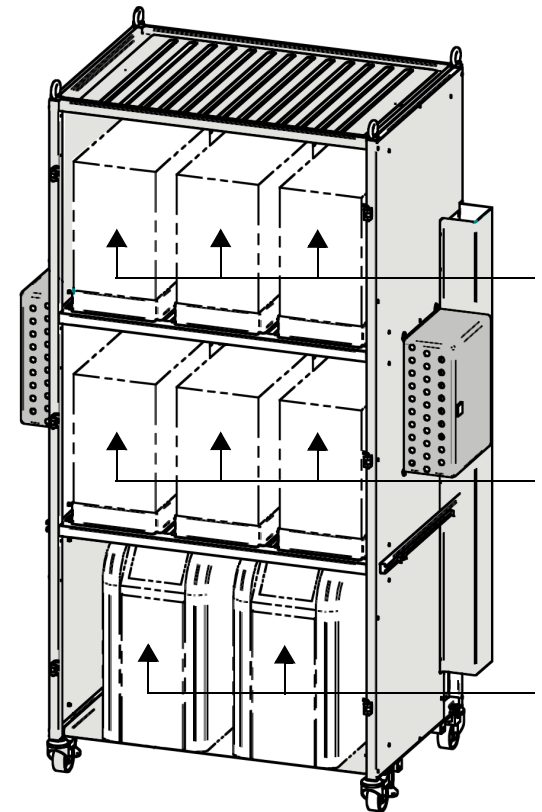
Caution!
Electrical Hazard! Tool damage possible!

Never operate the unit without bath fluid in the bath.



Note!

Do not drain the bath fluid while it is hot or cold! Check the temperature of the bath fluid prior to draining (by switching the unit on for a short moment for example).



1. Julabo F30-C
2. Julabo FL 601

TCU locations in an optional *Thermo Cabinet*

9.1. Ergonomic Considerations

For moving a temperature control unit consider the following:



CAUTION!

Ergonomic hazard!

Risk of damage to the spine by lifting or moving heavy objects.

Use personnel or mechanical assistance for lifting heavy objects:

For carrying loads of

- < 18 kg (< 40 lb.) one person is required
- 18 - 32 kg (40 - 70 lb.) at least two persons are required
- 32 - 55 kg (70 - 120 lb.) at least three persons are required
- > 55 kg (> 120 lb.) a forklift is required.

Weights

F30C : 32kg

FL601 : 48kg



Note!

For lifting an F30C temperature control unit at least **two persons** are required.

For lifting an FL601 temperature control unit at least **three persons** are required.

For changing a temperature control unit located within a thermo cabinet consider the following:

1. Open the thermo cabinet.
2. Loosen all cables and connections at the rear of the temperature control unit.
3. Lift temperature unit out off the cabinet using the corresponding handles.

9.2. Preventive Maintenance Overview

View	Part	Interval/ Shifts	To Do	Description/ normal state	Time min.	Page
<p>F30C FL601</p>	Unit, and all media lines	20 (weekly)	<ul style="list-style-type: none"> Visually check for: <ul style="list-style-type: none"> leaks spilled media. 	All lines, screws, and connections are leak free and undamaged.	1	-
	Water tank	20 (weekly)	<ul style="list-style-type: none"> Check water level. Fill water tank up to max using DI water 	Fill water to max. level. Use DI water to refill evaporated water. <i>If you have experienced a spill, refill with a water mix of: 90% DI water, 10% city water^a.</i>	2	-
	Water tank	20 (weekly)	<ul style="list-style-type: none"> Check functionality of the level indicator. 		2	-
	Unit	20 (weekly)	<ul style="list-style-type: none"> Ensure the displayed temperature matches specification. 	Standard temperature: 20-22°C F30C: See recipe setting. FL601: Check <i>OEM^b</i> manual, chapter temp. setting.	2	-
	Unit	as required	<ul style="list-style-type: none"> Clean the unit. 	Check <i>OEM</i> manual. See chapter <i>cleaning the unit</i> .	2	-
	Water tank	1000 (1 year)	<ul style="list-style-type: none"> Replace liquid in the water tank. Use the following water mix: <ul style="list-style-type: none"> 90% DI water 10% City water^a. 	<ul style="list-style-type: none"> Loosen drain screw to drain liquid. Use a suitable collection vessel. FL601: Use a short tube. FC30C: if required, place unit on a table. Tighten drain screw and refill tank. Check <i>OEM</i> manual. See chapters <i>filling, draining</i>. 	20	-

^{a)} city water = domestic water / ^{b)} OEM = OEM manuals are found in the appendix on the CD.



TEMPERATURE CONTROL UNITS

10.IONIZER BARS




Note!
Also refer to the OEM manual in the appendix (on the CD).



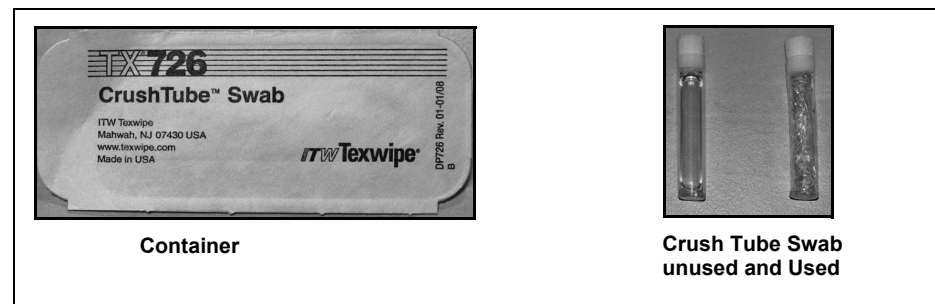
CAUTION!
Electrical shock and tool damage!
Maintaining the ionizer bar while machine is running may cause electrical shock or damage to ionizer bar!
Always turn machine off before starting the ionizer bar maintenance.

10.1. Preventive Maintenance Overview

Interval/ Shifts	Required time (min.)	Tools	Operating/ cleaning media	Spare parts
6 Month	10 per ionizer bar	<ul style="list-style-type: none"> CrushTube Swab 	<ul style="list-style-type: none"> Shut machine off. The ionizer bars must have no power otherwise the ionizer bars may damage. Break CrushTube. Press it. The internal container will break and allows the cleaning media to go to the swab. Clean an emitter point using the white swab of the CrushTube. Press on the transparent body to get more cleaning liquid. <div style="text-align: center;">  <p>Clean the emitter point with the white swab</p> </div> <ul style="list-style-type: none"> For every emitter point use a new Crush-Tube. 	CrushTube Swab; see image below

IONIZER BARS

3 years	10 per ionizer bar	<ul style="list-style-type: none"> Replace emitter points 	<ul style="list-style-type: none"> Shut machine off. The ionizer bars must have no power otherwise the ionizer bars may damage. Use a soft-jawed tool to remove emitter point. Careful: Emitter points break easily. Then it is very difficult to remove. Keep the emitter point straight and pull it out. Clean the area around the socket with IPA. Very carefully insert a new emitter point. 	Emitter points
As required		<ul style="list-style-type: none"> Change the Ionizer Bar Parameter 	<ul style="list-style-type: none"> Refer to the procedure below this table. 	charge plate monitor, stopwatch, maintenance wafer



10.2. Change the Ionizer Bar Parameter

1. Make a measurement of the discharging time from +1000V to +100V and from -1000V to -100V with the charge plate monitor. Measure at wafer height. If required, use a stopwatch.
2. Determine the balance:
 - If the positive measurement was slower than the negative one, your *balance is negative*.
 - If the negative measurement was slower than the positive one, your *balance is positive*.
 - If your positive measurement is about equal to the negative measurement (range about $\pm 10\%$), your *balance is equalized*.

When your balance is equal, you can skip this procedure. Changes are not required.

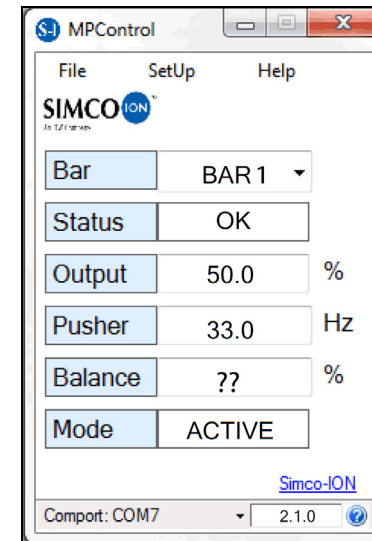
3. Start the software **MPControl** on the tool controller PC.
Found on the desktop or in the Windows Start menu:
Start > Programs > MPControl > MPControl.



Note!

Start the software **before** you plug-in the plug. If you reverse the order the settings will be overwritten.
If this ever happens, try to recover the data with **File > Load** and retrieve the data from the PC's hard disk.

4. When the program ask for a connection mode, select: **to a Single AeroBar.**
5. Plug the DB9 plug into the respective *RJ-45 to DB9 Adapter*.
The unplugged adapter is located near the *RJ-45 to DB9 Adapters* in the IO station.
6. When the window **MPControl** appears, click on **File > Refresh.**



7. Click into the **Balance** field and enter an offset as follows:
 - If your balance was negative, enter -10 into the balance field.
 - If your balance was positive, enter 10 into the balance field.
 Press **Enter** when finished.
8. Retry your measurement according to step 1 and 2. and enter a new value into the **Balance** field as follows:
 - If your balance was negative and is still negative, increase the value by -10. For instance the balance field shows -10. Increase the value by -10 and enter -20.
 - If your balance was positive and is still positive, increase the value by 10. For instance the balance field shows 10. Increase the value by 10 and enter 20.
 - If your balance changed from negative to positive or vice-versa: interpolate a value.
 - If your balance is equalized (range about $\pm 10\%$), you can stop the measurement. Go to step 10.

IONIZER BARS

9. Retry step 8 until your balance is equalized.
Maximum balance value is -49 and 49%.
10. Optionally, save the data on you disk with **File > Save**.
When you have saved the data to a disk you can retrieve it after a data loss.
11. Close the software and remove the laptop.

10.3. Put the Ionizer Offline

Use this procedure if you work right below the ionizer bar and the tool is not shut down.

1. Start the software and connect the USB cable as illustrated in the user manual.
2. Double click into the field **Mode** and change from **Active** to **Standby**.
3. Change the mode back to **Active** after your work.
4. Close the software and remove the laptop.