



# ANASPEC C.C.

SUPPORT AND SUPPLY OF ANALYTICAL EQUIPMENT

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## Carl Zeiss SMT 400 Series Service Schedule

<b>Company:</b>	<b>Tel. Number:</b>
<b>Contact Person:</b>	<b>Email:</b>
<b>Date:</b>	<b>Service Report No:</b>
<b>SEM Serial No:</b>	<b>SEM Software &amp; Op Sys Version:</b>
<b>Detector Serial No:</b>	<b>Pulse Processor Serial No:</b>
<b>EDS Software &amp; Op Sys Version:</b>	<b>Other Accessories:</b>

### System Performance

Discuss current performance with Customer

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### Initial System Checks

#### Current Configuration

Filament I =            A	Beam I = $\mu$ A
Probe I =                nA	Specimen I =           nA
Gun Vacuum =                torr	System Vacuum =                torr
Stage Z =                mm	WD =                    mm
Rotate Zero =                °	Tilt =                    °

CHECK CONDITION OF	COMMENTS			
<b>SEM Log file</b>	Note down error messages			
<b>Stage Initialisation – X, Y, Z, R, T</b>	Rotate & Tilt Disabled?			
<b>Image Resolution on SE image on WD above</b>	NB: Image must be saved in Anaspec directory			
<b>Focus Wobble</b>				
<b>Note Astigmatism</b> (Stigmator Values)	X =	%		
	Y =	%		
<b>IGP condition</b>	Is the IGP hot? IGP age =    years			
<b>Red Turbo Dampeners</b>	NB: The chamber must not touch the table top			
<b>BSD Signal on each quadrant</b>				
<b>BSD Preamp Peltier device working</b>				
<b>X-ray Detector calibration</b>				
<b>X-ray Detector Save Spectra on Cu</b>	Save spectra in Service directory			
<b>SE Detector condition (colour of coating)</b>				
<b>Confirm all Detector connections</b>	SE, BSE, TV			
<b>Column Isolation Valve Condition</b>	Leaking Valve?			
<b>Filament Centre Position</b>	Gun Shift - X=	%	Y=	%
	Gun Tilt - X=	%	Y=	%
<b>Back Up SEM Config Files</b> (emserver file to service directory)				
<b>SEM Magnification Calibration</b>	<2% error allowed Mag Range 1			
<b>SEM Scan Speed Calibration</b>	Minimal movement allowed when changing scan speeds			
<b>SEM Stage Centre Calibration</b>	Using Stage test Macro move stage around using X Y and R and then return to original position. Does it return to exact same spot?			
<b>Final Aperture Positions</b>	Pos 1 X = Y =	Pos 2 X = Y =	Pos 3 X = Y =	Pos 4 X = Y =

**Observations**

**POLISHING & CLEANING OR REPLACEMENT**

**SYSTEM PARTS**

**COMMENTS**

<b>Cathode Assembly</b>	Colour of the tungsten coating?
<b>Emission Aperture</b>	Still flat?
<b>Anode</b>	
<b>Gun Alignment Coil Assembly</b>	
<b>Gun Alignment Coil O-Rings REPLACEMENT</b>	O-RING 10.6mm x 2.4mm VITON
<b>Anti-contaminator Aperture</b>	Need Replacement?
<b>Anti-contaminator</b>	
<b>Column Isolation Valve Condition</b>	
<b>Column Isolation Valve O-Ring REPLACEMENT</b>	O-RING 7.6mm x 2.4mm VITON
<b>Column Screw Condition</b> (Grub screws in Cathode? Fastening screws in the gun align coil assembly? Tightening screws in the plate? Final aperture holder screws? Filament centering screws in the column?)	Need Replacement?
<b>Spray Apertures</b>	Quantity? Condition? Need Replacement?
<b>Final Aperture Holder</b>	Clean the holding plate for the apertures.
<b>Final Apertures REPLACEMENT</b>	Replacement of Used 50 $\mu$ apertures
<b>Internal Column Condition</b>	Vacuuming required?
<b>Collimator on X-ray Detector</b>	Check for Oil, CLEAN ONLY WITH ETHANOL <b>NO</b> ULTRASONIC BATH!!
<b>Window condition on Detector</b>	Note amount of Oil, IF CLEANING USE ETHANOL ONLY
<b>Electron Trap's Position</b>	Re-secure loose trap

<b>Condition of X-ray Detector</b>	Ice contamination on Crystal? Resolution deterioration? Alien Body/Ice balls inside dewar?
<b>Clean Chamber and Stage</b>	Note the stage condition (shavings, bits of sample)?
<b>Stage Levelling</b>	
<b>Penning Gauge &amp; O-ring holder</b>	
<b>Pump Down Time</b>	Minutes
<b>Replace Blown Bulbs on SEM Front Panel</b>	
<b>Fans and Filters</b>	Clean SEM PC, All Pulse Processors and cabinet/desk
<b>Rotary Pump Oil</b>	Replacement, Colouration.
<b>Oil Mist Filter</b>	Replacement
<b>Fore line Trap</b>	Alumina Replacement
<b>Desiccator on SEM</b>	
<b>Clean both Mouse &amp; Keyboard</b>	Both PCs
<b>Wipe down Desk and Plinth</b>	
<b>Brightness &amp; Contrast of Monitors</b>	If at max or burnt out, need replacement?
<b>Scan Disk and Defragment</b>	On SEM PC
<b>Remove Temp Files</b>	On SEM PC
<b>Bake out IGP and Column overnight</b>	Heat strap required/leave CCV(column Chamber Valve open over night)

## OPERATIONAL CHECKS

**CONFIRM CONDITION OF**

**COMMENTS**

<b>System Vacuum</b>	torr
<b>Gun Vacuum</b>	torr
<b>PC Date and Time</b>	Reset in Bios on both SEM and QS PC
<b>SEM Magnification Calibration</b>	<2% error allowed at Mag Range 1
<b>SEM Scan Speed Calibration</b>	Minimal movement allowed when changing scan speeds
<b>Image Resolution on SE</b>	Has image improved?
<b>Beam Condition Improved</b>	Fil I =           A Bias=            μA Probe I =           nA
<b>Correct Filament Centre Position</b>	Gun Shift - X=       % Y=       % Gun Tilt - X=       % Y=       %
<b>BSD Contrast and Brightness Improved</b>	Brightness =                % Contrast =                    %

