



# ANASPEC C.C.

SUPPORT AND SUPPLY OF ANALYTICAL EQUIPMENT

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## Carl Zeiss SMT FE (1500, Supra, Ultra) Series Service Schedule

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

### System Performance

Discuss current performance with Customer

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### Initial System Checks

#### Current Configuration

Filament I =           A	Beam I =                μA
Probe I =               nA	Extractor I =           nA
Spot Size =	Filament Age =           hours
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>SEM Water Cooling Temp Table</b> Tools/go to panel/water temperature	Temp =                    C°
<b>Column Suspension</b>	NB: The chamber must not touch the table top
<b>Stage Initialisation – X, Y, Z, R, T</b>	
<b>Image Resolution on Inlens SE @ 300K x Mag image at 6mm WD</b>	NB: Image must be saved in Anaspec directory
<b>Resolution (Vibration/noise)</b>	NB: Image must be saved in Anaspec directory
<b>Gun Alignment</b>	
<b>Gun Centre Position</b>	Gun Shift -                    % Gun Tilt -                    %
<b>Condition of Inlens Detector</b>	
<b>Condition of SE2 Scintillator</b>	
<b>Note Astigmatism</b> (Stigmator Values)	X =                    % Y =                    %
<b>IGP condition</b>	Is the IGP hot? IGP age =                    years
<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>Confirm all Detector connections</b>	PL13 – SE, PL14 – BSE, PL17 – TV
<b>Column Isolation Valve Condition</b>	Leaking Valve?
<b>Primary Pump condition (scroll/rotary)</b>	Noise level/oil colour
<b>Back Up SEM Config Files</b> (emserver file to service directory)	

### CHECKS & CALIBRATIONS

CHECK CONDITION OF	COMMENTS
<b>Aperture Size and Specimen Current</b> (Faraday cup @ 10Kv, 6mm WD)	<b>Size and Specimen Current</b>
<b>Aperture 1</b>	<b>Size: _____ μ      Value: _____</b>
<b>Aperture 2</b>	<b>Size: _____ μ      Value: _____</b>
<b>Aperture 3</b>	<b>Size: _____ μ      Value: _____</b>
<b>Aperture 4</b>	<b>Size: _____ μ      Value: _____</b>
<b>Aperture 5</b>	<b>Size: _____ μ      Value: _____</b>
<b>Aperture 6</b>	<b>Size: _____ μ      Value: _____</b>

Column Alignment Shift and Tilt	Course Shift and Tilt
Aperture 1	Aper X: _____ Y: _____ Gun X: _____ Y: _____
Aperture 2	Aper X: _____ Y: _____ Gun X: _____ Y: _____
Aperture 3	Aper X: _____ Y: _____ Gun X: _____ Y: _____
Aperture 4	Aper X: _____ Y: _____ Gun X: _____ Y: _____
Aperture 5	Aper X: _____ Y: _____ Gun X: _____ Y: _____
Aperture 6	Aper X: _____ Y: _____ Gun X: _____ Y: _____
Emission Image	
Gun Aligned	
Condenser Aligned	
Apertures Aligned	
Stigmator Balance	
High Current Mode	
Gun Parameters (write values in)	
Gun Vacuum (EHT ON)	Bake out required?
Extractor Current (EHT ON)	<b>@1KV</b> <b>µA</b>
Gun Vacuum (EHT OFF)	
Extractor Current (EHT OFF)	
Gun Vacuum (EHT ON)	Bake out required?
SEM Magnification Calibration	<2% error allowed
SEM Scan Speed Calibration	Minimal movement allowed when changing scan speeds
Gun Vacuum (EHT ON)	Bake out required?
EO Calibration done	
Pump Down Time	<b>Minutes</b>
VP Operation	
Clean Sample Chamber	
Penning Gauge & Isolator	
Stage Condition & Lubricate	

<b>Stage Magnetic Lock</b>	
<b>Stage Door</b> (Grub screws tight)	
<b>Damping System</b>	
<b>Drain H2O From Compressor</b>	
<b>Nitrogen Feed</b>	
<b>Check Turbo damper</b>	
<b>Service CIV and airlock</b>	
<b>Clean Keyboard, Desk &amp; Mouse</b>	
<b>Output Device Magnification Calibration</b>	
<b>Monitor Brightness &amp; Contrast</b>	
<b>Collimators on each Xray Detector</b>	Check for Oil, CLEAN ONLY WITH ETHANOL <b>NO</b> ULTRASONIC BATH!!
<b>Window condition on each 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>Stage Levelling</b>	
<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>Water Chiller</b> (Water level)	Hexid 40 Fluid top up
<b>Scan Disk and Defragment</b>	On SEM PC
<b>Remove Temp Files</b>	On SEM PC

## 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
<b>SEM Scan Speed Calibration</b>	Minimal movement allowed when changing scan speeds
<b>Image Resolution on Inlens SE @ 300K x Mag image at 6mm WD</b>	Has image improved? Save image in Service directory.
<b>Beam Stability</b>	
<b>Backscatter Working</b>	
<b>Stage Movement</b>	
<b>X-ray Detector Resolution Improved?</b>	
<b>X-ray Detector Calibration Improved?</b>	
<b>X-ray Detector Ice contamination?</b>	
<b>X-ray Detector Oil Absorption reduced?</b>	
<b>X-ray Detector Spectra on Cu Saved</b>	
<b>Check PC Speed</b>	
<b>Aperture Size and Specimen Current</b> (Faraday cup @ 10Kv, 6mm WD)	<b>Size and Specimen Current</b>
Aperture 1	Size: _____ μ Value: _____
Aperture 2	Size: _____ μ Value: _____
Aperture 3	Size: _____ μ Value: _____
Aperture 4	Size: _____ μ Value: _____
Aperture 5	Size: _____ μ Value: _____
Aperture 6	Size: _____ μ Value: _____
<b>Column Alignment Shift and Tilt</b>	<b>Course Shift and Tilt</b>
Aperture 1	Aper X: _____ Y: _____ Gun X: _____ Y: _____
Aperture 2	Aper X: _____ Y: _____ Gun X: _____ Y: _____
Aperture 3	Aper X: _____ Y: _____ Gun X: _____ Y: _____
Aperture 4	Aper X: _____ Y: _____ Gun X: _____ Y: _____
Aperture 5	Aper X: _____ Y: _____ Gun X: _____ Y: _____
Aperture 6	Aper X: _____ Y: _____ Gun X: _____ Y: _____
<b>SEM Interlocks</b> Partial Vent on Standby? Z Move on Vent? Shutdown @ Logoff?	
<b>Cut SEM Log File</b> (save cut portion in Anaspec Directory)	
<b>Back Up SEM Config Files</b> (emserver file to service directory)	

Read Only on Load State File	
Update The Service File	

**COMMENTS or RECOMMENDATIONS**

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**ENGINEER**

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**CUSTOMER**