

Alignment procedure TEM/STEM JEOL JEM2200FS

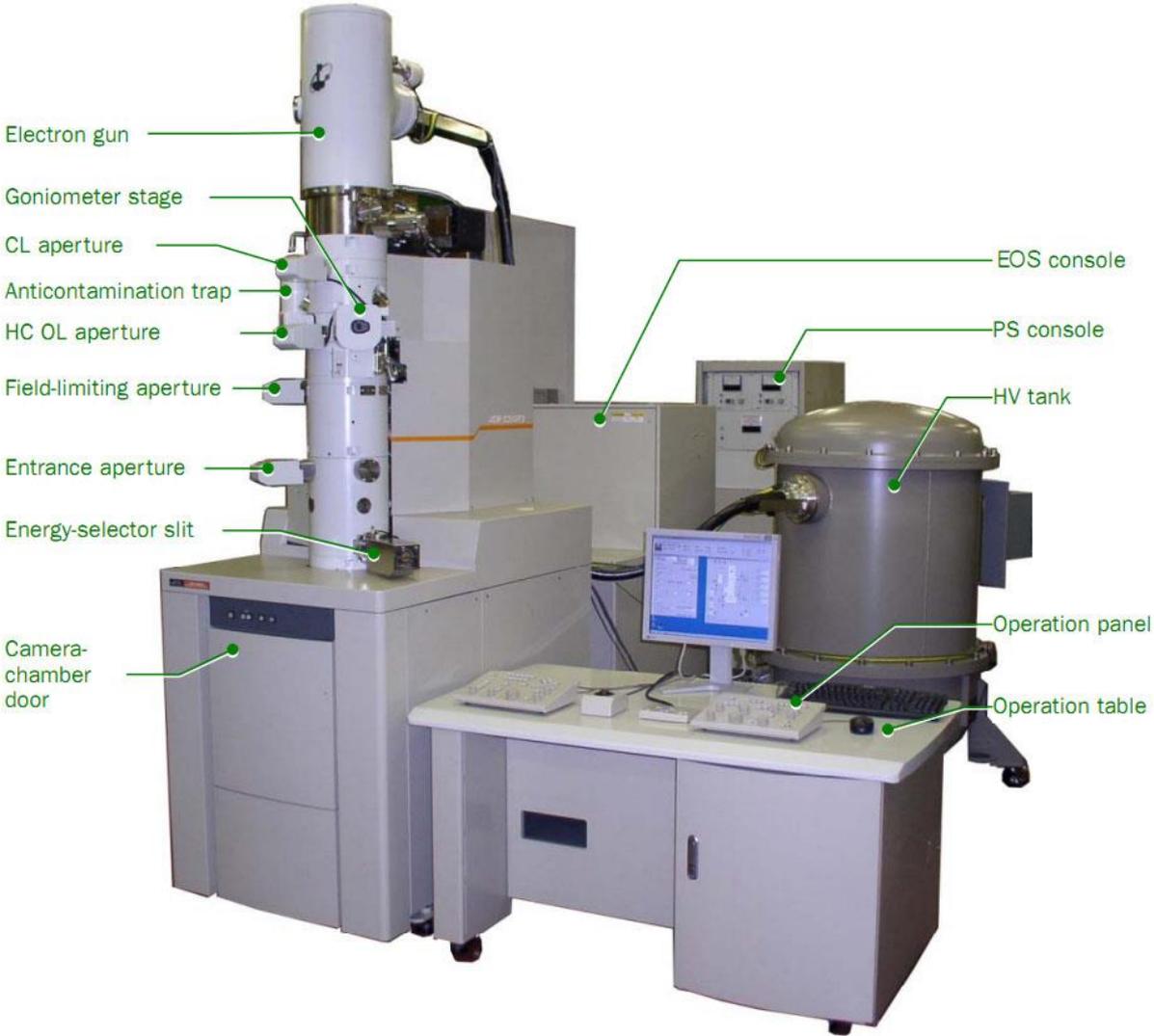
Transmission Electron diffraction

SELECTED AREA ELECTRON DIFFRACTION

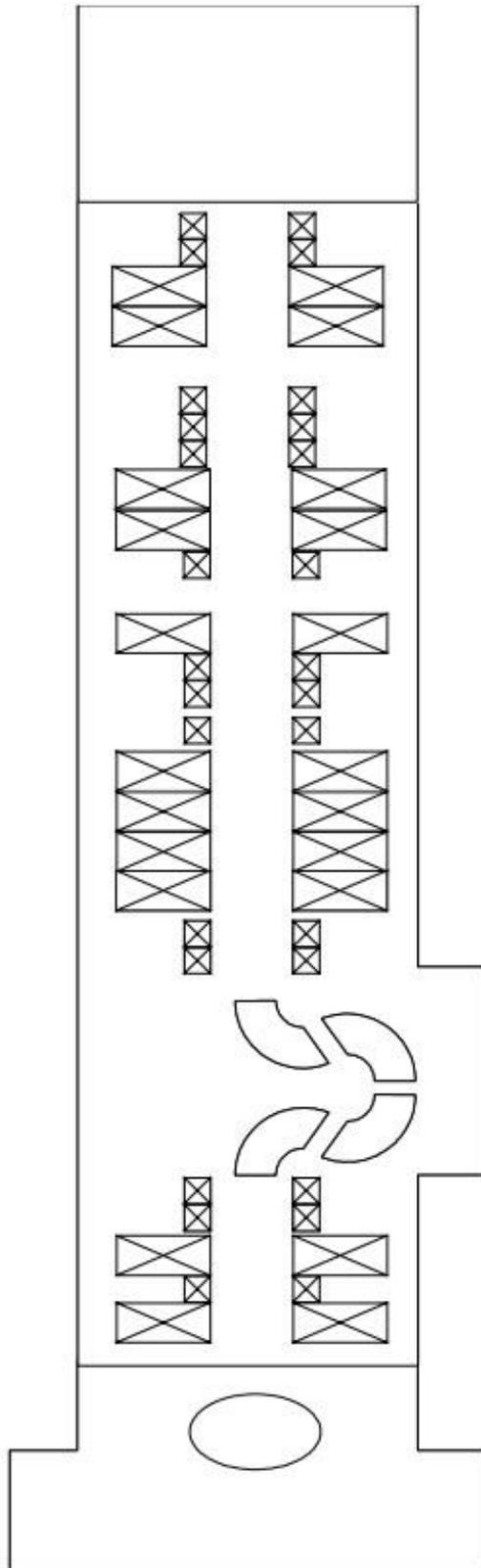
| | | | |
|----------------------------------|---|---|---|
| PROBE CONTROL (LEFT PANEL) | : | TEM | |
| APERTURE CONTROL (LP) | : | CLA2, HCA0, SAA0, ENTA0 | |
| MODE SELECTOR (RIGHT PANEL) | : | MAG1 | |
| MAG/CAM L (RP) | : | 50 kx (appropriate) | |
| BRIGHTNESS (LP) | : | CCW, smallest spot |  |
| SHIFT X/Y (LP/RP) | : | Center beam | |
| BRIGHTNESS (LP) | : | CW, widen to field of view |  |
| SPECIMEN SHIFT (GP or TRACKBALL) | : | Recognizable area of specimen | |
| STD FOCUS (RP) | : | Reset | |
| SPECIMEN HEIGHT (GP) | : | Eucentric height | |
| APERTURE CONTROL (LP) | : | SAA1 (appropriate), centered | |
| MODE SELECTOR (RP) | : | SA DIFF | |
| MAG/CAM L (RP) | : | 100 cm | |
| PLA (RP) | : | Center non-diffracted beam | |
| BRIGHTNESS (LP) | : | CCW till diffuse background |  |
| APERTURE CONTROL (LP) | : | HCA1, Edge visible | |
| DIFF FOCUS (RP) | : | Edge of HCA in focus | |
| APERTURE CONTROL (LP) | : | HCA0 | |
| BRIGHTNESS (LP) | : | CW, for parallel beam and sharp diffraction spots |  |
| SCREEN MONITOR WINDOW @ TEM PC | : | Record pattern | |

Construction of JEOL TEM/STEM JEM2200FS

External view



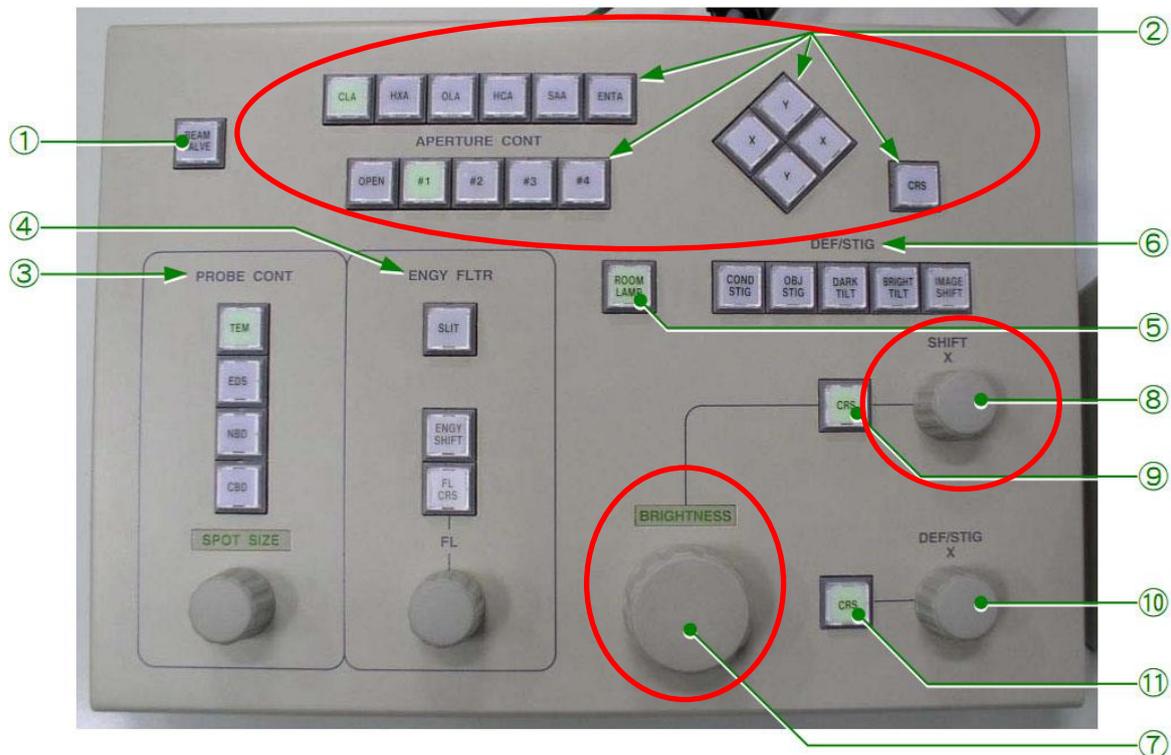
Layout of lenses and deflection coils



| | |
|----------|--------------------------------|
| GUN-A1 | Gun 1st deflector coil |
| GUN-A2 | Gun 2nd deflector coil |
| CL1 | 1st condenser lens |
| CL2 | 2nd condenser lens |
| CL-STIG | CL stigmator coil |
| CL-A1 | CL 1st deflector coil |
| CL-A2 | CL 2nd deflector coil |
| CM | Condenser minilens |
| OL | Objective lens |
| OL-STIG | OL stigmator coil |
| OM | Objective minilens |
| IS1 | 1st image shift coil |
| IS2 | 2nd image shift coil |
| IL-STIG | IL stigmator coil |
| IL1 | 1st intermediate lens |
| IL2 | 2nd intermediate lens |
| IL3 | 3rd intermediate lens |
| IL4 | 4th intermediate lens |
| FL-STIG1 | Filter lens 1st stigmator coil |
| FL-A1 | Filter lens 1st deflector coil |
| FL | Filter lens |
| FL-A2 | Filter lens 2nd deflector coil |
| FL-STIG2 | Filter lens 2nd stigmator coil |
| PL1 | 1st projector lens |
| PL-A | IL deflector coil |
| PL2 | 2nd projector lens |

Operation panels

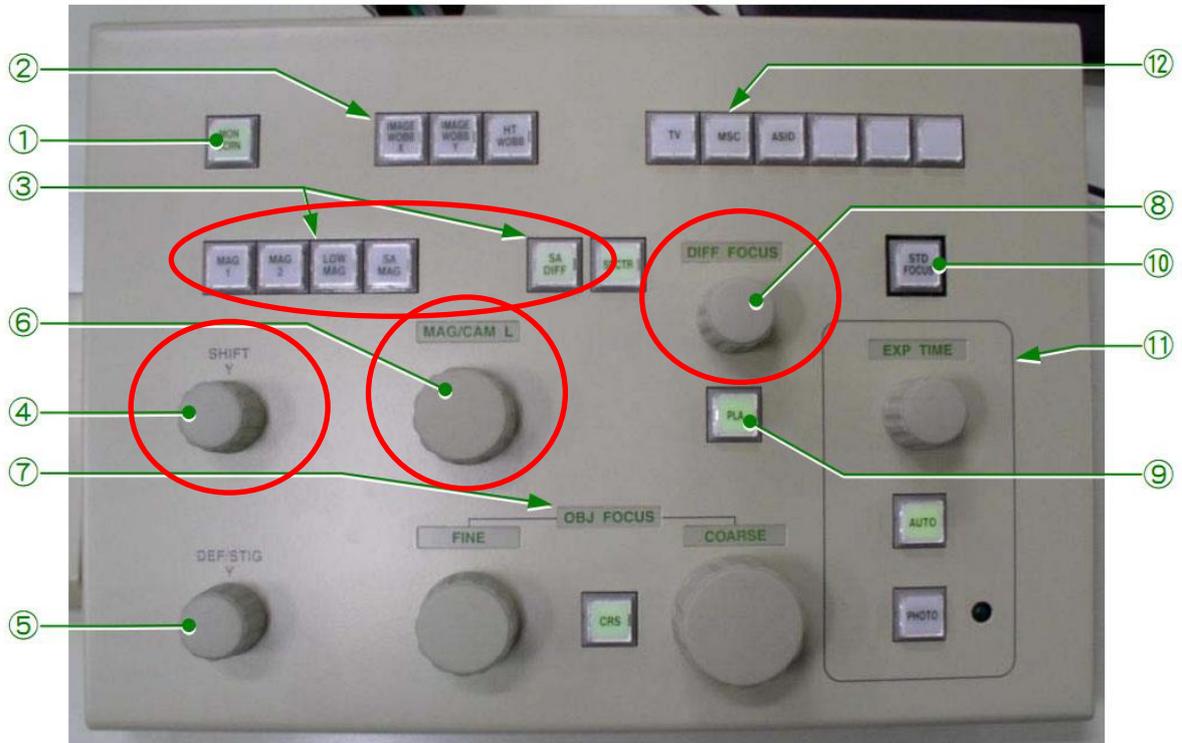
Left hand panel (LP)



| No | Function control |
|----|--|
| 1 | Open/Close gun valve |
| 2 | Aperture control |
| 3 | Probe control |
| 4 | Energy filter control |
| 5 | Room light control (not active) |
| 6 | Control for deflector/stigmator selection |
| 7 | Brightness control |
| 8 | Beam shift control x |
| 9 | Fine/coarse selector for brightness and beam shift |
| 10 | Deflector/stigmator control x |
| 11 | Fine/coarse selector for deflector/stigmator control |

Operation panels

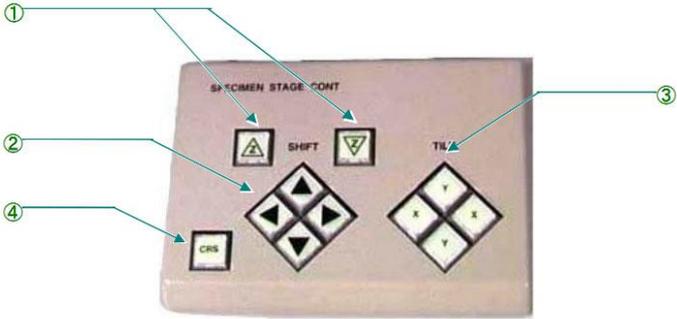
Right hand panel (RP)



| No | Function control |
|----|--|
| 1 | Monitor screen control |
| 2 | Wobbler control |
| 3 | Imaging/diffraction/spectroscopy control |
| 4 | Beam shift control y |
| 5 | Deflector/stigmator control y |
| 6 | Control for magnification/camera length |
| 7 | Objective focus control |
| 8 | Diffraction focus control |
| 9 | Projection lens alignment control |
| 10 | Standard focus |
| 11 | Photo control |
| 12 | Multifunction keys |

Operation panels

Goniometer control panel (GP)



| No | Function control |
|----|----------------------------|
| 1 | Specimen height control |
| 2 | Specimen shift control |
| 3 | Goniometer tilt control |
| 4 | Coarse/fine control button |

Trackball for specimen position control



Software control windows

Screenshot Monitor TEM

The screenshot displays the JEOL TEM control software interface. At the top, a status bar shows parameters: Emission Beam Valve, Acc. 200.00 kV, NBD, Spot 0.5nm, MAG: X200K, IMAGING, Energy Shift OFF, X= 32.3 μm, Y= -227.3 μm, TX= -0.1 deg, TY= 0.1 deg, Super Fine, SFx= 0%, SFy= 0%, SF Refresh, Stage Neutral. Below this is a menu bar with options like HT, SPC, Filter, Photo, Status, VAC, and F1-F6 function keys. The main interface is divided into several panels:

- Screen Monitor:** The central window showing a TEM image of a specimen. A red arrow points to the top-left corner of the image area. The image includes a scale bar for 30.00mm and 100.0nm. Text at the bottom of the image reads: "ZTCT#291cs_2 [TEM] JEM-2200FS 200kV X200K 23/05/2004 Operator:Kirmse / HU Berlin".
- Select Image / Operation:** A panel for image selection and operation, including CameraControl, Information, and Others tabs. It features a Preset dropdown set to TEM, and fields for Pixels (1280 x 1024), Binning (2 x 2), and LightMode (High Light). Exposure settings include Exposure Time (29.96 mSec), 138.00 μSec, 60.79 mSec, and 10.94 Sec. Gain / Offset is set to Gain 255, Offset 0. LUT Control is visible with a graph and Contrast / Brightness / Gamma sliders.
- ASID Control Panel:** A panel for ASID Mode control, with tabs for Function (MAG, AMAG, L MAG, Rocking, Alignment), Spot Size, Mag/Camera length, Brightness (STEP: 50, 3486), and Contrast (STEP: 10, 1072).
- Alignment Panel for Maintenance:** A panel for DEF Select (Gun, Spot, CLA, IS1, IS2, PL, DET), Stigmator (CL STIG, OLS, IL STIG - circled in red), Compensator (Shift, Tilt, Angle, NTRL), and Wobbler (Gun, Anode, HT, OBJ, ImageX, ImageY, ShiftX, ShiftY, TiltX, TiltY, Freq/Amp).

The bottom of the screen shows a Windows taskbar with the Start button, taskbar icons for High Voltage, Valve Status, Specimen P..., and ScreenMonitor, and a system tray with the time 16:57.