



ABT-60

Scanning Electron Microscope



HIGH PERFORMANCE A NEW STANDARD

Fully Automated One Button Operation From Sample Insertion To Imaging

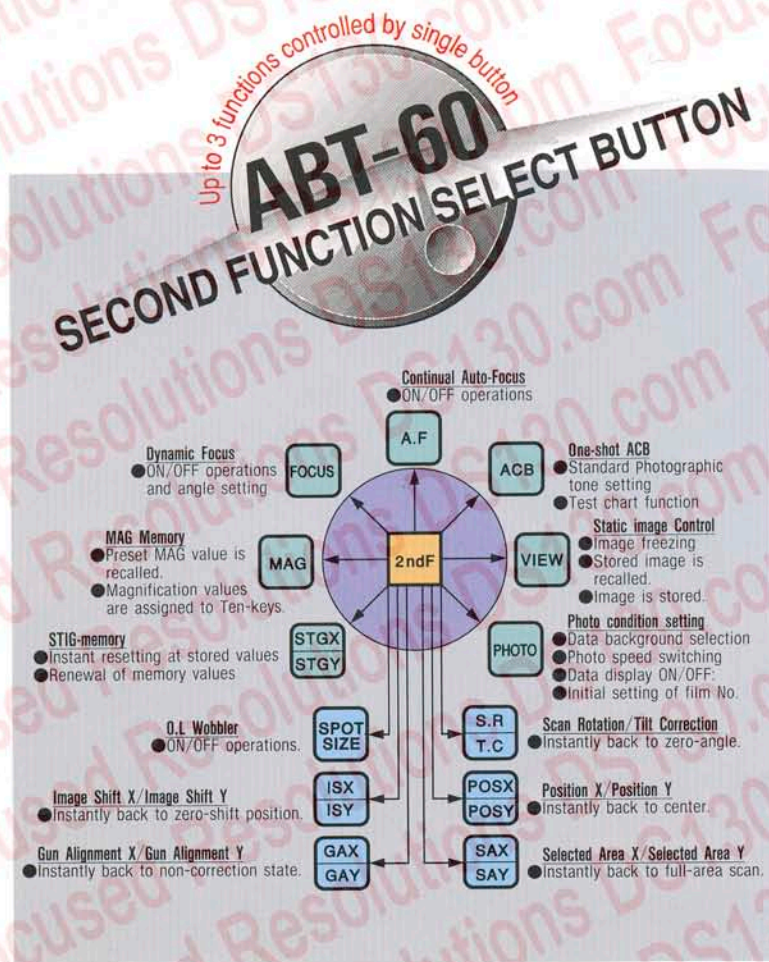
The ABT-60 offers a new level of SEM sophistication. Extensive computer control of operating functions results in extreme ease of operation and consistent high performance. This digital microscope has been designed from the ground up with operating efficiency and reliability as prime goals.

The operating panel uses a minimum of controls, yet offers exceptional flexibility. This is realized by the incorporation of multi-function buttons and rotary encoders. Computer storage and automatic recall of various parameters simplifies and speeds up operation.

Many adjustments and operations are performed with no operator involvement. Simply insert a sample and push a single button. The microscope is automatically evacuated, the beam turned on, gun aligned, image focussed and stigmated, brightness and contrast adjusted, and a clear sharp image displayed on the viewing CRT.

The operator requires to make no adjustments, other than selecting the area of the sample to be examined and setting the appropriate magnification. An understanding of what adjustments are automatically made is not required. The user can therefore concentrate on the sample being examined rather than optimizing various SEM parameters.

The ABT-60 is set up for convenient expansion, either as initially purchased, or by retrofitting accessories at a later date, such as EDX and a range of detectors. This flexibility results in the ABT-60 being well suited to a wide range of applications, such as teaching, research and development, and quality control-in fact any application where high performance, reliability, and ease of operation are key requirements.



Simple multi-function control panel



JOYSTICK CONTROLLED MOTORIZED STAGE

Approximately 70% of SEM operation involves moving the stage and surveying the specimen under investigation. The ABT-60 motor driven stage is controlled by a joystick with proportional speed control and speed range linked to magnification. This minimizes fatigue and allows the operator to concentrate on the sample under examination.

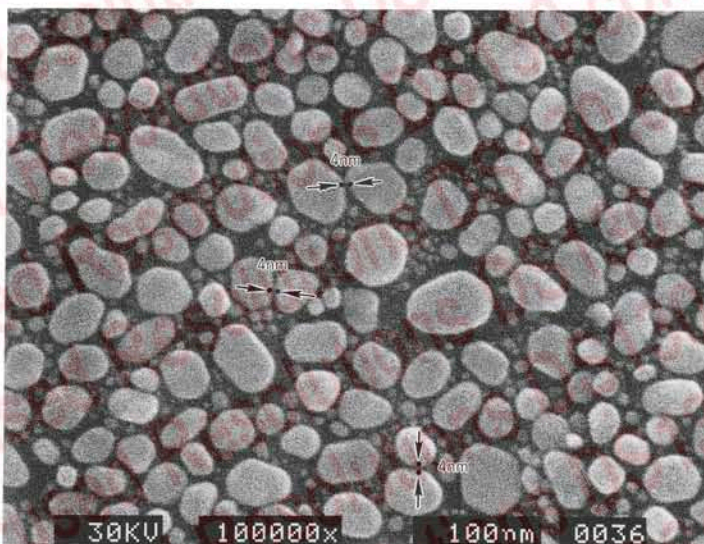


STANDARD IN EASE OF OPERATION



FEATURES

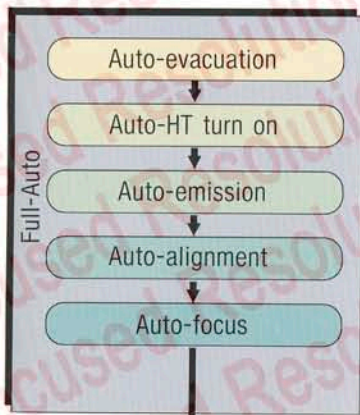
- High resolution 4nm
- Bright clear image allows operation in normal room light
- Single push-button operation from sample insertion to imaging
- Joystick controlled motor-driven 6" stage
- Conical objective lens
- Instant recall mag. memory (10 values)
- High precision auto-gun alignment, auto-focus and auto-stig.
- Auto contrast for both viewing and recording.
- Image processor (option)
- Simple multi-function control panel
- Freely positional viewing CRT
- Direct viewing of non-conducting samples with WET-II(option)
- Compact design with small footprint
- Wide range of detectors available (option)



Evaporated gold particles

Minimum operator training

Simply insert a specimen and push a single button to obtain a clear, sharp image on the viewing CRT.



TV image display

Outstanding convenience features

- Continuous and one-shot auto-focus—push button selectable.
- Astigmatism correction at the push of a button, plus stig. memory for each kV setting.
- Auto features operate at all scan speeds, including TV.
- Image processor eliminates image noise and produced crisp images under low signal level conditions(option)
- Freely positionable viewing CRT.
- Joystick controlled motorized specimen stage with proportional speed control linked to the magnification.
- Continuous auto-focus maintains focus when moving the sample. This in conjunction with auto-contrast and auto-brightness produces optimized images with no operator intervention.
- Gun alignment is performed automatically with a single push button operation. Alignment settings can be stored for each kV.

High resolution short persistence photo CRT.

- While viewing a TV image, simply press one button to record a properly exposed image.
- Auto contrast and brightness function instantly sets correct levels for photography.

Specimen exchange with single push button operation

- When replacing a specimen there is no need to switch off the gun. With an image on the viewing CRT, simply press the "air" button and remove the sample. Introduce a new sample and press the "air" button to obtain an image of the replacement specimen.

PERFORMANCE AND SPECIFICATIONS

1) PERFORMANCE

RESOLUTION	4nm(40 Å) (30kV, WD=3mm, secondary electron image)
MAGNIFICATION	15x to 300,000x
IMAGING MODES	Automatic magnification display, With mag. memory Secondary electron image Backscattered electron image

2) ELECTRON-OPTICAL SYSTEM

ACCELERATING VOLTAGES	0.5 to 3kV(100V steps), 3 to 30kV (1kV steps)
ELECTRON GUN	Precentered cartridge exchange system Variable bias, with auto emission, emission memory
GUN ALIGNMENT	Computer-controlled automatic gun alignment with gun alignment memory
LENS SYSTEM	3-step lens system (2 condenser lenses, and 1 objective lens) High-resolution conical objective lens Auto-beam system
APERTURE UNIT	Variable aperture
ASTIGMATISM CORRECTION	8-pole electromagnetic Auto-stigmator and manual correction, Stig. memory
FOCUSING	Computer-controlled auto focus system or manual operation. One shot & continuous auto-focus Dynamic focus system incorporated.
IMAGE SHIFT	X & Y; 20 μ m(WD 18mm)

3) SPECIMEN STAGE

STAGE	T-X-Y-R-Z eucentric stage
MAX SPECIMEN SIZE	150mm dia.
SPECIMEN SHIFT	X: 80mm, Y: 60mm(motor drive with joystick control)
SPECIMEN TILT	T: -10° to +90° continuous
SPECIMEN ROTATION	R: 360° continuous
WORKING DISTANCE	Z: 3mm to 65mm continuous
CURRENT MEASUREMENT	BNC Connector provided
DETECTOR PORTS	3

4) DETECTOR

Retractable SE detector with BSE imaging capability

5) DISPLAY SYSTEM

SCAN MODES	Full screen: SLOW-10sec/frame RAPID-1sec/frame With selected area & position reduced rapid scan TV scan mode: NTSC or PAL type Photo scan Analysis modes(SPOT, LINE, L.P., ECP)
DATA DISPLAY	Scan rotation/Tilt correction/Waveform monitor Accelerating voltage, magnification, working distance, spot size factor and film number(4 digits) are displayed in a group on the control panel.
CRT	Freely positionable 12-inch viewing CRT. 5-inch high resolution photo CRT.

6) IMAGE PHOTOGRAPHING SYSTEM

IMAGE ADJUSTMENT:	Auto-Contrast/Brightness(ACB) One-shot ACB for photography Dynamic ACB for image viewing
OPTIMUM EXPOSURE MONITOR	Waveform display Test chart display
RETURN TO SCAN MODE	One-shot auto-return system
DATA RECORDING	Accelerating voltage, magnification, micron value, micron bar & film number are automatically superimposed on the micrograph. Film number: 4 digits-settable & auto-augmented
CAMERA	Polaroid Other camera formats optionally available

7) EVACUATION SYSTEM

SYSTEM	Fully-automatic start-up and shut-down Self-diagnostic system
VACUUM PUMPS	Oil diffusion pump-400 liters/sec(with water cooled baffle and reservoir) Rotary pump-160 liters/min.

8) SAFETY INTERLOCKS

Protection provided in the event of power, water, and vacuum failure

9) OTHER

Separated column and console units, Air bag antivibration system Storage drawer below console table, Casters for easy transportation, RS-232 interface allowing computer control of all operating parameters.

INSTALLATION REQUIREMENTS

POWER	110V AC, 50/60 Hz 2.0kVA
GROUNDING	Type 3
COOLING WATER	Flow rate-greater than 2 liters/min Temp.-15 to 25°C Pressure-1.5 to 3kg/cm ² Faucet-11mm inside dia. Drain-20mm or larger inside dia.
ROOM TEMPERATURE	20±5°C
HUMIDITY	Below 60%
STRAY MAGNETIC FIELD	AC-below 0.3 μ T(3mG)
FLOOR VIBRATION	Below 0.15 Gal (Below 5Hz within 3 μ m p-p)

DIMENSION AND WEIGHT

COLUMN UNIT	600mm(W)×780mm(D)×1,340mm(H), 170kg
CONSOLE & IMAGE VIEWING UNIT	1000mm(W)×870mm(D)×1130mm(H), 110kg
OIL ROTARY PUMP	440mm(W)×260mm(D)×330mm(H), 27kg

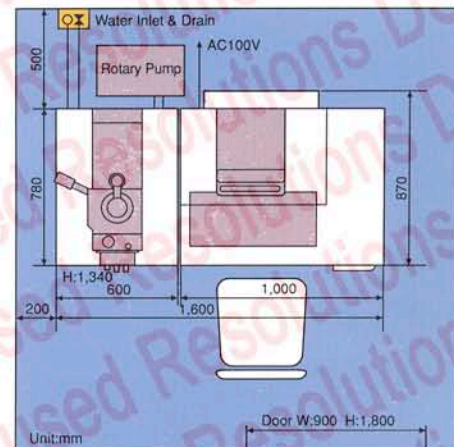
MAJOR ACCESSORIES AVAILABLE

- ★Gamma Control Module
- ★Y-Modulation Module
- ★Derivative/Signal Inversion Module
- ★Dual MAG Module
- Stationary Image Display Unit
- ★Solid-State Backscattered Electron Imaging Unit
- Robinson Backscattered Electron Imaging Unit*
- Cathodoluminescence imaging Unit*
- Accessory Mode Select Unit
- Option Box
- Keyboard for generating Alphanumeric Character Data
- 6×9 Roll Film Camera Hood
- 35mm Roll Film Camera Hood
- Energy-dispersive X-ray Analysis System
- Specimen Current imaging Unit*
- EBIC Imaging Unit*
- Current Feedthrough
- Low-Vacuum Viewing Unit
- Image Processor
- Sputter Coater
- Critical-Point Drying Apparatus

*Requires Accessory Mode Select Unit.

★Mountable in an option space above the control panel. For mounting all of these five accessories, an option box(separate type) should be used.

●Specifications subject to change without notice



TOPCON CORPORATION

75-1, Hasunuma-cho, Itabashi-ku, Tokyo, 174 Japan
Phone: 3-3966-3141 Fax: 3-3966-5106 Telex: 0272-2384

TOPCON AMERICA CORPORATION

65 West Century Road, Paramus, New Jersey 07652, U.S.A.
Phone: 201-261-9450 Fax: 201-387-2710 Telex: 134338

TOPCON TECHNOLOGIES, INC.

6940 Koll Center Parkway, Pleasanton, Calif. 94566, U.S.A.
Phone: 415-462-2212 Fax: 415-462-2234 Telex: 352098

TOPCON EUROPE B.V.

Esse Baan 11, 2908 LJ Capelle a/d IJssel, The Netherlands
Phone: 10-4585077 Fax: 10-4585045 Telex: 23783

TOPCON BEAM TECHNIK GmbH

Elisabeth-Munse-Strasse 5, 4156 Willich 1, Germany
Phone: 02154-428029 Fax: 02154-427917 Telex: 8531918 TBT D

TOPCON BEAM TECHNOLOGY S.A.R.L.

33, Rue des Chardonnerets, ZAC de Paris Nord II.,
B.P. 40020, 95911 Roissy Cdg Cedex, France
Phone: 1-48632081 Fax: 1-48637181

TOPCON SINGAPORE PTE. LTD.

Alexandra Distripark Block 4, #05-15 Panjang Road, Singapore 0511
Phone: 2780222 Fax: 2733540 Telex: RS 26622

TOPCON AUSTRALIA PTY. LTD.

253 Princes Highway Arncliffe NSW 2205, Australia
Phone: 2-597-2466 Fax: 2-597-3842