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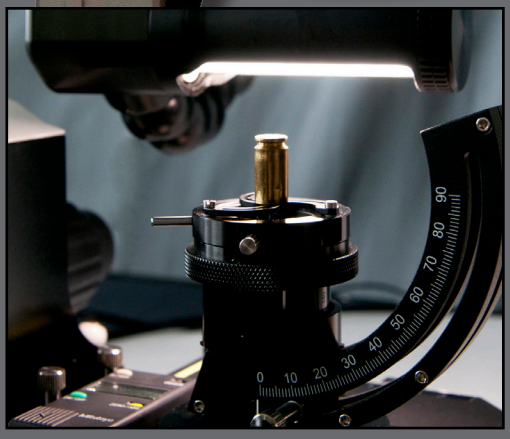
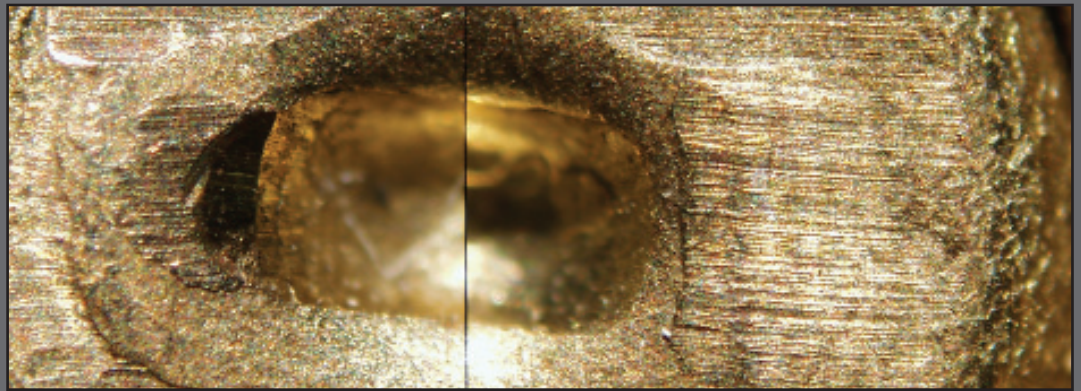
DISCOVERY

Firearms & Tool Marks Comparison Microscope





The Discovery, the world's premier firearms and tool marks comparison microscope, features Zeiss optics and provides the largest primary magnification range available to firearms examiners in today's marketplace.

Performance

- The Discovery is built with Zeiss world-class, high resolution, apochromatically corrected optics. The Discovery zoom optics have a 20:1 ratio, with a primary magnification range from approximately 7.5x to 148x (with the 1.0x objective), an unparalleled feature in zoom comparison microscopes.
- The system's motorized, pancratic zoom bodies ensure the highest degree of magnification reproducibility with over 900 matched magnification set points (with the 1.0x objective) providing high-contrast, in-focus images throughout the entire zoom range.
- The Discovery has fifteen pre-programmed magnification set points and ten additional user-programmable magnification set points.
- Electronic control of both the right and left zoom bodies enables each side of the microscope to work independently, or together, with direct communication to software for easy annotation, measurement, and documentation.
- The parfocality and parcentricity of the Discovery minimizes the need for constant refocusing and repositioning by the examiner while changing magnification settings.
- The Discovery produces an erect, un-reversed image with a 23mm Field Number (FN) eyepiece which is the largest FN available on a firearms comparison microscope as of this date. This magnification is 9.3% larger than a 22mm FN eyepiece.
- Compared images can be viewed as 100% right, 100% left, divided, or overlapped, into any ratio. The mask adjustor allows the examiner to manipulate the percentage of the right, or left, image being reviewed by sliding the adjustor right to left.
- Stages can be removed to accommodate large samples.

Bridge Control System

- Aperture Adjustment Controls.
- Mask Adjustment Control - allowing the examiner to transition between left or right image observation.
- Dividing-Line Thickness Control -- allowing the examiner to overlap images and adjust thickness of dividing line.
- Adjustable Mask Feature Controls.

ZEISS SYCOP SYSTEM CONTROL PANEL

The Sycop controls the motorized zoom optics and combines 3 functional elements in a single unit:

- Touch-sensitive screen, with programmed magnification set points.
- 6 push buttons for diverse microscope settings.
- Joystick for operation of motorized zoom.

Operated with one hand, the Sycop allows the examiner to adjust synchronized-zoom magnification without having to look away from the microscope. Using the touch screen, the examiner can view significant optical parameters at a glance, while activating and storing microscope settings. Rapid display of microscope information includes: current magnification, field-of-view, image resolution, and depth-of-field. Magnification information is automatically retained in any captured-image metadata.

Controller Option A -- Flatscreen Touchpad

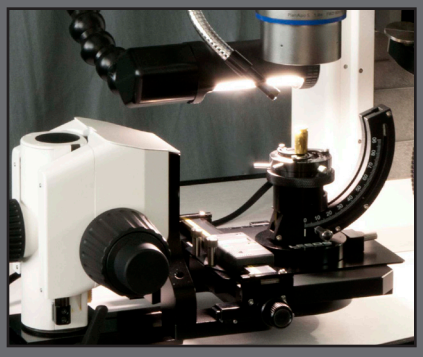
2 OPTIONS FOR DISCOVERY TABLE CONTROL

Leeds easy-to-use controllers enable adjusting table height adjustment, lighting options, and Z column position. Discovery **lighting options** include the Leeds LED fiber-optic cold-light source, fluorescent lighting, and LED spot lights. Other lighting options are also available.

Controller Option B -- 6 tactile buttons

Quality Control

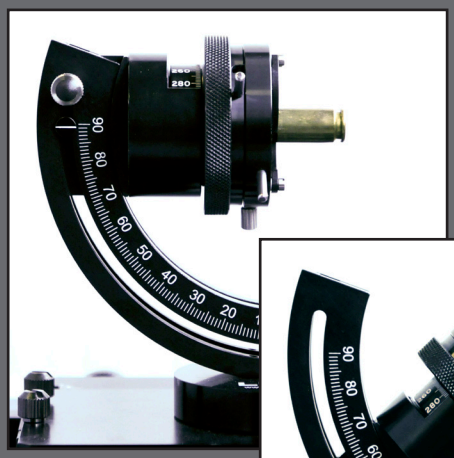
A single-axis LCD measuring scale allows for direct reading of point-to-point measurement of lands, grooves, and tool marks. The scale is capable of measuring in inches or metric units with a .0005”/0.01mm resolution. Use of the LCD scale eliminates the need for measurements that require stage verniers, eyepiece micrometers, or an air gap method. A N.I.S.T. traceable, ISO/IEC 17025:2005 accredited, Certificate of Calibration is provided with every LCD scale at installation.



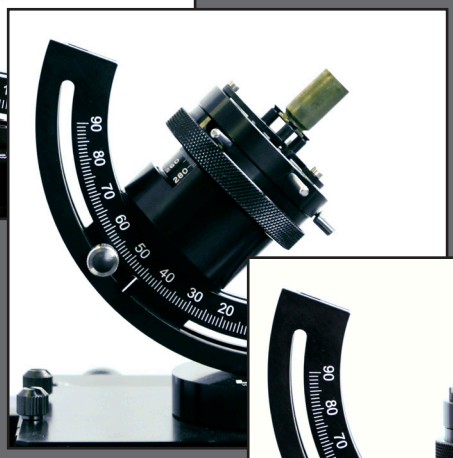
All visual magnifications are directly indicated on the Sycop System Control Panel eliminating the need for the use of multipliers to determine the total viewed magnification. A N.I.S.T. traceable ISO/IEC 17025:2005 accredited Certificate of Magnification Matching is provided with every system at the time of installation.

Versatility

The Leeds Universal Holder is an important feature of the Discovery, offering a single-service tool to assist in examining various sized bullets and cartridge casings. In addition, Leeds offers a number of interchangeable sample holders for tool mark examination.

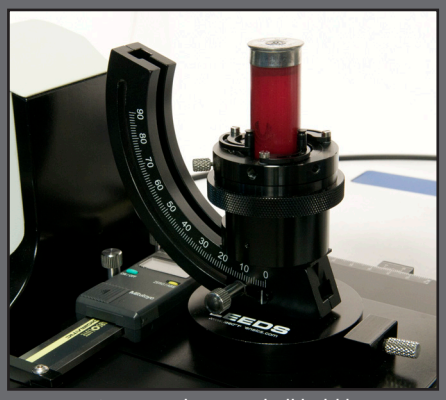


.40-cartridge casing held by the inside diameter



.40-cartridge casing held by the extractor

.40-cartridge casing held by the exterior



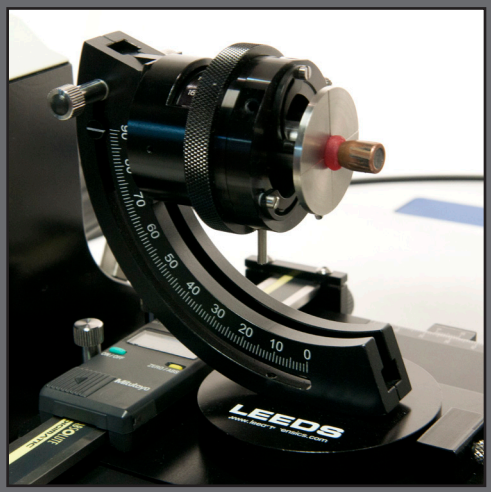
12-gauge shotgun shell held by the outside diameter

12-gauge shotgun shell held with the Leeds Magnetic Shell Mount

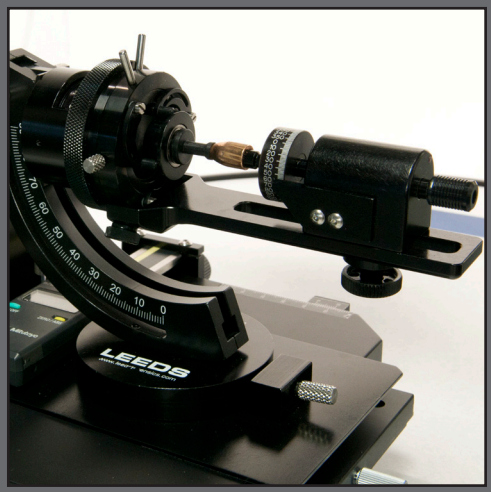
Universal Holder

The Leeds Universal Holder eliminates the need for multiple sample holders and accessory brushes for firearms examinations. The Leeds Universal Holder has 90° vertical-to-horizontal positioning range. It also has a 360° rotatable chuck that can hold an item as small as .030" wire, to as large as a 10-gauge shotgun shell. This unique holder allows a shell to be gripped by its inside, or outside diameter, and also can hold a shell by the extractor.

Bullet mounted to a pin mount with sticky wax

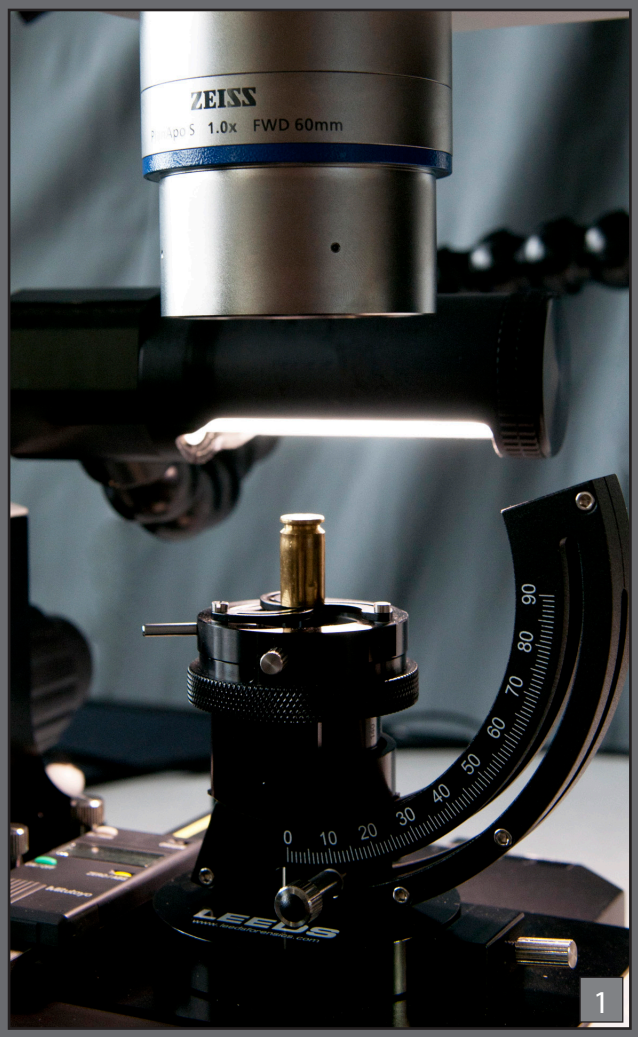


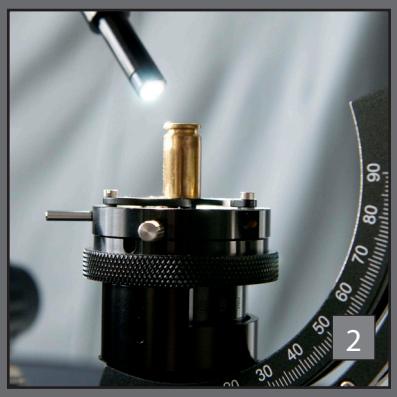
Bullet mounted to a mini-platter with sticky wax



"On-centers" projectile holder

Lighting & System Accessories





1. Leeds fluorescent-lighting design includes an articulated support arm. The fluorescent light includes a bright quad-lamp and offers a unique rotating hood to control sample contrast.

2. Gooseneck-bifurcated fiber-optic light guide with spot lens.

3. LED spot light on flexible arm.

4. Optional 12" table extension can be mounted on either the right, or left, side of the table. Features include cushioned pad and "object roll-off" protection edge.

5. Leeds LED fiber optic cold light source offers constant color temperature at all intensities with no vibration, no noise, and low maintenance. The Leeds LED light source is rated for over 20,000 hours.

Documentation, Imaging, and Software

Leeds provides a complete line of digital cameras that are compatible with Laboratory Information Management System (LIMS). These cameras can be complemented with image analysis, database, and archiving software.

Ergonomics

- Ergonomic placement and design of low-profile XY stage and focus controls minimize repetitive hand-over-wrist motions.
- Wrist pads allow for more comfortable wrist placement on edge of table.
- The table design permits the examiner to be close to the microscope eyepieces.
- Comfort is easily achievable for examiners with a tiltable binocular head adjusting from 5° to 30°.
- An easy-to-use, positionable touch-pad controls table height, lighting controls, and Z-column position from a single-control panel.
- Versatile, motorized table with height adjustment from 26" - 38". The ergonomic table is designed with a large work surface area.
- The Discovery's modular design allows for easily added options, such as a right, or left, side dual-view option, a 12" or 16" shelf, a right side, and/or left side table extension, with cushioned pad, a monitor-support arm, a keyboard and mouse tray, and a computer leg mount.

Discovery
Technical Specifications

Objective Zoom Range ** Working Distance (mm)	0.63x 4.6 - 92x 81	1.0x* 7.5 - 148x 60	1.5x 10.95 - 219x 30
	* 1x is the most commonly used objective ** Zoom Range may vary slightly from unit-to-unit		
Matched magnification set points with 1x objective	Over 900 set points from 7.5 - 148x		
Zoom Ratio	20:1		
Field Number (mm)	23		
Stage Movement & Universal Holder	X-axis (mm) Y-axis (mm) Z-axis (mm) Axial Slope Axial Rotation Base Rotation Stage Size (mm)		50 77 42 90° 360° 360° 180 x 135
Universal Holder	Outside Diameter Inside Diameter		0.030 - 0.88" 0.34 - 1.18"
Micrometer Range	Range Resolution		0 - 3" 0.0005"/0.01mm
Table Dimension	Height Width Depth Column Z-Axis Travel		26" - 38" 35.5" 24" 6"
Electrical Requirements	Voltage Power (max) Frequency		100 - 240 VAC 1.8 Kw 50 - 60 Hz

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