



DISCOVERY

Firearms & Tool Marks Comparison Microscope

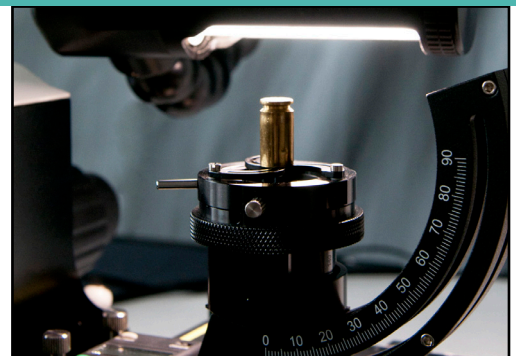
Discover Leeds *Discovery* firearms and toolmarks comparison microscope! Built with Zeiss optics, it provides the largest primary magnification range available to firearms examiners in today's marketplace.



Leeds Six-Button Key Pad is a tactile controller for the table height, column height, and fluorescent light controls.



The optional side-wing shelves are equipped with a neoprene pad and anti-roll-off edges.



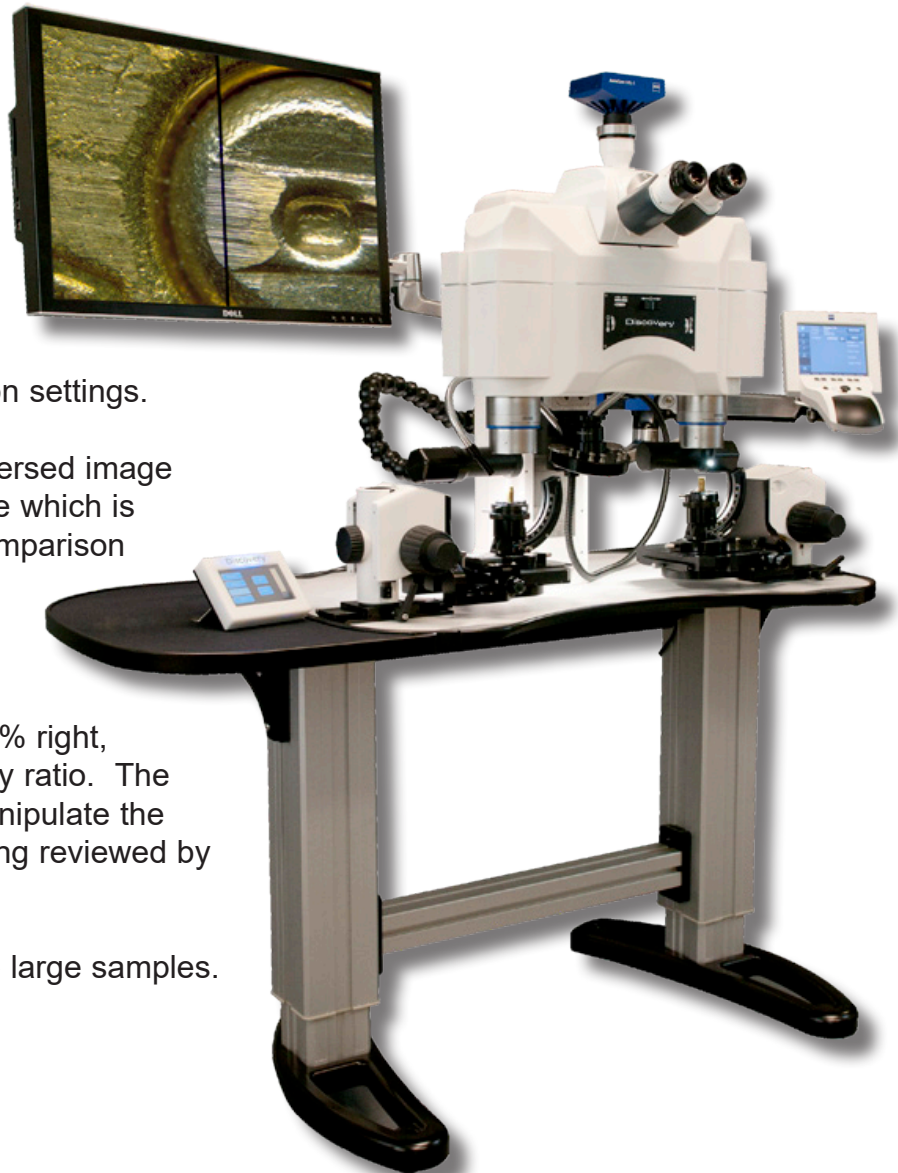
With a 90° vertical-to-horizontal positioning range *and* a 360° rotatable chuck, the Leeds Universal Holder can hold an item as small as .030" wire to as large as a 10-gauge shotgun shell.

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 15 pre-programmed magnification set points and 10 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.



2 OPTIONS FOR DISCOVERY TABLE

Leeds easy-to-use station ontrrollers enable adjusting table height adjustment, lighting options, and Z column position.

Controller Option A (shown left) -- Flatscreen Touchpad for Discovery models with either motorized or manual stages.



Controller Option B (shown right) -- 6 tactile buttons for Discovery with manual stages.



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.

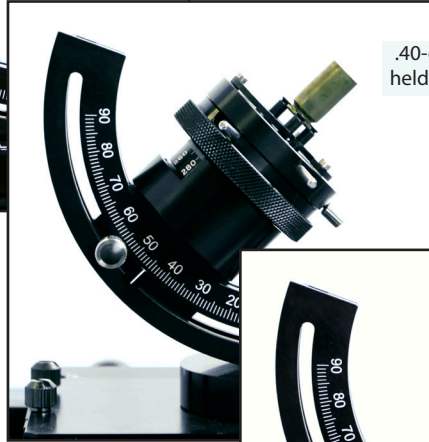
A N.I.S.T. traceable ISO/IEC 17025:2005 accredited Certificate of Magnification Matching is provided with every system at the time of installation.

LEEDS UNIVERSAL HOLDER

The Leeds Universal Holder is a single-service tool to assist in examining various sized bullets and cartridge casings. Leeds also offers a number of interchangeable sample holders for tool mark examination.



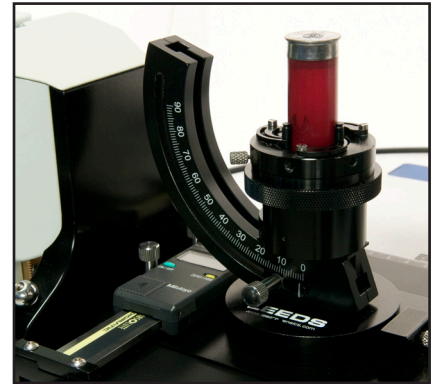
.40-cartridge casing
held by the inside
diameter



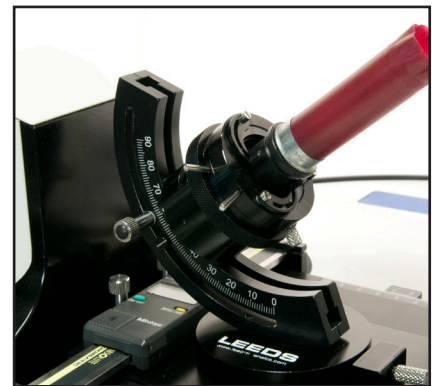
.40-cartridge casing
held by the extractor



.40-cartridge casing
held by the exterior

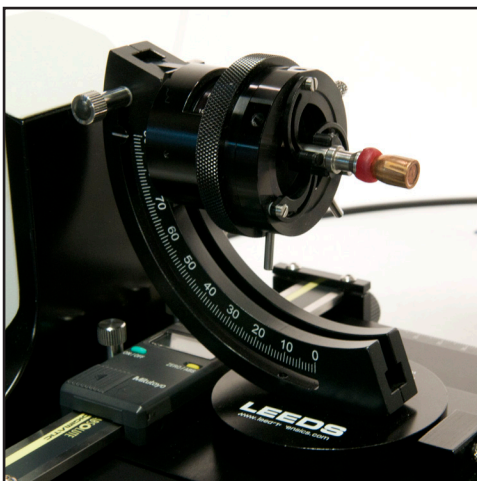


12-gauge shotgun shell held
by the outside diameter

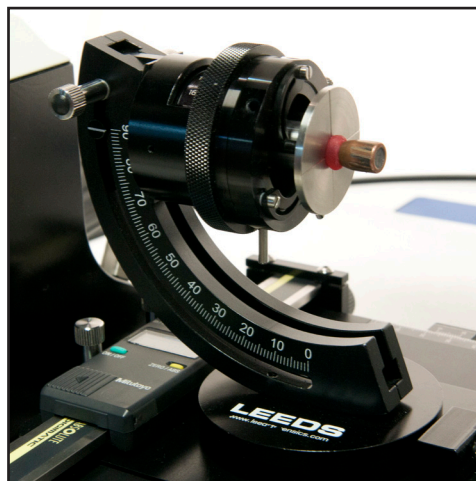


12-gauge shotgun shell held with the
Leeds Magnetic Shell Mount

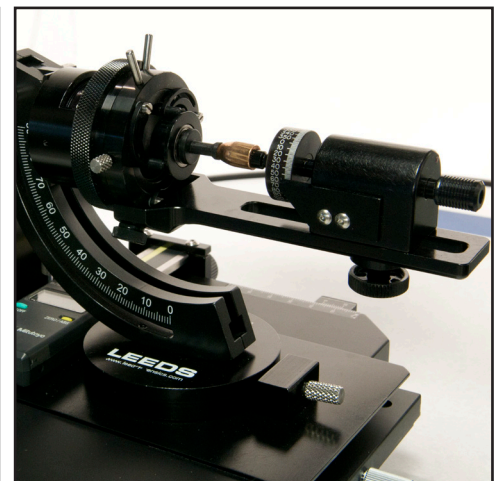
The Leeds Universal Holder eliminates the need for multiple sample holders & accessory brushes for firearms examinations. It has **90° vertical-to-horizontal positioning range**. It also has a **360° rotatable chuck** that can hold an item as small as .030" wire to as large as a 10-gauge shotgun shell.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



Bullet mounted to a pin mount with sticky wax.

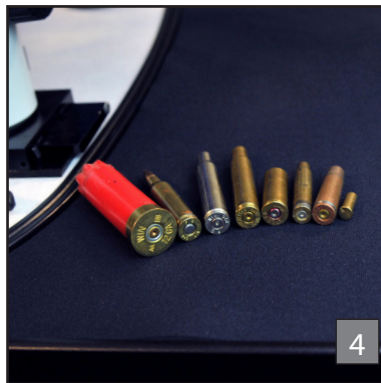
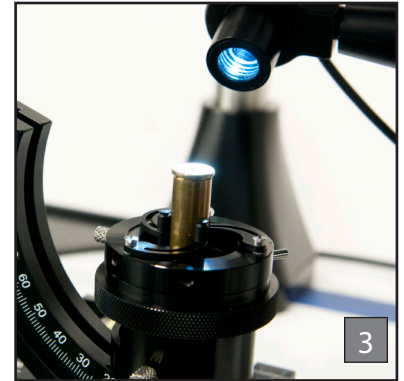
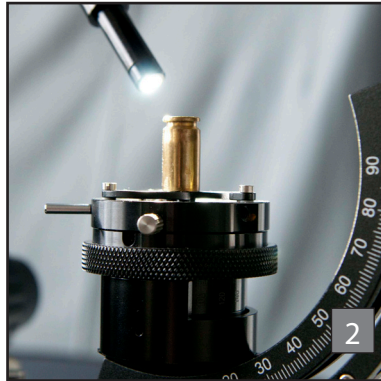
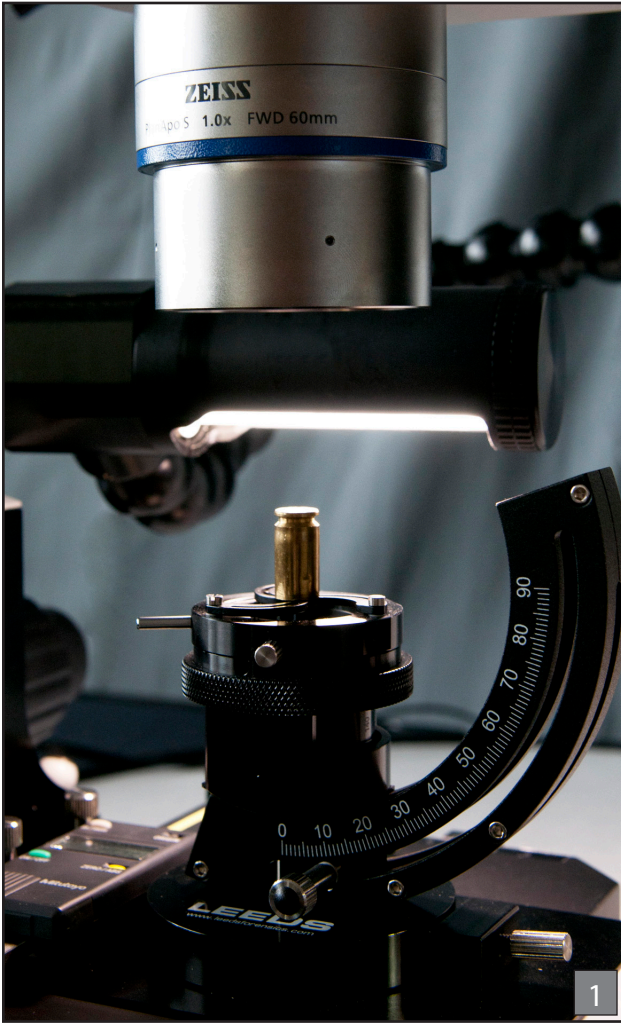


Bullet mounted to a mini-platter with sticky wax.



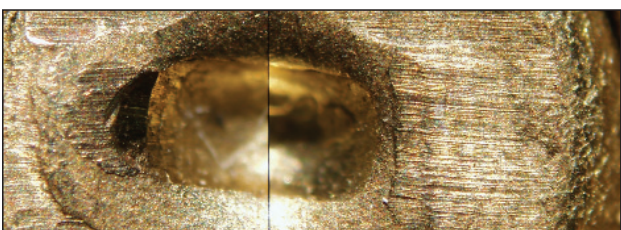
"On-centers" projectile holder.

LIGHTING & SYSTEM ACCESSORIES



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.



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.

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 | 0.63x | 1.0x* | 1.5x |
| Zoom Range ** | 4.6 - 92x | 7.5 - 148x | 10.95 - 219x |
| Working Distance (mm) | 81 | 60 | 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) | 50 | |
| | Y-axis (mm) | 77 | |
| | Z-axis (mm) | 42 | |
| | Axial Slope | 90° | |
| | Axial Rotation | 360° | |
| | Base Rotation | 360° | |
| | Stage Size (mm) | 180 x 135 | |
| Universal Holder | Outside Diameter | 0.030 - 0.88" | |
| | Inside Diameter | 0.34 - 1.18" | |
| Micrometer Range | Range | 0 - 3" | |
| | Resolution | 0.0005"/0.01mm | |
| Table Dimension | Height | 26" - 38" | |
| | Width | 35.5" | |
| | Depth | 24" | |
| | Column Z-Axis Travel | 6" | |
| Electrical Requirements | Voltage | 100 - 240 VAC | |
| | Power (max) | 1.8 Kw | |
| | Frequency | 50 - 60 Hz | |

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