



**Leeds
Forensic
Systems**

Your Forensic Imaging Source



The LCF3 Firearms & Tool Marks Comparison Microscope is a robust and powerful system offering outstanding performance, ergonomic comfort, and incredible versatility. Leeds has designed the system incorporating feedback from the first hand experience of forensic examiners.

PERFORMANCE

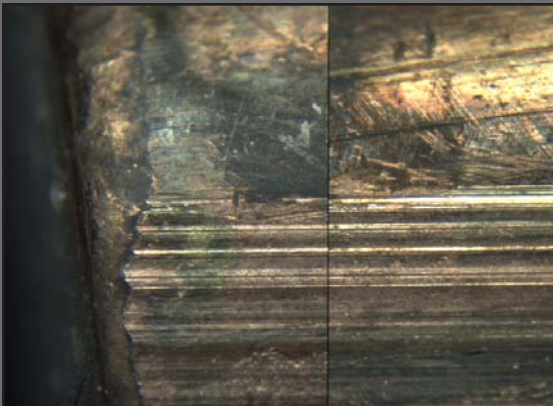
- The LCF3 is built with world-class Olympus apochromatically corrected optics, providing crisp, aberration-free, high-resolution images. The macro bodies, with a 16:1 zoom ratio and built-in aperture diaphragms, provide the examiner with 14 matched magnification positions to choose from. The optics are parcentric and parfocal throughout the zoom range. Leeds' technicians align all 14 of the click stop settings to assure that the magnification of the right and left zoom bodies are matched. This matching is completed using N.I.S.T. (National Institute of Standards and Technology) traceable standards and includes an ISO 17025 accredited Certificate of Calibration with each LCF3. Optional objectives are available to provide alternate magnification ranges and working distances for the examiners.



- Low profile stages help maintain an ergonomic viewing position and places the X and Y controls near the coarse and fine focus knobs. These mechanical stages and focus units are positioned to minimize repetitive hand-over-wrist motions. The stage mounts are placed on adjustable posts, allowing the stages to be removed from the work surface, to accommodate large samples.

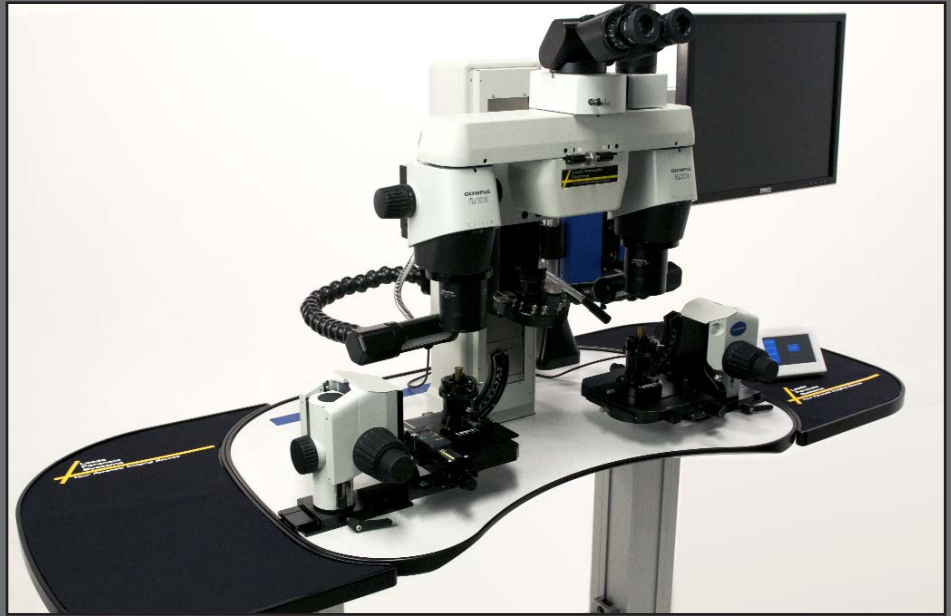


- The LCF3 optical bridge produces an erect, un-reversed image with a large 22mm field of view. Compared images can be viewed as 100% right, 100% left, and divided or overlapped into any ratio. The Leeds' mask adjustor intuitively allows the examiner to manipulate the percentage of the right or left image being reviewed by sliding the adjustor right to left.



ERGONOMICS

- Ergonomic design of fine focus adjustments by removing hand-over-wrist motion.
- Ergonomic table shape permits the examiner to be closer to the microscope eyepieces, offering a more comfortable seated position.
- Comfort is easily achievable for all examiners with a tiltable binocular head adjusting from 5° to 35°.
- Easy to use, positionable touch-pad controls table height, lighting controls, and Z column position from a single-control panel. Includes memory function to save individual examiner's settings.
- Versatile, motorized table with height adjustment from 26" - 38". The ergonomic table shape is designed with a large work surface area and Leeds' classic "object roll-off" protection edge.
- The LCF3's modular design allows for ease of adding 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 neoprene pad, a monitor support arm, a keyboard and mouse tray, and a computer-leg mount.



QUALITY CONTROL

A single axis LCD measuring scale can be added for direct reading of point-to-point measurement of lands, grooves, tool marks, etc. It is capable of measuring in inch or metric units with a .0005"/0.01mm resolution. Use of this LCD scale eliminates the need for measurements that require stage veniers, eyepiece micrometers or an air gap method. A N.I.S.T. traceable, ISO 17025 accredited, Certificate of Calibration is provided with every LCD scale at installation.



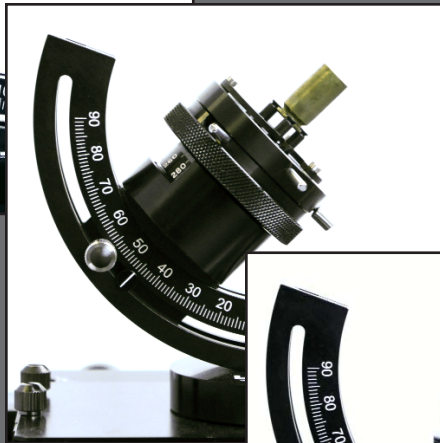
The parfocality of the LCF3 minimizes the need for constant refocusing by the examiner while changing magnification settings. All visual magnifications are clearly marked on the zoom knobs, eliminating the need for use of multipliers to determine the total viewed magnification. A N.I.S.T. traceable Certificate of Magnification Matching is provided with every system at the time of installation.

VERSATILITY

The Leeds Universal Holder is an important feature to the LCF3, offering a single service tool to assist in examining various sized bullets and cartridge casings. Alternatively, the Leeds quick change specimen holders can be used to view a wide variety of evidence samples.



.40 cartridge casing held by the inside diameter



.40 cartridge casing held by the extraction groove



12-gauge shotgun shell held by the outside diameter



.40 cartridge casing 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 extraction groove.



Bullet mounted with sticky wax to a mini platter



Bullet mounted with sticky wax to a pin mount



"On centers" projectile holder

LIGHTING & SYSTEM ACCESSORIES



1) Leeds' new quad lamp fluorescent lighting design includes an articulated support arm. The fluorescent light includes four exceptionally bright lamp units and offers a unique rotating hood to control sample contrast. 2) Goose-neck bifurcated fiber optic light guide with spot lens 3) Flexible LED spot light 4) Dual-View attachment with digital camera shown with optional left and right table extensions, and monitor arm on accessory post 5) 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. 6) Leeds' LED Cube Illuminator fiber-optic light source offers constant color temperature at all intensities with no vibration and low maintenance. The Cube Illuminator LED is rated for over 10,000 hours.

DOCUMENTATION, IMAGING, AND SOFTWARE

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

INSTALLATION AND SERVICE

- Annual service and calibration packages are available.
- Emergency service and repair available.
- All service technicians are factory trained and certified to work on Leeds microscope systems.

As the manufacturer and distributor, Leeds works directly with the end user to design a system to meet their individual needs.

In 1999 Leeds Forensic Systems, Inc. built and designed its first modern comparison microscope bridge and began manufacturing the Leeds Trace Evidence Comparison Microscope (LCT). Leeds was the first to deliver a high performance color and intensity balanced trace evidence comparison microscope. Leeds' design and research efforts led to the introduction of the first LCF in 2001. The LCF has continually evolved over the years as a result of Leeds' responding to customers' needs and input and has quickly become a popular tool requested by many of the top crime labs in the United States. Now in its third generation, the LCF3 reaches a new pinnacle of optical performance and stability, while providing the most ergonomic and natural interface in the marketplace for firearms and tool marks examiners.



In addition to the LCF3, Leeds manufactures the Leeds Trace Evidence Comparison Microscope (LCT) and the Leeds Spectral Vision System (LSV).

LCF3 Firearms & Tool Marks Comparison Microscope Technical Specifications

| Objectives Available | 1.0x* | 0.5x | 1.6x |
|--|---|---------------|--------------|
| Zoom Range | 6 - 102x | 3.0 - 51x | 9.6 - 163.2x |
| Working Distance (mm) | 60 | 70.5 | 30 |
| N.A. | 0.15 | 0.075 | 0.24 |
| * 1x objective is most commonly used for zoom range. | | | |
| Matched magnification positions with 1x objective | 6, 7, 9, 11, 14, 18, 22, 28, 36, 45, 56, 71, 89, 102x | | |
| Zoom Ratio | 16.4:1 | | |
| Field Number (mm) | 22 | | |
| Stage Movement & Universal Holder | X-axis (mm) | 50 | |
| | Y-axis (mm) | 77 | |
| | Z-axis (mm) | 32 | |
| | Axial Slope | 90° | |
| | Axial Rotation | 360° | |
| | Base Rotation | 360° | |
| | Stage Size (mm) | 180 x 135 | |
| Universal Holder | Outside Diameter | 0.030 - 0.78" | |
| | Inside Diameter | 0.36 - 1.12" | |
| Micrometer Range | Range | 0 - 3" | |
| | Resolution | 0.005"/0.01mm | |
| Table Dimensions | Height | 26 - 38" | |
| | Width | 35.5" | |
| | Depth | 24" | |
| | Z-Axis Travel | 6" | |
| | Footprint | 35.5" x 24" | |
| Electrical Requirements | Voltage | 100 - 240 VAC | |
| | Current (max) | 15 A | |
| | Frequency | 50 - 60 Hz | |

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