



LCF3 Firearms & Toolmarks Comparison Microscope

Leeds LCF3 Firearms & Tool Marks Comparison Microscope is designed using feedback from the first-hand experience of forensic examiners -- resulting in a powerful system with outstanding performance, ergonomic comfort, and the versatility needed for forensics.



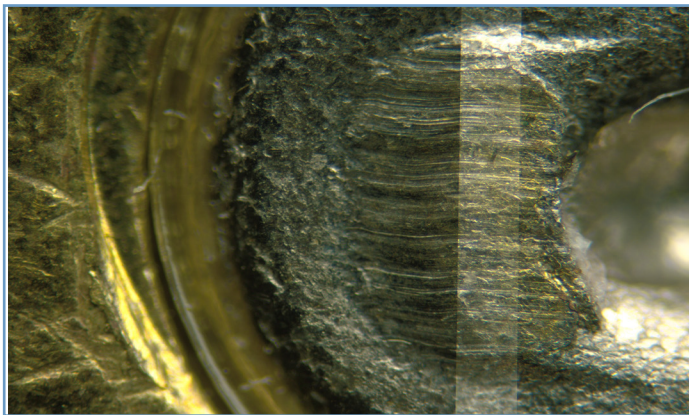
Shown above: Leeds LCF3 system with **motorized stages** (via trackball.) LCF3 is also available with **manual** stage controls.

Outstanding Performance

Leeds LCF3 is built with world-class **Olympus** apochromatically corrected optics, for crisp, aberration-free, high-resolution images.

A matched pair of zoom-based macro bodies are integrated into each LCF3 system, providing:

- * 16:1 zoom ratio,
- * Built-in aperture diaphragms,
- * Parcentric & parfocal optical system,
- * 14 matched magnification positions in the zoom range of 6x – 102x, with 11 positions in the range of 6x – 56x.



Breach face, showing fine striations, and firing pin impression.



Leeds 0.18x Ultra-widefield objective.



Each matched magnification position is specifically certified to match between both optical paths. **Optional objectives** are available for the LCF3 microscope, including the Leeds 1x Ultra-widefield objective.

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** (shown below) allows the examiner to manipulate the percentage of the right or left image being reviewed by sliding the adjustor right or left.



Ergonomic Design

Focus Mechanism

The ergonomic design enables fine focus adjustments *without* wrist-tiring motion.

'Kidney Bean' Table Shape

The shape of the table allows the examiner to be closer to the microscope eyepieces, offering a more comfortable seated position. Versatile, motorized table has height adjustment from 26" to 38" and a large work surface area, with Leeds 'object roll-off prevention' edges.

Tilting Head (Binocular or Trinocular)

Adjustable from 5° to 35°, allowing an examiner of any height to get comfortable. The trinocular head (for 2 eyes & 1 camera) provides 3 light splitting positions: 100% Camera; 100% Visual; 50%/50%. Add a phototube to the binocular head to be able to take photos.

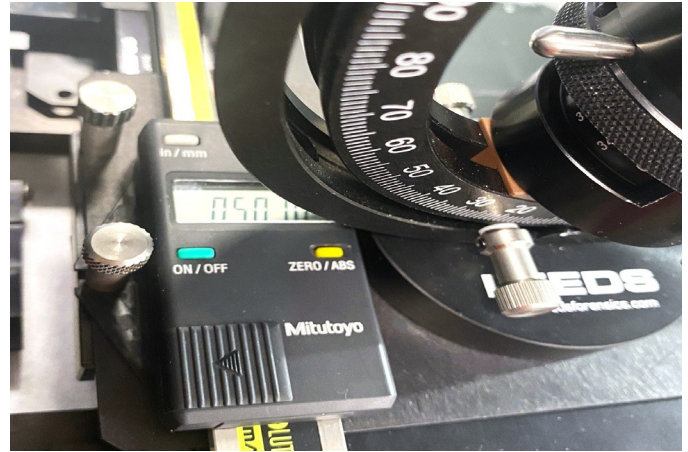


Positionable Controller Available as a 6-button key pad (above left) for LCF3 with manual controls, or an LCD touchpad (above right) for any LCF3. This adjusts table height and Z column position. Includes memory function to save settings for each examiner.

OPTIONS:

- * Right-side dual-view for training
- * Left- or right-side table extensions with neoprene pad & edges.
- * Articulated monitor support arm.
- * Keyboard & mouse tray.
- * Computer leg mount.

Quality Control



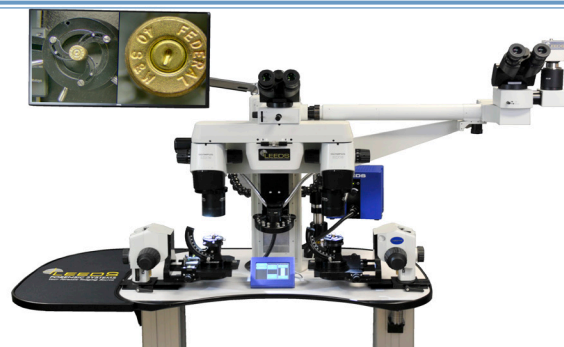
A single axis **LCD measuring scale** (shown above) allows for direct reading of point-to-point measurement of lines, grooves, toolmarks. The scale can measure in inch or metric units, with a .0005"/0.1mm resolution.

This eliminates the need for measurements that require stage verniers, eyepiece micrometers, or an air gap method.

ISO 17025:2017 Certificate of Calibration

is included 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, so you won't need multipliers to determine the total viewed magnification.

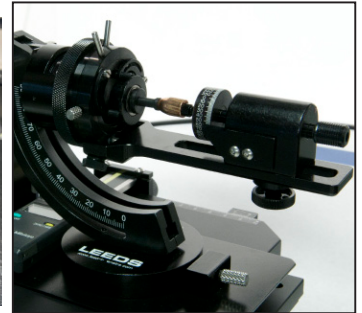
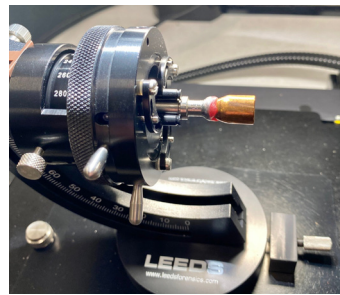


Universal Holder

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

This eliminates the need for multiple sample holders and accessory brushes for firearms examinations. With this unique holder, a cartridge case or shell can be gripped by its inside or outside diameter, or can be held by the extraction groove.

Leeds also offers several interchangeable sample holders for tool mark examination, including **sticky wax** (below left) and **an on-center projectile holder** (below right.)



.40-cartridge casing held by the inside diameter

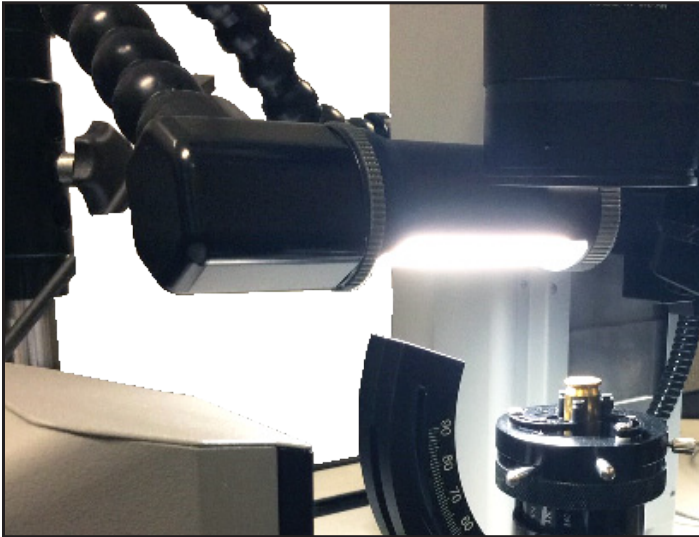


.40-cartridge casing held by the extraction groove



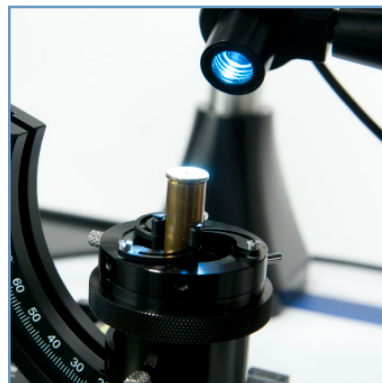
.40-cartridge casing held by the outside diameter

Lighting Systems & Accessories

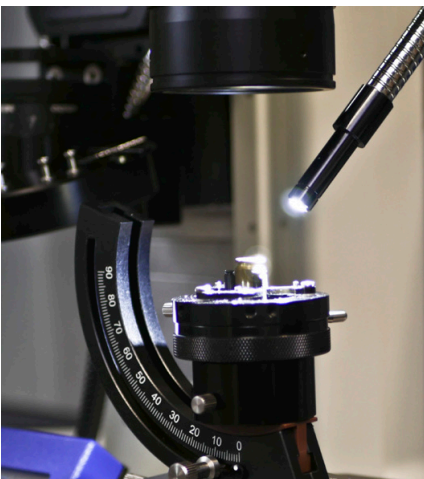


Our **quad lamp fluorescent lighting** design includes an articulated support arm. The fluorescent light includes a bright (13 watts) quad lamp and a unique rotating hood to help control sample contrast.

LED Cube Illuminator, fiber-optic light source offers constant color temperature at all intensities, with no vibration and low maintenance. Rated for over 20,000 hours.



Flexible LED spot light.



This **gooseneck, bifurcated fiber optic light** has a spot lens that enables you to put light *exactly* where it's needed.

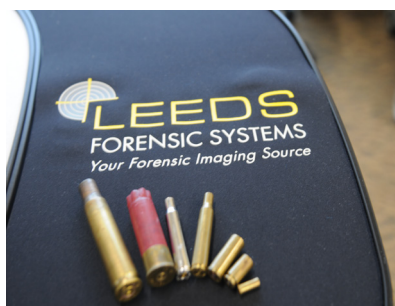


Dual-view attachment with right side table extension.

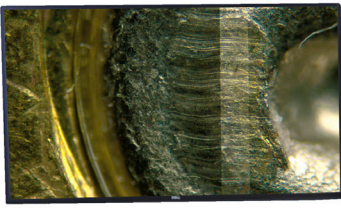


Optional Tool Mark Holders

For specimens that don't fit into the universal holder, we offer two other styles: a clamp and a 4"-diameter platen on a ball mount.



12"-wide table extensions feature a neoprene pad and **edges that prevent object roll-off**. For either right or left side.

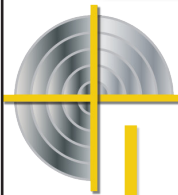
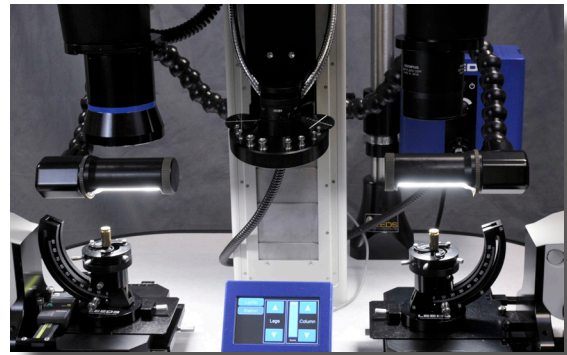


In 1999 Leeds Forensic Systems designed and built its first modern comparison microscope bridge and began manufacturing the Leeds Trace Evidence Comparison Microscope (LCT). Leeds was the first to deliver a high performance color- and intensity-balanced trace evidence comparison microscope.

The 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 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 height of optical performance and stability, while providing the most ergonomic and natural interface in the marketplace for firearms and tool marks examiners.

LCF3 FIREARMS & TOOL MARKS COMPARISON MICROSCOPE			
Technical Specifications			
Objective	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)	42	
	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	0.0005"/0.01mm	
Table Dimensions	Height	26" - 38"	
	Width	35.5"	
	Depth	24"	
	Footprint	35.5" x 24"	
Station Column Z-Axis Travel		6"	
Electrical Requirements	Voltage	100 - 240 VAC	
	Current (max)	15 A	
	Frequency	50 - 60 Hz	



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