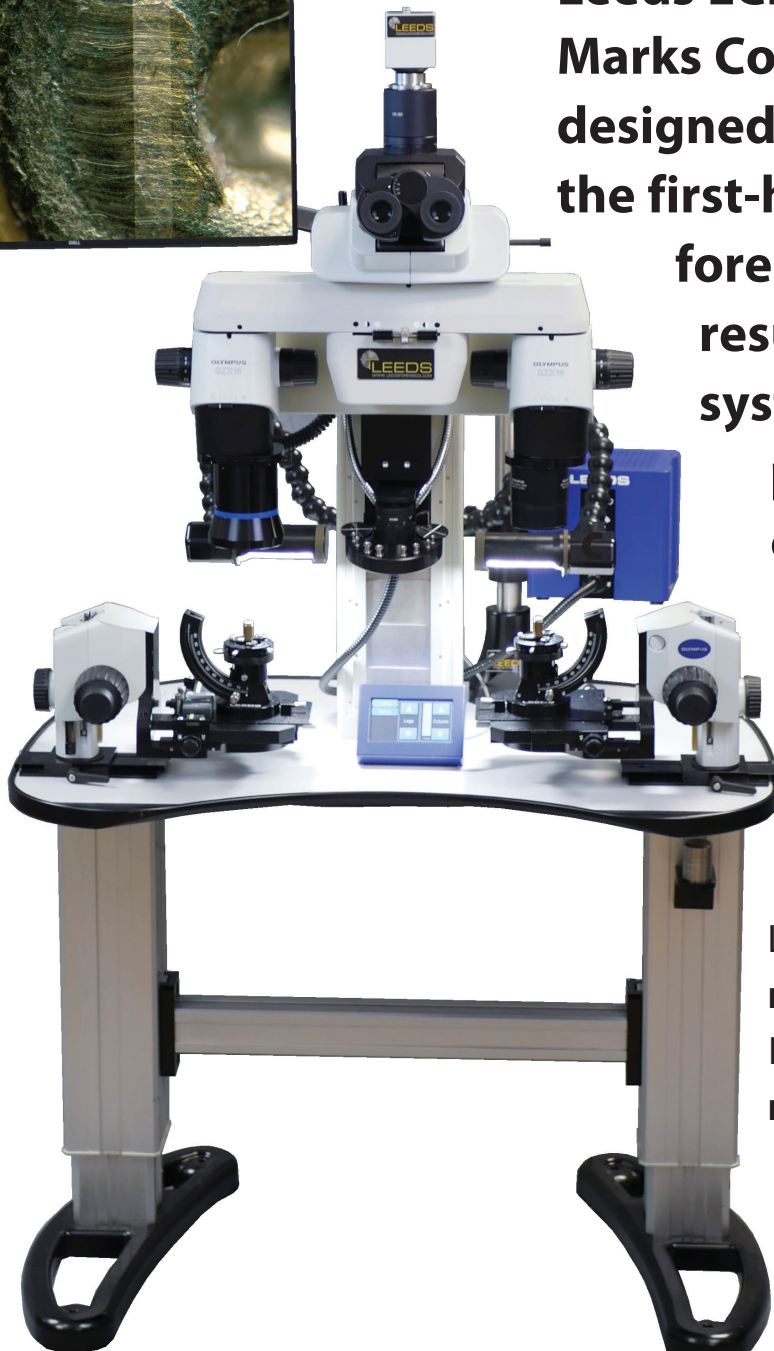
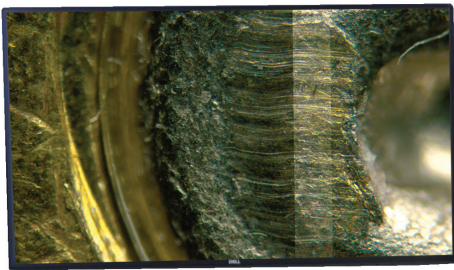




LCF3

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.

Leeds LCF3 system with manual stage controls. It is also available with motorized stages.

Outstanding Performance

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

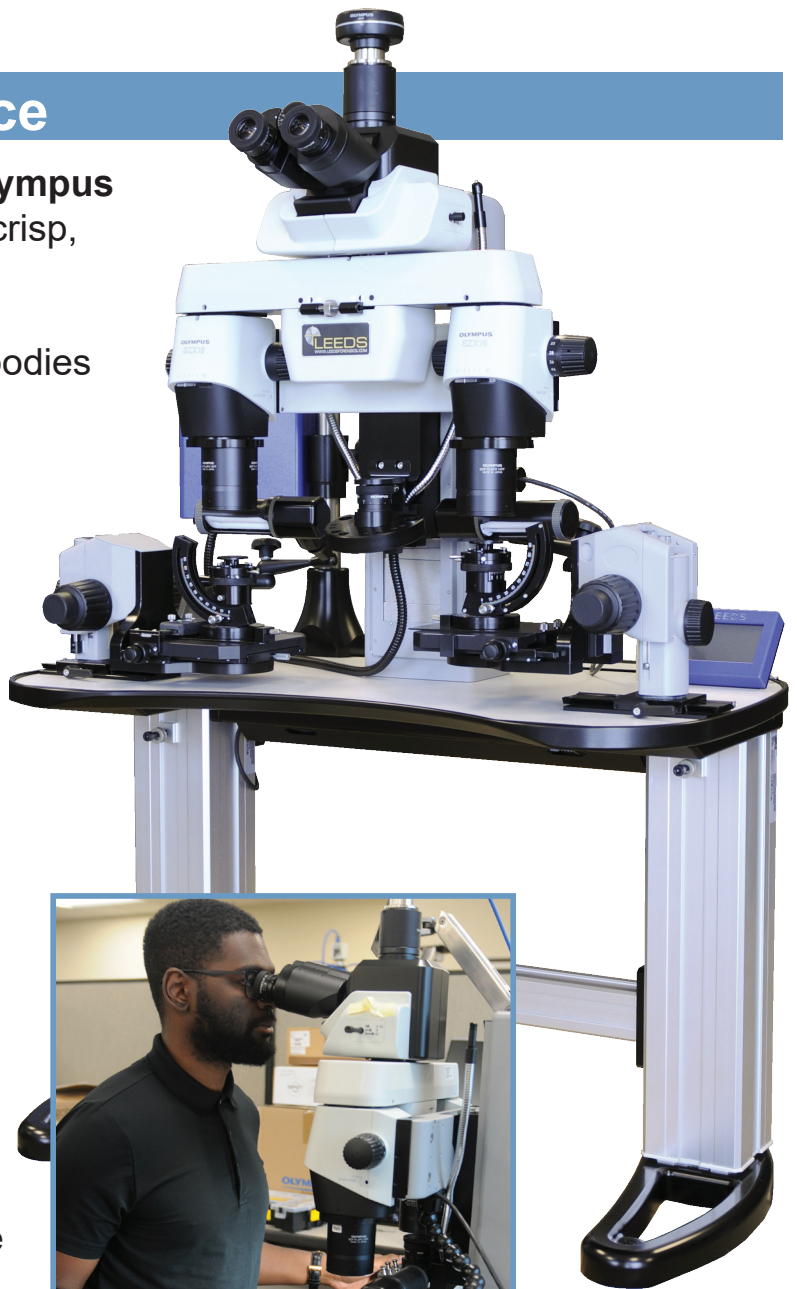
A matched pair of zoom-based macro bodies are integrated into each LCF3 system, providing:

- 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.

The 14 matched magnification positions are verified with an ISO 17025:2017 Certificate showing the actual magnification of the right and left microscope, and demonstrates the differences are within an acceptable tolerance.

Optional objectives are available for the LCF3 microscope, including the Leeds 0.18x 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.



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

Ergonomic Design

Focus Mechanism

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

Ergonomic Table Shape

The 'kidney bean' 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 Ocular (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.



The Leeds **mask adjustor** allows the examiner to manipulate the percentage of the right or left image being viewed by sliding the adjustor right or left.

It also easily adjusts the width of the divide/overlap for the mask using the center knob.

Quality Control

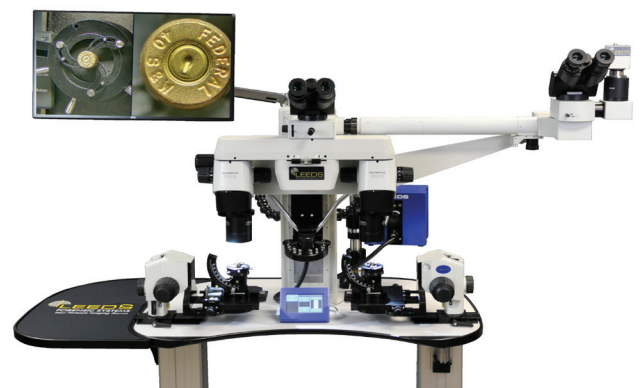
ISO 17025:2017 Certificate of Calibration is included with every LCD scale.

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.

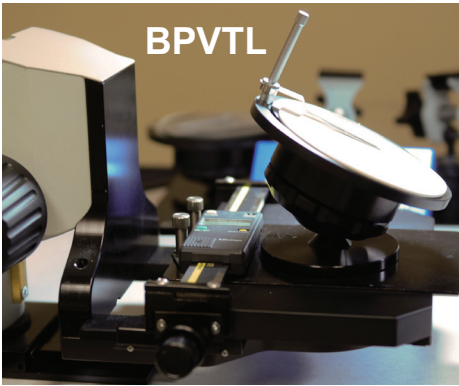
Each LCF3 is critically color balanced between 2 optical paths.



Optional:
Leeds 0.18x
Ultra-Widefield objective.



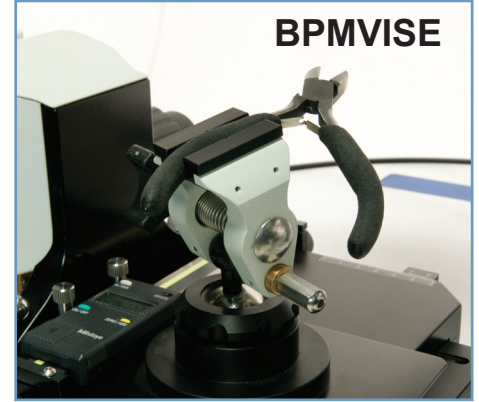
Quick-Change Holders



Ball Pivot Positioner has an adjustable surface for specimen tilt of up to 30° from horizontal.



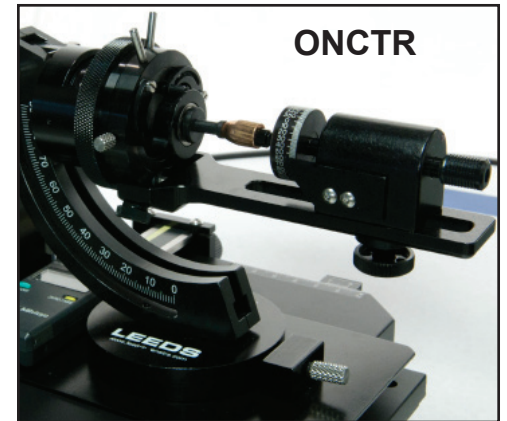
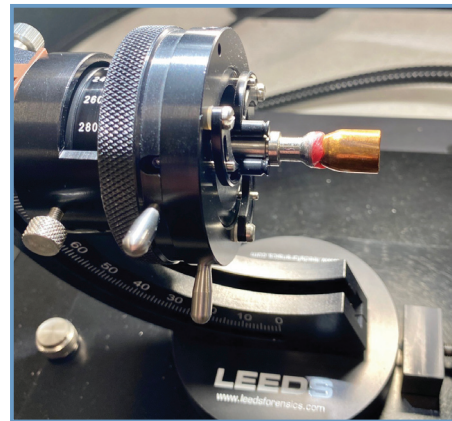
Reflected Light Document holder



The **Ball Pivot Vise** easily holds larger objects.



Magnetic holder for shotgun shell



Other sample holders for tool mark examination, including **red sticky wax** (shown left) and an **on-center projectile holder** (shown right)



This articulating wax platen is used **for mounting a small sample** to Leeds Universal Holder, allowing great range of motion through a ball and socket design.

Universal Holder

The **Leeds Universal Holder** (shown below) 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.

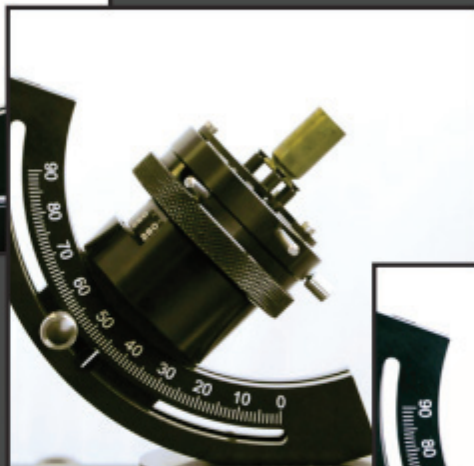


MEGA-UVHLR

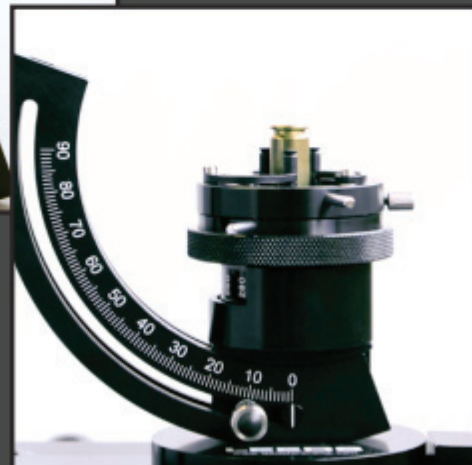
Mega Universal Holder
Designed to hold larger specimens, such as cables or other items too big for the normal holder.



.40-cartridge casing held by the inside diameter



.40-cartridge casing held by the extraction groove



.40-cartridge casing held by the outside diameter

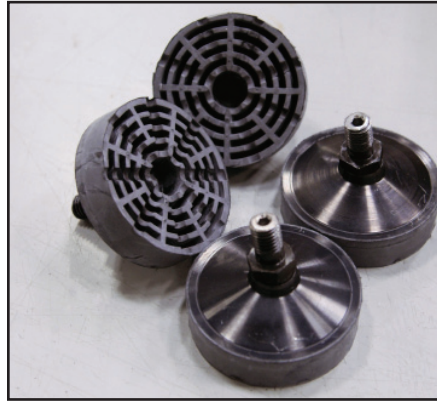
LCF-UVLHLR

Anti-Vibration Solutions

LCF3-AVPAD
Anti-vibration Pads.
Sold as set of 4



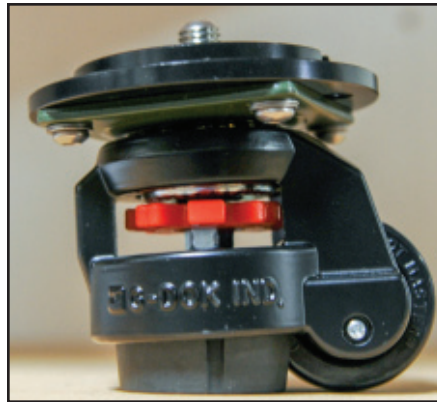
LCF3-VIBR
Anti-vibration feet.
Sold as set of 4



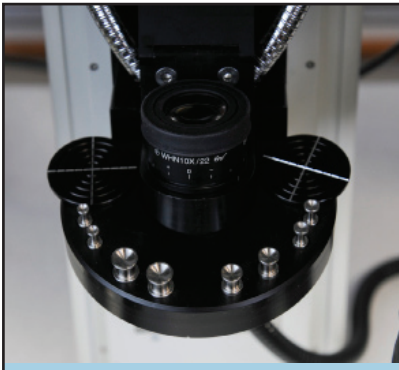
LCF3-VIBR-0.5
High deflection
anti-vibration feet.
Sold as set of 4



LCF3-CSTRS
Leveling Caster.
Sold as set of 4



LEEDS EYEPIECE AND PIN MOUNT HOLDER



Pin Mount Holder Tray,
attaches to eyepiece holder.



LCF-PMH

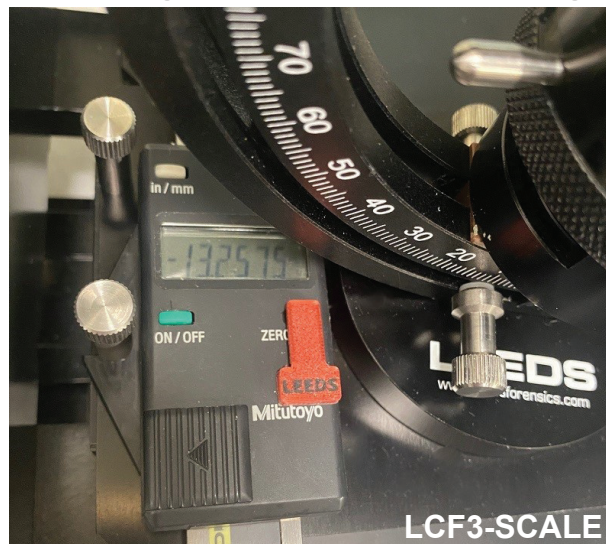


LCF-EPH



Set of Pin Mounts (Pairs)
LCF-PINMTS

Optional Single Axis LCD Measuring Scale



LCF3-SCALE

This scale 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.

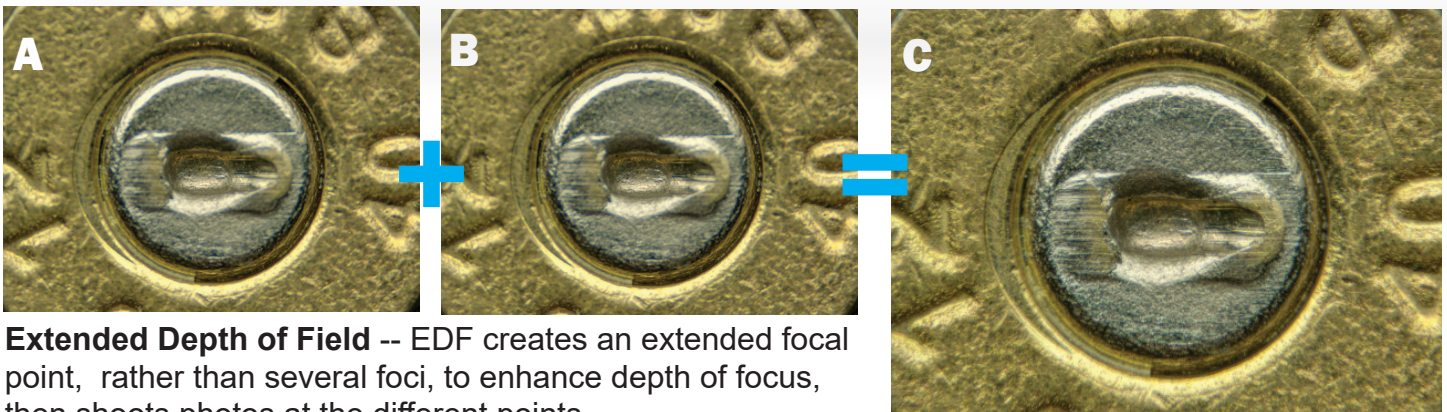
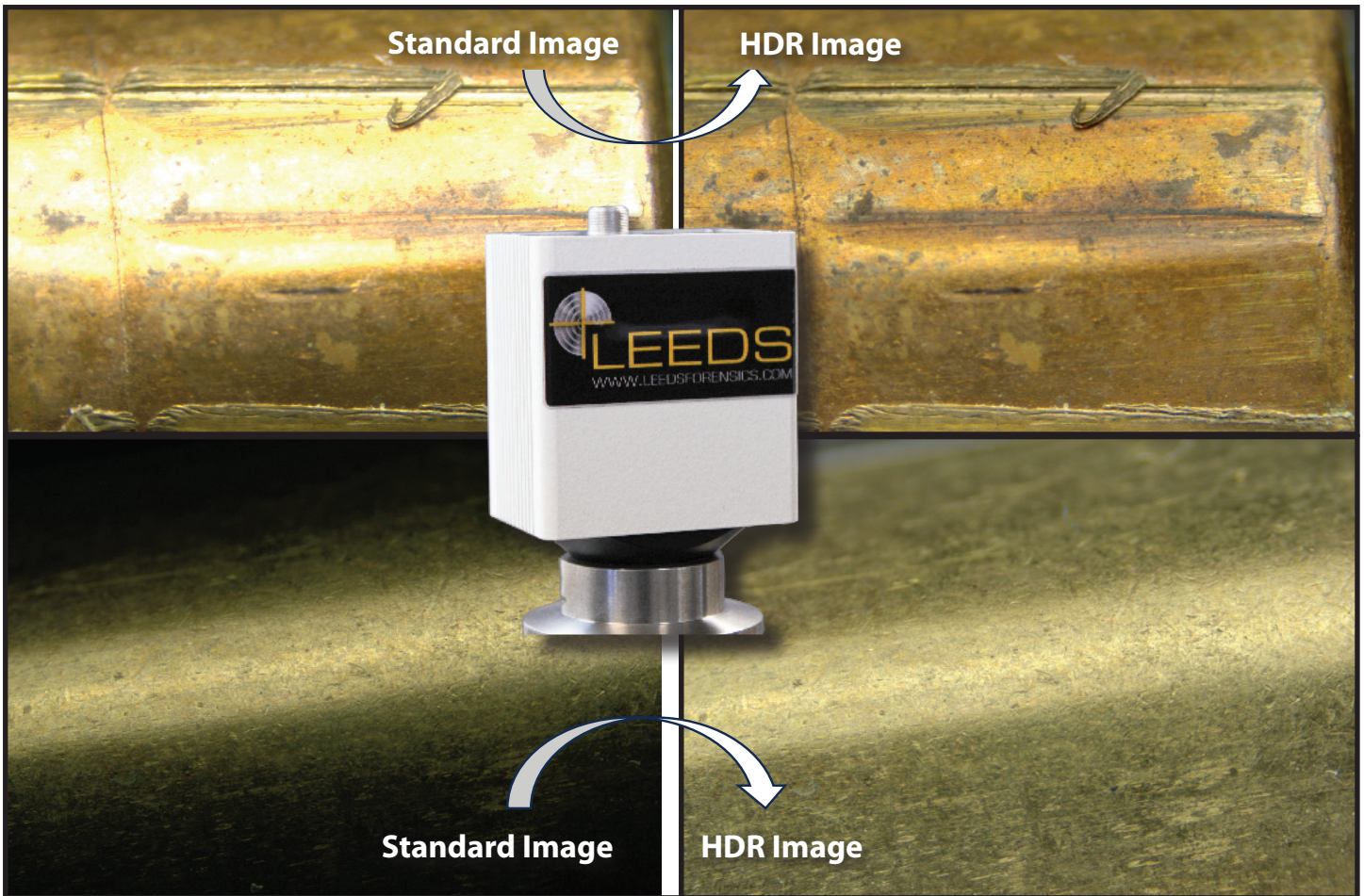
Cameras

PROBLEM: The cylindrical shape of bullets and cartridge cases creates a challenge for illumination under the microscope.

SOLUTION: Leeds CMOS-PKG Camera, available on new orders or as an upgrade to your current Leeds microscope.

High Dynamic Range

HDR algorithms compensate for the lighting differences by imaging **each area** of the sample with different camera exposures – then combining the best exposures for each region into a **single image**.



Extended Depth of Field -- EDF creates an extended focal point, rather than several foci, to enhance depth of focus, then shoots photos at the different points.

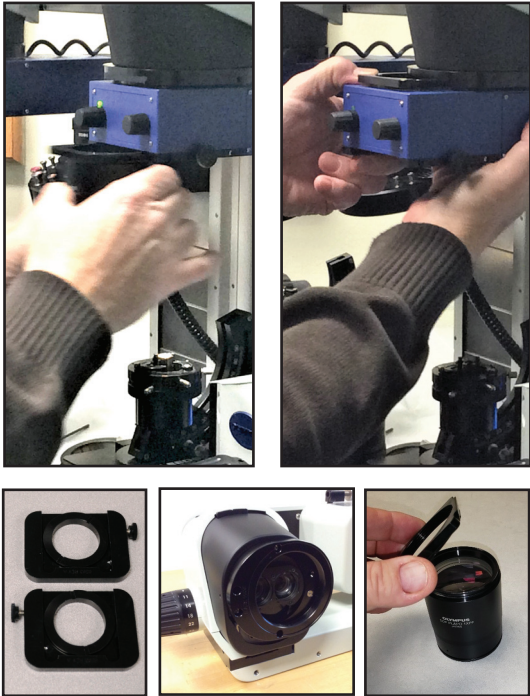
Photo A shows one of the images with the primer area in focus.

Photo B shows one of the images with the firing pin impression in focus.

Photo C shows the final compilation of all of the images in one image -- sharp and complete.

Several other cameras are also available

Leeds Quick Change Kit
 Add this mounting kit to easily and quickly swap out objectives
LCF-QCKIT



Illuminator Reflector, mounted on flexible tube arm, enables you to use the light to illuminate the back/dark side of the specimen. Sold in pairs.



Dual-view attachment perfect for classroom or peer review.



Helpful Accessories

LCF3-TBL-EXTKIT



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

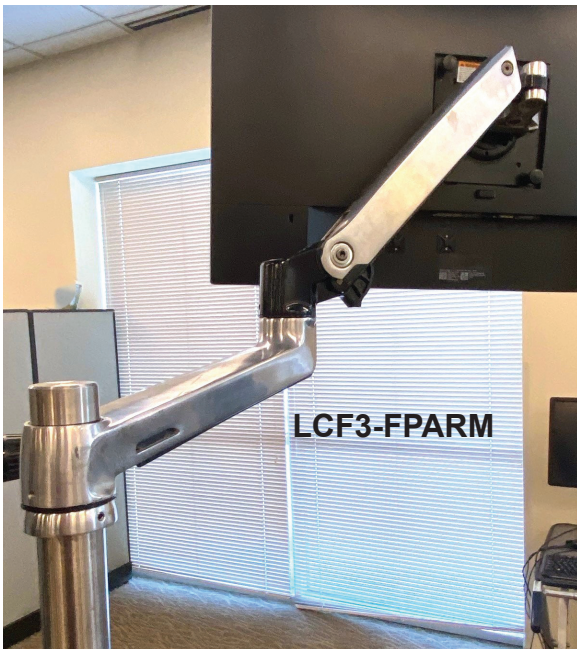
LCF3-KBMT



Keyboard Mounts

Easily attaches to either table leg and can be adjusted to desired height.

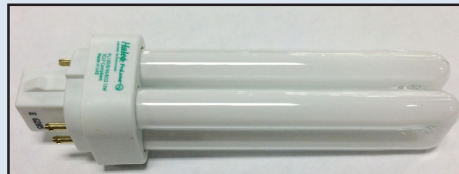
LCF3-FPARM



Monitor Post Mount

Can be attached to the post and oriented to the right, the left, or middle of table.

QUAD-TUBE REPLACEMENT



Fluorescent quad-tube, color-matched pair of replacement Bulbs. Sold as set of 2.

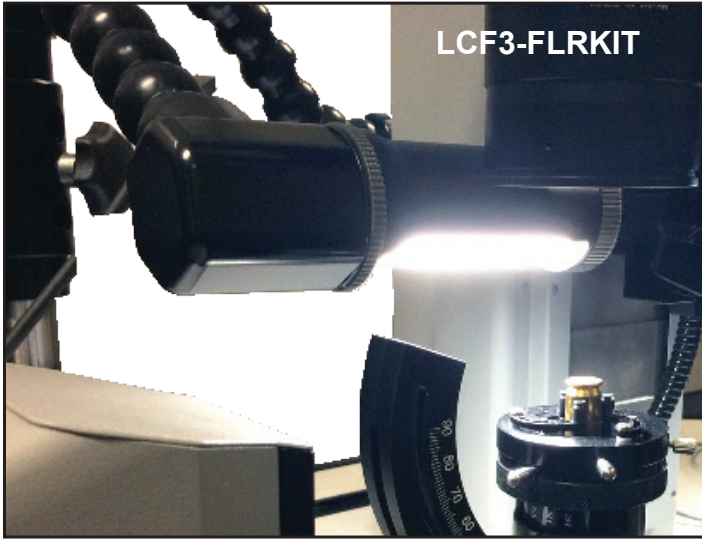
LCF-BDWT



White Contrast Disks

For when you need a higher-contrast background to view the specimen well.

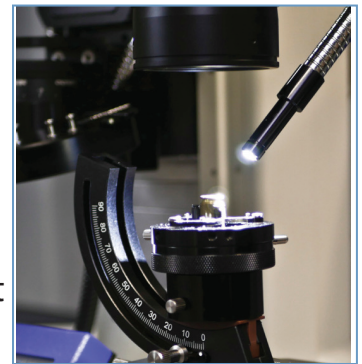
Lighting Systems



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

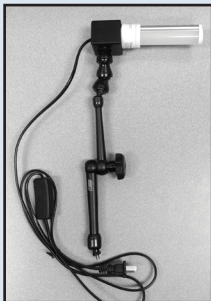


The **gooseneck, bifurcated fiber optic light** when used with the LEDFO has an optional focusing spot lens or a diffused lens that enables you to put light *exactly* where it's needed. **A08520**



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.

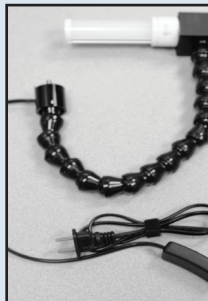
LEEDS LED LIGHT STIX



STAGE or CROSS-BEAM MOUNT
articulated arm attachment
LCF3-LEDKIT-AA-R2



COLUMN MOUNT
flexible tube arm, column mount.
LCF3 ONLY
LCF3-LEDKIT-CM



CROSS BEAM MOUNT
flexible tube arm, cross-beam mount
LCF3-LEDKIT-CB



Flexible LED spot light.
LCF3-LEDSP

Service: Keeping Your Scopes in Best Working Order

Leeds provides the only factory-trained service team for Leeds Comparison Microscopes! Our team is uniquely qualified to keep your instruments in the best possible working order.

We also provide **ISO17025:2017 calibration certificates** to satisfy the requirements of your quality program.

We offer a complete service program that includes: **calibration, field service, and factory repairs.**

- Leeds services **all** makes and models of microscopes.
- Service can be performed on-site nationwide, or at Leeds Minneapolis facility.
- We carry a full line of replacement bulbs. See our Ebay store, linked on www.leedsmicro.com.

Leeds can provide **ISO 17205:2017 accredited, NIST-traceable calibrations for:**

- Magnification matching;
- Camera measurement functions;
- Digital LCD stage micrometers;
- Linear eyepiece reticles.



Leeds is accredited to **ISO/IEC 17025:2017** by **PJLA Accreditation Services** for dimensional calibration of microscopes.



**PERRY JOHNSON LABORATORY
ACCREDITATION, INC.**

Certificate of Accreditation

Perry Johnson Laboratory Accreditation, Inc. has assessed the Laboratory of:

Leeds Precision Instruments, Inc.
17300 Medina Road, Suite 600, Minneapolis, MN 55447

(Hereinafter called the Organization) and hereby declares that Organization is accredited in accordance with the recognized International Standard:

**ISO/IEC 17025:2017
& Meets Requirements of ANSI/NCSI Z540-1-1994**

This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (as outlined by the joint ISO-ILAC-IAF Communiqué dated April 2017):

Dimensional Calibration
(As detailed in the supplement)

Accreditation claims for such testing and/or calibration services shall only be made from addresses referenced within this certificate. This Accreditation is granted subject to the system rules governing the Accreditation referred to above, and the Organization hereby covenants with the Accreditation body's duty to observe and comply with the said rules.

For PJLA:

 Tracy Szeszen President	<small>Initial Accreditation Date:</small> June 29, 2015	<small>Issue Date:</small> October 18, 2021
	<small>Revision Date:</small> August 22, 2022	<small>Expiration Date:</small> December 31, 2023
	<small>Accreditation No.:</small> 85567	<small>Certificate No.:</small> L21-630-R1

Perry Johnson Laboratory Accreditation, Inc. (PJLA)
755 W. Big Beaver, Suite 1325
Troy, Michigan 48064

The validity of this certificate is maintained through ongoing assessments based on a continuous accreditation cycle. The validity of this certificate should be confirmed through the PJLA website: www.pjla.com

Page 1 of 2

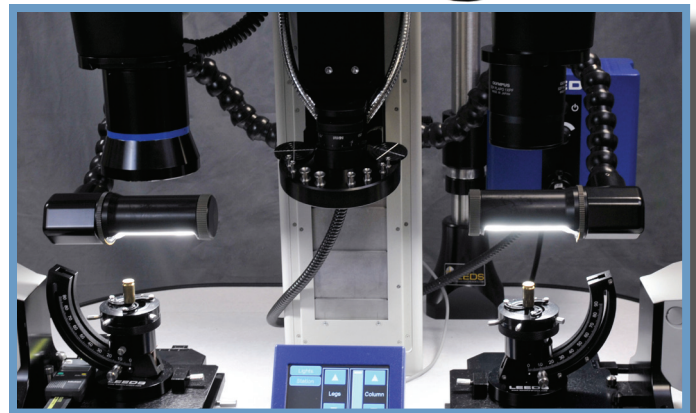
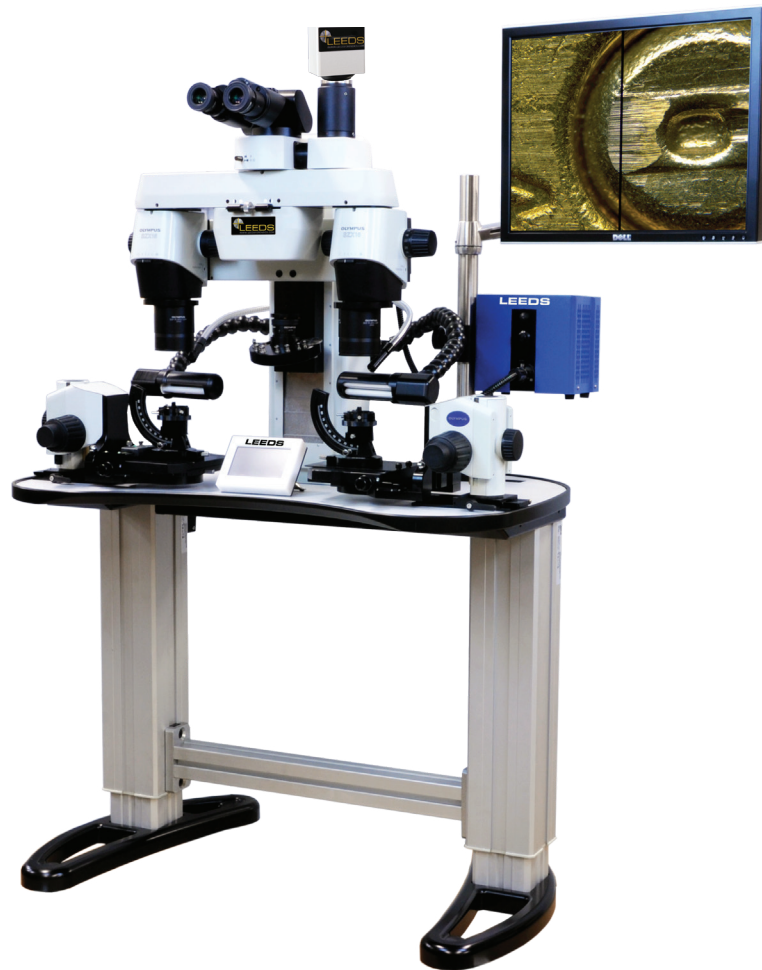
Call or visit our website to easily schedule your microscope service.

- 763-546-8575
- www.leedsmicro.com
- sales@leedsmicro.com

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"	



In 1999 Leeds 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 Leeds Forensic Comparison Microscope (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.

Leeds Forensic Products may be purchased on our **GSA Schedule Contract #GS-07F-097CA**



Your Forensic Imaging Source

Leeds Precision Instruments, Inc.

17300 Medina Road, Suite 600

Minneapolis MN 55447 USA

www.leedsmicro.com

763-546-8575 // sales@leedsmicro.com