

Living up to Life

*Leica*  
MICROSYSTEMS

## Leica LED3000 / LED5000

The energy-saving System Solution for Integrated Incident Light Illumination  
in Stereomicroscopy





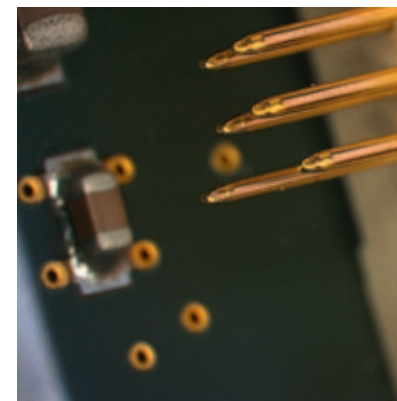
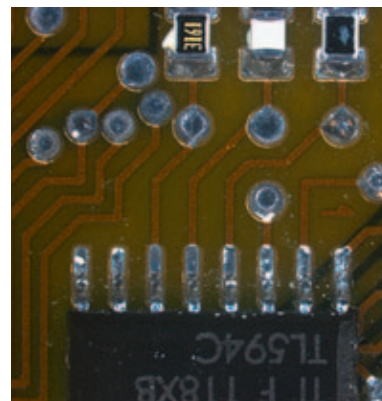
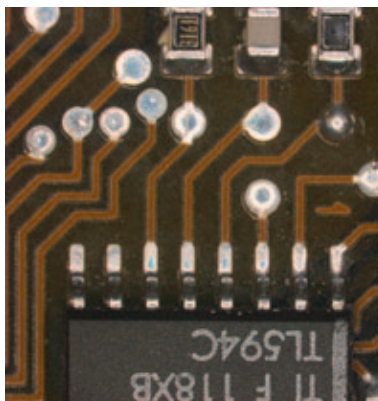
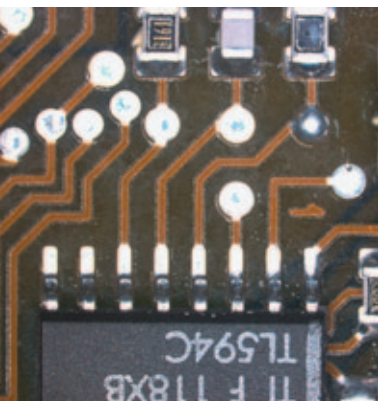
# Leica LED3000 & LED5000

The new illuminator series from Leica Microsystems offers a wide variety of lighting choices, a high degree of system integration, and the latest LED technology.

Leica Microsystems offers a broad spectrum of special LED illuminators for various incident light applications. In addition to the composition of the sample, the information to be gained is most critical for selecting the right illuminator.

The **LEICA LED3000 series** was designed for the Leica M50 / M60 / M80 routine stereomicroscopes, and the **LEICA LED5000 series** for high-performance stereomicroscopes such as the Leica M125, M165 C, and M205 A. Illumination options for both series are completely supported by Leica Application Suite (LAS) software; illumination settings can be changed and stored.

- › Leica LED3000 RL & LED5000 RL  
Compact LED ring light systems for routine and high-performance stereomicroscopes
- › Leica LED3000 SLI™ & LED5000 SLI™  
spot-lights directs light at the a specific spot
- › Leica LED3000 MCI™ & LED5000 MCI™  
Analyzing scratches and surface profile
- › Leica LED3000 NVI™ & LED5000 CXI™  
When light is needed perpendicular to the sample
- › Leica LED5000 HDI™  
Highly diffused illumination for uniform lighting



Leica LED3000 RL: inspection of a main-board without accessories – reflections on the metal contacts

Leica LED3000 RL with diffuser – more uniform illumination, reflections are reduced

Leica LED3000 RL with crossed polarizers: reflections on the soldered joints are almost completely eliminated

Plug contacts with a faulty pin – uniform illumination of the sample with the Leica LED3000 RL ring light

# Leica LED3000 RL & LED5000 RL

Compact LED ring light for routine and high-performance stereomicroscopes

The compact Leica LED3000 RL and LED5000 RL ring light use latest-generation LEDs and an LED auxiliary lens developed by Leica Microsystems to increase the brightness and homogeneity of the illumination. Conveniently adjustable segments provide new data about the sample without moving it.

## LEICA LED3000 RL

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- For objectives with a 58 mm diameter
- Optimized for 65 mm to 150 mm working distance
- 24 SMD power LEDs
- Adjustable segments: Full, half, and quarter ring

## LEICA LED5000 RL

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- For objectives with a 80 mm diameter
- Optimized for 50 mm to 80 mm working distance
- 40 SMD power LEDs
- Adjustable segments: Full, half, quarter, and one-eighth ring

## BENEFITS OF THE LEICA LED RING LIGHT

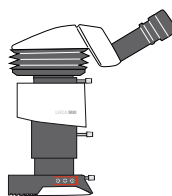
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- Uniform illumination of large object fields with the LED auxiliary lens
- High color fidelity through latest-generation white LEDs
- Compact design gives easy access to the sample
- Extra information gained by adjustable segments
- Control all functions with Leica LAS software
- Optional accessories: diffuser and polarization set
- LED service life of 50,000 operating hours
- Low power consumption

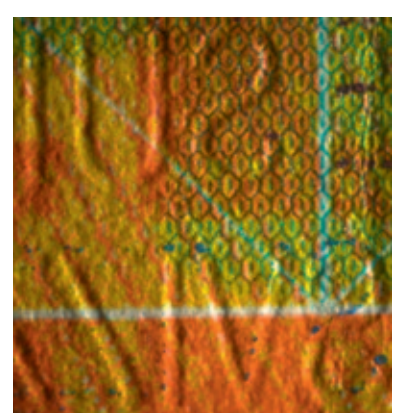
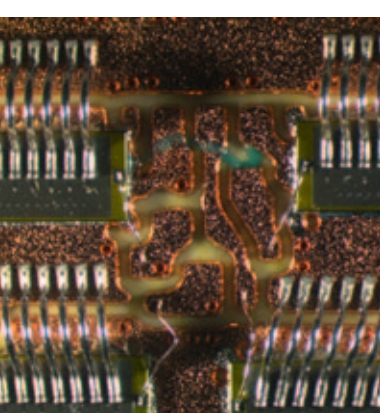
## RING LIGHT

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Leica ring light illuminators feature the light arranged in a ring around the objective, and the light shines down onto the sample. It is illuminated from various angles or uniformly illuminated in ring form depending on the illuminated segments.



Ring illuminator



Leica LED3000 SLI™ : connecting wires on an electronics board are highlight by a side light

Leica LED3000 SLI™ : stamped letters on a banknote are emphasized by flat light

Leica LED5000 SLI™ : rosemary needles illuminated by spot light

Leica LED5000 SLI™ : pine cone illuminated by spot light

# Leica LED3000 SLI™ & LED5000 SLI™

## Spotlight illuminators for the most flexibility

The double-armed goosenecks with integrated LED spotlights can be placed in any position for the desired contrast – outstretched for very flat oblique light (side light) with strong shading, up to high-angle incident light with minimal shading. For high brightness, these compact LED spotlights can be moved very close to the sample.

The operating concept is one-of-a-kind: The control for the light intensity is located on a separate gooseneck. This allows for ergonomic positioning depending on the user's preference.

### LEICA LED3000 SLI™ AND LED5000 SLI™

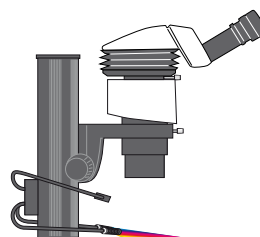
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- Two positionable goosenecks
- Separate gooseneck with integrated control element
- Left and right LED spot lights can be individually controlled
- No bothersome cable in the sample area
- Removable diffuser attachments
- Controlled using LAS software
- Combinable with other LED illuminators
- Leica LED3000 SLI™: 300 mm gooseneck length
- Leica LED5000 SLI™: 500 mm gooseneck length

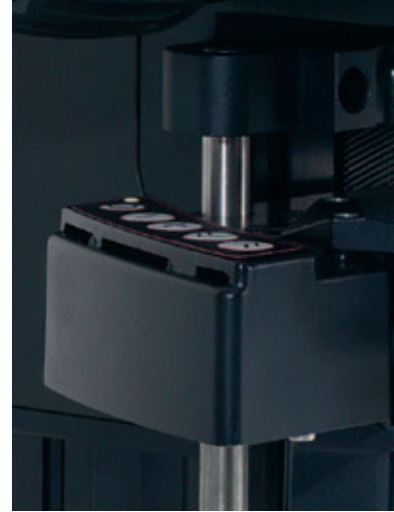
### SPOTLIGHT ILLUMINATION

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The Leica LED 3000 SLI™ and Leica LED 5000 SLI™ each feature two bright LED spot-lights, which can be individually adjusted to the sample with two goosenecks. The control panel sits on a separate gooseneck and can be positioned as desired.



Spotlight illumination



Leica LED3000 MCI™: coin illuminated with right illuminator arc

Leica LED3000 MCI™: scratches become visible with the left illuminator arc

Leica LED5000 MCI™: fingerprint on a CD in oblique light

Leica LED5000 MCI™: The same sample in flat incident light. Clearly visible: dust particles



# Leica LED3000 MCI™ & LED5000 MCI™

## Options for oblique illumination

The unique Leica MCI™ (Multi Contrast Illumination) systems are ideal for applications that required goose-neck illumination up until now. The flat angle of the oblique incident light creates particularly high contrast for precise viewing. The user can detect the finest unevenness and defects, such as scratches and dust particles. In contrast to gooseneck illumination, the settings are fully reproducible. With the addition of Leica Application Suite and SmartTouch™ control, the user can quickly and easily recall stored illumination parameters at any time using the LED5000 MCI™.

### LEICA LED3000 MCI™

- 4 high-output LEDs
- Different illumination angles deliver high contrast
- For routine stereomicroscopes of the Leica M series

### LEICA MCI™ illumination

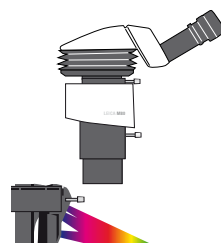
- Detection of fine sample structures
- Adjustable illuminator arc height
- Reproducible illumination settings save time
- Compact design without the inconvenience of cables in the sample area

### LEICA LED5000 MCI™

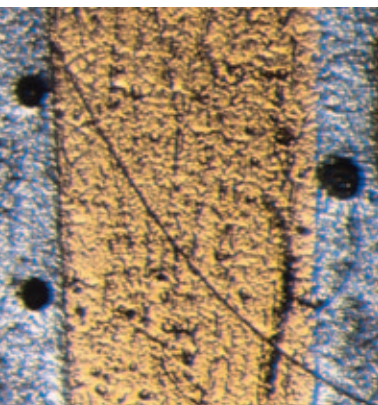
- 9 high-output LEDs
- Different illumination angles and directions deliver high contrast
- Left and right illuminator arcs are movable
- Optional control via Leica Application Suite (LAS)
- For high-performance stereomicroscopes of the Leica M series

### MULTI CONTRAST ILLUMINATION

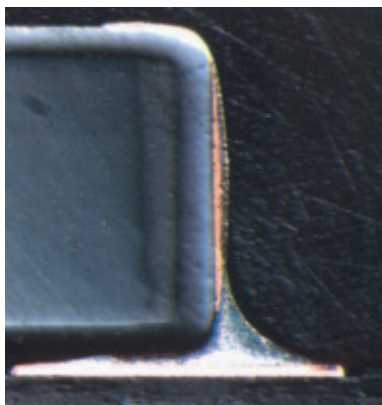
Two or three illuminator arcs with multiple LED shine in selectable combinations and illumination angles and are height-adjustable. A wide variety of illumination scenarios result from the combination of settings.



Multi Contrast Illumination



Leica LED5000 CXI™: trapped air bubbles in the cross-section of a soldered joint



Leica LED5000 CXI™: cross-section through an electronic component including solder contact



Leica LED3000 NVI™: a look into a USB memory stick



Enlarged detail of an injection nozzle – left: with Leica LED3000 NVI™, right: with conventional ring light

# Leica LED5000 CXI™ & LED3000 NVI™

When light is needed perpendicular to the sample

The Leica LED5000 CXI™ is a coaxial illuminator suited for maintaining quality control of planar, polished or reflective manufactured pieces. Scratches, stress cracks, impurities, and pores, are made exceptionally visible.

The LED3000 NVI™ illuminator is primarily used for viewing recesses and bores, since the light falls nearly vertically onto the sample. Unlike coaxial illumination, it is also ideal for uneven samples and for samples having no reflections.

## LEICA LED5000 CXI™

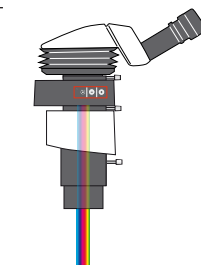
- Ideal for flat, reflective or polished samples
- Brightness control directly on the illumination unit
- No quarter-wave plate required for stereo viewing
- Optional control via Leica Application Suite (LAS)

## LEICA LED3000 NVI™

- Ideal for viewing recesses and bores
- Even light through 2-point illumination
- Minimized shadows caused by tools
- Compact design – great accessibility to the sample

## COAXIAL ILLUMINATOR

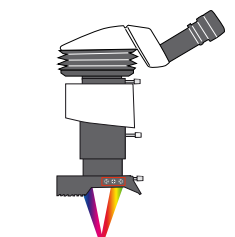
For coaxial illumination, the light is coupled directly into the beam path and reflected by the planar sample into the other beam path. Unevenness/scratches do not reflect this light and thus are optically clear.



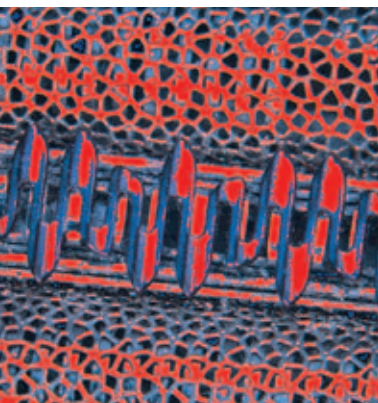
Coaxial illuminator

## VERTICAL ILLUMINATION

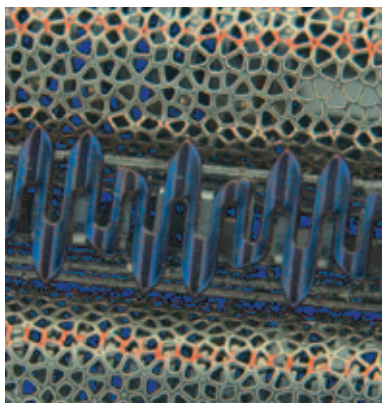
NVI™ stands for “Near Vertical Illumination”, which shines nearly vertical to the sample plane. This allows bores and recesses to be well illuminated.



Vertical illumination



Foil cutter head: image with ring light in LAS. Red: overexposed areas without image information



Foil cutter head: Image with Leica LED5000 HDI™ – uniform illumination and structure information



LAS Montage image of a rhinoceros beetle under the Leica LED5000 HDI™ illuminator

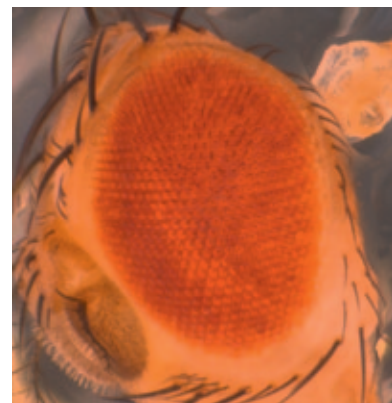


Image of the large eye of the *Drosophila melanogaster*

# Leica LED5000 HDI™

The Leica LED5000 HDI™ illuminator is based on the concept of an illumination dome. Its dome shape produces very uniform light, while it simultaneously blankets ambient light effectively. It also illuminates difficult-to-image surfaces without reflections.

With the Leica LED5000 HDI™, Leica Microsystems has developed the first flexible dome illuminator for stereomicroscopes (Leica FlexiDome™). Simply by lifting the illuminator, the sample is accessible and can be rearranged without adjusting the focus. The soft silicon rubber protects the user and sample. The LED5000 HDI™ is controlled using a built-in membrane keyboard. All of the illumination parameters can be saved via Leica Application Suite and recalled. With the uniform illumination, the LAS Montage and LAS Multifocus software modules provide particularly good results for critical samples.

## LEICA LED5000 HDI™ IN LOWER POSITION

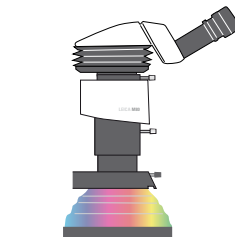
- Diffused all-around illumination suppresses reflections and shading as much as possible
- Stray light/ambient light is eliminated
- Constant illumination intensity

## LEICA LED5000 HDI™ IN UPPER POSITION

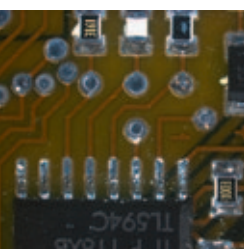
- Maximum accessibility for the realignment of the sample
- Light characteristic similar to a circular neon lamp

## HDI™ (Highly Diffuse Illumination)

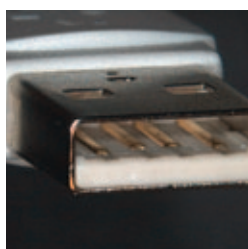
The light on the inside of the dome of the Leica LED5000 HDI™ is reflected and scattered repeatedly, ensuring that few shadows or reflections arise. The Leica LED5000 HDI™ resembles a circular neon lamp when folded up.



Highly diffuse illumination



**Leica LED3000 RL / LED5000 RL**  
 • Even illumination  
 • Variable light direction



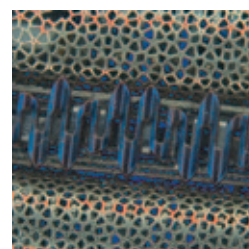
**Leica LED3000 NVI™**  
 • For recesses  
 • Low shading



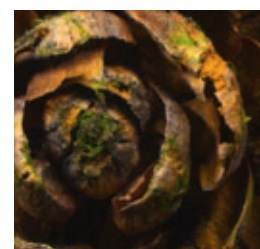
**Leica LED3000 / LED5000 MCI™**  
 • Repeatable contrast



**Leica LED5000 CXI™**  
 • Specifically for flat, reflective samples



**Leica LED5000 HDI™**  
 • Highly diffuse light  
 • 2-in-1 illumination



**Leica LED3000 / LED5000 SLI™**  
 • Variable contrast

# The System Principle

With the Leica LED5000/LED3000 family, the complete illumination system is integrated with the overall Leica microscopy system. Focusing columns with integrated electronics bundle and process all digital signals and send them to the Leica Application Suite (LAS) software. All data is read out by the software, saved with the captured image, and can be recalled at any time. Recurring experiments can be reproduced in the future with just a few mouse clicks.

Various illumination scenarios can be selected in Leica LAS (e.g. two LED arcs of the LED5000 MCI™). Next, you can select the speed at which the illuminator switches between the scenarios. The sample is then automatically illuminated from different perspectives.

## BENEFITS OF LEDS

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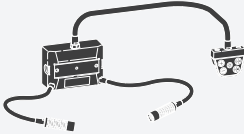
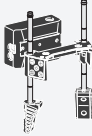
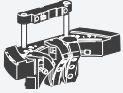


- Long service life (up to 50,000 h)
- No lamp replacement necessary
- Up to 90% less power consumption
- Color-neutral display of the sample
- Constant color temperature, even for different brightness levels
- Fanless operation without bothersome noises
- Flicker-free light through DC components
- Insensitive to voltage fluctuations in the power supply

## BENEFITS OF THE LEICA LED FAMILY

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- Control elements on the instrument
- Easy installation
- No additional control units required
- Integration with LAS software
- Reproducible settings
- Illumination setting is saved with the image
- Easy access to the sample through compact illumination design
- Saves space at the workstation
- Durable membrane keyboard

# Technical Data

	LED3000 RL	LED5000 RL	LED3000 NVI™	LED5000 CXI™	LED3000 SLI™	LED5000 SLI™	LED3000 MCI™	LED5000 MCI™	LED5000 HDI™
									
<b>Number of LEDs</b>	24	40	2	2	2	2	4	9	132
<b>LED service life</b>	50,000 h	50,000 h	50,000 h	50,000 h	50,000 h	50,000 h	50,000 h	50,000 h	30,000 h
<b>Color temperature</b>	5600 K	5600 K	6500 K	6500 K	5600 K	5600 K	5700 K	5700 K	6500 K
<b>Objective diameter</b>	58 mm	80 mm	58 mm	–	–	–	–	–	80 mm
<b>Recommended working distances</b>	60 – 150 mm	50 – 80 mm	60 – 150 mm	–	–	–	–	–	60 – 70 mm
<b>CTL2 / CAN terminals</b>	1	1	1	1	2	2	2	2	1
<b>Compatible with FusionOptics™</b>	Not relevant	Yes	Not relevant	Only with AX carrier	Yes	Yes	Yes	Yes	Yes
<b>Power consumption</b>	15 watts	10 watts	10 watts	10 watts	5 watts	5 watts	10 watts	15 watts	25 watts
<b>Compatible with</b>	Routine	High-end	Routine	M series	Routine	High-end	Routine	High-end	High-end
<b>Remark / Accessories</b>	Diffuser pol. set	Diffuser pol. set	–	1/4-wave plate (AX item)	Length: 300 mm	Length: 500 mm	–	–	–

**Note:**  
LEDs slowly diminish in brightness as they age. By definition, the service life corresponds to the number of operating hours it takes to reach approx. 50% of the original brightness. This does not mean that the illuminator no longer functions. For shift operation, we recommend estimating the year's operating hours to determine the expected service life of an LED illuminator.

# Article numbers

- |   |   |  |
|---|---|--|
| <p>10 450 494 LED5000 RL-80/40 – ring illuminator, 2<sup>nd</sup> generation, for Ø 80 mm objectives, 40 power LEDs, 5600 K color temperature, optimized LED auxiliary lens, selectable segments, working distance: 50 – 80 mm</p> <p>10 450 497 Polarization set for Leica LED5000 RL-80/40</p> <p>10 450 498 Diffuser for LED5000 RL-80/40</p> <p>10 450 548 LED5000 SLI™, spotlight illumination, double-armed gooseneck 500 mm long, with 2 power LEDs, 5600 K color temperature, control unit on separate gooseneck, incl. diffuser pair</p> <p>10 450 561 LED5000 MCI™, multi-contrast illumination, 2<sup>nd</sup> generation; with 9 power LEDs, 2 movable illuminator arcs</p> <p>10 450 168 LED5000 CXI™ – coaxial LED incident light illumination, 1.5× magnification factor</p> <p>10 450 062 LED5000 HDI™, diffuse illumination, FlexiDome™, ideal for highly reflective samples</p> | <p>10 450 271 LED3000 RL – ring illuminator, Ø 58 mm objectives, 24 power LEDs, 5600 K color temperature, optimized LED auxiliary lens, selectable segments, optimized for 60 – 150 mm working distance</p> <p>10 450 337 Polarization set for LED3000 RL</p> <p>10 450 338 Diffuser for LED3000 RL</p> <p>10 450 508 LED3000 SLI™, spotlight illumination, double-armed gooseneck 300 mm long, 2 power LEDs, 5600 K color temperature, control unit on separate gooseneck, incl. diffuser pair</p> <p>10 450 507 LED3000 MCI™, multi-contrast illumination with 4 power LEDs, 5600 K color temperature, selectable scenes</p> <p>10 450 169 LED3000 NVI™ – vertical illuminator for Ø 58 mm objectives, for 60 – 150 mm working distance</p> | <p>10 450 266 Power supply for LED3000/LED5000</p> <p>10 450 267 RLA 80/66 ring illuminator adapter for LED5000 RL for Ø 66 mm objectives</p> <p>10 450 501 RLA 58/66 ring illuminator adapter for LED3000 RL and LED3000 NVI™ for Ø 66 mm objectives</p> <p>10 450 549 LED3000 SLI™/MCI™ adapter – routine, for LED3000 MCI™ and LED3000 SLI™; for installation between the focusing column and baseplate</p> <p>10 450 570 Terminal for combination light guide on focusing columns of the routine M series, for LED3000 SLI™ and LED3000 MCI™</p> |
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