



# Leica M720 OH5

Premium Surgical Microscope  
A New Dimension in Comfort



Comf



# ort Reloaded

Excellence in optics and ease of use are the hallmarks of the Leica Microsystems brand. The finest resolution, image contrast and color fidelity assure brilliant detail visibility, and unprecedented ergonomics simplify your workflow in the operating room.

To this, Leica Microsystems now adds a new dimension in comfort. Our ingenious Horizontal Optics Technology and stand provide you with the most compact microscope with the highest maneuvering precision and positioning flexibility on the market.

Your benefit: more room to work and improved viewing conditions make operating in all positions more comfortable – for safe and successful surgical outcomes.

The Leica M720 OH5 – A new dimension in comfort.

### **Breakthrough in Surgical Microscope Design**

For years, surgeons have needed a surgical microscope with smaller, more compact optics. Traditional microscope design has evolved over the years using large, vertical optical zoom lens systems which have limited the surgeon's working room and ability to work comfortably. With the Leica M720 OH5, Leica writes a revolutionary new chapter in microscope design. The heart of the innovation: Horizontal Optics Technology.

The new Leica M720 optical head of the OH5 is far more compact than today's surgical microscopes. Designed along a horizontal, as opposed to a vertical plane, Horizontal Optics Technology provides a significant improvement in surgeon comfort, particularly for awkward procedures such as posterior fossa cranial surgery where patients are positioned in an upright posture. Horizontal Optics Technology therefore provides a substantial gain in free working distance for both cranial and spine cases, allowing you unobstructed access to the surgical area.

Real innovation makes life easier – and the Leica M720 OH5 does exactly this.



The innovative Horizontal Optics Technology reduces the size of the optical head and gives surgeons more room to work – dramatically increasing their comfort level.

# A New Dimension in Comfort



Actual size 1:1



# An Individual Fit

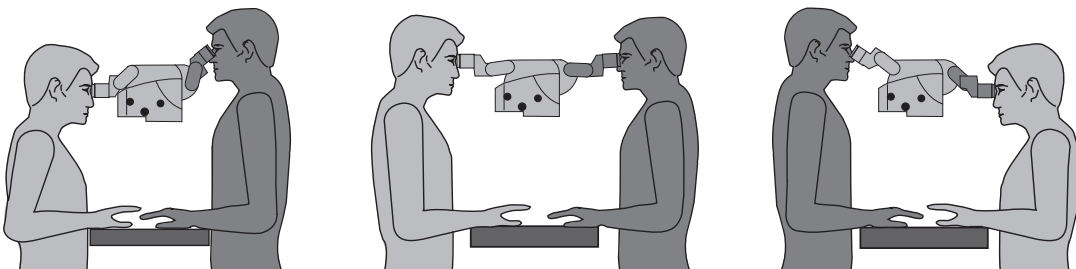


## Leica Butterfly-Binoculars

Every person is unique in stature and physical requirements. Surgical microscope designers can only accommodate different body sizes and changing operating conditions through the use of individually adjustable components that create the right working conditions for different people of different statures.

In addition to the optical system's compact size, the new binocular tubes are designed with an inclination range of  $115^\circ$ , which allows each individual to always work in comfort. They also feature Leica's innovative Butterfly-Binoculars, which enable the eyepieces to swing to a second viewing plane, quickly and easily.

This extra flexibility creates ideal working conditions for both the surgeon and the assistant. Leica Butterfly-Binoculars accommodate all body heights and the most challenging surgical positions.



During surgery, Leica Butterfly-Binoculars ensure comfortable positioning for all individuals.



**COMPACT DESIGN**



**HIGHEST OVERHEAD CLEARANCE**



# Freedom of Positioning

## **Superior Reach and Overhead Clearance**

The Leica M720 OH5 allows perfect positioning for surgery and takes up very little space in the operating room. The system provides the highest overhead clearance and the longest reach of any surgical microscope on the market today. This superior reach gives the surgeon ultimate flexibility to place the microscope wherever it best fits his or her surgical needs – behind the surgeon in the unique overhead position, or positioned anywhere around or across the operating table.



**SUPERIOR REACH**



# Unrivalled Maneuverability



The ergonomic 150° range of the incline angle combined with the most compact optical system provides the surgeon with unmatched comfort, even in the most difficult positions.

## Precise Movement

The Leica M720 OH5 offers a greatly expanded range of movement in all dimensions for improved microscope maneuverability. The microscope features robotic functions on two axes (X/Y) to allow a very high degree of precise movement. The robotic functions can be activated by hand and/or foot controls.

Just as the Leica OH4, it takes only half the force to move the Leica OH5 compared to other high-end microscopes. The system is vibration-free at all magnification levels. The stand's patented, advanced movement system achieves perfect re-balance in six axes and at all locations and angles of the microscope.



With a 100° range of lateral movement, the surgeon can easily achieve the most challenging side views.

## ErgoLock™

The main surgeon's binocular tube is freely adjustable within a range of 115°. Leica's ErgoLock™ option enables the tube to be easily locked in five defined positions. This feature ensures stability of the binocular position especially when using the mouth switch control.

## Convenient Mouth Switch

Leica's ergonomically-designed mouth switch control allows the surgeon to easily position the microscope while leaving both hands free during surgery.



The binocular tube is easily locked in five defined positions with Leica's ErgoLock™ option, ensuring stability.



Leica's mouth switch provides the ultimate hands-free control.

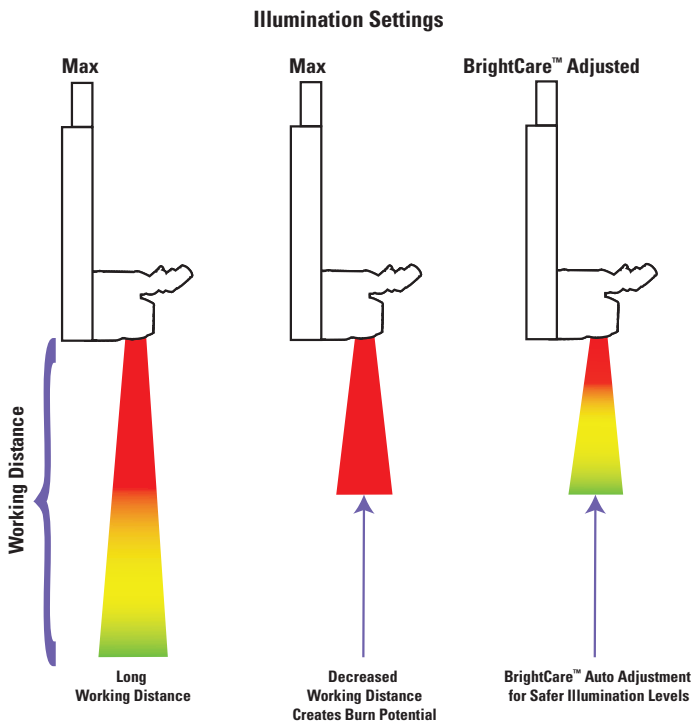


The ergonomic design and sturdy, all-metal construction of the pistol grip ensure comfort and stability when moving the microscope.

The Leica M720 OH5 offers innovative illumination solutions for the benefit of the surgeon and the safety of the patient.

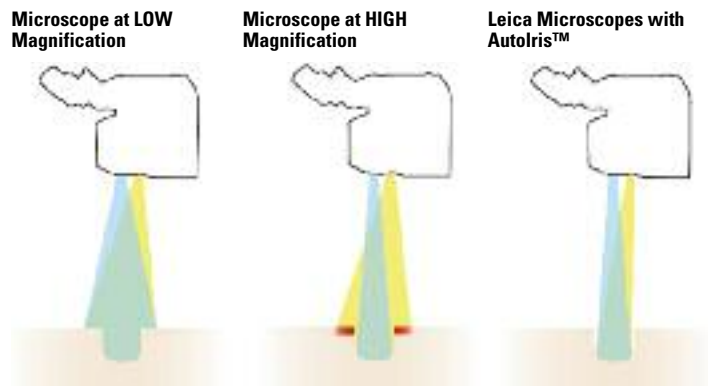
**BrightCare™: Auto light intensity control based on working distance**

As a microscope's working distance (WD) decreases from 500 mm to 200 mm, the intensity of the microscope light (without adjustments) increases by over 600% [lux/Wd<sup>2</sup>]. A safe light at 500 mm is therefore a dangerously hot light at 200 mm. The BrightCare™ function automatically reduces the light intensity as the surgeon decreases WD using the focus function. Consequently, the surgeon does not need to constantly adjust light intensity based on his/her WD. The surgeon can focus on doing surgery without the worry of causing thermal injury. If the surgeon chooses to have more light, he may defeat the BrightCare™ system by selecting a button on the touch screen.



**Autoliris™: Auto light diameter control based on magnification**

When a surgeon zooms from low magnification to high magnification, he is viewing only 17% of the illuminated area of the patient (6:1 zoom). Therefore, the surgeon sees only 17% of light and not



At low magnification, the field of illumination (yellow) fills the field of view (green).

Previously, as magnification increased, the field of view became smaller, but the illumination field remained the same. The illumination outside the field of view could potentially cause tissue burns (red).

Autoliris™ automatically works with the zoom, decreasing the field of illumination as the field of view decreases. There is no peripheral illumination to cause tissue burns outside the field of view.

the 100% light that the patient is exposed to. As a result, the skin surrounding an incision has the potential to burn since the surgeon does not recognize all the light and 83% of the light is serving no benefit (just heat to patient). Using software tied to the zoom and a motorized light iris, Leica Autoliris™ only illuminates the field which can be seen by the surgeon. In high magnification situations, the patient receives 83% less light energy and the benefits of convection are more effective. This is all done automatically without surgeon or nurse involvement. At any time, the surgeon can override the system by a conveniently located control on the side of the optics carrier. This will allow a light diameter much smaller than the visual field.

# Safety without Compromise



The Leica M720 OH5 features two independent 300W xenon illumination systems to provide continuous illumination.



## **Illumination in an Instant**

The Leica M720 OH5 features two completely independent 300W xenon arc-lamp illumination systems. The second system automatically activates in the event of lamp failure in the primary system, which gives the surgeon peace of mind that surgery will not be jeopardized.

## **Fast System Reboot**

If the power cable becomes disconnected for any reason, the system reboots in less than 30 seconds, which is by far the fastest reset time available today.

## **Anti-microbial Coating for Added Safety**

AgProtect™, Leica's antimicrobial nano silver coating, provides outstanding protection to microscope users by reducing exposure to surface pathogens. The coating covers the microscope's outside surfaces and protects the operator and other individuals in the work area by penetrating the membranes of microbes to prevent replication. Leica Microsystems contributes added safety for its customers, medical teams and their patients through AgProtect™.

## **Protective Lens**

For clear viewing in a sterile environment, there are two versions of the protective lens for the Leica M720's objective; both are made of high-quality optical glass. One protective lens is sterilizable, reusable, and designed for use with sterile drapes available on the market today. The other version is disposable and comes with a protective lens welded into a sterile drape.

### Modular Design Supports all Applications

The Leica M720 OH5 offers the correct module for every surgical application. Whether configured with the main binoculars only, with assistant binoculars or with the Leica DI C700 dual imaging module, the Leica M720 OH5 is always compact, elegantly designed and easy to maneuver. The four simultaneous viewing ports not only provide ultimate flexibility in surgery, but also provide an excellent platform for teaching applications.



Binocular tube replacement



Assistant attachment for spine



Leica DI C700 dual imaging module with assistant attachment for spine



### OpenArchitecture™ for IGS Integration

The Leica DI C700 dual imaging module allows the surgeon to input data from external sources, such as high-resolution RGB video signals, correlated data from IGS systems, and standard CT or MRI data. With an IGS computer, the CT or MRI can be fully correlated to the image in either eyepiece. The fully correlated image can overlay the actual image or a shutter can be used, allowing the surgeon to view the actual image through one eyepiece and the fully correlated image through the other eyepiece.

### Tool Tracking Perfected

In combination with the tool tracking capabilities of an IGS system, the Leica M720 OH5 microscope can track a surgical instrument as it moves in the X, Y, and focus axis. Move the instrument and the microscope follows with no need for the surgeon to touch the handle grips and move his or her hands out of the surgical field.

### Neuro-endoscopy Images

Non-correlated images such as endoscopy images can be projected with the highest resolution and contrast available on the market today. With the Leica DI C700, the surgeon can view the endoscopy image in whichever microscope eyepiece he or she chooses.

In combination with the tool tracking capabilities of an IGS system, the optical axis and focal plane of the microscope follows the tip of a navigated tool in any lateral direction.



# Flexibility Built In



Leica MDRS4 Digital Video System.



The video camera adapter allows focus and magnification independently of the surgeon's view.

## Ready for Future Imaging Technologies

The selection of video options changes continuously as imaging technology evolves. The Leica M720 OH5 is an open architecture system that will adapt to the newest video innovations as they become available. The Leica MDRS4 digital video recording system, today's most advanced video technology, is built into the Leica M720 OH5 floor stand for convenience and easy accessibility.

## Video Screen Integrated with the Floor Stand

The Leica M720 OH5 features a built-in, movable video screen arm, with three-rotation axes and an inclination axis to best position the large video flat screen into the perfect position for all viewers. In addition, all functions of the integrated Leica MDRS4 digital video recording system are conveniently and directly controlled via the large video screen (using a keyboard, touch pad or touch screen option).

## The First in Integrated High-definition Video

HDMD™ is a compact, high-definition (HD) recording system matched and optimized for Leica Microsystems to integrate with Leica surgical microscopes. Recording in a 4:3 format at 720p (progressive) and 30fps (frames per second), it provides full image coverage on a 24" HD flatscreen. The state-of-the-art MPEG4 video compression allows reduced file sizes.



Leica's video screen is available as an option.

# Fast Focus Guaranteed



SpeedSpot™ allows accurate focusing of all viewing ports.

## SpeedSpot™

Fast, accurate microscope focusing is easy with the Leica SpeedSpot™ and its two laser beams. And, as a focusing reference, SpeedSpot™ helps ensure that the image is always sharply defined for all three viewing ports (surgeon, assistant, and documentation).

## True Auto-Balance

Leica's single button auto-balance saves valuable time. With only two pushes of one button, Leica's patented auto-balance system fully balances all six axes for precise positioning.

## Intraoperative Re-Balance

A microscope may need re-balancing during surgery due to changing needs for the surgeon's and assistant's positioning. It is easy to re-balance the microscope intraoperatively, even through a sterile drape. Pushing the AC/BC button conveniently located above the optical head quickly and accurately re-balances the microscope in seconds thus ensuring uninterrupted surgery.

Leica's new graphical user interface and hard keys for illumination control and auto-balancing.



Intraoperative re-balancing for uninterrupted surgery.





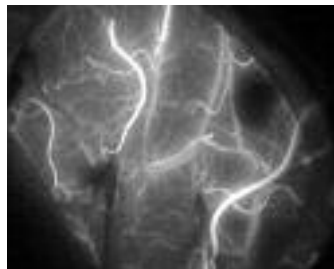
# Invisible Becomes Visible

## **The Leica FL800\*: A valuable option for the Leica M720 OH5**

Leica FL800 provides state-of-the-art neurovascular fluorescence for fluorescence-based angiography. With this option, surgeons can determine the patency of vessels during surgery directly through the surgical microscope eyepieces or on a video monitor.



ICG injection after 2 seconds:  
Arterial view.



ICG injection after 5 seconds:  
Capillary view.



ICG injection after 9 seconds:  
Venous view.

\* The Leica FL800 neurovascular device has received FDA 510(k) clearance. Please check the status of Leica FL800 regulatory approval with your local Leica representative.

<b>Electrical data</b>	
Power connection for Leica M720 OH5	1600 VA 50/60 Hz 100 V (+10% / -15%), 120 V (+10% / -15%), 220 V (+10% / -15%), 240 V (+10% / -15%)
Protection class	Class 1
<b>Leica M720 OH5 Microscope</b>	
Magnification	APO OptiChrome™-6:1 zoom, motorized, revolutionary new optical concept with horizontal zoom for maximum compactness of the microscope
Focus	Motorized or manual focusing via a multifocal lens
Eyepieces	Wide field eyepieces for eyeglass wearers, 10× for main surgeon and opposite assistant, 12.5× for lateral assistant, dioptric setting +/- 5 with adjustable eye cup
Objective	APO OptiChrome™ Multifocal lens, 200mm to 500mm variable working distance through motorized function, with manual override
Illumination	Continuously adjustable illumination field diameter with Gauss-shaped light distribution; continuously adjustable brightness at a constant color temperature
Autoliris™	Built-in, automatic, zoom-synchronized illumination field diameter, with manual override and reset feature
Main light source	High-performance 300 Watt xenon arc-lamp through fiber optic
Emergency lamp	300 Watt xenon arc-lamp on a separate electrical system
BrightCare™	Safety technology for safer illumination levels: the working distance is synchronized to the illumination control
SpeedSpot™	Dual laser focusing device for fast, precise microscope positioning
Binocular tubes	Binocular tubes feature flexible butterfly ergonomic height adjustment for optimal body position at the microscope; 115° variable angle: 0° to 115° range, for main surgeon, -55° to +60° for opposite assistant
ErgoLock™	Built in locking device to hold main surgeon's binocular tube fixed in five predefined angles: 10°, 35°, 65°, 90°, and 115°
Compact dimensions	Only 72mm minimal height from the main surgeon's binocular to the objective, with the microscope in a horizontal position Only 232mm minimal length from the main surgeon's binocular to the objective, with microscope in posterior fossa seated patient position
Surface coating	Covered with anti-microbial coating
<b>Optical data</b>	
Magnification range	1.5× to 17.0× with 10× eyepiece
Field of view	12.5mm to 143mm with 10× eyepiece
<b>Microscope carrier</b>	
Rotation of optics	540°
Lateral tilt	50° to left / 50° to right
Inclination tilt	-30° to +120°
XY speed	Zoom-correlated XY speed
Balancing	A, B, C, and D axes are fully automatic, each can be manually balanced
Intraoperative re-balancing	AC/BC button for automatic intraoperative re-balancing of the A and C axes, and for re-balancing the B and C axes
Brakes	One brake for A/B axis, one brake for C axis
Indicator	LED for fluorescence mode status, LED for video record status
<b>Accessories</b>	
Second observer	Stereo attachment to beam splitter for second observer
Binocular tube	Variable angle of 30° to 150° for the second observer
Video adapter	Leica Video Zoom Adapter, 3:1 zoom, 35mm to 100mm focal length, c-mount, with fine focus, Leica NIR Dual Video Adapter

# Technical Data

## Leica M720 OH5

<b>Imaging</b>	Leica DI C700 high-resolution, true color dual imaging module for-correlated and non-correlated data display, resolution 1024×768 pixels, color depth 24 bit, gray scale 256, contrast >= 1: 300, color temperature 2500° – 9000°K
Asepsis	Sterilizable protective glass cover for the objective, sterilizable components for all drive knobs, drapes are available (specifically designed for the Leica M720)
Laser	Laser micromanipulator from 3 <sup>rd</sup> party is in development
<b>IGS</b>	
Interface / Compatibility	Open architecture for IGS systems
<b>Fluorescence</b>	
Vascular Fluorescence	Optional Leica FL800 integrated vascular fluorescence is available in the USA, EU, and most countries
<b>Leica M720 OH5 floor stand</b>	
Type	Floor stand with six electromagnetic brakes
Base	720mm × 720mm with four 360° rotatable casters of 130mm diameter each, one central single-step foot brake
Balancing	New “no brake release” Auto-balance; One button / two pushes for complete automatic balancing of stand and optics
Intraoperative re-balancing	AC/BC button for automatic intraoperative AC axis re-balancing and for BC axis re-balancing
Swing arm	Patented advanced movement system for perfect balance in six axes, new vibration-dissipating technology
Floor stand control unit	New generation touch panel technology. The latest electronics control for the continuous operation of all motorized functions and illumination intensity. Built-in BrightCare™ technology for working distance synchronized illumination control. Data displayed via LCD. ISUS™ Intelligent Set-up System; menu selection based on unique software for user-specific configuration, with built-in electronic auto-diagnosis and user support. Software-independent hard keys for illumination and auto-balancing; indicator for main / backup illumination and fluorescence mode, Open architecture for future software developments.
Light source	300 Watt dual xenon arc-lamp illumination system and built in automatic lamp quick changer
Controls	10-function pistol grips for zoom, focus, all-free release of six brakes. Side button to control three user-defined brakes, motorized lateral tilt and inclination (XY), and Leica DI C700 functions. All functions are freely programmable with the exception of the all-free button; mouth switch for three brakes (XYZ), 12-function foot control and hand switch.
Documentation integration	Prepared for integration with video and digital recording systems, open architecture
Connectors	Numerous built-in connectors for video, IGS, and control data transfer
Internal power	12 Volt DC, 19 Volt DC, and AC connections
Carrier for monitor	700mm long, flexible arm with 4 axes for rotation and inclination to carry optional video monitor
Materials	All-solid metal construction
Surface coating	Covered with anti-microbial coating
Range cantilever	Max. 1925mm
Load	Min. 8.0kg and max. 11.7kg of accessories attach to the microscope
Weight	Approx. 310kg as a fully configured system
Storage Dimensions	1945mm (height) × 1395mm (width) × 830mm (depth)
<b>Conformity C E</b>	<ul style="list-style-type: none"> <li>• Medical devices directive 93/42/EEC, Classification: Class I, in compliance with appendix IX, rule 1, with reference to rules 10 and 12 of the directive.</li> <li>• Medical electrical equipment, Part 1: General requirements for safety IEC 60601-1; EN 60601-1; UL60601-1; CAN/CSA-C22.2 NO. 601.1-M90</li> <li>• Electromagnetic compatibility IEC 60601-1-2; EN 60601-1-2</li> </ul> <p>Leica Microsystems (Schweiz) AG, Surgical Division, has the management system certificate for the international standards ISO 9001:2000 / ISO 13485:2003 and ISO 14001:2004 relating to quality management, quality assurance and environmental management.</p>

# Leica Microsystems – the brand for outstanding products

Leica Microsystems operates internationally in four divisions, where we rank with the market leaders.

## • Life Science Research Division

Leica Microsystems' Life Science Research Division supports the imaging needs of the scientific community with advanced innovation and technical expertise for the visualization, measurement and analysis of microstructures. Our strong focus on understanding scientific applications puts Leica Microsystems' customers at the leading edge of science.

## • Industry Division

The Leica Microsystems Industry Division's focus is to support customers' pursuit of the highest quality end result by providing the best and most innovative imaging systems for their needs to see, measure and analyze the microstructures in routine and research industrial applications, in materials science and quality control, in forensic science investigations, and educational applications.

## • Biosystems Division

The Biosystems Division of Leica Microsystems brings histopathology labs and researchers the highest-quality, most comprehensive product range. From patient to pathologist, the range includes the ideal product for each histology step and high-productivity workflow solutions for the entire lab. With complete histology systems featuring innovative automation and Novocastra™ reagents, the Biosystems Division creates better patient care through rapid turnaround, diagnostic confidence and close customer collaboration.

## • Surgical Division

The Leica Microsystems Surgical Division's focus is to partner with and support micro-surgeons and their care of patients with the highest-quality, most innovative surgical microscope technology today and into the future.

Leica Microsystems' mission is to be the world's first-choice provider of innovative solutions to our customers' needs for vision, measurement and analysis of micro-structures.

Leica, the leading brand for microscopes and scientific instruments, developed from five brand names, all with a long tradition: Wild, Leitz, Reichert, Jung and Cambridge Instruments. Yet Leica symbolizes innovation as well as tradition.

## Leica Microsystems – an international company with a strong network of customer services

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## and representatives of Leica Microsystems in more than 100 countries.

The Surgical Division, within Leica Microsystems (Schweiz) AG, holds the management system certificates for the international standards ISO 9001:2000 / ISO 13485:2003, and ISO 14001:2004 relating to quality management, quality assurance and environmental management.

