

# Leica M680 2 x 2

2 independent zoom systems,  
2 independent focusing systems  
Surgical microscope for reconstructive,  
hand, heart and spinal surgery, urology  
and gynaecology

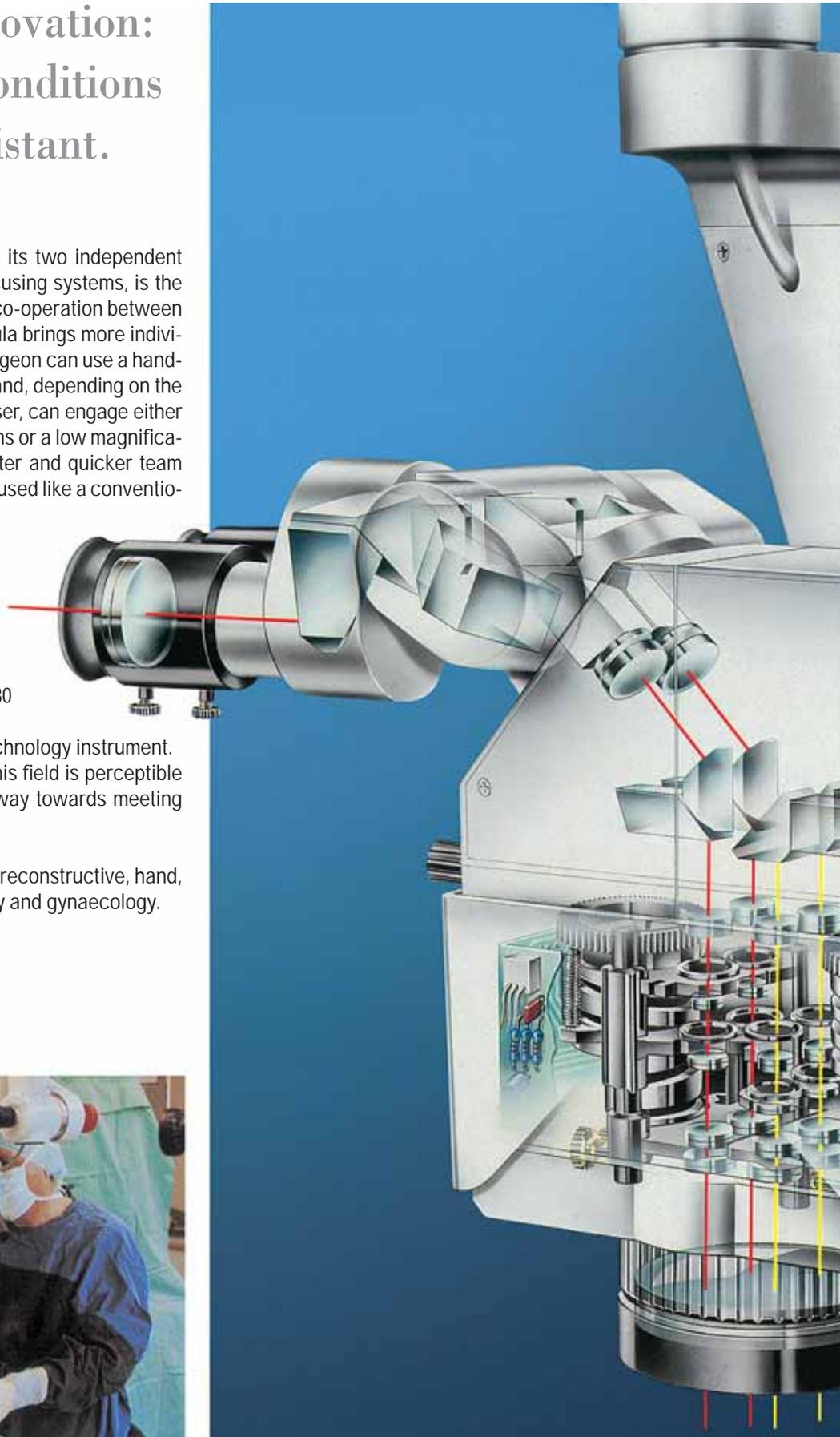
*Leica*  
MICROSYSTEMS

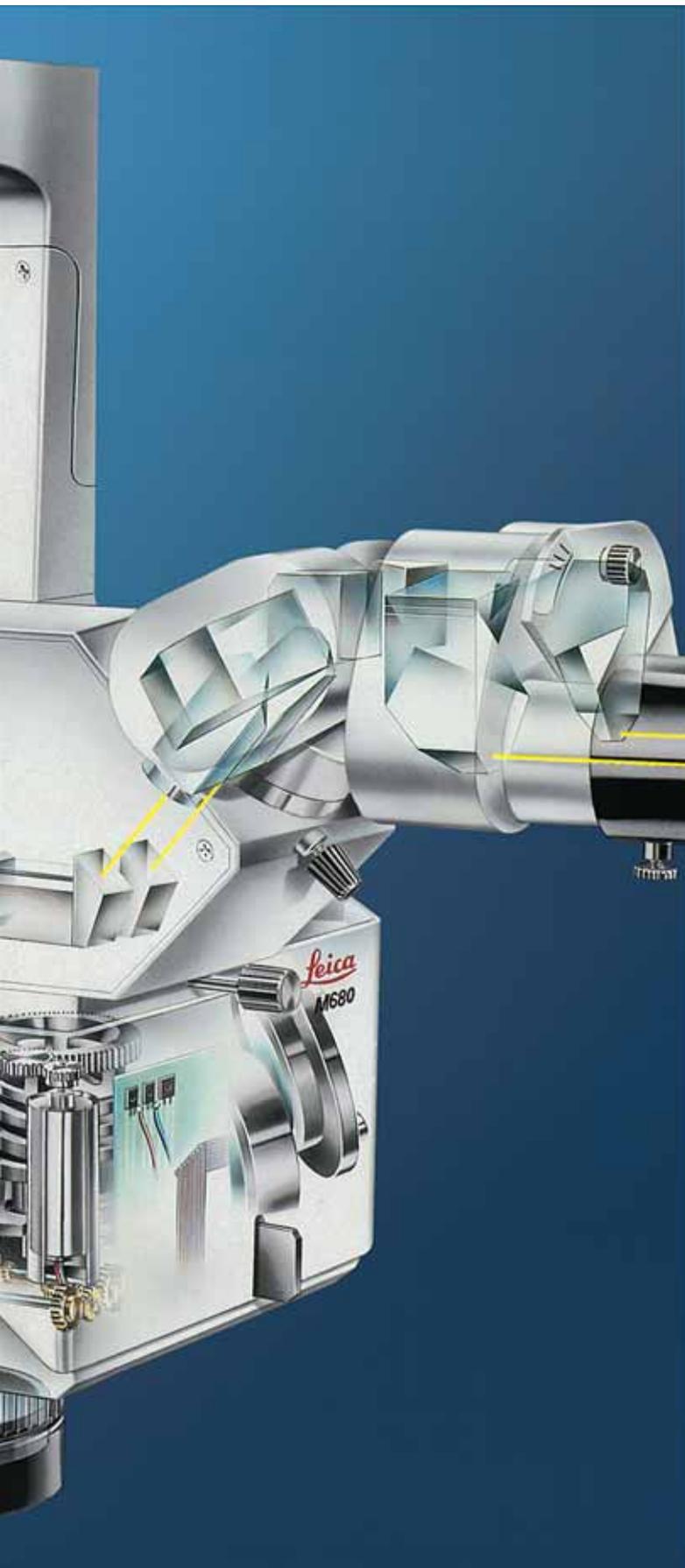
# The Leica M680 innovation: Identical working conditions for surgeon and assistant.

The Leica M680 surgical microscope, with its two independent zooms and its two independent internal focusing systems, is the first instrument to offer ideal conditions for co-operation between surgeon and assistant. The magic 2x2 formula brings more individual freedom within the teamwork. Each surgeon can use a hand- or footswitch to bring the image into focus and, depending on the momentary requirements of the particular user, can engage either a high magnification for detailed observations or a low magnification for an overall view. This results in better and quicker teamwork. Naturally, the Leica M680 can also be used like a conventional surgical microscope, and under these circumstances the two independent zooms can be coupled at the touch of a key, the individual focusing possibilities remaining unimpaired.

Mechanical, optical and electronic components have been combined in the Leica M680 at a level never before seen in a surgical microscope, resulting in a compact high-technology instrument. The fascinating advance of technology in this field is perceptible in the diagram opposite, and goes a long way towards meeting medical requirements.

The Leica M680 offers new opportunities in reconstructive, hand, heart and spinal surgery, and also in urology and gynaecology.





### The claims of high technology:

High technology must serve the needs of the user. It must not become an end in itself. The targeted application of electronics can expand the performance range of an instrument considerably, and the function of high-tech within this framework is to make the instrument easier to use and more reliable, and to improve the convenience available to the user. This is the philosophy of the Leica researchers and designers who are behind the development of the Leica M680.

### The pride of our designers

The Leica M680: A technological work of art, consisting of 283 optical, electronic and precision-engineered components.

### 2x surgical know-how

Microsurgery from two sides: Two pairs of eyes and two pairs of hands can do more for the patient if the optics and ergonomics are right for both the surgeon and the assistant, as they indeed are in the Leica M680.



# The optics of the Leica M680: You simply see more.

Optical quality and intense illumination always have been the traditionally-outstanding features of Leica surgical microscopes. Now the Leica M680 has set new standards even there. The remarkable depth of field has been described by users as «four-fingers deep». The fields of view have been enlarged 50% to give the full overall picture, reducing or even eliminating the need to refocus or reposition in certain surgical disciplines. The brilliant, high-contrast image permits meticulous work even at low magnifications. Thanks to the perfect three-dimensional impression and the outstanding resolution, the observer simply sees more.

The powerful light source ensures that the brightness of the field observed remains constant over the whole magnification range, so the eyes are not constantly readjusting to new light levels. Two illumination prisms ensure that the output of the 50-watt halogen lamp is fully exploited, and supply more than enough light for all applications. The uniquely-high transmissivity of the optical components can be demonstrated with a simple but impressive test: Even with the microscope illuminator switched off, fine structures can be clearly observed at any magnification using normal room lighting.

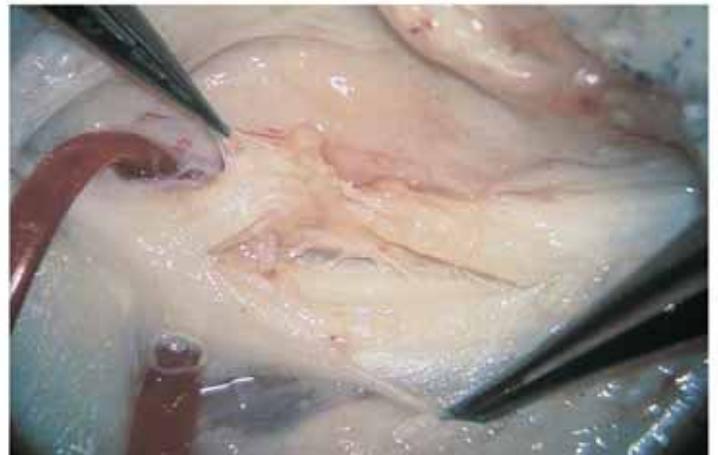
Partial lesion of the median nerve,  
hand joint.

Photographs by kind permission of  
Dr B. Forster, Switzerland



## Not just a piece of glass

The high-performance objectives are a silent witness to the combined traditional expertise and state-of-the-art knowledge of Leica in Switzerland, and of its personnel.

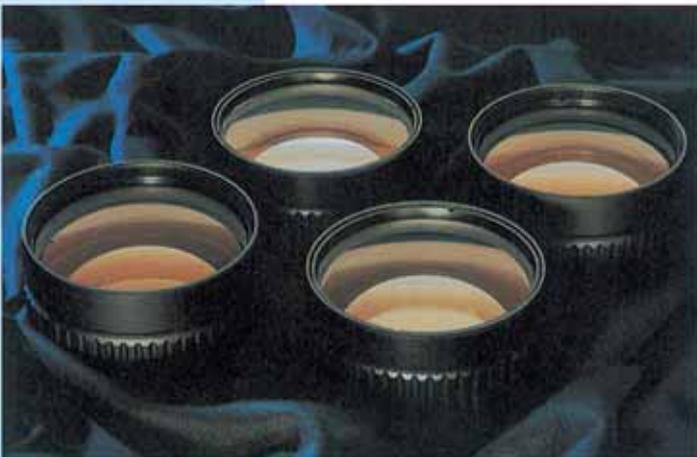




**User-related development:**

The idea of the surgical microscope has only one goal – to make features more visible and recognizable so as to be able to work more confidently. In the interests of the patient no concessions are to be made with regard to optical quality, lighting and reliability. Our development work is user-orientated; we keep the patient at the centre of our activities. Medical consultants from various disciplines have critically followed every step and have enriched the project with their advice.

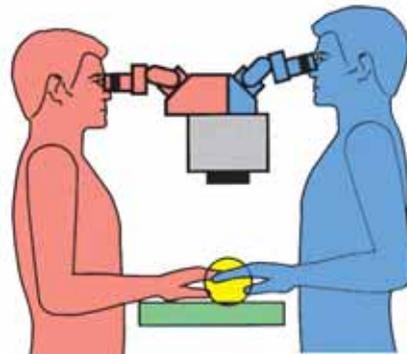
**Interchangeable objectives**  
Focal lengths 200 mm, 250 mm, 300 mm  
and 350 mm, for various working  
distances, magnification ranges and  
field diameters.



# Interchangeable stereo modules and rotatable adapters: The instrument accommodates to you and to your requirements.

In addition to the well-established 180° dual stereo attachments, the Leica M680 includes a real innovation: Short and long stereo modules, combinable as required. These quickly-interchangeable modules compensate for differences in stature between the two surgeons, and also balance out an asymmetrical field of operation. Whether an operating table is broad or narrow is no longer important; the adaptable Leica M680 accommodates to the conditions imposed. The individuals at the instrument both have access to a relaxed posture in all respects. Ergonomic working at the Leica M680 is not a matter of chance; it is a concept.

If the microscope has to be swung out during the operation, the binocular tube can be levelled up with a  $\pm 30^\circ$  rotatable adapter, and the comfortable head position is retained. Because of its optical quality, its constant light intensity and its adaptable components, the Leica M680 offers the best conditions for fatigue-free operations extending over many hours.



Example:  
Operating table broad and operating field asymmetrical:  
Stereo modules, long/short

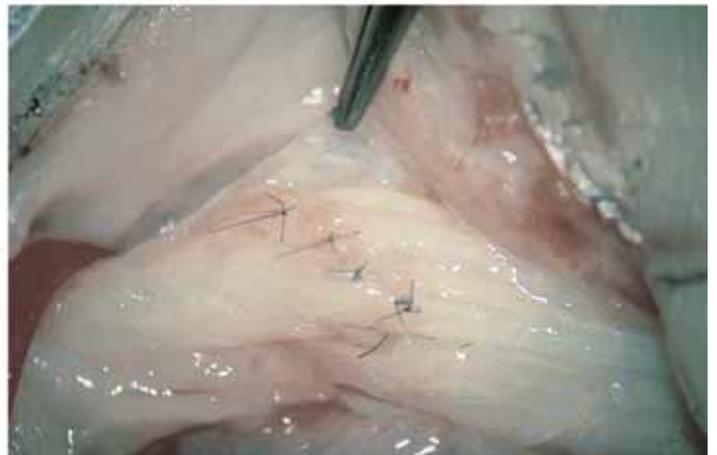


### Ergonomics:

The science of human engineering. People are not all built to the same pattern, and these differences, along with the requirements imposed by the various surgical techniques, must be taken into account during the designing of a surgical microscope. The problems can only be overcome with a dynamic system of modular components. Getting the configuration right is one of the most important functions of our R&D department.

### No more problems with ergonomics

Operating table broad or narrow? Operating field symmetrical or asymmetrical? Two long stereo modules and two short ones ensure the maximum of viewing comfort for both users.



# User-friendliness and motorized movement: All four hands are free for the operation.

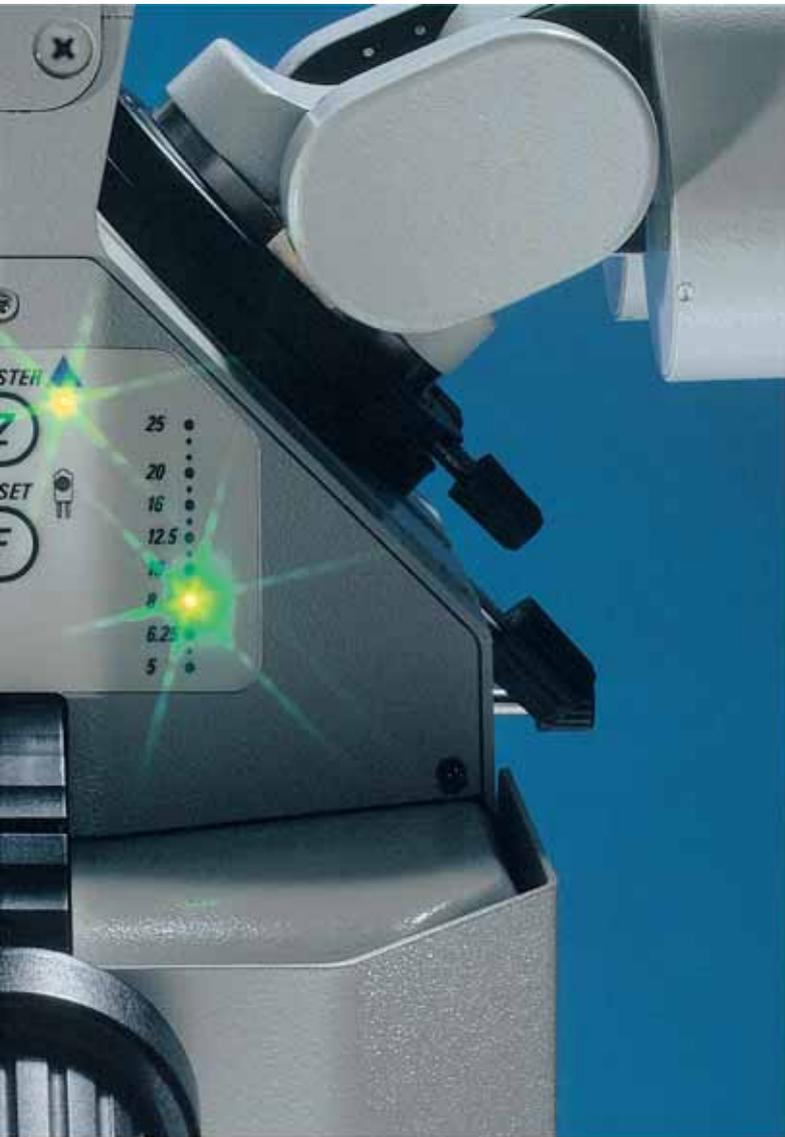
The motorized mobility and built-in intelligence of the Leica M680 underpin the surgeon's work. Focusing and zooming are both motorized, as are the tilting and turning of the microscope, so it is very easy to position the instrument over the operating field. Each user has a separate handswitch or footswitch and individual access to the zoom and focusing system. In practise, one of the surgeons also takes over responsibility for governing the movements of the microscope. This function can be transferred to the other surgeon during the course of the operation.

The automatic accommodation of focusing and tilt speeds to the zoom position is also very convenient, because it enables the speeds to be reduced with increasing magnification, thus avoiding overrun of the correct focus plane and of the selected observation point. When the instrument is switched on, the zoom and the internal focus automatically travel to a central starting position. This reset function can be reactivated at any time. Bulb failure is also signalled automatically. These are just a few of the many electronic refinements which make the Leica M680 so easy to use.



**Changing sides quickly**  
If the surgeons change sides during the operation, they take their own personal outfits along with them, including the interpupillary and dioptric settings, the stereo module, and the accessories for photo, video etc. To avoid physically moving the footswitches, these can be redesignated by means of switches.





### Unfold capabilities:

In the experienced hands of the specialist, the surgical microscope becomes an instrument for realizing the user's full potential. The assistant requires ideal conditions for learning and co-operation. This requirement has upgraded the entire Leica M680 project to a concept.

### Just a few LEDs?

The Leica M680 demonstrates its intelligence here: The master function, which couples the two zooms; the reset functions for zoom and focus; the zoom positions; the lamp inspection.



### The electronics can be interesting as well

This is particularly true when the electronics bring user benefits; the knobs for regulating the focus, zoom and XY speeds, for example, or the LEDs which help with the inspection of the functions.

Not forgetting something invisible from outside – the dependence of focus- and XY speeds on the magnification.

# Modular components: The choice is yours.

The modular system of Leica surgical microscopes not only enables the workplace to be ergonomically planned, as shown on pages 6 and 7; it also has clear economic advantages, because existing Leica accessories can also be used on the Leica M680. Sets for photography, TV and dualstation viewing can be added at a later date in accordance with changing requirements in documentation and training. Beam splitters and accessories can be quickly fitted to the surgical microscope, or removed again.

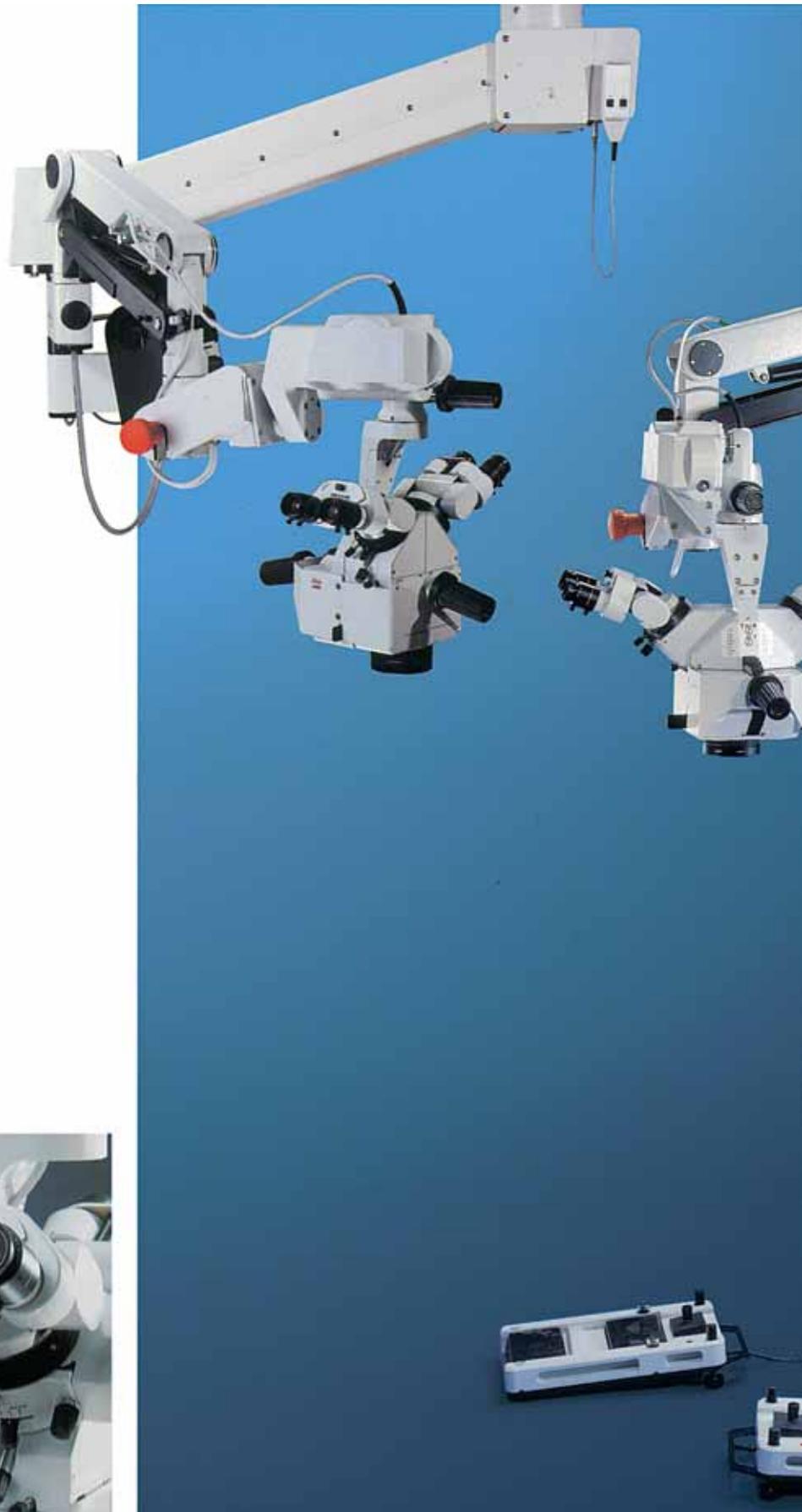
## Leica 2 2D video module

Microsurgical procedures can now be demonstrated live on video to a large number of spectators. The compact stereo module can be inserted into the beam path of the surgical microscope or can be integrated into the accessories used by the assistant.

## Photography and video

The Leica SLR camera and the video camera can be on the left. Or the configuration can be reversed.

Just as you wish.





#### **Modularity and the future:**

Surgical techniques evolve. The precise procedures and requirements of the future are not known, and yet a pace-setting surgical microscope must be ready for them. Only the flexibility offered by a modular system provides the latitude to accommodate unforeseen modifications and new accessories, and that is why Leica surgical microscopes are planned along these lines.

#### **For floor or ceiling**

The floor stand is rollable from place to place. The position chosen for the ceiling mount takes account of the layout of the room and of the locations of existing installations.

# Leica Microsystems – the brand for outstanding products

## The main performance features

Magnification changer	2x 1:5 zoom, motorized
Focusing drive	2x internal focus, motorized
Tilttable and inclinable joints	Motorized
Adjustment speeds	Dependent on magnification
Binocular tube	2x with variable viewing angle and tube adapter, $\pm 30^\circ$ rotatable
Stereo modules	2x short, 2x long
Interchangeable objectives	f=200 mm, 250 mm, 300 mm, 350 mm
Wide-field eyepieces for spectacle wearers	10x, 16x
Total magnifications	1,4x to 12,5x (with 10x eyepieces)
Field diameter	16.8 mm to 147 mm (with 10x eyepieces)
Quick-change lamp mount	2x precision-centred 12 V/50 W halogen bulbs
Stands	Floor stand and ceiling mount, OH overhead stand
Accessories	Photo/TV dual adapter, stereo attachment for second observer, Leica 2-2D video module

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

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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The Business Unit SOM, within Leica Microsystems, holds the management system certificates for the international standards ISO 9001:2000 / ISO 13485:2003 and ISO 14001 relating to quality management, quality assurance and environmental management.

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