

Living up to Life

*Leica*  
MICROSYSTEMS

MEDICAL DIVISION



# Leica M620 F20

**User Manual**

10 714 371 - Version 01

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Thank you for purchasing a Leica surgical microscope system.

In developing our systems, we have placed great emphasis on simple, self-explanatory operation. Nevertheless, we suggest studying this user manual in detail so that you know and are able to utilize all the benefits of your Leica surgical microscope in an optimum way.

For valuable information about Leica Microsystems products and services and the address of your nearest Leica representative, please visit our website,

[www.leica-microsystems.com](http://www.leica-microsystems.com)

Thank you for choosing our products. We hope that you will enjoy the quality and performance of your new Leica Microsystems surgical microscope.

Leica Microsystems (Schweiz) AG  
Medical Division  
Max Schmidheiny-Strasse 201  
CH-9435 Heerbrugg  
Phone: +41 71 726 3333  
Fax: +41 71 726 3334

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# 1 Introduction

## 1.1 About this user manual/ installation manual

In this user manual the surgical microscope Leica M620 F12 is described.



In addition to notes on the use of the instruments this user manual gives important safety information (see chapter 3).



► Read this user manual carefully before operating the product.

## 1.2 Symbols in this user manual

The symbols used in this user manual have the following meaning:

Symbol	Warning word	Meaning
	<b>WARNING</b>	Indicates a potentially hazardous situation or improper use that could result in serious personal injuries or death.
	<b>CAUTION</b>	Indicates a potentially hazardous situation or improper use which, if not avoided, may result in minor or moderate injury.
	<b>NOTE</b>	Indicates a potentially hazardous situation or improper use which, if not avoided, may result in appreciable material, financial and environmental damage.
		Information about use that helps the user to employ the product in a technically correct and efficient way.
		Action required; this symbol indicates that you need to perform a specific action or series of actions.

# 2 Product identification

The model and serial numbers of your product are located on the identification label on the underside of the horizontal arm.

- Enter this data in your user manual and always refer to it when you contact us or the service workshop regarding any questions you may have.

Type	Serial no.
...	...

## 2.1 Optional product features

Different product features and accessories are optionally available. The availability varies from country to country and is subject to local regulatory requirements. Please contact your local representative for availability.

## 3 Safety notes

The Leica M620 F20 surgical microscope is state-of-the-art technology. Nevertheless, hazards can arise during operation.

- Always follow the instructions in this user manual, and in particular the safety notes.

### 3.1 Intended use of instrument

- The Leica M620 F20 surgical microscope is an optical instrument for improving the visibility of objects through magnification and illumination. It can be applied for observation and documentation and for human and veterinary medical treatment.
- The Leica M620 F20 surgical microscope may be used only in closed rooms and must be placed on a solid floor.
- The Leica M620 F20 surgical microscope is subject to special precautionary measures for electromagnetic compatibility.
- Portable and mobile as well as stationary RF communications equipment can have a negative effect on the reliability of the Leica M620 F20 surgical microscope's functionality.
- The Leica M620 F20 is intended for professional use only.

### 3.2 Indications for use

- The Leica M620 F20 surgical microscope is suitable for ophthalmic applications such as Retina, Cornea and Cataract surgery in hospitals, clinics or other human medical institutions.
- The Leica M620 surgical microscope may only be used in closed rooms and must be placed on a solid floor or mounted to the ceiling.
- This User Manual is intended for physicians, nurses and other medical and technical staff who prepare, operate or maintain the device after appropriate training. It is the duty of the device owner / operator to train and brief all the operating personnel.


### 3.3 Contraindications

No known contraindications for use.

### 3.4 Directions for the person responsible for the instrument

- Ensure that the surgical microscope is used only by qualified personnel.
- Ensure that this user manual is always available at the place where the surgical microscope is used.
- Carry out regular inspections to make certain that the authorized users are adhering to safety requirements.
- When instructing new users, do so thoroughly and explain the meanings of the warning signs and messages.
- Allocate responsibilities for commissioning, operation and maintenance. Monitor compliance with this.
- Do not use the surgical microscope unless it is in proper condition.
- Inform your Leica Microsystems representative or Leica Microsystems (Schweiz) AG, Medical Division, 9435 Heerbrugg, Switzerland, immediately if you detect a product defect that could potentially cause injury or harm.
- If you use accessories from other manufacturers with the surgical microscope system, make sure that these manufacturers confirm that the combination is safe to use. Follow the instructions in the user manual for those accessories.
- Modifications to or service on the surgical microscope may be carried out only by technicians who are explicitly authorized by Leica to do so.
- Use only original Leica Microsystems parts in maintenance work.
- After service work or technical modifications, the device must be readjusted in accordance with our technical specifications.
- If the instrument is modified or serviced by unauthorized persons, is improperly maintained (as long as maintenance was not carried out by us), or is handled improperly, Leica will not accept any liability.
- The effect of the surgical microscope on other instruments has been tested as specified in EN 60601-1-2. The system has passed the tests relating to emissions and immunity. Comply with the usual precautionary and safety measures relating to electromagnetic and other forms of radiation.
- Only the supplied power cord may be used.
- The power cord must have a protective conductor and must be undamaged.
- The power cord must be mechanically secured with the "Power Input" socket to prevent accidental disconnection.
- All parts of the Leica M620 F20 surgical microscope shall not be serviced or maintained while in use with a patient.
- Lamps shall not be changed while in use with a patient.
- Use of this equipment adjacent to other equipment should be avoided because it could result in improper operation. If such use is necessary, this equipment and the other equipment should be observed to verify that they are operating normally.

- Use of accessories and cables other than those specified or provided by the manufacturer of his equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.
- The Leica M620 F20 surgical microscope may be used only in closed rooms and must be placed on a solid floor.
- Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the Leica M620 F20, including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.

 The emissions characteristics of this equipment make it suitable for use in industrial areas and hospitals (CISPR 11 class A). If it is used in a residential environment (for which CISPR 11 class B is normally required), this equipment might not offer adequate protection to radio-frequency communication services. The user might need to take mitigation measures, such as re-locating or re-orienting the equipment.

### User qualifications

The Leica surgical microscope may only be used by physicians and medical assistance personnel with appropriate qualifications who have been instructed in the use of the instrument. Specific training is not required.

## 3.5 Directions for the operator of the instrument

- Follow the instructions described here.
- Follow the instructions given by your employer regarding the organization of work and safety at work.
- Check the illumination intensity before and during surgery.
- Do not move the system without released brakes.
- Operate the system only with all equipment in its proper position (all covers fitted, doors closed).
- To avoid the risk of electric shock, this equipment must only be connected to a supply mains with protective earth.
- All parts of the instrument shall not be serviced or maintained while in use with a patient.
- Lamps shall not be changed while in use with a patient.

### Phototoxic damage to the retina during eye surgery



#### WARNING

#### Damage to the eyes due to prolonged exposure!

The light of the instrument may be harmful. Risk of eye damage increases with the duration of exposure.

- ▶ During exposure to the light from this instrument, do not exceed the hazard reference values. For this instrument, an exposure time of over 3 min 35 seconds at maximum output power exceeds the hazard reference value.

The following table is intended to serve as a guideline and make the surgeon aware of the potential hazard.


The data have been calculated for the worst-case scenario:

- Eye with aphakia
- Completely unmoving eye (continuous irradiation of the same region)
- Uninterrupted light exposure, e.g. no surgical instruments in the eye
- Pupils dilated to 7 mm

The calculations are based on the corresponding ISO standards<sup>1)2)</sup> and the exposure limit values recommended in them. Published literature shows that a moving eye may allow for increased time of exposure<sup>3)</sup>.

**Main Light**

Light setting	Recommended maximum exposure time according to <sup>1)</sup> [min.]		
	Without filter	With GG435 filter	With GG475 filter
25 %	1 h 21 min	1 h 33 min	4 h 22 min
50 %	19 min	23 min	1 h 08 min
75 %	7 min 39 s	9 min 10 s	28 min 46 s
100 %	3 min 35 s	4 min 30 s	14 min 42 s
<b>With retina protection filter 5× (10448676)</b>			
100%	25 min 52 s		

 Use the protection filter 5× (10448676) to increase the operation duration by at least a factor of 5 compared to the standard configuration without a filter.

**Sources:**

- <sup>1)</sup> DIN EN ISO 15004-2:2007 Optical instruments – Fundamentals requirements and test methods – Part 2: Light hazard protection.
- <sup>2)</sup> ISO 10936-2:2010 Optics and photonics – Operation microscopes/  
Part 2: Light hazard from operation microscopes used in ocular surgery.
- <sup>3)</sup> David Sliney, Danielle Aron-Rosa, Francois DeLori, Franz Fankhauser, Robert Landry, Martin Mainster, John Marshall, Bernhard Rassow, Bruce Stuck, Stephen Trokel, Teresa Motz West and Michael Wolffe, Adjustment of guidelines for exposure of the eye to optical radiation from ocular instruments: statement from a task group of the International Commission on Non-Ionizing Radiation Protection (ICNIRP), APPLIED OPTICS Vol. 44, No 11, p2162 (10 April 2005)

Protect the patient with the following safeguards:

- Short exposure times
- Low brightness settings
- Use of protective filters
- Switching off the illumination during breaks in the operation

It is recommended to adjust the brightness to the minimum necessary for the surgery. Infants, patients with aphakia (whose eyelens has not been replaced by an artificial lens with a UV protection screen), small children and persons with diseases of the eye are at greater risk. The risk is also increased if the person being treated or operated on has, within the last 24 hours, already been exposed to illumination from the same or any other ophthalmological instrument that uses a bright visible light source.

This applies especially to patients that have been examined via retinal photography.

The decision with regard to the light intensity to be used must be made on a case-by-case basis. In any event, the surgeon must evaluate the risks and benefits of the used light intensity. Despite all efforts to minimize the risk of retinal injury by surgical microscopes, damage may still occur. Photochemical retinal damage is a possible complication of the necessity to use bright light to make eye structures visible during difficult ophthalmological processes.

**Stability (floor stands only)**

When moved in OP, the swing arm must be folded up and locked and the brakes must be applied, otherwise the swing arm may drift out of control and the stand could topple.

**Hazards due to movable parts**

This section describes uses that, inadvertently, could lead to hazardous situations.

- Add accessories and balance the stand before the operation, and never over the field of operation.
- Do not put your fingers between the microscope and the focusing drive; they could get crushed.

**Floor stand:**

- Always push the microscope to move it; never pull it. Feet in lightweight shoes could become trapped beneath the casing of the base.
- The footbrakes must remain engaged throughout the operation.

**Electrical connections**

The control unit may be opened only by a Leica-approved service technician.

**Accessories**

Only the following accessories may be used with the Leica M620 F20 surgical microscope:

- The Leica Microsystems accessories described in this User Manual.
- Other accessories, provided that these have been expressly approved by Leica Microsystems as being technically safe in this context.



### 3.6 Dangers of use

 **WARNING**  
**Risk of injury from downward movement of surgical microscope!**

- ▶ Never change the accessories or attempt to rebalance the microscope while it is above the field of operation.
- ▶ After every modification, balance the swing arm.

 **WARNING**  
**Risk of injury through falling binocular tube!**


- ▶ Tighten the clamping screw securely.

 **WARNING**  
**Risk of injury through falling surgical microscope!**

- ▶ Check the mounting of the assistant's stereomicroscope before every use.

 **WARNING**  
**Risk of injury from parts falling down!**

- ▶ Complete all preparations and adjustments to the optics carrier before the operation.
- ▶ Never rebalance or re-equip the optical components and accessories with the instrument over the operation area.
- ▶ Check that the optical components and accessories fit well and are fastened securely before the operation.
- ▶ Before changing equipment during an operation, swivel the microscope away from the operation area.

 **WARNING**  
**Risk of injury from:**

- **Uncontrolled lateral movement of the swing arm.**
- **Tilting of the stand.**
- **Feet in lightweight shoes could become trapped beneath the casing of the base.**
- **Abrupt braking of the surgical microscope at a threshold that cannot be crossed.**

- ▶ For transportation, always move the Leica M620 F20 surgical microscope into the transport position.
- ▶ Never move the stand while the unit is extended.
- ▶ Never roll over cables lying on the floor.
- ▶ Always push the Leica M620 F20 surgical microscope - never pull it.

 **CAUTION**  
**Surgical microscope can move without warning!**


- ▶ Always secure the footbrakes when you are not moving the system.

 **CAUTION**  
**Danger of fatal electrical shock!**

- ▶ The surgical microscope may be connected to a grounded socket only.

 **CAUTION**  
**Risk of infection!**

- ▶ Leave sufficient space around the stand to prevent contact with non-sterile components.

 **WARNING**  
**Light that is too intense can damage the retina!**

- ▶ Observe the warning messages in the "Safety Notes" chapter on page 5.

 **WARNING**  
**Failure of the illumination can be dangerous for the patient!**

- ▶ If the main illuminator fails, switch to the auxiliary illuminator immediately.

 **WARNING**  
**Damage to the eyes due to prolonged exposure!**

- The light of the instrument may be harmful. Risk of eye damage increases with the duration of exposure.
- ▶ During exposure to the light from this instrument, do not exceed the hazard reference values. For this instrument, an exposure time of over 8 minutes at maximum output power exceeds the hazard reference value.

 **CAUTION**  
**Damage to the control panel!**

- The light of the instrument may be harmful. Risk of eye damage increases with the duration of exposure.
- ▶ Only operate the control panel using your fingers.
  - ▶ Never use hard, sharp or pointed objects made out of wood, metal or plastic.
  - ▶ Never clean the control panel using cleaning agents that contain abrasive substances. These substances can scratch the surface and cause it to become dull.



**WARNING**

**Danger of fatal electric shock!**

- ▶ Disconnect the power cable from the instrument power socket before changing fuses.



**CAUTION**

**Risk of burns!**

The lamp and illumination mount get very hot.

- ▶ Check that the lamp and illumination mount have cooled before you remove the lamp.



**WARNING**

**Risk of infection!**

**This antimicrobial coating is no substitute for the usual cleaning and sterilization procedures according to the applicable regulations.**

- ▶ Clean and sterilize the instrument as usual according to the applicable regulations.

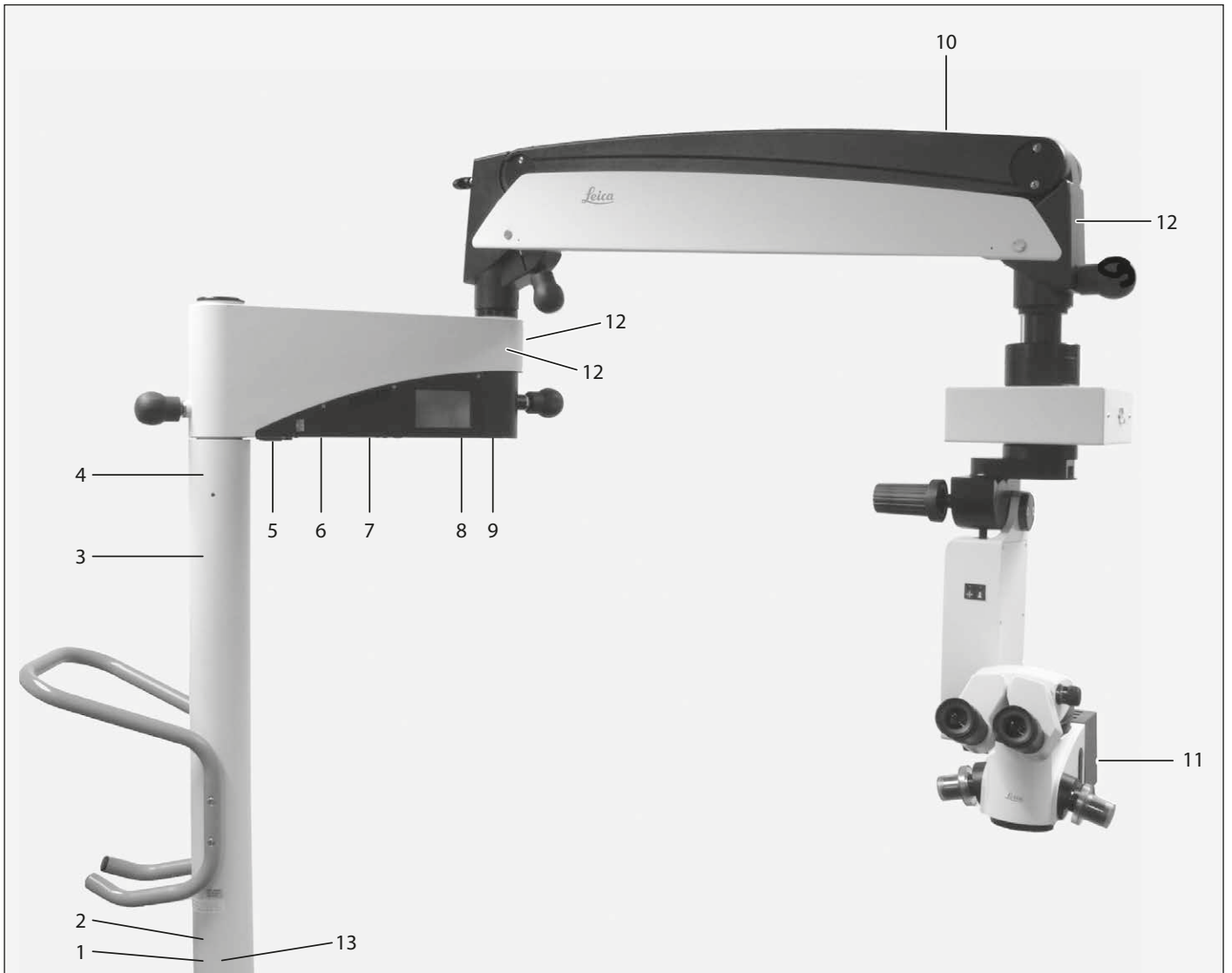






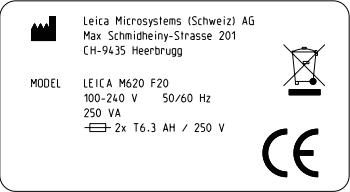
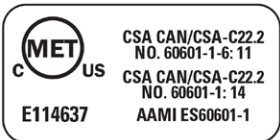
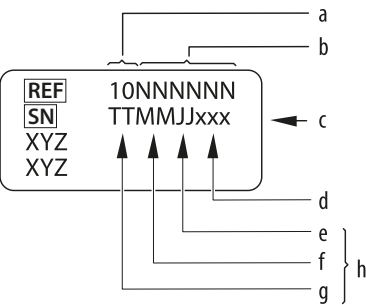
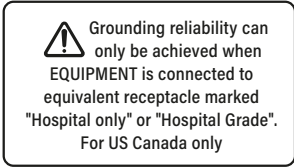
**WARNING**

**Risk of injury through surgical microscope moving down!**



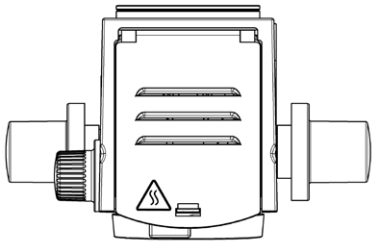

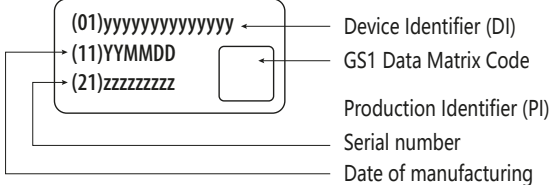
- ▶ Do not exceed the max. load when equipping components and accessories.
- ▶ Check the total weight using the "Load table" (see page 38).

### 3.7 Signs and labels

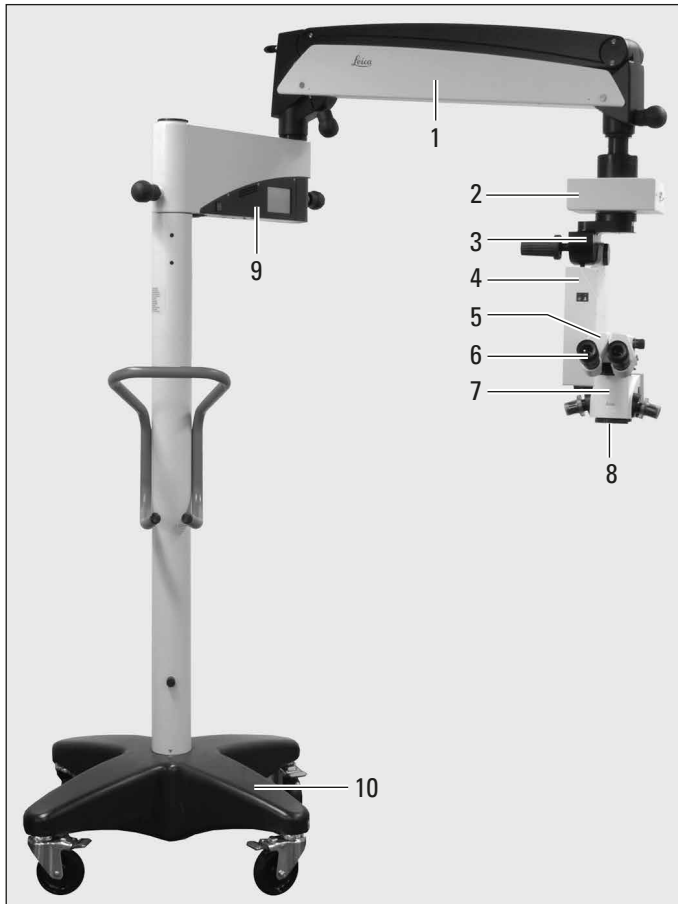


- 1  ANVISA Registration number (only Brazil)
- 2  INMETRO label (only Brazil)
- 3  Transport position (F20 floor stand)
- 4  System weight label (F20)
- 5  Type label
- 6  MET label (only USA and Canada)
- 7  Fabrication label
  - a Prefix number
  - b Leica system article no.
  - c Serial number
  - d Incremental number starting at 1 for each batch
  - e JJ = year (2 digits)
  - f MM = month (2 digits)
  - g TT = day (2 digits)
  - h Production starting date
- 8  Grounding label
 

Grounding reliability can only be achieved when EQUIPMENT is connected to equivalent receptacle marked "Hospital only" or "Hospital Grade". For US Canada only

La fiabilité de la mise à la terre n'est assurée que si l'équipement est connecté à une prise équivalente, marquée "Hôpital seulement" ou "Qualité hôpital".
- 9  Mandatory label - read the user manual carefully before operating the product. Web address for electronic version of the user manual. Medical Device
- 10  Max. load for optics carrier
- 11  Danger sign for hot surface
- 12  Tilt Label
- 13  UDI Label
  - (01)yyyyyyyyyyyyyy Device Identifier (DI)
  - (11)YYMMDD GS1 Data Matrix Code
  - (21)zzzzzzzzz Production Identifier (PI)
  - Serial number
  - Date of manufacturing

## 4 Design



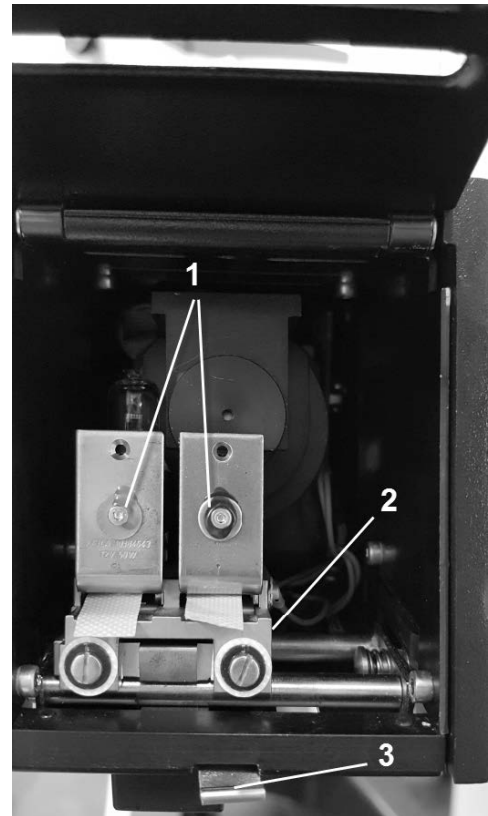
- 1 Swing arm
- 2 XY-unit (optional)
- 3 Tilt head
- 4 Focus unit
- 5 Binocular tube
- 6 Eyepieces
- 7 Optics carrier
- 8 Lens
- 9 Control unit
- 10 Base

## 5 Functions

### 5.1 Illumination

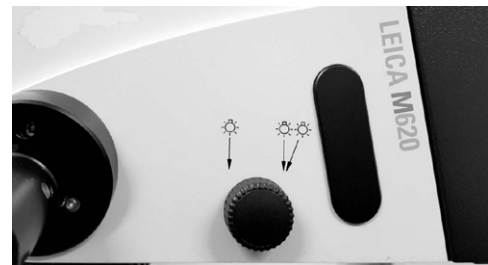
The illumination of the surgical microscope Leica M620 is a Halogen light system with 2 bulbs (1), where the second is only a spare. Both bulbs are located in the optics carrier.

In case of a failure of the lamp in use, the other lamp can be selected with the slide button (3) for quick-change lamp mount (2).



The 6° illumination or inclined and vertical light (indication with 2 bulbs at the optics carrier) can be adjusted with the rotary button to obtain red reflex and more contrast.

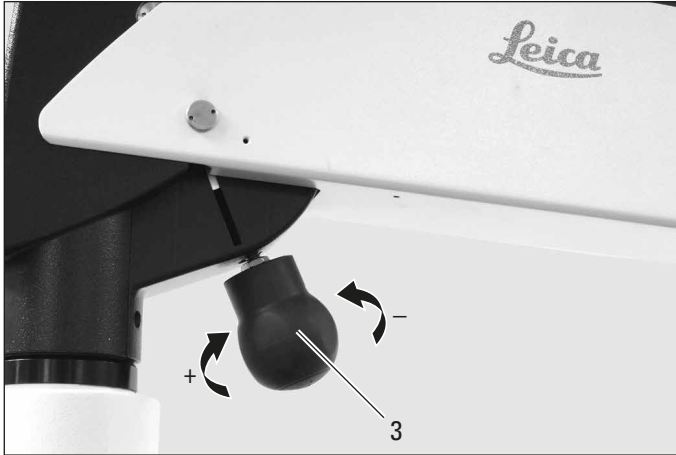
The 0° light or vertical light (indication with 1 bulb at the optics carrier) will remain permanently.



## 5.2 Balancing System

With a balanced surgical microscope Leica M620 F20 you can move the optics carrier in any position without tilting or falling down. After balancing, all movements during operation only need a minor force.

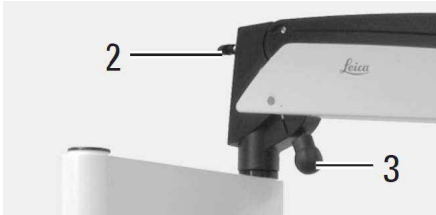
With the rotary knob (3) on the swing arm the drifts will be adjusted.



### Balancing the swing arm

- ▶ Hold the microscope firmly.
- ▶ Pull the retaining pin (2).

The swing arm is now released.



Check whether or not the microscope drifts.

### Microscope drifts downwards:

- ▶ Turn the rotary knob (3) clockwise (+).

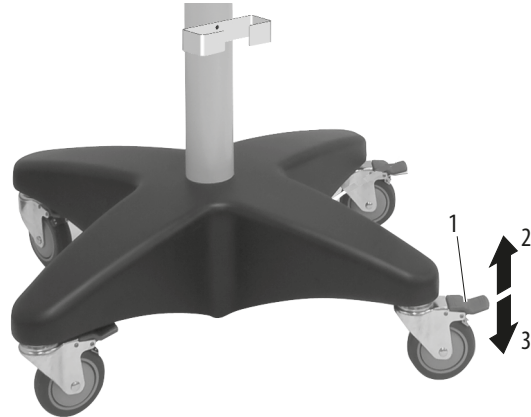
### Microscope drifts upwards:

- ▶ Turn rotary knob (3) counter-clockwise (-).

## 5.3 Footbrakes

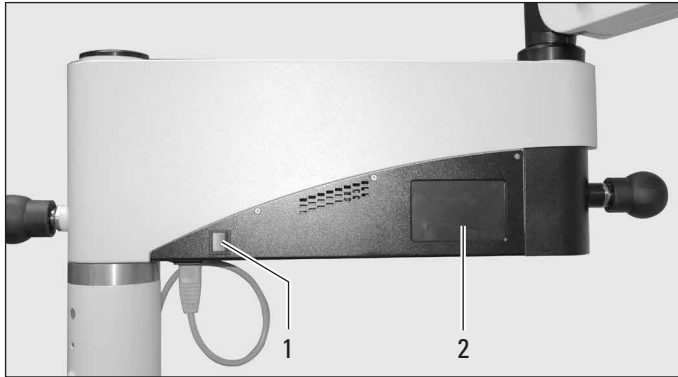
Footbrakes are attached to each of the four wheels on the stand. The wheel is engaged and released with the footbrake engage/release lever (1).

- ▶ Press the footbrake engage/release lever down (3):  
The footbrake is engaged.
- ▶ Lift the footbrake engage/release lever (2):  
The footbrake is released.

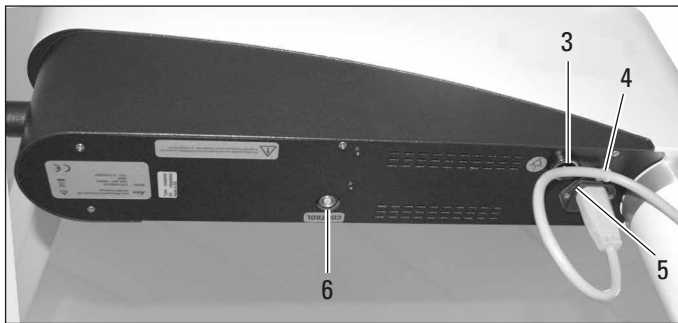


## 6 Controls

### 6.1 Control unit

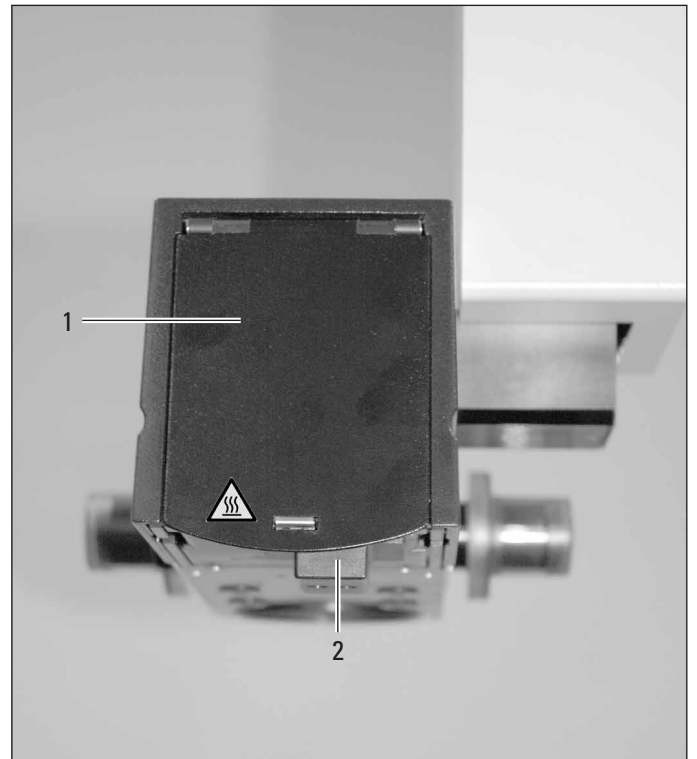


- 1 Main switch
- 2 Control Panel



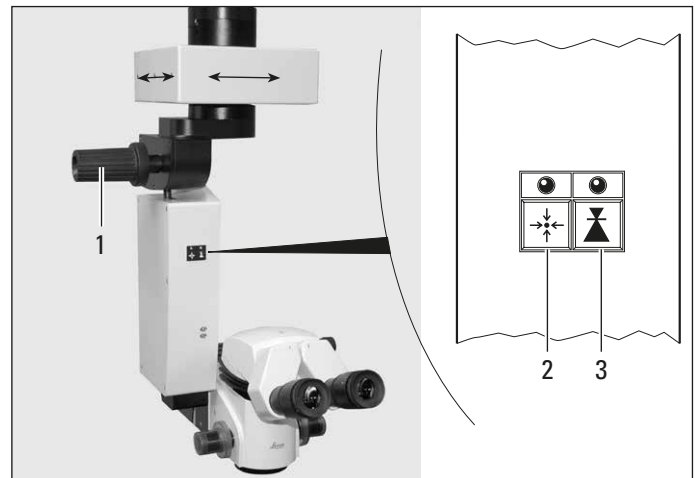
- 3 Socket for potential equalization for connecting the Leica M620 F20 to a potential equalization device. This is part of the customer's building installation. Observe the requirements of EN 60601-1 (§ 8.6.7).
- 4 Power cable strain relief device
- 5 Power socket
- 6 Connection for footswitch  
Here, only foot and hand switches delivered by Leica Microsystems (Schweiz) AG, Medical Division may be connected.

### 6.2 Lamp housing



- 1 Lamp replacement cover
- 2 Slide button for quick-change lamp mount

### 6.3 Tilt head/focus unit



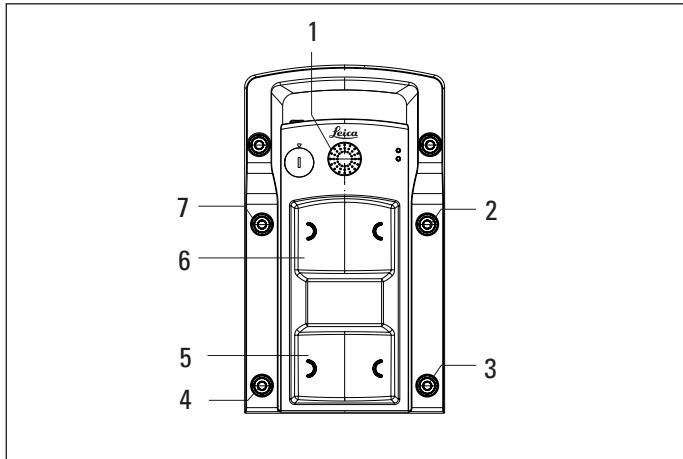
#### Tilt head

- 1 Tilt head fine adjustment

#### Focus unit

- 2 Reset button, XY-unit
- 3 Reset button, focus

## 6.4 Footswitch (standard configuration)



- 1 XY adjustment
- 2 Microscope illumination darker
- 3 No Function
- 4 Microscope illumination on/off
- 5 Zoom up/down
- 6 Focus bottom and top
- 7 Microscope illumination brighter

**!** See page 30 for alternative footswitches and free programming of footswitches.

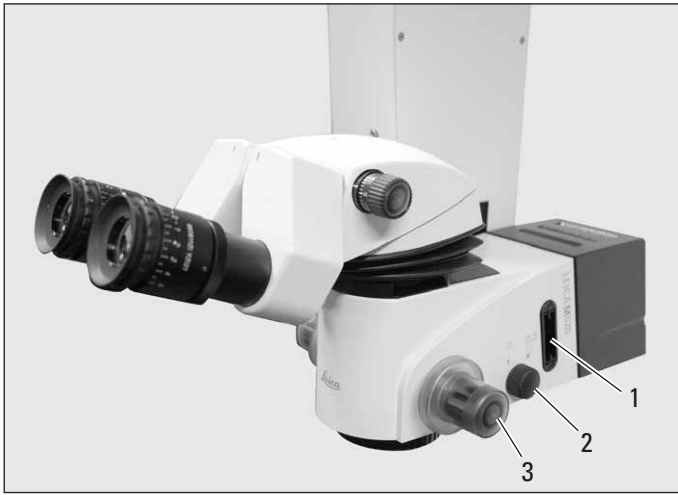
## 6.5 Stand



- 1 Articulation brakes
- 2 Rotary knob for balancing
- 3 Retaining pin
- 4 Footbrake release lever
- 5 Footbrake

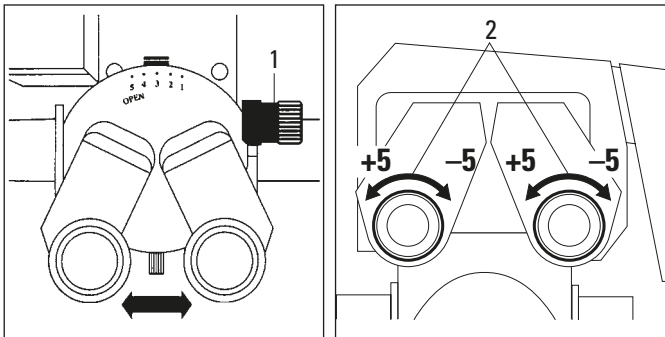


## 6.6 Optics carrier



- 1 Insert for filter (UV protection filter GG475, protection filter 5x)
- 2 Jalousie blind rotary knob for fade out/fade in 6° illumination
- 3 Handles

## 6.7 Binocular tube, eyepiece, second observer tubes



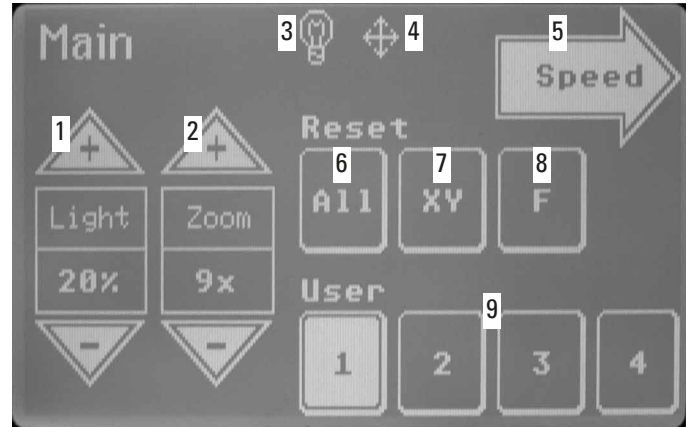
- 1 Drive knob for interpupillary distance adjustment
- 2 Diopter adjustment
- 3 Knurled ring for image correction

## 6.8 User interface of the control panel



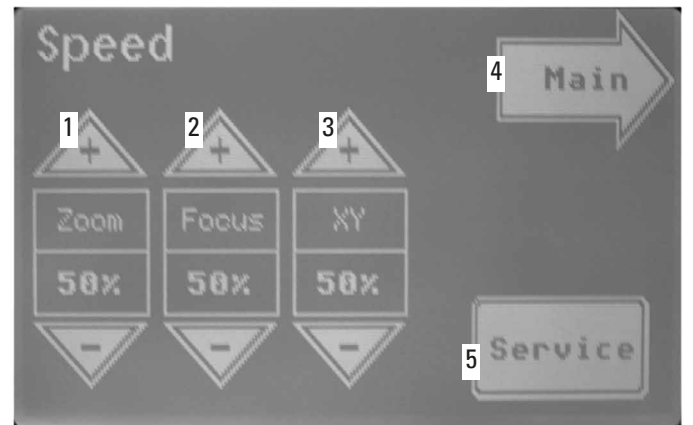
For information on operating the control panel, see page 29.

### "Main" menu



- 1 Illumination lighter/darker
- 2 Zoom up/down
- 3 Defective lamp warning
- 4 XY reversal active
- 5 "Speed" menu
- 6 Reset All
- 7 Reset XY
- 8 Reset focus
- 9 User selection 1-4

### "Speed" menu



- 1 Zoom speed setting
- 2 Focus speed setting
- 3 XY-speed setting
- 4 Back to the "Main" menu
- 5 Switch to the service area (password-protected)

## 7 Preparation before surgery

### 7.1 Transporting the surgical microscope



#### WARNING

##### Risk of injury from:

- **Uncontrolled lateral movement of the swing arm.**
- **Tilting of the stand.**
- **Feet in lightweight shoes could become trapped beneath the casing of the base.**
- **Abrupt braking of the surgical microscope at a threshold that cannot be crossed.**
  - ▶ For transportation, always move the Leica M620 F20 surgical microscope into the transport position.
  - ▶ Never move the stand while the unit is extended.
  - ▶ Never roll over cables lying on the floor.
  - ▶ Always push the Leica M620 F20 surgical microscope - never pull it.

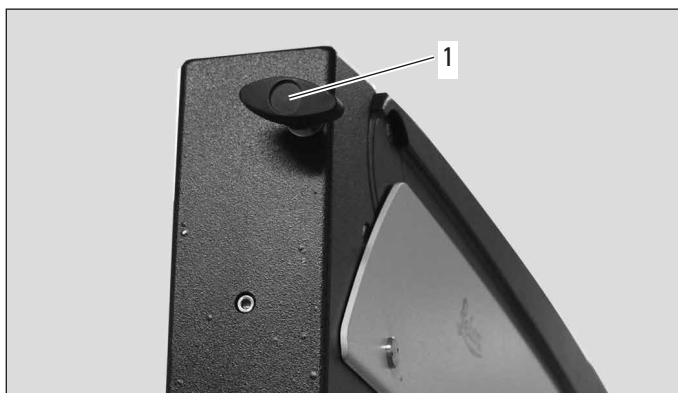
#### Transport position

##### Locking the swing arm

- ▶ Position the swing arm approximately horizontally.
- ▶ Press in the retaining lever (1), rotate it horizontally and move the swing arm up and down until the retaining lever snaps into place.

The swing arm is now locked.

- ▶ Release the articulation brakes (2), fold the swing arm.
- ▶ Move the surgical microscope into transport position and tighten the articulation brakes.



#### Transport the surgical microscope and secure it in its installation location

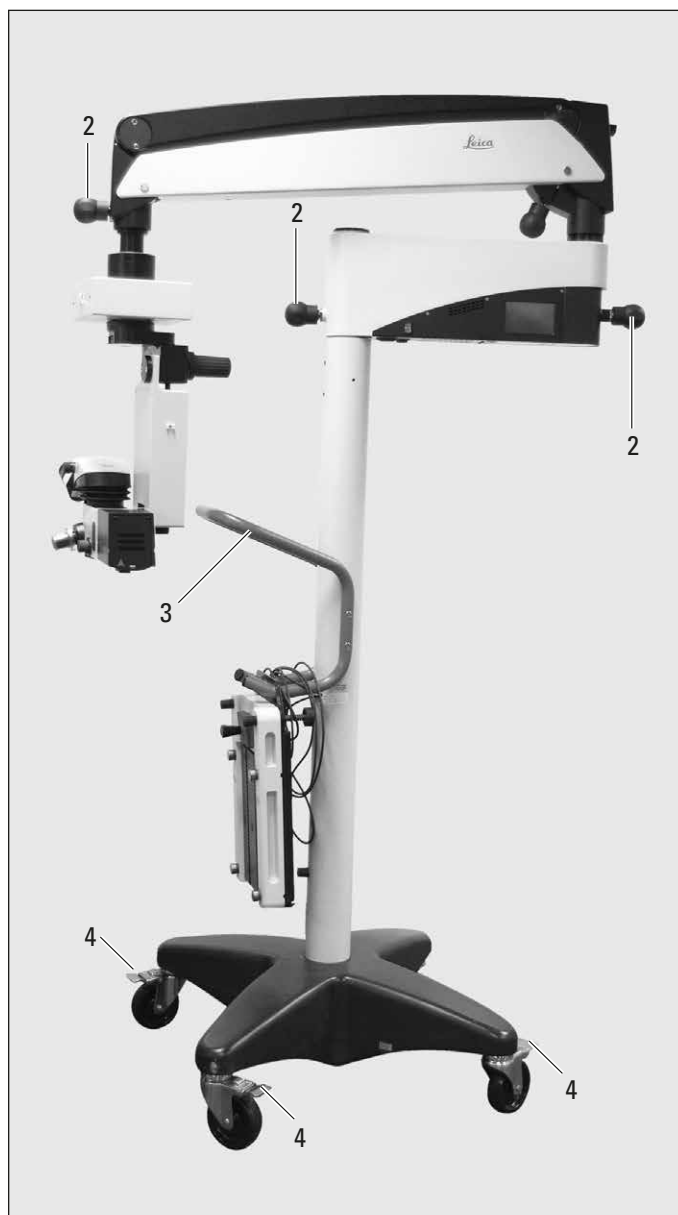
- ▶ Pull the power plug from the socket and wrap the power cable around the handle.
- ▶ Hook in the footswitch to the clip.
- ▶ Step on the footbrake release lever (4) to release the footbrakes.
- ▶ Push the surgical microscope to its new location by the handle (3).
- ▶ Lock the footbrakes at the installation location.



#### CAUTION

##### Surgical microscope can move without warning!

- ▶ Always secure the footbrakes when you are not moving the system.



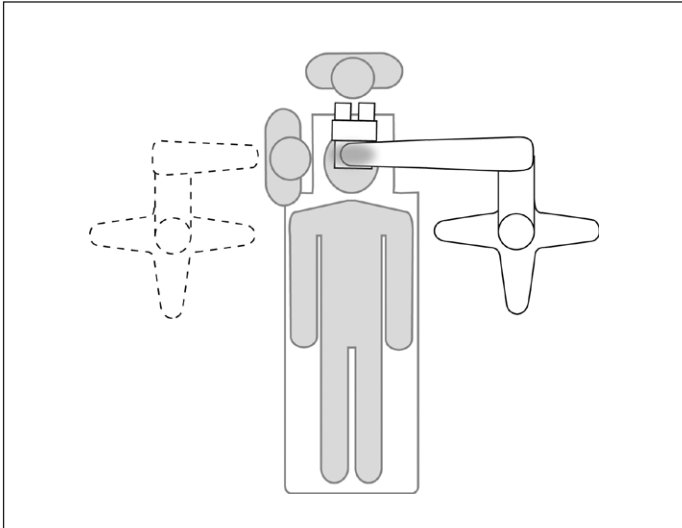
## 7.2 Positioning the surgical microscope at the operating table



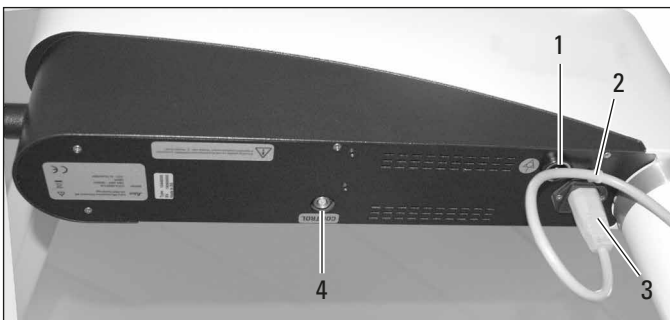
### CAUTION

#### Danger of fatal electrical shock!

- ▶ The surgical microscope may be connected to a grounded socket only.



- ▶ Carefully move the surgical microscope to the operating table using the handle and position it for the forthcoming operation.
- ▶ Tighten the footbrakes.
- ▶ Plug the power cable (3) into the socket and secure it with cable ties (2).
- ▶ Connect the potential equalization to the socket (1) on the control unit.
- ▶ Connect the footswitch to the socket (4) on the control unit.



- ▶ Adjust the tilt of the footswitch. Rotate the footrest in or out.
- ▶ Check that all accessories are correctly connected and securely attached.
- ▶ Release the articulation brakes and set them to a light resistance.

Make the joint easier to move:

- ▶ Release the articulation brake (1).

Make the joint more difficult to move:

- ▶ Tighten the articulation brake (1).
- ▶ Pull the retaining lever (2).
- ▶ Extend the swing arm.
- ▶ Check the weight setting on the swing arm by raising and lowering the microscope and correct as necessary, see page 24.



### CAUTION

#### Risk of infection!

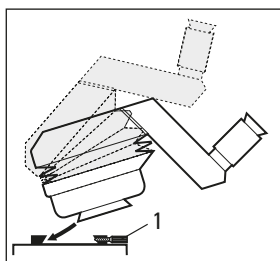
- ▶ Leave sufficient space around the stand to prevent contact with non-sterile components.

## 7.3 Installing binocular tube, eyepiece and objective

A range of options enables the surgical microscope to be matched to the requirements of the task at hand.

### Installing the binocular tube

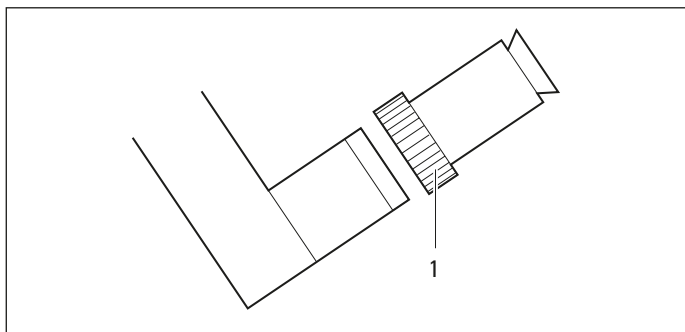
- WARNING**  
**Risk of injury through falling binocular tube!**
- ▶ Tighten the clamping screw securely.



- ▶ Tighten the clamping screw (1).
- ▶ Push the binocular tube into the dovetail ring.
- ▶ Tighten the clamping screw securely.

### Fitting the eyepiece

- ▶ Set the eyepiece in place.
- ▶ Tighten the rotary ring (1).



### Eyepieces

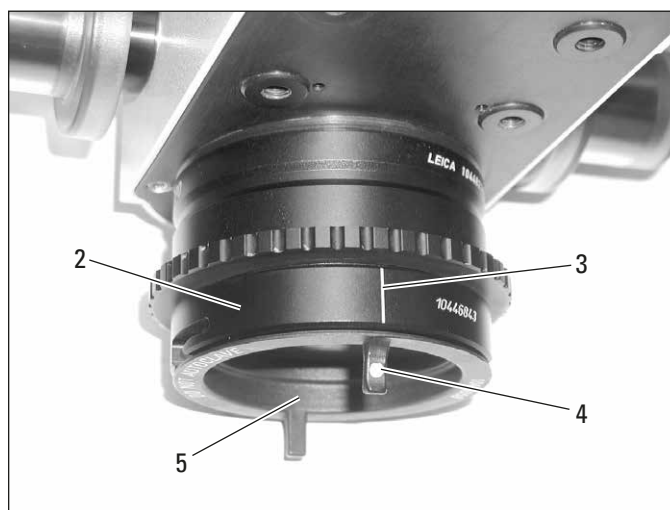
Eyepiece 8.33×, adjustable  
 Eyepiece 10×/21B, adjustable  
 Eyepiece 12.5×/17B, adjustable

### Fitting the objective protection glass

- ▶ Screw the holder for the objective protection glass (2) into the objective and position it such that the mark (3) faces backwards.
- ▶ Position the objective protection glass (5) and turn it slightly to the right.

The objective protection glass will snap into place and the markings (3) and (4) will match.

- !** The objective protection glass is not autoclavable.



### Inserting additional filters

The Leica M620 F20 features two slots for additional filters.

- !** Temperature-resistant 32 mm diameter filters may be used. For further information, please contact your Leica Microsystems representative.

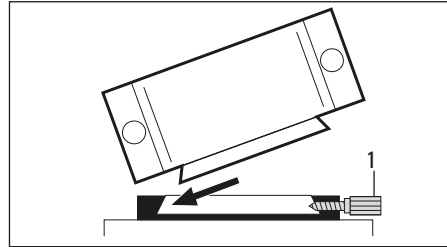
- ▶ Remove cover (1) of the filter slots.
- ▶ Mount the filter in the filter holder with a tension ring.



## 7.4 Fitting adapters for accessories

### Installing the beam splitter/stereo adapter

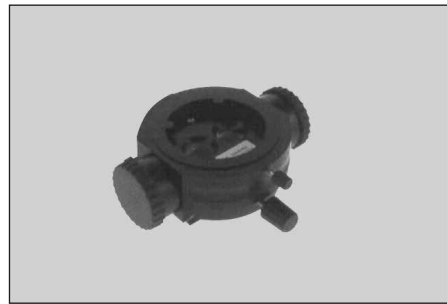
- ▶ Loosen the clamping screw (1).
- ▶ Push the beam splitter/stereo adapter into the dovetail ring.
- ▶ Tighten the clamping screw.



- ▶ Insert the filter holder (2).

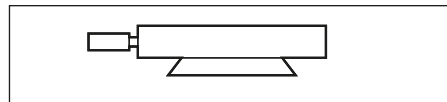


### Beam splitter with 50/50 % observation, alternative: beam splitter with 70/30 % observation



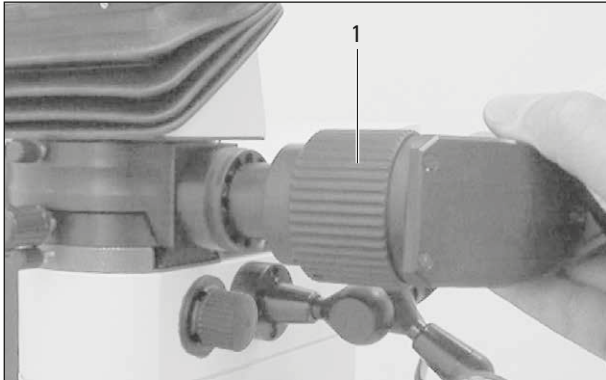
### Stereo adapter for accessories

For installing accessories with M600 interface (dovetail ring) under beam splitter with Leica M500 interface (e.g. "Wild" type laser filter).



### Fitting the adapter

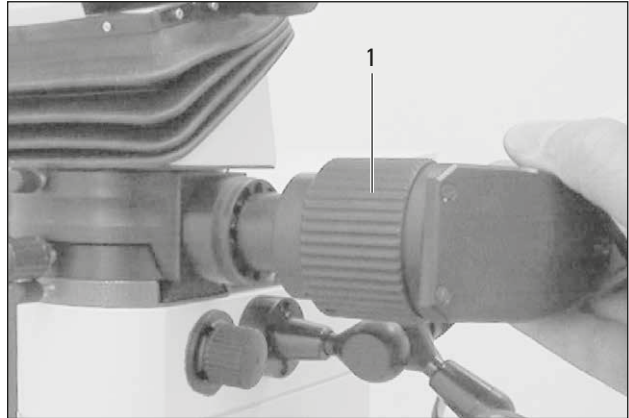
- ▶ Insert the adapter in the beam splitter.
- Tighten the rotary ring (1).



## 7.5 Adjusting the second-observer tube

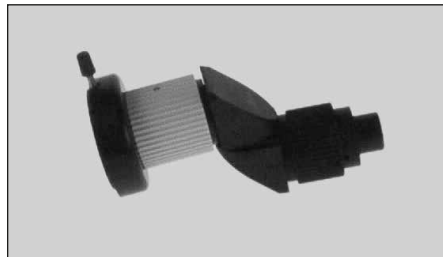
### Install stereo attachment/second observer tube

- ▶ Insert the stereo attachment/second observer tube into the beam splitter.
- ▶ Tighten the rotary ring (1).



### Stereo attachment for second observer

The dual stereo attachment can be attached to the left or right on the beam splitter and turned as required.

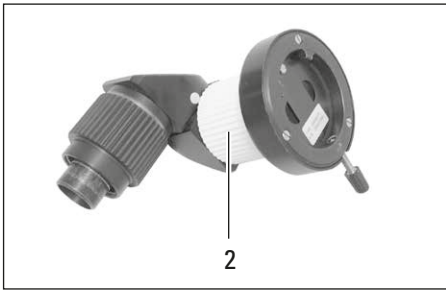


### Adjusting the second observer tube

- ▶ Rotate the monocular second observer tube in the desired direction.
- ▶ Adjust the diopter setting at the eyepiece.
- ▶ Correct the image with the knurled ring (2).

### Adjusting the stereo attachment for second observer

- ▶ Turn the attachment for the second observer in the desired direction.
- ▶ Align the binocular tube horizontally.
- ▶ Adjust the diopter setting at the eyepiece.
- ▶ Correct the image with the knurled ring (2).



### Using the assistant's stereomicroscope



#### WARNING

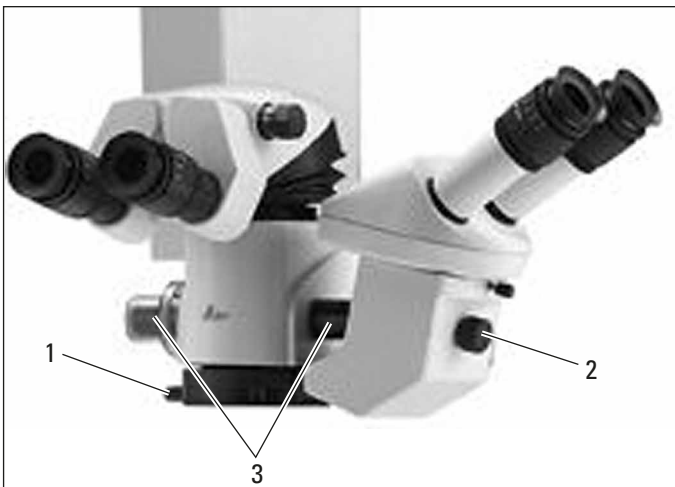
#### Risk of injury through falling surgical microscope!

- ▶ Check the mounting of the assistant's stereomicroscope before every use.



The assistant's stereomicroscope can only be used with the following objectives:

- WD=175 mm
- WD=200 mm



- ▶ Mount adapter with included screws (see manual of assistant's stereomicroscope).
- ▶ Focus assistant's image with sterile-operable focus drive (2).
- ▶ Moving assistant's stereomicroscope to left/right:
- ▶ Remove sterile handles (3) with hub.
- ▶ Loosen clamping screw (1) and turn the assistant's stereomicroscope.
- ▶ Tighten the clamping screw (1).
- ▶ Turn the hub and reattach sterile handles (3).

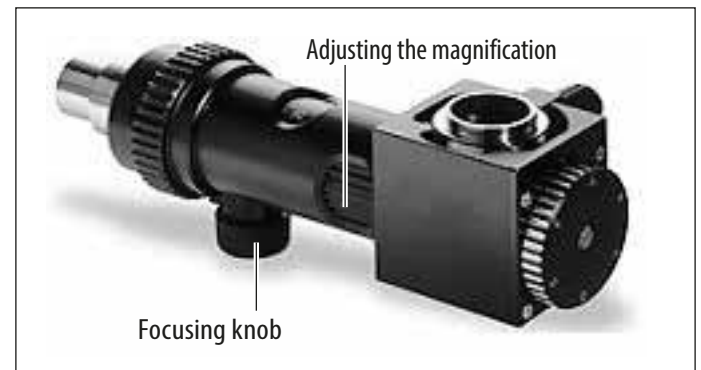
## 7.6 Fitting documentation accessories



#### WARNING

#### Risk of injury from parts falling down!

- ▶ Complete all preparations and adjustments to the optics carrier before the operation.
- ▶ Never rebalance or re-equip the optical components and accessories with the instrument over the operation area.
- ▶ Check that the optical components and accessories fit well and are fastened securely before the operation.
- ▶ Before changing equipment during an operation, swivel the microscope away from the operation area.



#### Fitting the phototube

- ▶ Fasten the phototube to the documentation port of the 0° assistant attachment or to the beam splitter.
- ▶ Secure the camera, complete with adapter, in the phototube. Tighten the clamping screw.

Please refer to section 9.3 for a list of video accessories.



## 7.7 Selecting documentation accessories

	Zoom Video Adapter 35 mm	TV adapter 55 mm	Photo/TV dual attachment 60 mm	TV adapter 70 mm	Photo/TV dual attachment 85 mm	Zoom Video Adapter 100 mm	TV adapter 70 mm
1/4"							
1/3"							
1/2"							
2/3"							
1"							

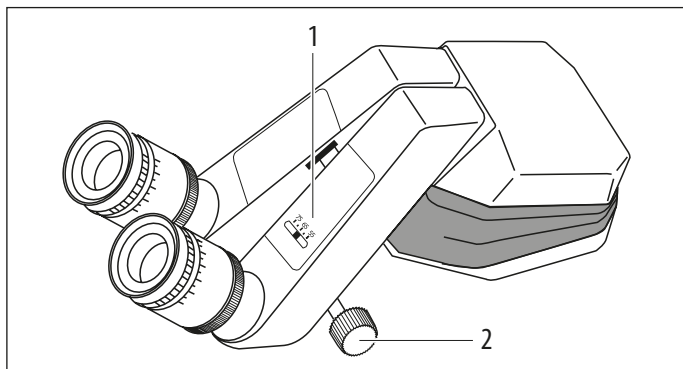
	Photo/TV dual attachment	
	250 mm	350 mm
35 mm		
Digital Photo camera		

 Field of view

 Monitor/image



## 7.8 Adjusting the eyebase and eyepoint



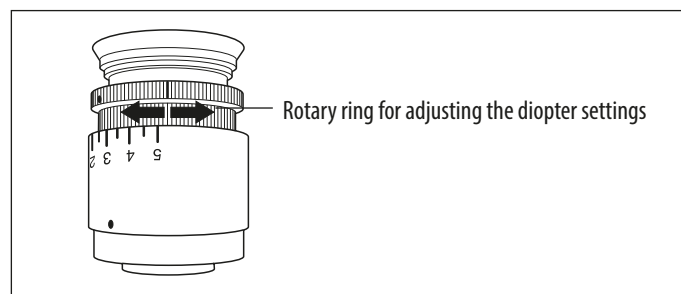
The interpupillary distance (1) and preferred degree of contact with the eyepieces vary from user to user.

Prepare the microscope for surgery using a user table.

### Adjusting the eyebase

- ▶ Set the eyelenses of the eyepieces to "0" or select the required diopter value.
- ▶ Set the magnification changer to step 10.
- ▶ Look into the eyepieces and adjust the tubes with the setting wheel (2) or by hand (in the case of binocular tubes without a setting wheel) until a circular field of view is visible.

## 7.9 Adjusting the parfocality



### Adjusting the diopter settings

Adjust the diopter settings accurately for each eye separately; only this method will ensure that the image will stay in focus throughout the entire zoom range (parfocal).

#### 1. Prepare the microscope

- ▶ Switch on the microscope at the control unit and place a flat test object such as a piece of paper beneath the objective.
- ▶ Set the maximum brightness.
- ▶ Set the minimum magnification.
- ▶ Shift the microscope until the test object is visible in the center of the field of view and reasonably sharp.

#### 2. Focus on the test object

- ▶ Set the maximum magnification.
- ▶ Focus the microscope.
- ▶ Set the minimum magnification.

#### 3. Adjusting the diopter settings

- ▶ Adjust the diopter setting for each eye in turn, until the image is seen in sharp focus.
- ▶ Set the maximum magnification.
- ▶ Focus the microscope again.
- ▶ Set the minimum magnification.
- ▶ Inspect the diopter settings, readjusting them if necessary so that both images are sharp.

#### 4. Checking parfocality

- ▶ Zoom through the whole range, observing the test object. The image sharpness must remain constant at all magnifications. If it does not, then repeat points 2 to 4 of this procedure.

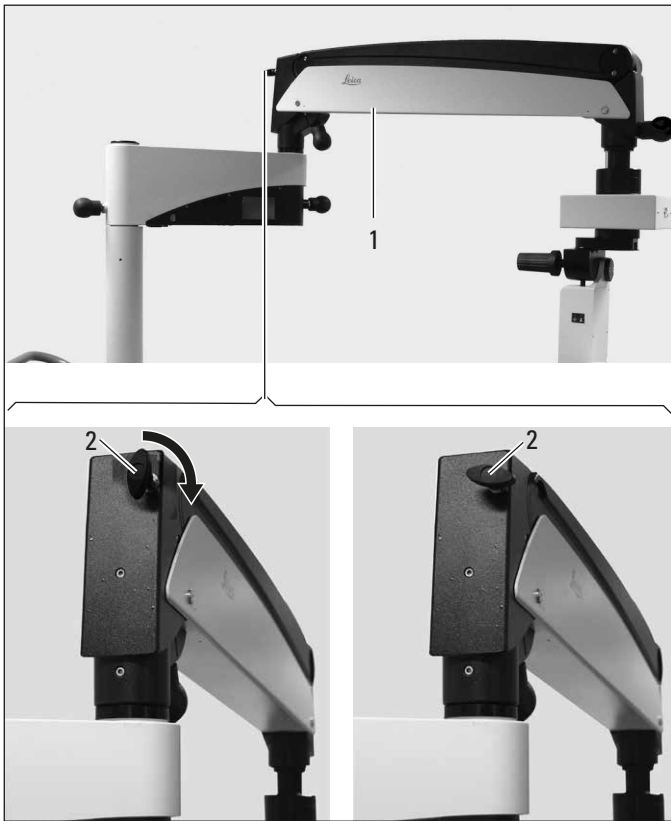
## 7.10 Changing accessories of the surgical microscope and balancing the swing arm



### WARNING

**Risk of injury from downward movement of surgical microscope!**

- ▶ Never change the accessories or attempt to rebalance the microscope while it is above the field of operation.
- ▶ After every modification, balance the swing arm.



### Locking the swing arm

- ▶ Position the swing arm approximately horizontally.
- ▶ Press retaining pin (2) and move the swing arm up and down until the retaining pin snaps into place.

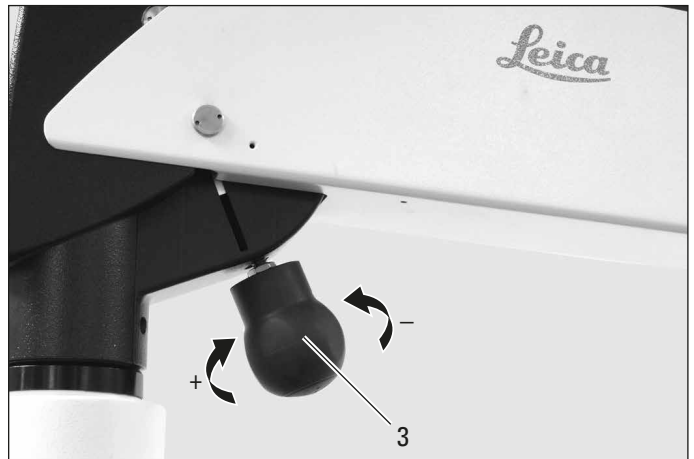
The swing arm is now locked.

### Cleaning the optical accessories

- ▶ Inspect the cleanliness of the eyepieces and objectives as well as any photo or TV adapters as appropriate.
- ▶ Remove dust and dirt.

### Mounting accessories

- ▶ Outfit the microscope and all accessories for use.



### Balancing the swing arm

- ▶ Hold the microscope firmly.
- ▶ Pull the retaining pin (2).  
The swing arm is now released.
- ▶ See whether or not the microscope drifts.  
Microscope drifts downwards:
  - ▶ Turn the rotary knob (3) clockwise (+).
 Microscope drifts upwards:
  - ▶ Turn rotary knob (3) counter-clockwise.

## 7.11 Installing sterile components

Standard components:

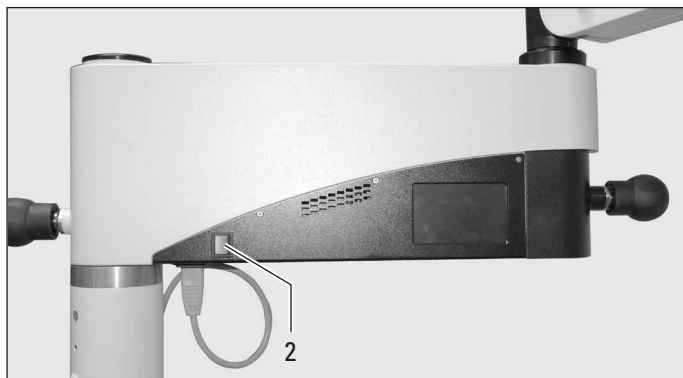
- One handle, large, black (tilt head)
- 2 handles, transparent
- 2 drive knobs

The handles are steam and gas-sterilizable.

- ▶ Sterilize the handles and drive knobs.
- ▶ Attach the sterile drive knobs on the binocular tube and the drive knob to block ambient illumination.
- ▶ Attach sterile handles to optics carrier and tilt head.

## 7.12 Preparing the surgical microscope for use

- ▶ Switch on the power switch (2).



The XY unit will move to its middle position.  
The LED (page 26, position 2) is lit when the mid position has been reached.

The focus will travel to its home position (1/3 up, 2/3 down) at maximum speed. The LED (page 26, position 3) is lit when the focus reset position has been reached.

### Basic setting:

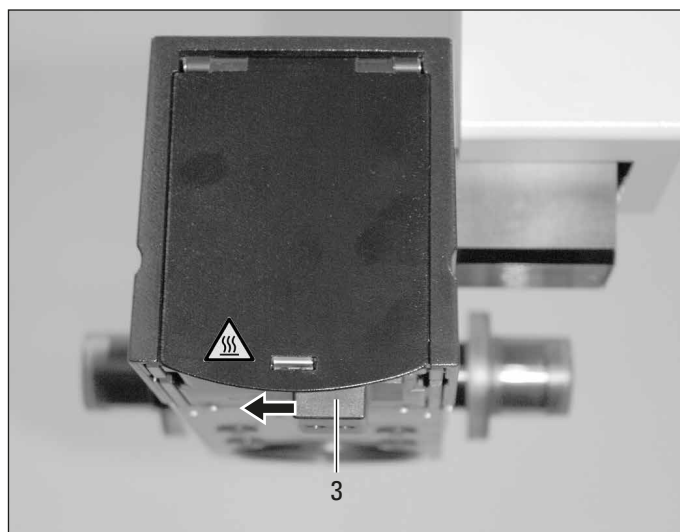
When switching the Leica M620 F20 on with the power switch, the zoom will travel to the same position it was in when the instrument was turned off. The brightness of the lamps and drive speeds remain at the programmed values of the last user.

## 7.13 Checking the function of the lamp

- ▶ Switch on the microscope using the power switch.  
The main lamp will light up.
- ▶ Move the slide button for the quick-change lamp mount (3) to the other side.  
The auxiliary lamp will light up.
- ▶ Move the slide button for the quick-change lamp back to the main lamp.



The slide button for the quick-change lamp mount (3) must be slid fully against its stop, otherwise the lamp will not light.



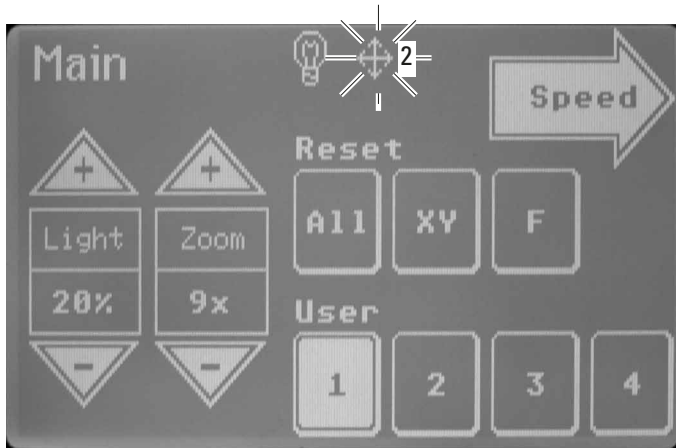
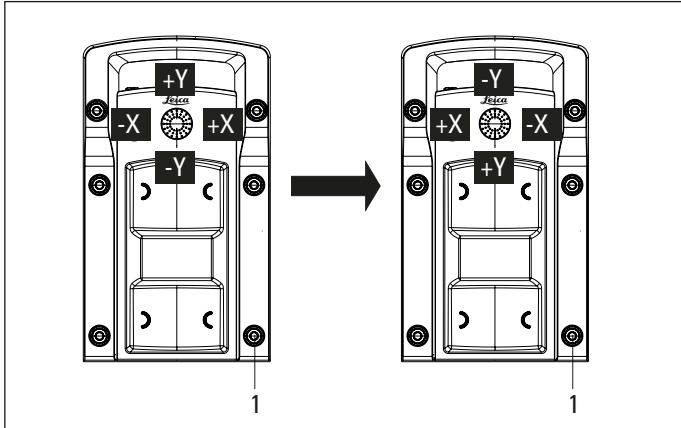
## 7.14 Show/switch footswitch type

See page 30.

## 7.15 Reversing + and – directions of the XY unit

**!** The "XY-reverse" function must be assigned to the footswitch (see page 30).

- ▶ Use the "XY-reverse" button (1) on the footswitch to reverse the + and – directions of the XY unit to – and +.
- The "XY-reversal enabled" symbol (2) on the control panel lights up.

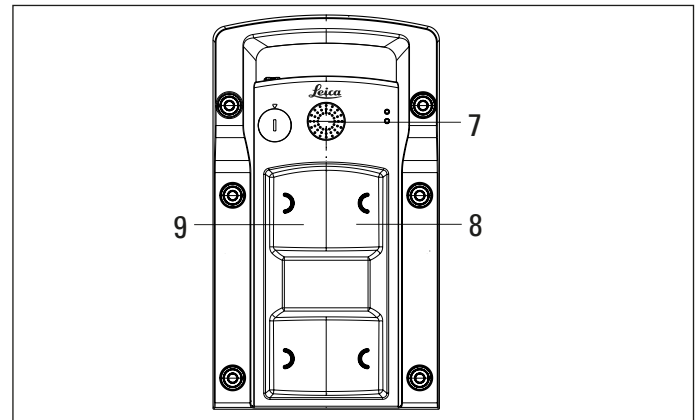
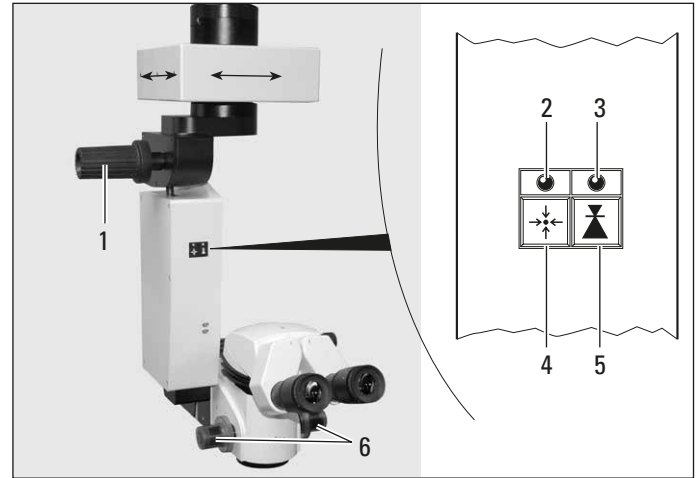


## 8 Operation

### 8.1 Positioning the microscope

#### Adjusting the mid position:

- ▶ Press the "Reset XY-unit" key (4).
- The XY unit will move to its middle position.  
LED (2) is lit when the mid position has been reached.



#### Coarse positioning

- ▶ Hold both handles (6) to position the microscope.

#### Fine positioning

- ▶ Actuate the XY unit via the footswitch (7).
- ▶ Adjust the travel speed of the XY unit on the control panel (see page 29).

#### Tilt fine adjustment:

- ▶ Use the tilt head fine adjustment (1) to set the tilt of the microscope precisely.

**Auto reset:**

The "auto reset" function can be deactivated on the control panel in the service area.

- ▶ Hold both handles and move the microscope to its uppermost position.

All drives will move to their reset positions and the illumination will go out. When the microscope is returned to its working position, the illumination will switch on at the configured starting value.

## 8.2 Adjusting the focus

(in accordance with factory settings)

**Basic setting:**

- ▶ Press "reset focus" button (5).  
The focus will travel to its home position (1/3 up, 2/3 down) at maximum speed.  
LED (3) is lit when the focus reset position has been reached.

**Adjusting the focus:**

- ▶ Press the programmed button (8) or (9) on the footswitch.
- ▶ Adjust the speed on the control panel (see page 29).

## 8.3 Adjusting the magnification

- ▶ Adjust the magnification on the control panel (see page 29).

## 8.4 Adjusting the illumination

(in accordance with factory settings)

**WARNING**

**Light that is too intense can damage the retina!**

- ▶ Observe the warning messages in the "Safety Notes" chapter on page 5.

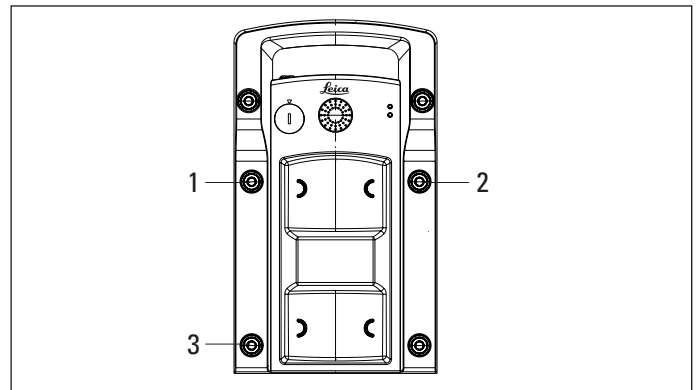
**Switching the microscope illumination on and off**

Use button (3) to switch the microscope illumination on and off.

- ▶ Adjust the brightness of the main illuminator on the control panel (see page 29) or on the footswitch.

- (1) brighter
- (2) less bright

The brightness level is displayed as a percentage on the control panel.



## 8.5 Switching from main to spare illumination

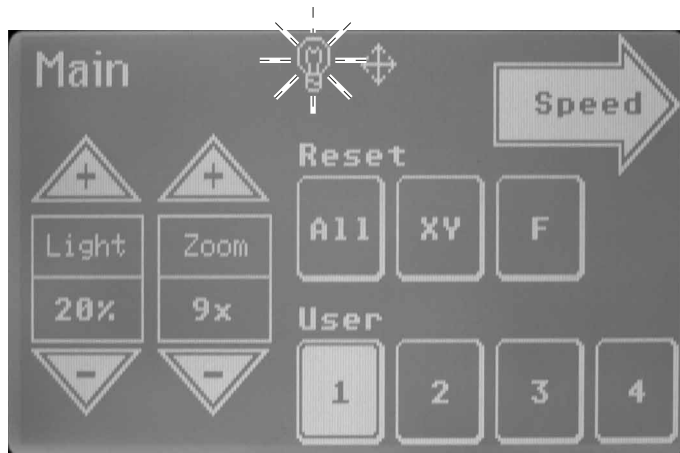


### WARNING

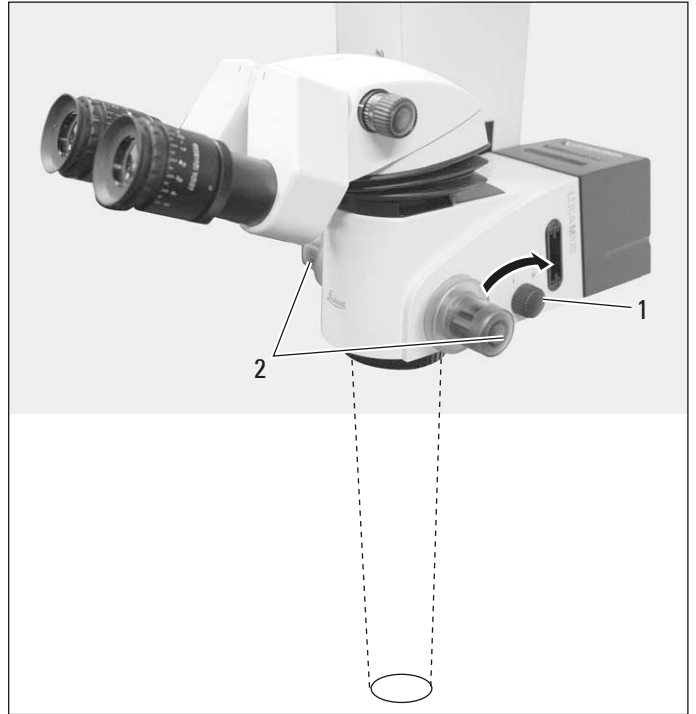
**Failure of the illumination can be dangerous for the patient!**

- ▶ If the main illuminator fails, switch to the auxiliary illuminator immediately.

If a lamp is defective, the warning symbol for a defective lamp flashes on the "Main" menu of the control panel.



## 8.6 Setting the illumination type and working distance



- ▶ Set the approximate working distance by raising or lowering the microscope with the handles (2).
- ▶ Turn the rotary knob (1) clockwise.

Ambient lighting/6° illumination is no longer displayed.

Red reflex illumination/0° red reflex illumination is retained.

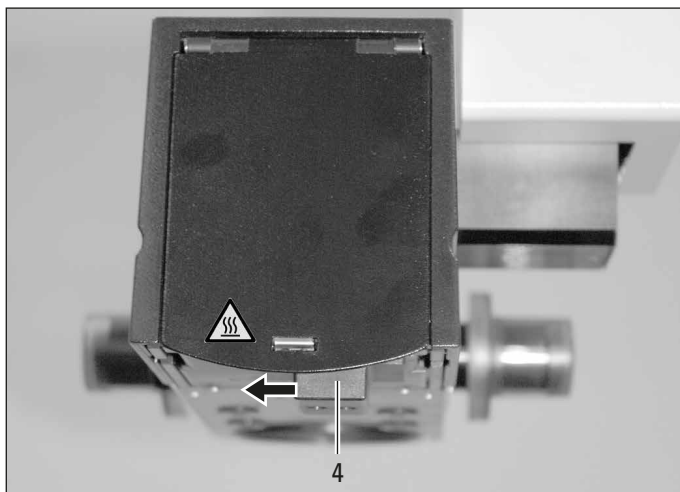
The 6° illumination can be adjusted with the rotary button (1) to optimize red reflex and contrast. The 0° light will remain permanently.



- Replace the defective illumination at the next opportunity.
- Never begin an operation with only one functioning illumination unit.
- The slide button for the quick-change lamp mount must be slid fully against its stop, otherwise the lamp will not light.

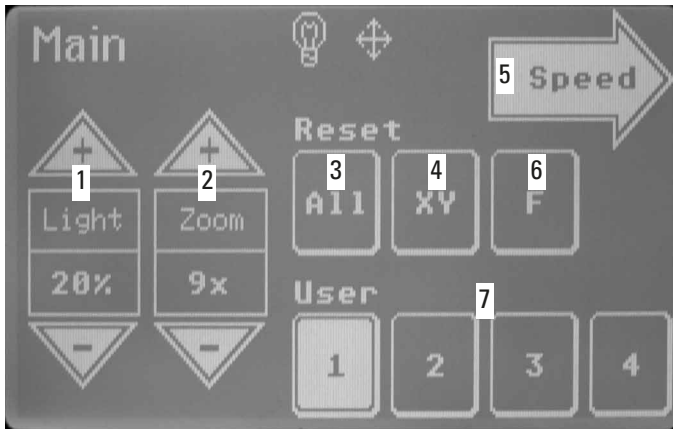
- ▶ Move the slide button for the quick-change lamp mount (4) to the other side.

The auxiliary lamp will light up.



## 8.7 Operating the control panel

If the Leica M620 F20 is switched on, the main menu appears on the control panel. The following settings can be configured there:



### Calling up the settings of the surgeon

Use buttons 1-4 (7) to call up the custom settings (starting values, speeds, footswitch assignments) of the operating surgeon.

- ▶ Under "User", press button 1-4 (7).

The values stored under the button will be applied.  
For programming the buttons, see page 29.

### Adjusting brightness and magnification

Brightness and zoom can be adjusted continuously.

- ▶ Press arrow keys "+" or "-" in "Light" (1).  
The brightness will change as required.
- ▶ Press arrow keys "+" or "-" in "Zoom" (2).

The magnification will change as desired.

### Restoring settings

If settings (brightness, magnification) are changed, the original values can be restored.

- ▶ Under "Reset", press the button "All" (3).

The values stored under the appropriate button will be applied.

### Going to reset positions

- ▶ Under "Reset", press the button "XY" (4).

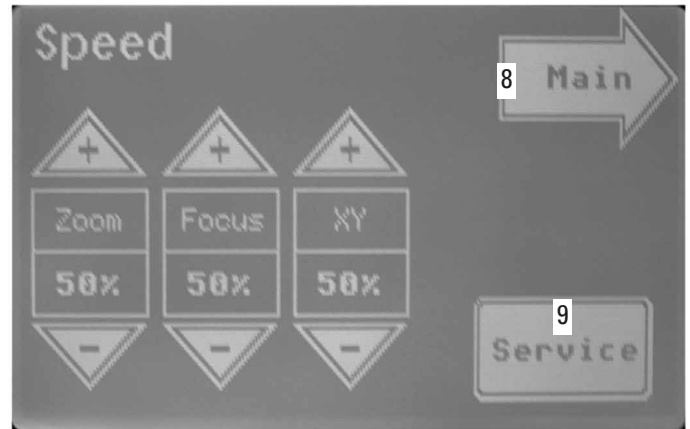
The XY unit will move to its middle position.

- ▶ Under "Reset", press the button "F" (5).

The focus will travel to its home position (1/3 up, 2/3 down).

### Adjusting the working speeds for zoom, focus and XY unit

- ▶ In the main menu, press the "Speed" arrow button.  
The "Speed" menu will open.



- ▶ In the "Speed" menu, use the "+" or "-" arrow keys to select the desired working speed.

! Save values (see page 30).

- ▶ Press the "Main" arrow button (8).  
The main menu will reappear.

### Accessing the service area

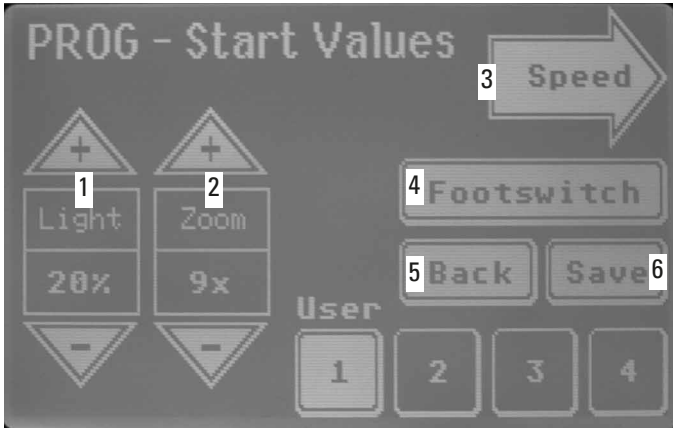
! The service area is password-protected.  
Please contact your Leica Microsystems service representative.

- ▶ In the "Speed" menu, press the "Service" field (9) and enter the password.  
The service area will now appear.



### Custom settings for the operating surgeon

- ▶ In the main menu under "User", press the button under which the settings are to be stored, 1-4, for at least 3 seconds. The "PROG-Start Values" menu will appear.



- ▶ Adjust the starting values for brightness (1) and magnification (2) as required.
- ▶ Press the "Save" (6) button.

The settings will be stored for the selected button.

or

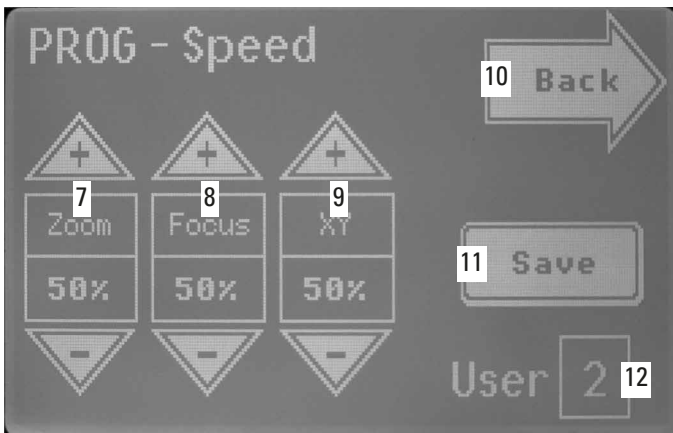
- ▶ Press the "Back" (5) button.

The configuration process will be canceled and the main menu will reappear.

### Setting the focus, zoom and XY unit speeds

- ▶ In the "PROG-Start Values" menu, press the "Speed" arrow button (3).

The "PROG-Speed" menu will open.



- ▶ Use the "+" or "-" arrow buttons to set the desired speeds for zoom (7), focus (8) and XY movements (9).
- ▶ Press the "Save" (11) button.

The settings will be stored for the selected button.

or

- ▶ Press the "Back" (10) button.

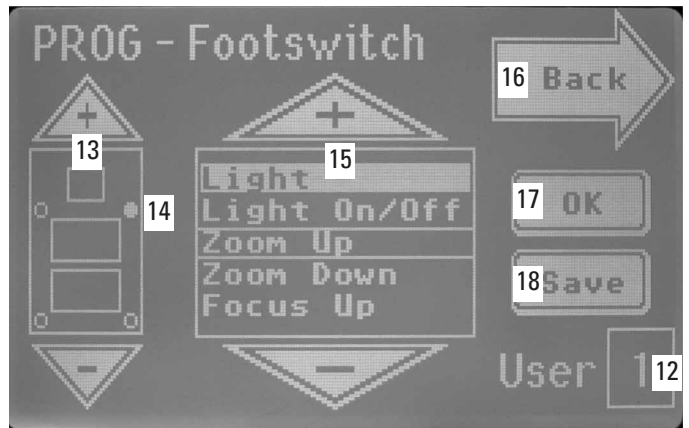
The configuration process will be canceled and the "PROGStart Values" menu will reappear.

The field (12) indicates the user (1-4) for whom the settings are currently being configured.

### Changing the footswitch settings

- ▶ In the "PROG-Start Values" menu, press the "Footswitch" button (4).

The "PROG-Footswitch" menu will open.



- ▶ Select the connected footswitch at the footswitch icon (13) using the "+" or "-" arrow keys.
- ▶ Press the button to be programmed (14) on the footswitch icon (○ becomes ●).
- ▶ Select the desired function in the middle block (15) with the "+" or "-" arrow keys and confirm your choice with "OK" (17).
- ▶ When all of the footswitch buttons are programmed, press "Save" (18).

The settings are now saved.

or

- ▶ Press the "Back" (16) button.

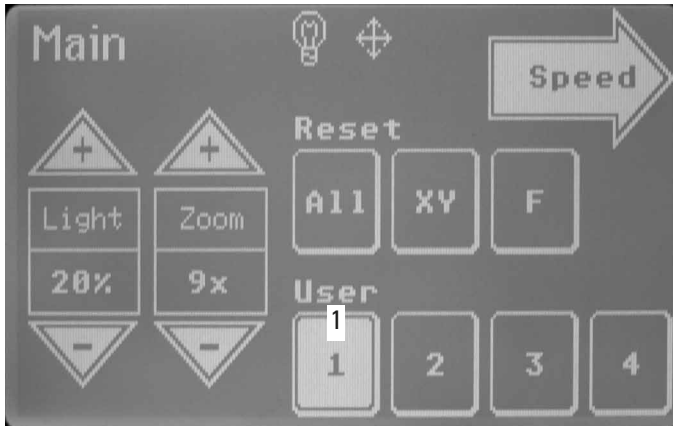
The configuration process will be canceled and the "PROGStart Values" menu will reappear.



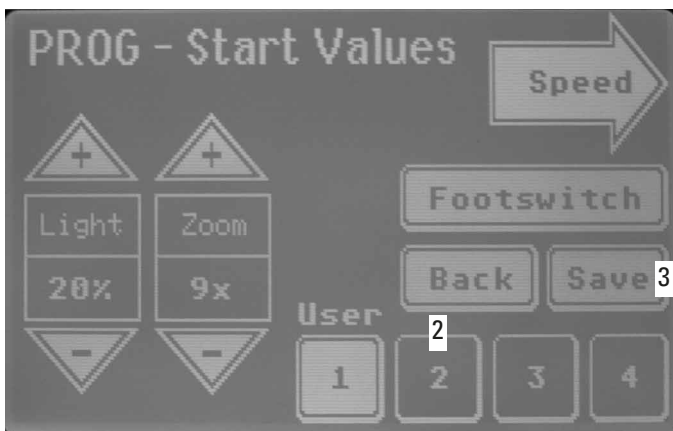
### Copying settings to another user

The settings stored for one surgeon may be copied to another.

- ▶ In the main menu, press the button (1) with the settings to be copied for at least three seconds (e.g. "1").



The "PROG-Start Values" menu will appear.



- ▶ Press the desired target button (2) (e.g. "2").
- ▶ Press the "Save" (3) button.

The settings for button "1" now also apply to "2".

### Setting Auto Reset



This function can be disabled in the service area. Please contact your Leica Microsystems service representative.

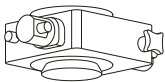



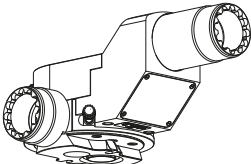

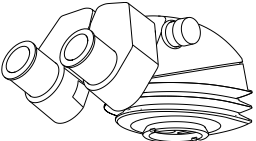
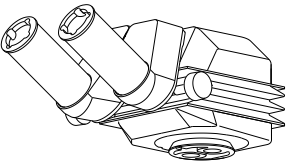
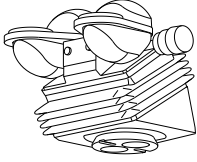
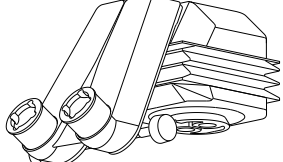

When the "Auto Reset" function is enabled, all drives move to their reset positions and the illumination is turned off when the surgical microscope is moved to its uppermost position.

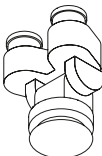
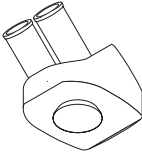


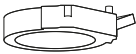
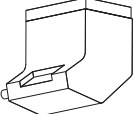
When the microscope is returned to its working position, the illumination will switch on at the configured starting value.

## 8.8 Decommissioning

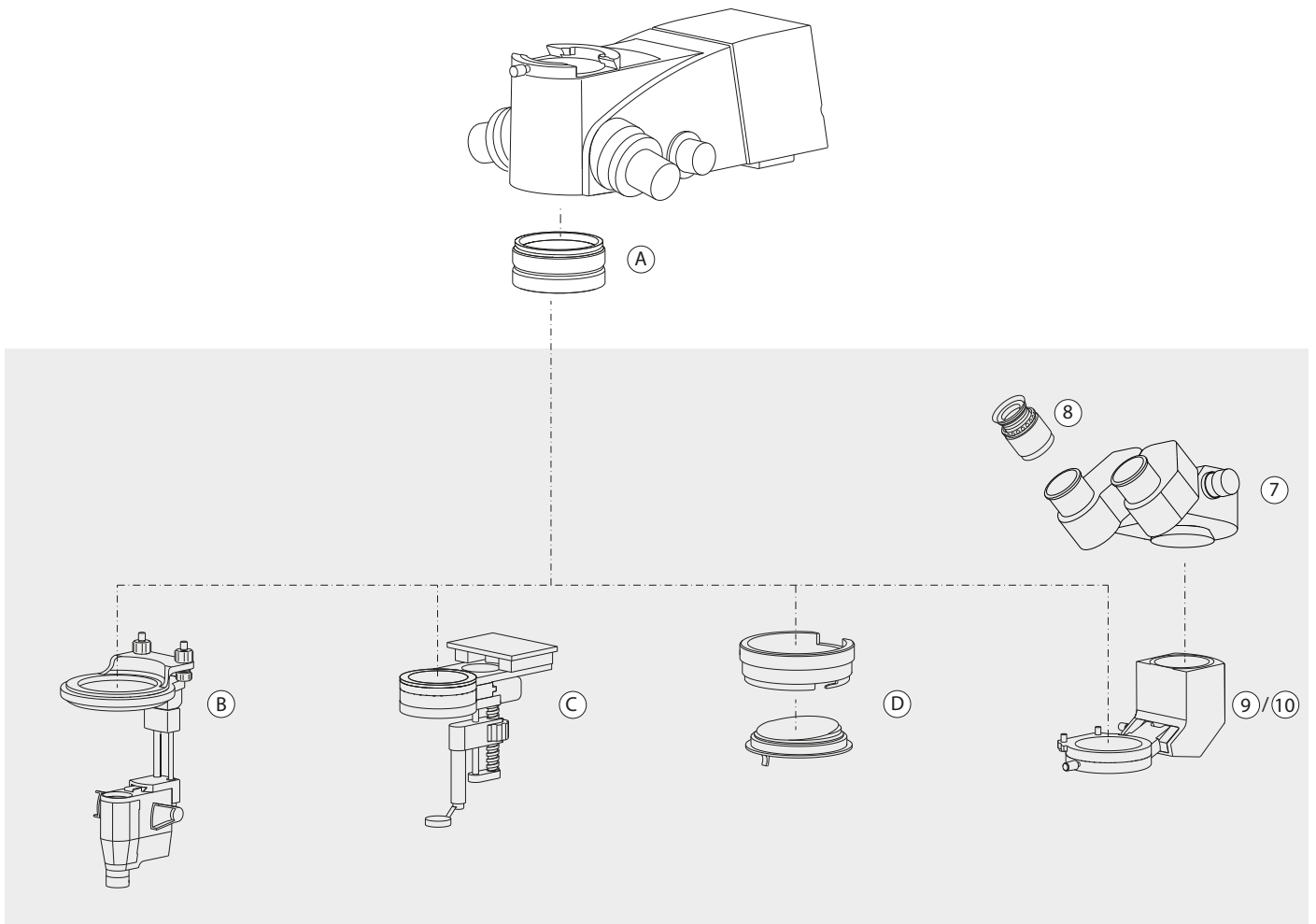
- ▶ Switch off the Leica M620 F20 surgical microscope at the power switch (1, page 13).




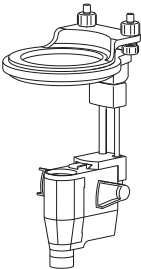
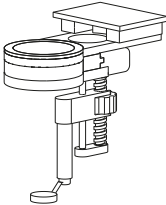


Item No.	Image	Component/accessory	Description
①		Oculus SDI	<ul style="list-style-type: none"> <li>• Inverter</li> </ul>
②		Laser filter 2 beams	<ul style="list-style-type: none"> <li>• Third-party product, purchased only from third parties</li> </ul>
③		Stereo adapter	<ul style="list-style-type: none"> <li>• For assembling a beam splitter</li> </ul>
④		Beam splitter 50/50 Beam splitter 70/30	<ul style="list-style-type: none"> <li>• The two interfaces can be used as assistant ports and documentation ports.</li> </ul>
⑤		Revolving beam splitter 50/50 Revolving beam splitter 70/30	<ul style="list-style-type: none"> <li>• Revolving (front) assistant port</li> <li>• Fixed (rear) documentation port</li> </ul>
⑥		Second observer stereo attachment	<ul style="list-style-type: none"> <li>• For assembly of binocular tube</li> </ul>
⑦		Binocular tube, inclinable 5° to 25° with PD	<ul style="list-style-type: none"> <li>• Adjustable viewing angle and height</li> <li>• Adjustable interpupillary distance</li> </ul>
⑦		Binocular tube 10° to 50° with PD	<ul style="list-style-type: none"> <li>• Adjustable viewing angle and height</li> <li>• Adjustable interpupillary distance</li> </ul>
⑦		Binocular tube 30° to 150°, T, type II L	<ul style="list-style-type: none"> <li>• Tilts 120°</li> <li>• Adjustable interpupillary distance</li> </ul>
⑦		Binocular tube 10° to 50°, Type II, UltraLow™	<ul style="list-style-type: none"> <li>• With extra-low viewing height</li> <li>• Adjustable viewing angle and height</li> <li>• Adjustable interpupillary distance</li> </ul>
⑦		Binocular tube, inclined, T, type II	

Item No.	Image	Component/accessory	Description
⑦		Binocular tube, 180°, variable	
⑦		Binocular tube, 45°	<ul style="list-style-type: none"> <li>• Optional for use on the assistant attachment</li> </ul>
⑧		Eyepiece, 10× Eyepiece, 8.33× Eyepiece, 12.5×	
⑧		Leica ToricEyePiece	<ul style="list-style-type: none"> <li>• Facilitates adjustments to the angle of toric intraocular lenses via an integrated scale</li> <li>• For further information see the separate operating and installation instructions</li> </ul>
⑨		Adapter for Stereo Assistant Microscope	
⑩		Stereo Assistant Microscope	<ul style="list-style-type: none"> <li>• Separate assistant microscope</li> <li>• For further information see the separate operating and installation instructions</li> </ul>

## 9.2 Patient-side



- (A) Lens
- (B) Leica RUV800
- (C) Oculus BIOM
- (D) Protective glass with holder
- (9) / (10) Stereo Assistant Microscope with adapter

Item No.	Image	Component/accessory	
A		Objective APO WD175 Objective APO WD200 Objective f = 175 mm Objective f = 200 mm Objective f = 225 mm	
B		Leica RUV800 WD175 Leica RUV800 WD200	<ul style="list-style-type: none"> <li>• For observing the fundus of the patient's eye</li> <li>• For further information, see the separate operating instructions</li> </ul>
C		Oculus BIOM	<ul style="list-style-type: none"> <li>• Third-party product, purchased only from third parties</li> </ul>
D		Holder for protective glass	
D		Protective glass	

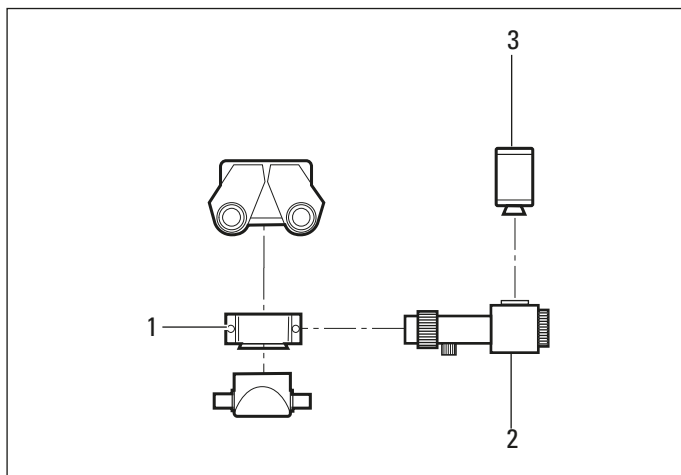
Combination options on the patient side

	Objective WD175	Objective WD200	Objective f = 175	Objective f = 200	Objective f = 225	Stereo Assistant Microscope	Leica RUV800	Oculus BIOM	Protective glass	Dust cover
Stereo Assistant Microscope	✓	-	-	✓	-		-	-	-	-
Leica RUV800	1)	1)	✓	✓	-	-		-	-	-
Oculus BIOM	✓	✓	-	✓	✓	-	-		-	2)
Protective glass	✓	✓	✓	✓	✓	-	-	-		✓
Dust cover	✓	✓	✓	✓	✓	-	-	2)	✓	

1) Adapting with distance piece 10743425

2) With special protective sleeve

### 9.3 Video accessories for Leica M620 F20



- 1 Beam splitter (50/50 % or 70/30 %), rotatable beam splitter
- 2 Video adapter (Leica ZVA / RVA / MVA)
- 3 C-mount camera

#### Video adapter

- For commercially available video cameras with C-mount, complete with adapter.
- The video adapter (2) is installed at the beam splitter.
- Zoom and fine focus function for Leica Zoom Video Adapter.



The parfocality of the Leica Zoom Video Adapter has to be adjusted.

- ▶ Set the maximum magnification.
- ▶ Place a flat test specimen with sharp contours under the objective.
- ▶ Look through the eyepieces and focus the microscope.
- ▶ Set the minimum magnification.
- ▶ Set the maximum magnification (f = 100 mm) on the Leica Zoom Video Adapter.
- ▶ Focus the monitor image on the Leica Zoom Video Adapter.
- ▶ Set the desired magnification on the Leica Zoom Video Adapter.

## 9.4 Load table



You can find the value for the max. load in the "Technical Data" chapter, page 46.

**Equipment Leica M620 F20 serial number .....**

**Max. load for stand from microscope interface..... kg**

Group	Art. No.	Description	Weight	Installation	
				Quantity	Total
<b>Assistant</b>	10448231	Stereo Assistant Microscope (incl. adapter):	1.10 kg		,
	10446482	Beam splitter 70/30	0.41 kg		,
	10446565	Beam splitter 50/50	0.41 kg		,
	10448487	Revolving beam splitter 50/50	1.04 kg		,
	10448354	Revolving beam splitter 70/30	1.04 kg		,
	10446992	Stereo adapter	0.22 kg		,
	10448597	Second observer stereo attachment	1.01 kg		,
	<b>Optics</b>	10445937	Objective APO WD200	0.41 kg	
10445938		Objective APO WD175			,
10431692		Objective f = 175 mm	0.20 kg		,
10382162		Objective f = 200 mm			,
10457297		Objective f = 225 mm			,
10448547		Binocular tube 10° to 50°, Type II, UltraLow™	1.42 kg		,
10448217		Binocular tube, inclinable 5° to 25° with PD	0.74 kg		,
10448159		Binocular tube 10° to 50° with PD	1.26 kg		,
10446797		Binocular tube 30° to 150°	0.81 kg		,
10448088		Binocular tube var. 0° to 180°, T, type II L	1.42 kg		,
10446574		Binocular tube, inclinable, T, type II	0.74 kg		,
10446618		Binocular tube, 45°	0.56 kg		,
10448028		Eyepiece, 10×	0.10 kg		,
10448125		Eyepiece, 8.33×			,
10446739		Eyepiece, 12.5×			,
Loading assistant and optics				<b>Intermediate sum 1</b>	,

To continue, see the next page



Group	Art. No.	Description	Weight	Installation	
				Quantity	Total
Accessories for front section of the eye	10448554	Leica ToricEyePiece	0.10 kg		,
Accessories for rear section of the eye	10448555	Leica RUV800 WD175, complete	0.53 kg		,
	10448556	Leica RUV800 WD200, complete			,
	10448392	Oculus SDI	0.72 kg		,
	10448041	Oculus BIOM, complete	0.68 kg		,
		Laser filter	0.30 kg		,
		Laser manipulator	0.30 kg		,
Sterilizable components	10180591	Clip-on handle	0.08 kg		,
	20384656	Transparent cover clip-on handle	0.02 kg		,
	10428238	Binocular tube T rotary knob cover	0.01 kg		,
	10446468	Holder for protective glass	0.10 kg		,
	10446467	Protective glass	0.06 kg		,
		Dust covers			,
Documentation	10446592	Leica Zoom Video Adapter	0.76 kg		,
	10448292	Leica Remote Video Adapter	0.44 kg		,
	10448290	Leica Manual Video Adapter	0.42 kg		,
Load of accessories for front/rear section of the eye, sterilizable components, documentation				<b>Intermediate sum 2</b>	,
Carry over load for assistant and optics				<b>Intermediate sum 1</b>	,
<b>Complete System</b>				<b>Load</b>	,




This list contains typical equipment articles.  
Subject to change.


## 10 Care and maintenance


### 10.1 Care instructions

- Put a dust cover over the instrument during breaks in work.
- Keep accessories in a dust-free place when not in use.
- Remove dust with bellows and a soft brush.
- Clean the objectives and eyepieces with special optics cleaning cloths and pure alcohol.
- Protect the surgical microscope from moisture, vapors, acids, alkalis, and corrosive substances. Do not keep chemicals near the instrument.
- Protect the surgical microscope from improper handling. Never install other device sockets or unscrew optical systems and mechanical parts unless explicitly instructed to do so in this User Manual.
- Protect the surgical microscope from oil and grease. Never oil or grease the guide surfaces or mechanical parts.
- Remove coarse debris with a moistened disposable cloth.
- To disinfect the surgical microscope, use compounds from the surface disinfectant group based on the following active ingredients:
  - Aldehydes
  - Alcohols
  - Quaternary ammonium compounds

 Due to potential damage to the materials, never use products based on:

- Halogen-releasing agents,
- Strong organic acids
- Oxygen-donating compounds

 Follow the disinfectant manufacturer's instructions.

 We recommend concluding a service contract with Leica Microsystems Service.

### 10.2 Cleaning the control panel



#### CAUTION

#### Damage to the control panel!

The light of the instrument may be harmful. Risk of eye damage increases with the duration of exposure.

- ▶ Only operate the control panel using your fingers.
- ▶ Never use hard, sharp or pointed objects made out of wood, metal or plastic.
- ▶ Never clean the control panel using cleaning agents that contain abrasive substances. These substances can scratch the surface and cause it to become dull.

- ▶ Before cleaning the control panel, switch off your Leica M620 F20 and disconnect it from the power supply.
- ▶ Use a soft, lint-free cloth to clean the control panel.
- ▶ Do not apply cleaning agent directly to the control panel, but rather to the cleaning cloth.
- ▶ To clean the control panel, use a commercially available cleaning agent for glass/eyeglasses or plastics.
- ▶ Clean the control panel without pressing.



The control panel is resistant to most disinfectants used in the medical field.

### 10.3 Maintenance

The Leica M620 F20 surgical microscope is basically maintenance-free. To ensure that it always operates safely and reliably, we recommend that you take the precaution of contacting the responsible service organization.

You can arrange for periodic inspections or, if appropriate, conclude a maintenance contract with them.



We recommend concluding a service contract with Leica Microsystems Service.



Use only original spare parts for servicing.

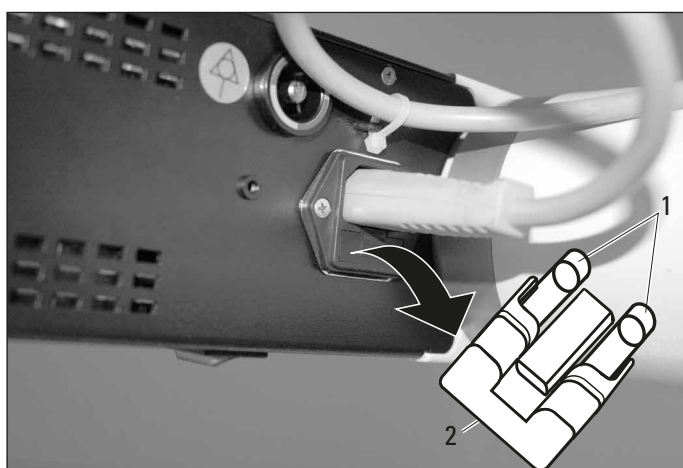
## 10.4 Care and Maintenance of the Leica Footswitch

After each operation, clean the Leica footswitch in warm or hot water (but below 60 °C). It is basically maintenance-free. In case of defects, please contact the responsible service organization.

## 10.5 Changing the fuse


### **WARNING** **Danger of fatal electric shock!**

- ▶ Disconnect the power cable from the instrument power socket before changing fuses.



The fuses are located in a fuse holder (2) in the instrument power socket.

- ▶ Using a screwdriver, pry out the fuse holder (2), then pull it all the way out by hand.
- ▶ Change out the fuses (1).

 Use only 6.3 AH time-lag fuses.

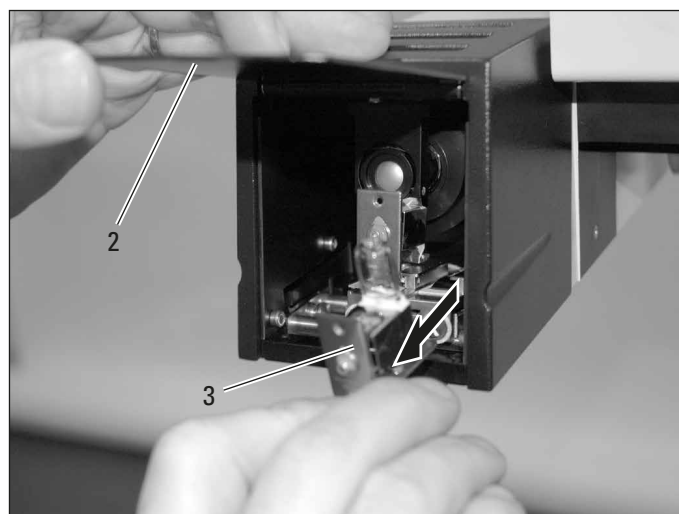
- ▶ Replace the fuse holder (2) and press it in all the way using your hand.


## 10.6 Changing the bulb

### **CAUTION** **Risk of burns!**


The lamp and illumination mount get very hot.

- ▶ Check that the lamp and illumination mount have cooled before you remove the lamp.



 Replace defective lamps immediately after an operation to ensure that a replacement lamp is available at all times. Use only genuine Leica replacement lamps.

- ▶ Open lamp replacement cover (2).

 Before replacing the lamp, disconnect the surgical microscope from the power supply.

- ▶ Pull the halogen lamp and base (3) out of its holder.
- ▶ Insert the halogen lamp and base into the holder until it clicks into place.
- ▶ Close lamp replacement cover (2)

## 10.7 Function check

### **Lighting**

- ▶ Switch on the main switch.  
Main lighting is lit.
- ▶ Switch to auxiliary illumination.  
The auxiliary lamp will light up.
- ▶ Switch back to the main lighting.

### **Footswitch**

- ▶ Position the footswitch.
- ▶ Test all the functions with the footswitch.

## 10.8 Notes on reprocessing of resterilizable products

### 10.8.1 General

#### Products

Reusable products supplied by Leica Microsystems (Schweiz) AG, Medical Division, such as rotary knobs, objective protective glasses and capping pieces.

#### Limitation of re-preparation:

Observe relevant local regulations pertaining to the re-preparation of medical products used in connection with verified or suspected cases of Creutzfeldt-Jacob disease (CJD) or its variant (vCJD). As a rule, resterilizable products used with this patient group can be disposed of safely by incineration.

#### Occupational safety and health protection

Particular attention must be paid to the occupational safety and health protection of the persons responsible for preparing contaminated products. Current regulations of hospital hygiene and prevention of infection must be observed in the preparation, cleaning and disinfection of the products.

#### Limitation of reprocessing

Frequent reprocessing has little effects on these products. The end of the product life cycle is usually determined by wear and tear and damage through use.

### 10.8.2 Instructions

#### Antimicrobial coating

The essential parts of the instruments feature an antimicrobial coating designed to prevent the spread of microorganisms.



#### **WARNING**

#### **Risk of infection!**

**This antimicrobial coating is no substitute for the usual cleaning and sterilization procedures according to the applicable regulations.**

- ▶ Clean and sterilize the instrument as usual according to the applicable regulations.

#### Workplace

Remove surface contamination with a disposable cloth / paper cloth.

#### Storage and transport

No special requirements.

It is recommended to perform the reprocessing of a product immediately following its use.

#### Preparation for cleaning

Remove the product from the surgical microscope.

#### Cleaning: manual

Equipment: Running water, detergent, alcohols, microfiber cloth.

Procedure:

1. Rinse surface contamination off of the product (temperature < 40 °C). Use some rinsing agent depending upon degree of contamination.
2. Spirits may also be used to clean the optics if heavy contamination such as fingerprints, grease streaks etc. is present.
3. Dry off products, except for optical components, with a disposable cloth/paper cloth. Dry off optical surfaces with a micro-fiber cloth.

#### Cleaning: automatic

Equipment: cleaning/disinfecting device

It is not recommended to clean products with optical components in a cleaning/disinfecting device. In addition, optical components must not be cleaned in ultrasonic baths in order to prevent damage.

#### Disinfection

The alcohol disinfection solution "Mikrozid, Liquid" may be used in accordance with the instructions on the label.

Please note that after disinfection, the optical surfaces must be rinsed thoroughly with fresh drinking water, followed by fresh demineralized water. The products must be dried thoroughly before the subsequent sterilization.

#### Maintenance

No special requirements.

#### Control and functional test

Check the security of attachment of the rotary knobs and handles.

#### Packaging

Individual: A standard PE bag may be used. The bag must be large enough for the product so that the closure is not under tension.

#### Storage

No special requirements.

**Additional information**

None

**Sterilization**

This list provides an overview of the sterilizable components available at Leica Microsystems (Schweiz) AG, Medical Division for the surgical microscope.

**Contact information of manufacturer**

Address of local agent

Leica Microsystems (Schweiz) AG, Medical Division, has verified that the aforementioned instructions for the preparation of a product are suitable for its reuse. The processing person is responsible for reprocessing with the equipment, materials and personnel and for achieving the desired results in the reprocessing installation. In general, this requires validations and routine monitoring of the process. Every deviation from the supplied instructions should also be examined carefully by the processing person to determine effectiveness and possible detrimental consequences.

**10.8.3 Sterilization table**

The following table gives an overview of the available sterilizable components to the surgical microscopes of Leica Microsystems (Schweiz) AG, Medical Division.

Art. No.	Designation	Permissible sterilization methods	
		Steam (autoclave) 134 °C, t > 10 min	Ethylene oxide max. 60 °C
10180591	Clip-on handle	X	
10428328	Rotary knob, binocular tube T	X	
10384656	Rotary knob, transparent	X	
10443792	Lever extension	X	
10446058	Protective glass, multifocal lens		X <sup>1)</sup>
10446469	Objective protective glass Leica M680/FL400		X <sup>1)</sup>
10446467	Objective protective glass Leica M840/M841		X <sup>1)</sup>
10445341	Handle for Leica M655, sterilizable	X	
10445340	Cap for Leica M655/M695, sterilizable	X	
10446842	Handle for Leica M400, sterilizable	X	
10448440	Cover, sterilizable for Leica M320 handle	X	
10448431	Objective protective glass Leica M320		X <sup>1)</sup>
10448296	Objective protective glass Leica M720, spare part (package of 10)		X <sup>1)</sup>
10448280	Objective protective glass Leica M720, assembly, sterilizable		X <sup>1)</sup>
10448581	Cover, sterilizable for Leica RUV800	X	

<sup>1)</sup> Products with optical components can be steam-autoclaved using the conditions listed above. However, this may cause a layer of dots and streaks to form on the glass surface, which may reduce the optical performance.

## 11 Disposal

The respective applicable national laws must be observed for disposal of the products, with the involvement of corresponding disposal companies. The unit packaging is to be recycled.

## 12 What to do if ...?



If electrically operated functions do not work properly, always check these points first:

- Is the main power switch switched on?
- Is the power cable connected correctly?
- Are all connecting cables attached correctly?

### 12.1 General malfunctions

Malfunction	Cause	Elimination
The swing arm moves up/down by itself.	Swing arm not properly balanced.	▶ Balance the swing arm (see page 16).
The swing arm sinks even at the highest level of the balancing scale.	Total weight of accessories and microscope too high.	▶ Reduce the total weight.
The microscope cannot be moved or moved only with a great deal of effort.	Articulation brakes too tight.	▶ Loosen the articulation brakes (see page 17).
The functions cannot be actuated via the footswitch.	A wire connection is loose.	▶ Check the main power cable. ▶ Check the footswitch connection.
	Assignment entered incorrectly on the control unit.	▶ Check the assignment of the footswitch on the control panel (see page 30).

### 12.2 Microscope

Malfunction	Cause	Elimination
No light in microscope.	Quick-change lamp mount not positioned correctly.	▶ Move the quick-change lamp mount to the other side. ▶ Slide the quick-change lamp mount fully home.
"Defective lamp warning" flashing.	Main and/or auxiliary lamp defective.	▶ Check the lamps, replace defective lamps.
The image does not remain sharp.	Eyepieces not properly seated. Dioptrics not set correctly.	▶ Screw the eyepieces all the way on. ▶ Perform dioptric correction exactly as specified in the instructions.
Undesirable reflections.	Objective cover not correctly attached to the sterile drape.	▶ Clamp the objective cover of the sterile drape to the objective with the cover tilted slightly forwards.
Image cut off at borders.	Filter holder not correctly inserted.	▶ Press the filter holder completely into the optics carrier.
XY traveling in the incorrect direction, the XYReverse icon on the control panel is flashing.	XY-reverse enabled.	▶ Reset all, or disable XY-reverse with the footswitch.

## 12.3 TV, photography

<b>Malfunction</b>	<b>Cause</b>	<b>Elimination</b>
The image on the monitor is too dark.	The video camera and/or monitor is/are not set correctly.	Optimize the settings for the camera and/or monitor (see the manufacturer's operating instructions).
	Filter in dual attachment is set incorrectly.	▶ Adjust the brightness or replace the filter in the dual attachment.
The photos are blurry.	The parfocality of the microscope is not set properly.	▶ Check the parfocality of the microscope (see page 23).
Specimen is out of focus.	The specimen is not precisely focused.	▶ Focus precisely, use graticule if necessary.



If your instrument has a malfunction that is not described here, contact your Leica Microsystems representative.

## 13 Technical data

### 13.1 Electrical data

Power socket	
F20 floor stand	Central on the horizontal arm 100-240 VAC, 50/60 Hz
Fuse	2 × T 6.3 AH 250 V
Power consumption	250 VA
Protection class	Class I

### 13.2 Surgical microscope

Magnification changer	Zoom 6:1, motor-driven; variable speed
XY-unit	50 mm movement range in both the X and Y direction Adjustable speed Automatic reset when switched on Button-operated reset option and auto reset
Focus	Motorized, 50 mm, adjustable speed Automatic reset when switched on Button-operated reset option and auto reset
Tilt	±5° manual fine adjustment
Objectives	AP0 WD = 175 mm and 200 mm f = 175 mm f = 200 mm f = 225 mm
Eyepieces	Wide-field eyepieces for persons wearing glasses 10× (optionally 8.33× and 12.5×)
Illumination	Homogeneous, coaxial illumination, 60 mm dia. Adjustable brightness 6° illumination blockable Quick-change lamp mount with 2 12 V/50 W halogen lamps IR protective filter fixed GG420 UV protective filter fixed GG475 UV protective filter switchable (optional) 2 slots for optional 32 mm dia. filters

### 13.3 Stand

Castors	4 × Ø 100 mm
Footbrakes	4 × integrated in castors
Total weight	Approx. 270 kg with max. load
Swing arm brakes	3 mechanical articulation brakes with brake knob 1 locking lever for vertical movement
Load	Max. 6.5 kg from microscope/dovetail ring interface
Space requirements rest (park) position	Base 608 × 608 mm Minimum height: approx. 1902 mm
Range	Maximum extension: approx. 1444 mm
Lift	Approx. 620 mm
Balancing	Via gas spring
Turning ranges	Axis 1 (for column): No stop Axis 2 (in the center): +180/–135° Axis 3 (over the XY coupling): +180/–155°

### 13.4 Optical data

Objective f = 175 mm				
Eyepiece	Total magnification (mm)		Field of view Ø (mm)	
	min.	max.	min.	max.
8.33 × 22	3.3	19.8	55.4	9.2
10 × 21	4.0	23.8	52.9	8.8
12.5 × 17	5.0	29.8	42.8	7.1

Objective WD = 175 mm / f = 200 mm				
Eyepiece	Total magnification (mm)		Field of view Ø (mm)	
	min.	max.	min.	max.
8.33 × 22	2.9	17.4	63.4	10.6
10 × 21	3.5	20.8	60.5	10.1
12.5 × 17	4.3	26.1	49.0	8.2

Objective WD = 200 mm / f = 225 mm				
Eyepiece	Total magnification (mm)		Field of view Ø (mm)	
	min.	max.	min.	max.
8.33 × 22	2.6	15.4	71.3	11.9
10 × 21	3.1	18.8	68.0	11.1
12.5 × 17	3.9	23.2	55.1	9.2



## 13.5 Control unit

### Connection sockets for

- Power cable
- Footswitch
- Zero point adjustment

### Display

- Brightness
- Magnification
- Speed zoom, focus, XY
- User configurations
- XY Reverse
- Defective lamps
- Footswitch settings
- Service menus

### Operation on the control panel by means of dynamic menu

- Settings brightness, magnification
- Zoom, focus, XY speeds
- Reset all, XY, focus
- Select/program individual users

## 13.6 Configurations and Weights

The stands have the following maximum load from the interfaces of the microscope:

Stand	F18	F20
Max. load	5.4 kg	6.5 kg



### WARNING

**Risk of injury through surgical microscope moving down!**

- ▶ Do not exceed the max. load when equipping components and accessories.
- ▶ Check the total weight using the load table above.



The total weight of the load is measured using the "Load table" on page 38.

## 13.7 Ambient conditions

Use	+10 °C to +40 °C +50 °F to +104 °F 30 % to 75 % rel. humidity 780 mbar to 1013 mbar atmospheric pressure
Storage	-40 °C to +70 °C -40 °F to +158 °F 10 % to 100 % rel. humidity 500 mbar to 1060 mbar atmospheric pressure
Transport	-40 °C to +70 °C -40 °F to +158 °F 10 % to 100 % rel. humidity 500 mbar to 1060 mbar atmospheric pressure

## 13.8 Electromagnetic compatibility (EMC)

### Environment for which the instrument is suitable

Hospitals except for near active HF surgical equipment and the RF shielded room of an ME system for magnetic resonance imaging, where the intensity of EM disturbances is high.

### Emissions

CISPR 11	Class A, Group 1
Harmonic distortion per IEC 61000-3-3	Class A
Voltage fluctuation and flicker per IEC 61000-3-3	Class A, Figures 3-7

### Immunity

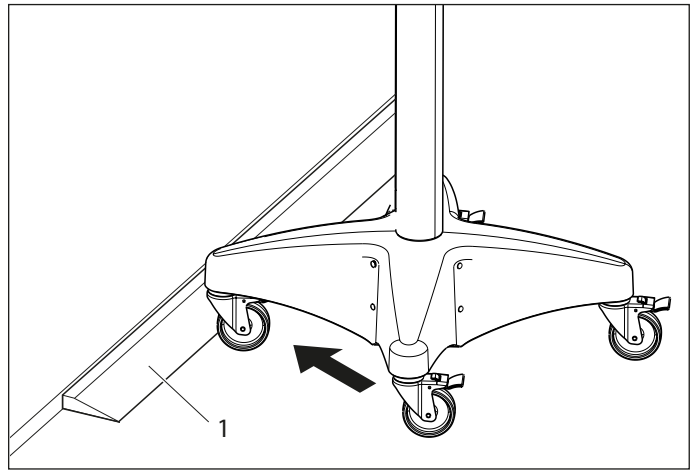
- Electrostatic discharge IEC 61000-4-2 CD +/- 8 kV, AD +/- 15 kV
- Radiated RF EM fields IEC 61000-4-3: 80-2700 MHz 10 Vm
- Proximity wireless fields IEC 61000-4-3: 380-5785 MHz 9 V/m; 28 V/m
- Electrical fast transients and bursts IEC 61000-4-4 ± 2 kV: Power supply lines
- Surges IEC 61000-4-5 ± 1 kV: Line-to-line  
± 2 kV: Line-to-ground
- Conducted disturbances, induced by RF fields IEC 61000-4-6 10 V rms
- Rated power-frequency magnetic field IEC 61000-4-8 30 A/m
- Voltage dips and interruptions IEC 61000-4-11 according to IEC 60601-1-2: 2014

### 13.9 Standards fulfilled

- Medical Electrical Equipment, Part 1: General requirements for Safety IEC 60601-1; EN 60601-1; UL60601-1; CAN/CSA C22.2 NO 60601-1-14:2014.
- Electromagnetic compatibility IEC 60601-1-2; EN 60601-1-2.
- The Medical Division, within Leica Microsystems (Schweiz) AG, holds the management system certificates for the international standard ISO 13485 relating to quality management and quality assurance.

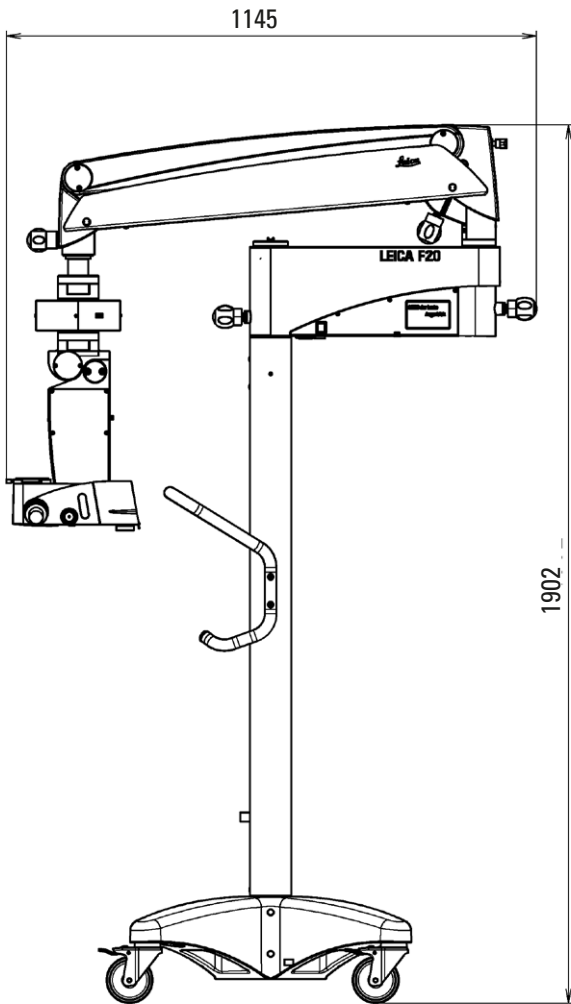
### 13.10 Limitations of use

- The Leica M620 F20 is only to be used on a strong, level floor in enclosed rooms.
- Impairments through drifting can occur at floors which have an inclination exceeding 0.3°.
- The Leica M620 F20 is not suitable for crossing thresholds higher than 20 mm.
- Without auxiliary equipment, the Leica M620 F20 can be moved across thresholds up to a max. height of 5 mm.
- To move the Leica M620 F20 over thresholds of 5-20 mm, the wedge (1) included in the packaging can be used.

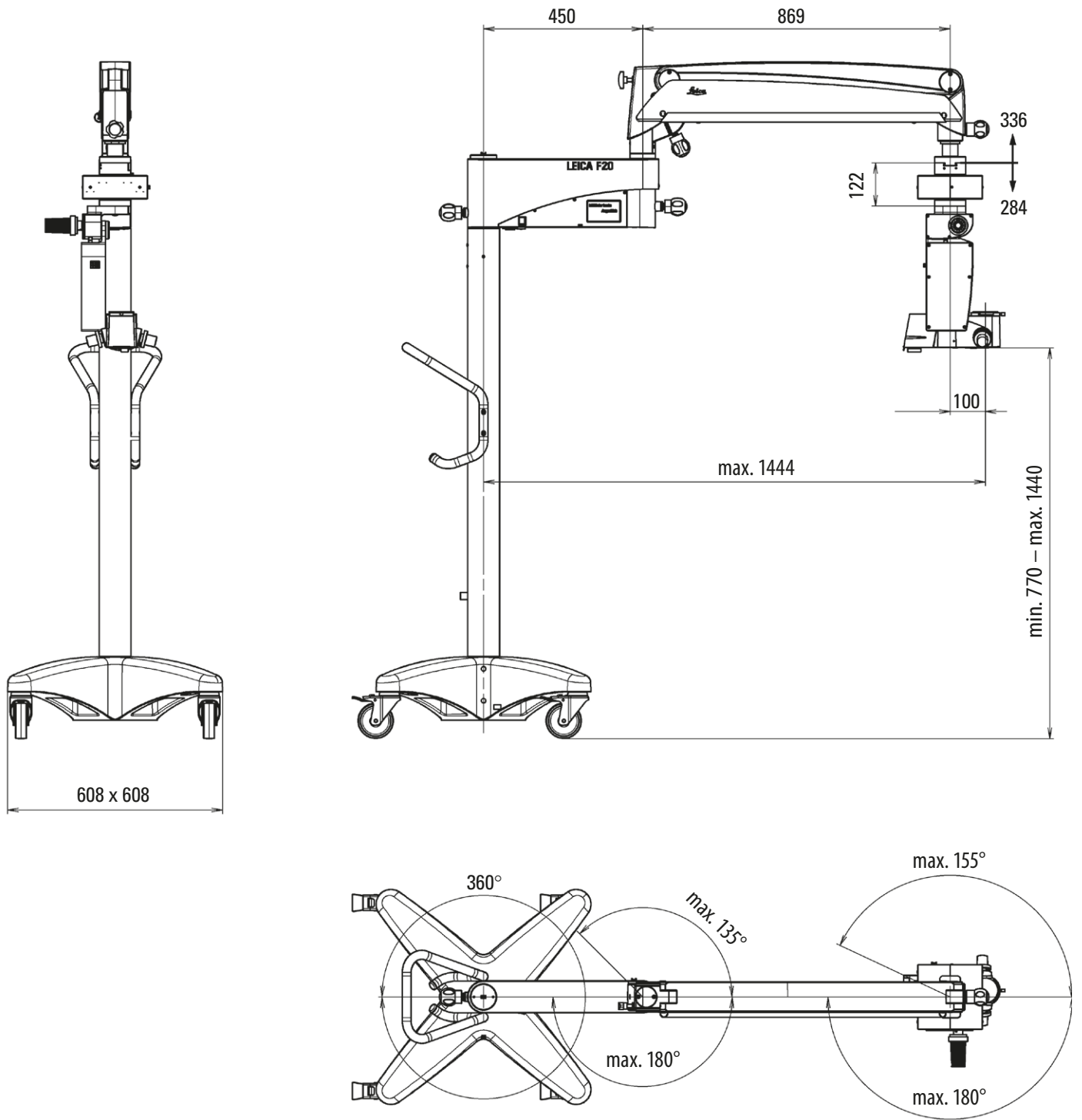


- ▶ Place the wedge (1) in front of the threshold.
- ▶ Move the surgical microscope across the threshold in transport position, pushing it by the handgrip.

### 13.11 Dimensions



Transport position (dimensions in mm)



Leica M620 F20 (unit of measure mm)





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Leica Microsystems (Schweiz) AG · Max Schmidheiny Strasse 201 · CH-9435 Heerbrugg

T +41 71 726 3333 · F +41 71 726 3399

[www.leica-microsystems.com](http://www.leica-microsystems.com)

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