Leica
MICROSYSTEMS

Motorized Focus Column
User Manual

Contents

Introduction

About this User Manual

This user manual is an essential component of the product.

It must be read carefully before the product is assembled, put into operation or used, and must be kept for later reference.

This user manual includes important instructions and information related to the operating safety and maintenance of the computing unit. In particular, follow all safety instructions (see chapter „Safety Notes“).

Warning Symbols in this User Manual or on the System

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

Symbol	Meaning
 **Caution!**	This symbol indicated a hazard with a low degree of risk that, if not avoided, can result in minor or moderate injury.
	Warning of hazardous electrical voltage! Risk of electrical shock! Failure to comply may cause the following: ■ Personal injury ■ Product malfunctions and damage

Symbol	Meaning
	Warning of crushing fingers / hands at the top or the bottom of the Motorized Focus Column! Make sure that no limbs get between the objective and the sample table during motorized vertical movement. Failure to comply may cause the following: ■ Personal injury ■ Product malfunctions and damage

Symbol	Meaning
	Do not use this instrument near sources of high electromagnetic radiation (for example, unshielded, intentionally operated ultra-high frequency sources); otherwise, the proper operation may be disrupted. We recommend assessing the electromagnetic environment before operation of the components and then giving corresponding instructions.

Other symbols in this user manual or on the system

Symbol	Meaning
	Indicates additional information or explanations that are intended to help the user employ the product in a technically correct and efficient way.
▶	■ Individual step that you must perform or ■ Several steps without given order
1. 2.	Several steps that you must perform in the given order
	Instructions for disposing of the system, its accessories and consumables. The system must be disposed of in accordance with 2012/19/EU WEEE directive.

UK Responsible Person

Leica Microsystems (UK) Limited
Larch House, Woodlands Business Park, Milton Keynes, England, United Kingdom, MK14 6FG

Copyright Information

The instructions contained in the following documentation reflect state-of-the-art technology. We have compiled the texts and illustrations as accurately as possible. Still, we are always grateful for comments and suggestions regarding potential mistakes within this documentation.

The names of companies and products used herein may be trademarks of their respective owners.

The information in this manual is subject to modification at any time and without notification.

Safety Notes

Intended Use

Reasonably foreseeable misuse

The following misuse is prohibited:

- Using the system for any purpose not in accordance with the Declaration of Conformity (e.g. using it as an in-vitro diagnostic product according to Council Directive 98/79/EC or as a medical product according to Council Directive 93/42/EEC)
- Operating the microscope in an inclined position
- Cleaning the system in a way other than specified in this manual
- Allowing unauthorized personnel to open the system
- Using cables that Leica Microsystems has not provided or permitted
- Using the system in other environmental conditions than specified in this manual
- Using combinations with non-Leica components that go beyond the scope of the manual

The manufacturer assumes no liability for damage caused by, or any risks arising from, using the microscope for other purposes than those for which they are intended or not using them within the specifications of Leica Microsystems.

In such cases, the Declaration of Conformity shall be invalid.

Intended Use (Continued)

The Motorized Focus Column is attached to microscopes that are used for routine industrial and research applications. This is used to focus the optics carrier on the object.

Intended environment

- In order to avoid overheating or corrosion of the system, only operate the system within the permissible temperature range and ambient conditions (see instructions for use of the respective microscope).
- Do not use the system in altitudes exceeding 2000 m ASL/NL.
- Protect the components from moisture, large temperature fluctuations, heat (e.g. direct sunlight, radiators or other sources of heat) and vibrations. These conditions can distort the functionality of the system.
- Do not use in rooms with flammable gases and substances.
- Do not use in a potentially explosive environment.
- Ensure free air circulation and do not cover or block air vents of the components.
- Ensure that electrical components are placed at least 10 cm away from the wall, from other devices and from flammable substances.
- Operate the system in as clean and dust-free an environment as possible.
- Position the system on a stable, even, non-slip surface.
- Ensure that the system is free-standing and easily accessible.
- Do not place multiple components, such as computing units, on one another and do not place a monitor on a computing unit.
- The system is not suitable for examining potentially infectious samples.
- Serious malfunctions due to damaged controls. Replace damaged controls immediately.

General Safety Instructions

In order to maintain this condition and to ensure safe operation, the user must follow the instructions and warnings contained in this user manual.

In addition to this user manual, the safety notes of the other manuals provided must be observed!

Instructions for the person responsible for the system

- The instrument and accessories described in this user manual have been tested for safety and potential hazards. The responsible Leica affiliate or the main plant must be consulted whenever the device is altered, modified or used in conjunction with non-Leica components that are outside of the scope of this user manual.
- Unauthorized alterations to the device or noncompliant use shall void all rights to any warranty claims and product liability.
- Ensure that the system is operated only by personnel who has been instructed by authorized Leica personnel.
- Ensure that this user manual is always available at the place where the system is in use.
- Ensure that installation is guided by the user manual.
- Ensure that all operators have read, understood and observed this user manual, and particularly the safety regulations.
- Carry out regular inspections to ensure that the authorized users are adhere to safety requirements.
- Ensure that personnel is aware of hazards and safety equipment.
- Manage the responsibilities, competences and monitoring of staff.

Instructions for the operator of the system

- In order to maintain the condition of the system and to ensure safe operation, follow the instructions and warnings contained in this user manual.
- In addition to this manual, observe the safety instructions of the other system component manuals provided (e.g. microscope, monitor or other accessories).
- Prior to connecting power or prior to operation, check the components and accessories for damage.
- Only operate the system in a technically perfect condition.
- In case of safety-related malfunctions, switch off the system immediately, disconnect it from the power supply and take suitable measures to prevent further use.
- In all cases of doubt regarding the safety of the system, switch off the system and prevent further use.

General Safety Instructions (Continued)

- In addition to the overall documentation, ensure that legal or other safety and accident prevention regulations including applicable standards and guidelines of the respective operating country are complied with.

Repairs, service work

- Refer to "Safety Concept" booklet.
- Only original Leica Microsystems spare parts may be used.
- Before opening the instruments, switch off the power and unplug the power cable.
- Avoid contact with powered electrical circuits, which can lead to injury.

Transport

- Use the original packaging for shipping or transporting the individual modules of the Motorized Focus system and the accessory components.
- In order to prevent damage from vibrations, disassemble all moving parts that (according to the user manual) can be assembled and disassembled by the customer and pack them separately.

Integration in third-party products

- Refer to "Safety Concept" booklet.

Disposal

- Refer to "Safety Concept" booklet.

Legal regulations

- Refer to "Safety Concept" booklet.

EC Declaration of Conformity

- Refer to "Safety Concept" booklet.

Health risks

Workplaces with microscopes facilitate and improve the viewing task, but they also impose high demands on the eyes and holding muscles of the user. Depending on the duration of uninterrupted work, asthenopia and musculoskeletal problems may occur.

For this reason, appropriate measures for reduction of the workload must be taken:

- Optimal arrangement of workplace, work assignments and work flow (changing tasks frequently)
- Thorough training of the personnel, giving consideration to ergonomic and organizational aspects

The ergonomic optics concept and the design of the Motorized Focus system aim to limit the strain on the user to the lowest possible level.

Safety Instructions for Potential Hazardous Areas

Electrical safety

The On/Off button does not disconnect the computing unit from the supply voltage.

- ▶ To completely disconnect it, remove the power supply from the socket outlet.

The computing unit is powered via the external power supply:

- Use the original power supply only (LPS-certified Power Supply Mean Well GST36B05-P1J).
- Make sure that the power cord is approved for use in the country in which you intend to use it.
- The cables shall be plugged or unplugged in the de-energized state. Before connecting the system, check that the supply voltage and frequency are correct at the installation site.
- Always hold the plug of power supply when removing it from the socket outlet. Never unplug it by pulling the cable.
- If the original power supply fails or is damaged, have it replaced. Original power supplies are available from your Leica branch office or Leica dealer.
- Do not repair the power supply.
- Electrical work must only be carried out by Leica Service.
- To avoid damage to the computing unit, do not plug in or unplug data lines and control circuits unless the computing unit is switched off.
- To avoid injury to the user and for cooling reasons and fire protection, never remove the covers of the components.

The electrical accessory components are not protected against water or liquid solutions. Water can cause electric shock:

- Do not immerse the components in water.
- Ensure that no liquids or objects enter the interior of the components (during cleaning, etc.).

Electromagnetic radiation

Electromagnetic radiation can disrupt proper operation:

- Do not use the components near sources of high electromagnetic radiation (for example, unshielded, intentionally operated ultra-high frequency sources).

We recommend assessing the electromagnetic environment before operation of the components and then giving corresponding instructions.

Safety Instructions for Individual Operating Phases

Transportation

- Transport and store the system only within the permissible temperature range and ambient conditions (see instructions for use of the respective microscope).
- Use the original packaging for shipping or transporting the individual components and accessories.
- In order to prevent damage from vibrations, disassemble all moving parts that (according to the user manual) can be assembled and disassembled by the customer and pack them separately.

Installation and operation

- Operate the system only within the permissible temperature range and ambient conditions.
- If the system has been stored in a cold environment or at high humidity, wait until it is completely dry and has reached approximately before operating the system.
- Before connecting the system, check that the supply voltage and frequency are correct at the installation site.
- Prior to connecting power or prior to operation, check the components and accessories for damage.
- Do not use damaged, non-functioning components or accessories. Instead, notify your Leica branch office or Leica dealer.
- In order to ensure the product reliability and warranty services, the system must be exclusively operated with the original accessories and in particular the original power cord. The user bears the risk when using non-approved accessories.

Risk of crushing at the top and bottom of the focus column!

- ▶ Make sure that no limbs get between the objective and the sample table during a motorized vertical movement.

Cleaning

- Only clean as specified in this user manual and observe the related safety regulations (see chapter "Care, Cleaning, Maintenance, Contact Details").
- Prior to any care, cleaning or maintenance work on the system switch off the power and unplug the power cable.

Safety Instructions for Individual Operating Phases (Continued)

Improper maintenance, modifications and repairs

Maintenance and repairs may be carried out only by technicians who are explicitly authorized by Leica to do so.

Unauthorized alterations to the system shall void all rights to any warranty claims and product liability.

- Ensure that only original Leica Microsystems spare parts are used.
- Avoid contact with powered electrical circuits, which can lead to injury.

Directives of European Community (EC-Directives)

The system fulfills the EU Directive 2006/42/EU (Machinery) including the requirements for electrical safety. The system also fullfills the 2014/30/EU concerning electromagnetic compatibility.

The complete system does not conform to the requirements of an IVD device according to 98/79/EC, (EU) 2017/746 (Corrigendum to Regulation (EU) 2017/746 of the European Parliament and of the Council of 5 April 2017 on in vitro diagnostic medical devices and repealing Directive 98/79/EC and Commission Decision 2010/227/EU).

System safety and EMC

Our system has been designed, produced and tested in compliance with:

- Radio interference suppression in compliance with EN 55011 class B
- EN 61326-1, Electrical equipment for measurement, control and laboratory use – EMC requirements

This product of protection class 1 is built and inspected in accordance with IEC/EN 61010-1 Safety requirements for electrical equipment for measurement, control and laboratory use.

The system meets the requirements of EU directives and carries the CE mark.

- 2006/42/EU Machinery directive
- 2009/125/EC + VO EU 2019/1782 Ecodesign requirements for energy-related products
- 2014/30/EU EMC directive
- 2011/65/EU RoHS directive

Disposal

After the end of the product's life, please contact Leica Service or Leica Sales on how to dispose of it.

Like all electronic devices, the computing unit, its components and accessories may not be disposed of as general household waste!

Please observe the national laws and ordinances which, for example, implement and ensure compliance with EU directive WEEE 2012/19/EU.

CHINA RoHS

Hazardous Substance Marking Table

Part name	Hazardous substances					
	Pb	Hg	Cd	Cr (VI)	PBB	PBDE
Printed circuit boards	x	o	o	o	o	o
Electronic components	x	o	o	o	o	o
Mechanical parts	x	o	o	o	o	o
Cables and cable accessories	x	o	o	o	o	o
Displays	x	o	o	o	o	o
Light sources	x	x	o	o	o	o
Optics	x	o	x	o	o	o

This table is prepared in accordance with the provisions of SJ/T 11364.

o: Indicates that said hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.

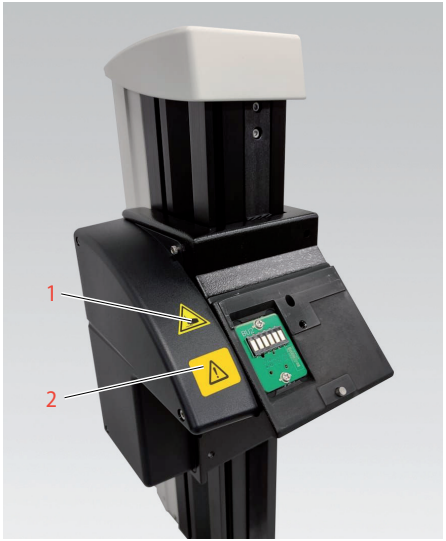
x: Indicates that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572.

End User License Agreement (EULA)

When sending or forwarding the system to third parties for any reason, or when returning the system to Leica for service or maintenance, the user should always reset the system to factory settings.

Use of network and/or other connectivity functionality provided by or with the system are at the user´s discretion and risk; specifically, the user assumes full responsibility for network operation and safety. Leica does not guarantee any particular network safety standard and declines all responsibility, without limitation, for unauthorized access, security breach, data loss or corruption, or any financial or legal consequences thereof.

Signs and Labels



1 

Warning sign for squeezing hands or fingers

2 

Warning symbol to draw attention to the careful use of the system

System Overview

Congratulations!

We congratulate you on purchasing the Motorized Focus Column from Leica Microsystems.

User Manual

User manuals and updates are also available for you to download and print from our website www.leica-microsystems.com.

This user manual describes the special functions of the Motorized Focus Column and contains important instructions for its operational safety, maintenance, and accessories.

The "Safety Concept" booklet contains additional safety information regarding the service work, requirements and the handling of the microscope, accessories and electrical accessories as well as general safety instructions.

You can combine individual system articles with articles from external suppliers (e.g. cold light sources, etc.). Please read the user manual and the safety instructions from the supplier.

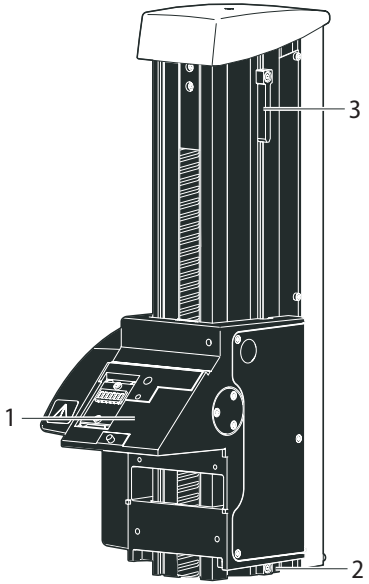
Before installing, operating or using the instruments, read the user manuals listed above. In particular, please follow all safety instructions.

To maintain the unit in its original condition and to ensure safe operation, the user must follow the instructions and warnings contained in these user manuals.

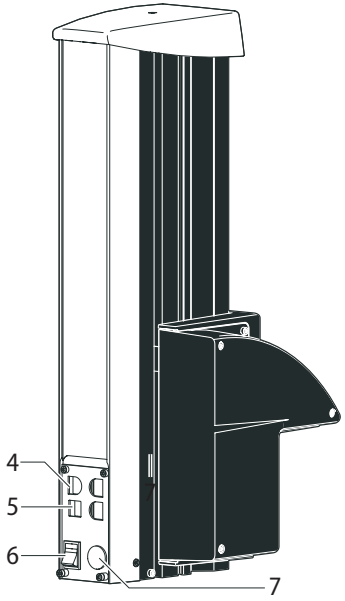
Overview of the Instruments

The Motorized Focus Column is mainly used on microscopes in laboratories, research establishments and institutes. It is used for motorized focusing of the samples.
The Motorized Focus Column is available in two different sizes:

- approx. 400 mm
- approx. 600 mm

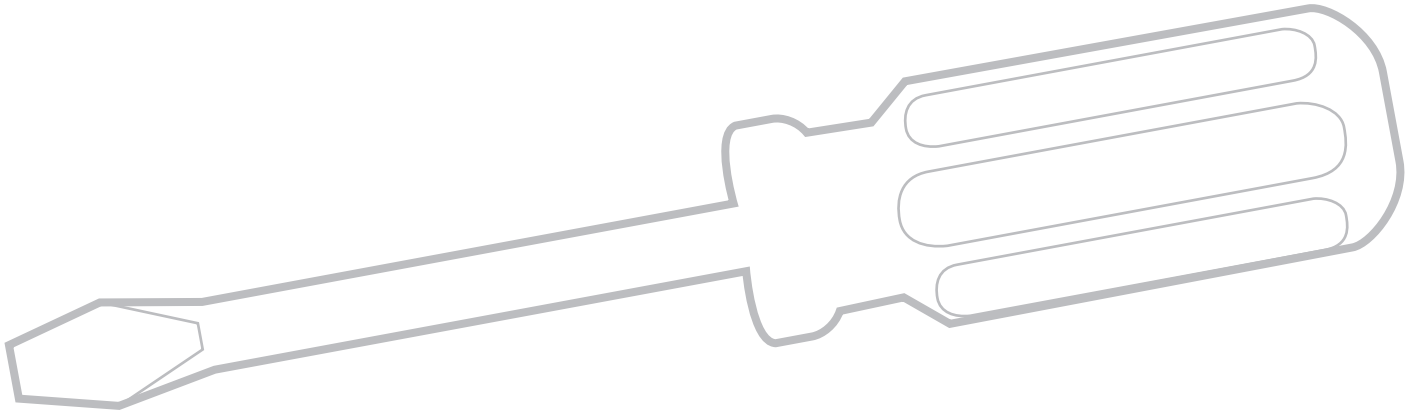


1 Interface to Microscope
2 Lower limit Stop - for adjusting travel
3 Upper limit Stop - for adjusting travel



4 3×CAN Connection
5 1× USB (2.0)
6 On-Off Switch
7 Power supply Connector (33 V)

Assembly



Adjusting the Travel Path

General notes

Depending on the work situation, it is necessary to restrict the maximum travel path of the microscope.

Crushing hazard!

- Injuries when manipulating the specimen because the fingers or hand get pinched.
- Possible contamination of the sample and other consequential damage due to unintentional contact between the objective and the sample.

▶ In the event of a power failure while the motorized focus was moving, calibrate the motorized focus.

Readjusting the motorized focus

The motorized focus is factory-adjusted and normally does not need to be readjusted - even if the maximum travel path is changed.

Exception: If the power fails while the motorized focus is moving, the position data are lost. In this case, the calibration must be repeated using the LAS X Software or the SmartTouch™. To do so, please consult the respective manual.

Restricting the bottom travel range

1. Move the motorized focus into the lowest position you want to reach.
2. Unscrew the screw of the limit stop on the side of the focusing column.

3. Push the limit stop to the height of the motorized focus.

It is easiest to move the limit stop by keeping the screwdriver inserted and moving it upwards.

4. Tighten the screw of the limit stop.

General Assembly (Continued)

Base and Focusing Column

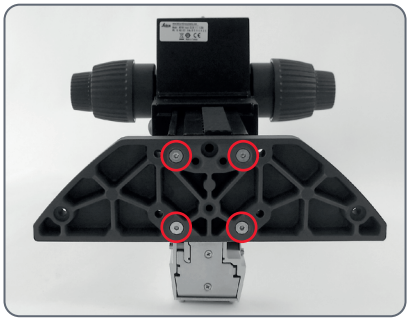
The first step is to connect the focusing column of the M series to the corresponding base.

Tools used

- Hex socket screwdriver, 3 mm

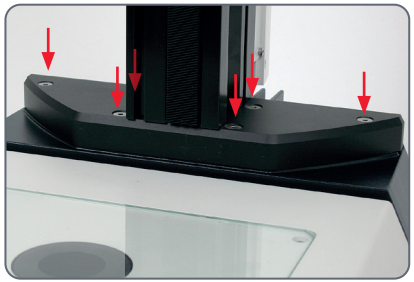
Assembling the column adapter

- Securely install the column adapter on the column using the four included screws.



Assembling the focusing column

- Securely screw the focusing column to the base using the six included screws.



Assembling the Focusing Column with an Incident-light Base

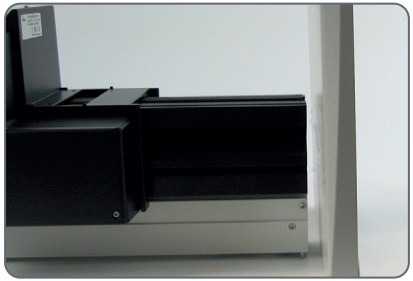
When using an incident-light base, the focusing column and motorized focus are installed directly on the base; no extension plate is required.

Tools used

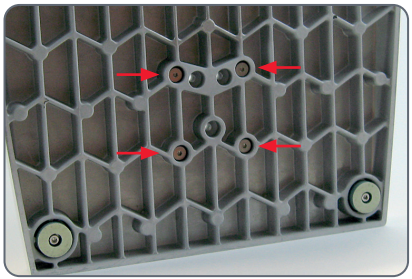
- Hex socket screwdriver, 3 mm

Assembly

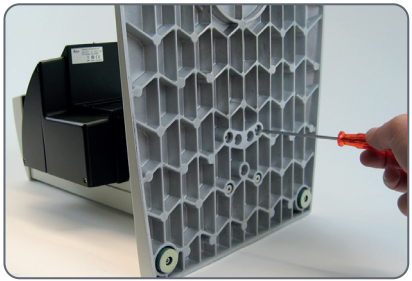
1. Place the focusing column on the side.



2. Insert the four screws provided into the outer holes of the base.



3. Screw the base securely onto the focusing column.



Care and Maintenance

Care, Cleaning, Maintenance, Contact Details

This chapter includes instructions on how to clean and protect the device to support the longlasting function of your Motorized Focus Column.

General

Leica products are renowned for their robustness and long service life. Observing the following care and cleaning tips will ensure that even after years and decades, your Leica system will continue to work as well as it did on the very first day.

Warranty benefits

The guarantee covers all faults in materials and manufacture. It does not, however, cover damage resulting from careless or improper handling.

Contact address

If your system no longer works perfectly, contact your Leica representative. You can find information on worldwide Leica representatives on the Leica website: www.leica-microsystems.com.

Protection from dirt

Dust and dirt will affect the quality of your results.

- Put an optionally available dust cover over the components when they will not be used for a long time.
- Keep accessories in a dust-free place when not in use.

Prior to any care, cleaning or maintenance work on the system

- Switch off the power and unplug the power cord.

Touching live parts or components can cause injury!

- Do not disassemble or replace parts. They must only be disassembled by Leica service specialists.

Removing the covers of the components exposes hazardous voltages. Risk of electric shock and death.

- Do not clean any interior parts yourself.
- Please contact an authorized Leica dealer for technical service.

Care, Cleaning, Maintenance, Contact Details (Continued)

Care and cleaning

Keeping all components clean is important for maintaining good optical performance. Residual fiber and dust can create unwanted background fluorescence during fluorescence microscopy.

- Remove dust and loose dirt particles with a soft brush or lint-free cotton cloth.
- Clean clinging dirt as necessary with a low-concentrated soap solution, petroleum ether or ethyl alcohol. Use a linen or leather cloth that is moistened with one of these substances.
- Do not use any unsuitable cleaning agents, chemicals or techniques for cleaning.
- Protect your components from moisture, fumes and acids and from alkaline, caustic and corrosive materials.
- Never use chemicals (e.g. thinners containing acetone, xylene or nitrogen) to clean the component, in particular colored surfaces or accessories with rubberized parts. This could damage the surfaces, and specimens could be contaminated by abraded particles.
- Test cleaning solutions of unknown composition on a less visible area of the components first. Ensure that coated or plastic surfaces do not become matted or etched.
- Protect your components from oil and grease.
- Do not grease guide surfaces or mechanical parts.

Cleaning polymer components

Some components are made of polymer or are polymer-coated. They are, therefore, pleasant and convenient to handle. The use of unsuitable cleaning agents and techniques can damage polymers.

Cleaning the microscope

Microscopes in warm and warm-damp climatic zones require special care in order to prevent the build up of fungus. The microscope optics should be kept meticulously clean.

- For cleaning instructions, refer to the microscope user manual.

Handling acids and bases

- For examinations using acids or other aggressive chemicals, take particular caution.
- Never allow the optics and mechanical parts to come into direct contact with these chemicals.

Removing immersion oil

- Follow safety notes for immersion oil.
- Wipe off the immersion oil with a clean cotton cloth.
- Re-wipe the surface several times with ethyl alcohol.

Care, Cleaning, Maintenance, Contact Details (Continued)

Maintenance, repair work and servicing

- Ensure that repairs are only carried out by Leica-trained service technicians.
- Only use cables provided and approved by Leica.
- Only use original Leica spare parts.
- If you use accessories from other manufacturers with the microscope, make sure that these manufacturers confirm that the combination is safe to use.
- Follow the instructions in the user manual for those accessories.

Danger of electric shock!

Removing the cover of the Motorized Focus exposes electrically live parts, which, if touched, can cause potentially fatal injuries.

- ▶ Have technical service carried out by a Leica Microsystems authorized dealer.

Specifications

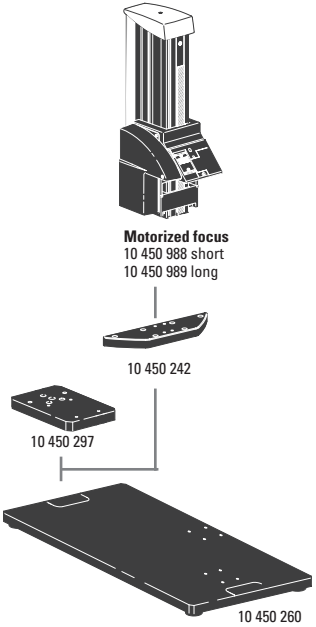
Motorized Focus Column (Continued)

	Technical data
Environment	
Operation temperature	10 °C – 40 °C
Storage temperature	-10 °C – 55 °C
Humidity (operating / storage)	10 % – 90 % RH (non condensing)
Operating altitude (maximum)	0 – 2,000 m
Storage altitude	nA
Pollution degree of intended environment	2 (office / lab environment)
Accessories	Various Leica controlling devices and Leica illumination devices
Ports and connectors	1 USB (2.0)
	3 CAN
	1 power (33 V)
Power supply	
Input	100 – 230 VAC ± 10 %, 50/60 Hz, 0.5 A – 1.2 A
Output	33 VDC, max 3.03 A (100 W)
Overvoltage category	II

	Technical data
Performance	
Travel Speed	0.2 mm/s – 25 mm/s
Resolution of Motorized Focus Column	1 um (typically)
Positioning repeatability	±2.5 um (typically - for a travel range ±1 cm)
Max. load	15 kg
Weight	10 450 988: 6.7 kg 10 450 989: 8.25 kg
Dimensions	10 450 988: 219.5×138×431 mm 10 450 989: 219.5×138×631 mm

Motorized Focus Column

Article Description



Art.No.	Description
10 450 988	Motorized Focus Column short with profile column 420 mm
10 450 989	Motorized Focus Column long with profile column 620 mm
10 450 242	Standard adapter plate between column and transmitted light base
10 450 297	Adapter for base 10 450 260 for all swinging-arm columns
10 450 260	Universal base XL for specimens up to 300 × 300 mm

Compatibility to further Leica bases available.
Please contact your local Leica Service or Sales Partner.

Leica
MICROSYSTEMS

CONNECT
WITH US!

danaher

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