



Leica DM750 M Manual

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Safety instructions

Safety Notes



Before installing, operating or using the instrument, it is mandatory to read this user manual. In particular, please observe all safety instructions.

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

You can combine individual system articles with articles from external suppliers. Please read the user manual and the safety instructions of the supplier.

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.

Warning of a danger



This symbol indicates especially important information that is mandatory to read and observe. Failure to follow these instructions may pose hazards to personnel, cause instrument malfunctions or damage the instrument.

Hazardous electrical voltage



This symbol indicates especially important information that is mandatory to read and observe. Failure to follow these instructions may pose hazards to personnel, cause instrument malfunctions or damage the instrument.

Important information



This symbol indicates additional information or explanations that intend to provide clarity.

EC Declaration of Conformity

Electrically operated accessories are constructed based on the state of the art of technology and are provided with an EC Declaration of Conformity.

Contact address

*Leica Microsystems (Schweiz) AG
Industry Division
Max Schmidheiny Strasse 201
CH-9435 Heerbrugg (Switzerland)*

Instructions on use

Intended use

The DM series microscopes by Leica are optical instruments for improving the visibility of objects through magnification and illumination. They are used for observing and documenting.

Place of use

Use the instrument in enclosed, dust-free rooms at +10 °C to +40 °C only. Protect it from oil, chemicals and extreme humidity. It must be at least 10 cm from the wall and away from flammable substances.

Interference

Avoid large temperature fluctuations, direct sunlight and vibrations. These conditions can distort measurements and micrographic images.



In warm and warm-damp climatic zones, the individual components require special care in order to prevent the build-up of fungus.

Use in clean rooms

Leica DM series microscopes can be used in clean rooms without any problems.

Handling electrical components



Never install any other plug (NEMA 5-15P) or unscrew any mechanical components unless expressly instructed to do so in the instructions.



The microscope must be connected to a grounded socket.



Always position the microscope so that you can disconnect it from the power supply at any time. The power cable is provided as the power disconnect device.

Instructions on use (continued)

Intervention from the user



The microscopes of the DM series contain no components that can be maintained or repaired by the user. Exceptions are mentioned specifically in this manual.



Unless otherwise specified in this manual, repair and service work may be carried out by authorized Leica technicians only.



Unauthorized alterations to the instrument or noncompliant use shall void all rights to any warranty claims.

Maintenance



Leica DM series microscopes are 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. Here you can arrange for periodic inspections and conclude a maintenance contract (recommended).

Accessories

Only those accessories may be used that are listed in this user manual or for which safe use has been confirmed by Leica Microsystems.

Danger of infection



Direct contact with eyepieces is a potential transmission method for bacterial and viral infections of the eye. The risk can be kept to a minimum by using personal eyepieces for each individual or detachable eyecups.

Assembling the Leica DM750 M


Assembling the Incident Light Axis

Assembly

1. Place the incident light axis with the heat sink facing backwards onto the tripod mount.
2. Align the incident light axis according to the tripod geometry.
3. Fasten the incident light axis into place by tightening the setscrew.



Assembling the Viewing Tubes

 There are two types of viewing tube. Identify which viewing tube you have:



Type 1: Leica EZ Viewing Tube with integrated eyepieces



Type 2: Standard tube with separate eyepieces

Assembly


1. Loosen the setscrew (on top of the stand) using the Allen key provided.
2. Set the dovetail into the tripod mount and tighten the setscrew carefully. This way, the tube automatically shifts to the correct position on the optical axis of the microscope.



Leica EZ Viewing Tube with Integrated Eyepieces



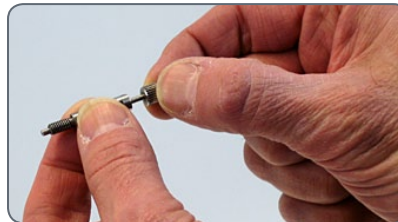
Leica EZ Viewing Tube with integrated eyepieces

 Loosen the setscrew at the stand or replace the setscrew with the optional wingscrew to rotate the Leica EZ Viewing Tube.

1. In order to use the wingscrew, remove the setscrew that was delivered with the stand.



2. Detach the wing screw part completely before the screw is used on the stand.




3. Reinstall the Leica EZ Viewing Tube onto the stand.




4. Tighten the wingscrew using the wrench included in the delivery package.



Leica EZ Viewing Tube – integrated eyepieces (cont.)

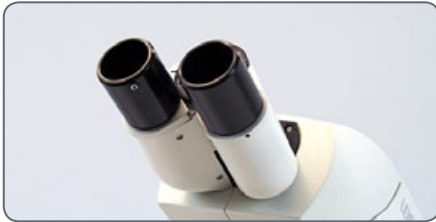
 Now, you can rotate the Leica EZ Viewing Tube by loosening the wingscrew, bringing the tube to the desired position and tightening the wingscrew again.

 The eyepieces are integrated into the Leica EZ Viewing Tube and preset; therefore, there is no need to adjust or install the eyepieces.


Continue with the "Eyecups" section on [page 13](#).



Leica Standard Tube with Separate Eyepieces



Standard tubes; tubes do not include eyepieces yet


 The standard tube includes a rotatable dovetail. Therefore, you can now rotate the standard viewing tube freely in any orientation.

1. Insert the eyepieces into the tubes.




2. Secure the eyepieces in the tubes by tightening the silver screws at the bottom.




 The eyepieces can still be rotated, but no longer detached from the tubes.

Eyecups

 If you wear eyeglasses for microscope viewing, keep the rubber eyeguards folded down. If you do not wear eyeglasses, you may find it useful to unfold the rubber eyeguards in order to help block out ambient room light.



 If you have purchased a standard microscope configuration, the objectives are pre-installed on the objective nosepiece and the specimen stage condenser is installed onto the stand. In this case, continue with the "Use" section starting on [page 17](#). If you have purchased your Leica DM750 M in individual components and not according to the standard configuration, continue with the "Installing Objectives" section on [page 14](#).

Installing Objectives

Installing Objectives



When rotating the objective nosepiece, always use the knurled ring on the objective nosepiece.

While rotating the objective nosepiece clockwise, screw the objectives into the objective nosepiece. Start with the lowest magnification.



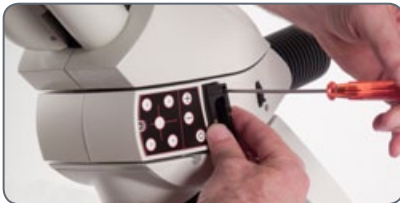
Conversion to Incident Light Polarization

Installing the polarizing adapter

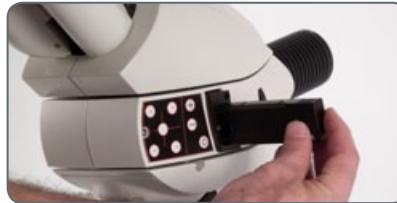
1. Unscrew the screw and remove the cover. The opening for the polarizing adapter is now accessible.



2. Insert the polarizing adapter into the opening and tighten the screw.



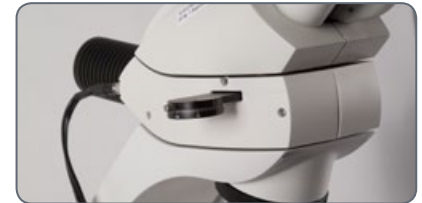
3. Insert the polarizer into the polarizing adapter.



4. Remove the cover of the analyzer.



5. Push the analyzer into the opening as far as it will go.



Use

Switching on the Microscope

Precautionary measures



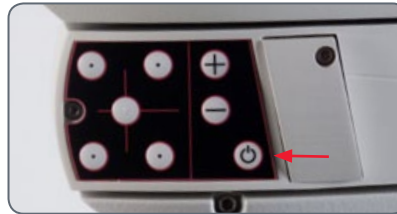
The light of the Leica DM750 M can be very bright. Therefore, only look into the eyepieces *after* you have switched on and reduced the illumination (see item 3)!

Connecting and switching on the microscope

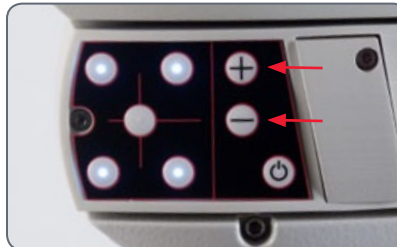
1. Connect the power supply unit and the power cable with the incident light axis of the Leica DM750 M and secure the plug using the retaining ring on the incident light axis!



2. Switch on the illumination by briefly pressing the power switch.




3. Look through the eyepieces and adjust the brightness to the desired level.




The brightness can be adjusted in 15 increments.

Modifying the Aperture Diaphragm

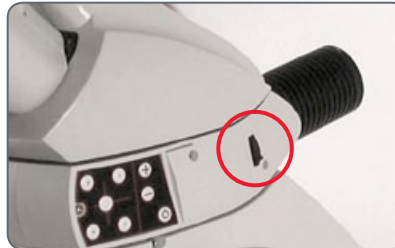
Aperture diaphragm

 The aperture diaphragm of the incident light axis can be opened or closed. An open aperture diaphragm generates a higher resolution with a decreased depth of field. A closed aperture diaphragm, on the other hand, reduces the quantity of light and resolution capacity, but the depth of field is increased.

 The aperture diaphragm must be completely open for all oblique light illumination scenarios.


Opening / closing the aperture diaphragm


1. Close the aperture diaphragm by moving the lever upwards.
2. Open the aperture diaphragm by moving the lever downwards.



Illumination Scenarios

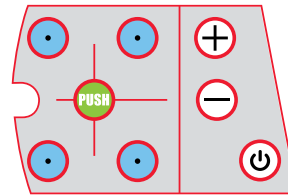
Illumination Scenarios

 You can adjust the incident light axis illumination to your needs and requirements using the membrane control panel.

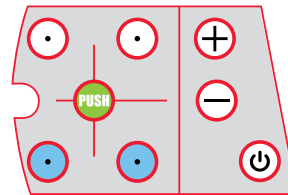
 The aperture diaphragm must be completely open for all oblique light illumination scenarios.

Changing the illumination mode

Press the button in the middle once to switch between bright-field illumination and oblique illumination (oblique incident illumination).



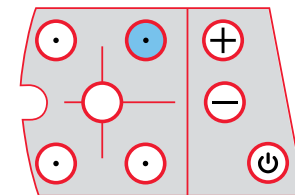
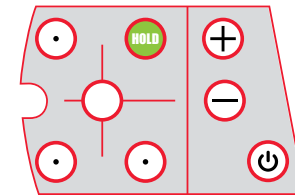
Bright field illumination



Oblique illumination

Individual light field (oblique light)

Hold a button pressed longer than two seconds to activate only one of the four light fields for oblique illumination. Combinations with other light fields are also possible.

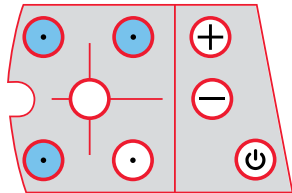
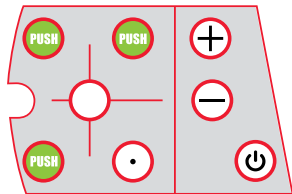


Individual light field

Illumination Scenarios (continued)

Adding light fields

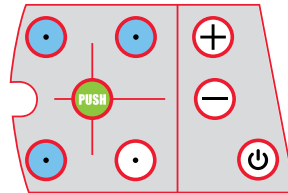
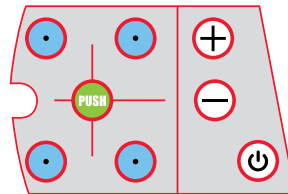
Press a button only briefly to switch an additional light field on or off.



Any arrangement

Switching to bright field

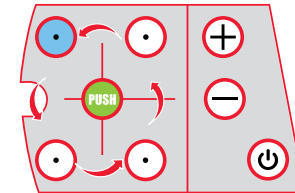
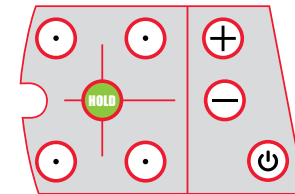
Press the middle button briefly to toggle between bright-field illumination and the previously selected oblique light configuration.



Switching between bright field illumination and the most recent setting

Automatically calling up oblique light illumination scenarios


Hold the middle button pressed longer than two seconds; as long as you do not release the button, the next light field is activated every two seconds.




Switching automatically between the light fields

Using Specimen Holders

Additional specimen holders

 Specimen holders are available in two different versions, with a diameter of 25 mm and 30 mm:

- Order number for 25 mm version: 13 613 167
- Order number for 30 mm version: 13 613 168

 The maximum height of the specimen is 30 mm.

Inserting the specimen holder

1. Unscrew the ring from the specimen holder.
2. Insert the specimen.
3. Screw the ring onto the specimen holder.




4. Set the specimen holder into the stage aperture and push it to the rear as far as it will go.




5. Position the specimen by moving the stage and looking through the eyepieces simultaneously.




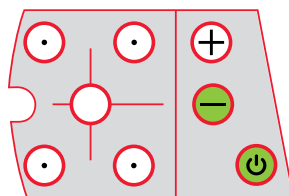
Automatic Shutoff of Illumination


 The illumination of the Leica DM750 M is shut off automatically if the user does not make any modifications for two hours. This setting can be changed.

 If the incident light illumination is disconnected from the power supply and then reconnected, automatic shutoff is always activated (factory setting).


Deactivating delayed shutoff

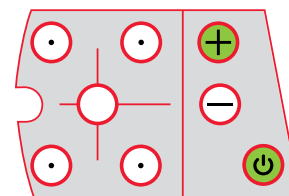
1. Switch the incident light axis off.
2. Hold the  button pressed while switching on the incident light axis.




 After the delayed shutoff is deactivated, the LED flashes three times slowly and then stays steady.

Activating delayed shutoff

1. Switch the incident light axis off.
2. Hold the  button pressed while switching on the incident light axis.



 After the delayed shutoff is activated, the LED flashes three times quickly and then stays steady.



Conversion and Use with Transmitted Light

Optional Koehler Illumination

Transmitted illumination



For the Leica DM750 M, there are two condensers available for optimum transmitted illumination. Determine which type of illumination is used for your instrument since this will be important later.

Type 1: Standard condenser

Adjustable condenser centering with tool kept at the ready:




Type 2: Koehler condenser

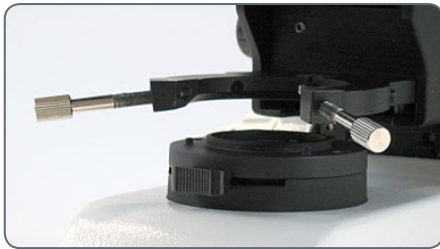
Adjustable condenser centering with wingscrews and adjustable Koehler field diaphragm:



Installing the Condenser

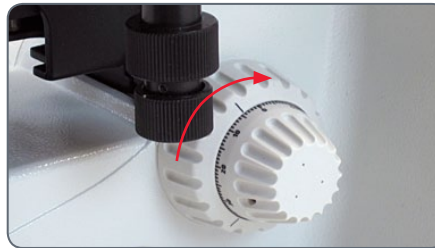
Condenser

 The Leica DM750 M is equipped with an open holder for the specimen stage condenser; in other words, the condenser must be installed.

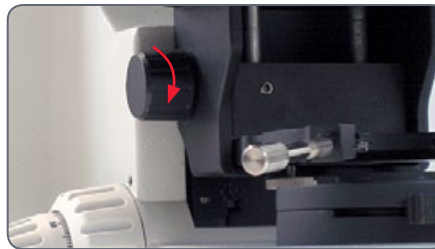


The holder of the condenser is open

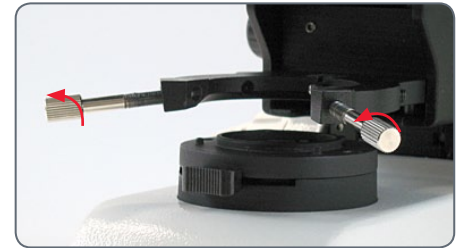
1. Move the specimen stage upwards as far as it will go using the coarse focusing knob.



2. Move the condenser holder into the lowest position using the condenser focusing knob.



3. Unscrew the two setscrews (or wingscrews for Koehler stands) on the condenser holder.



Installing the condenser (continued)

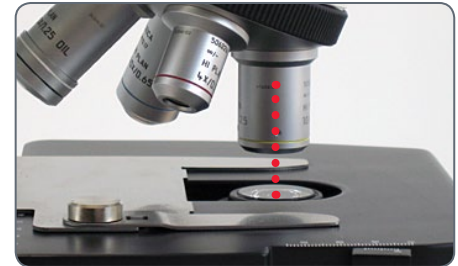
4. Push the condenser under the specimen stage into the holder by aligning the locating pin on the bottom of the condenser with the slot on the rear side of the fork.



5. Move the condenser into the highest position using the condenser focusing knob.



6. Tighten the two setscrews (Koehler stand wingscrews) so that the upper lens of the condenser is centered under the objective in working position and the specimen stage condenser is thus roughly centered.



i How to center the condenser more precisely is described in the section entitled "Complete Condenser Centering" on [page 28](#).

Switching on the Microscope

Precautionary measures



The light of the Leica DM750 M can be very bright. Therefore, do not look into the eyepieces until *after* you have switched on the illumination!

Connecting and switching on the microscope

1. Plug the power cable of the microscope into a corresponding grounded socket.



2. Reduce the brightness to the minimum.



3. Switch on the microscope using the switch at the bottom right of the microscope stand.



4. Look through the eyepieces and adjust the brightness to the desired level.

Complete Condenser Centering

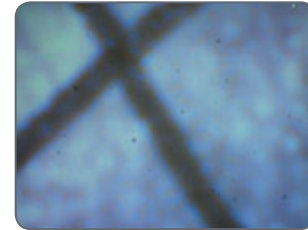
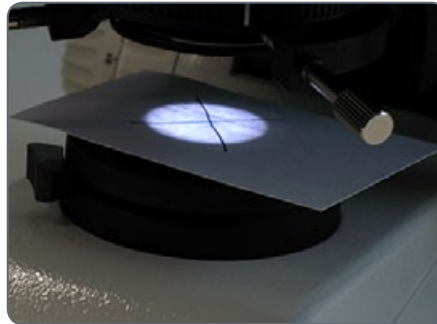
Complete Condenser Centering

1. Open the condenser aperture by rotating the knurled ring on the condenser to the right.

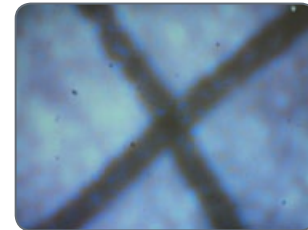


Make sure that the condenser is in the highest position.

2. Write an "X" on a piece of paper in the size of a business card and place it onto the light output of the microscope stand in such a way that the "X" is centered over the illumination.



Not centered




Centered

3. Look through the eyepieces and center the "X" in the field of view by tightening the setscrews. (Leica DM750 M with Koehler illumination: tighten the knurled screws).

Complete Condenser Centering (cont.)

4. For a Leica DM750 M with standard condenser (without Koehler field diaphragm), you can now lock the condenser into its position by tightening the setscrews on both sides of the condenser fork using the tool included in the delivery package.


 For a Leica DM750 M with Koehler field diaphragm, center and focus the condenser more precisely. The procedure is described in the "Koehler Configuration" section on [page 36](#).



Setscrew

Using the Condenser

Using the Condenser

 The condenser is furnished with an iris diaphragm, which can be adjusted to match the effective numerical aperture of the objective.

1. To open and close this diaphragm, simply turn the knurled ring on the condenser to the right or to the left so that the line on the ring is aligned with the objective magnification used.
2. Open the iris diaphragm of the condenser completely by turning the condenser ring all the way to the right.



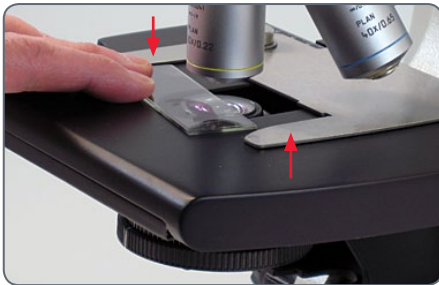
The line on the ring is aligned with the objective magnification used.

Preparation for Viewing a Specimen Slide

1. Position a specimen slide on the specimen stage by sliding it under the slide grips.
2. Position the specimen slide such that a part of the specimen is under the objective used.



Slide grips hold the slide in place.



Slide grips

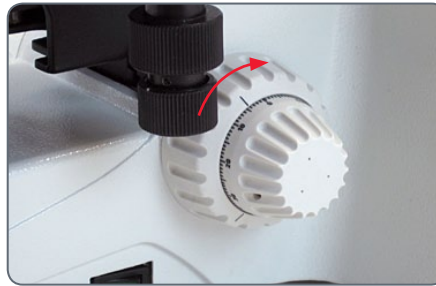


Focusing


1. Rotate the objective nosepiece in such a way that the objective with the lowest magnification level is in the working position.



2. Move the specimen stage upwards by turning the coarse focusing knob as far as it will go to the maximum position.



3. Look into the eyepieces and adjust the illumination intensity to the desired level.

 The stand of the Leica DM750 M has been calibrated at the factory so that the focus can be found from this position within 1.5 rotations of the fine focus.

4. Bring the specimen into focus using the fine focusing knob.



Viewing Tube Adjustment

Adjust the eyetubes

1. Adjust the tubes to your interpupillary distance. Fold or unfold the eyetubes to decrease or increase the distance between the eyepieces until you see one illuminated circle.



Leica EZ Viewing Tube

- If you are using a Leica EZ Viewing Tube, which has eyepieces that are integrated into the tubes, no further adjustments are required. Simply wear your glasses or contact lenses.
- For Leica DM750 M with Koehler field diaphragm, continue with the "Koehler Configuration" section on [page 36](#).

Standard Viewing Tube with Two Fixed Eyepieces

- If you are using a standard tube with two fixed eyepieces (no focusing eyepieces), no further adjustments are required. Simply wear your glasses or contact lenses.
- For Leica DM750 M with Koehler field diaphragm, continue with the "Koehler Configuration" section on [page 36](#).

Viewing Tube Adjustment (cont.)

Standard tube

If you are using a standard viewing tube with one or two focusing eyepieces, you need to make some adjustments.

1. Set the focusing eyepieces to "0".



i If you are comfortable wearing your corrective lenses (contact lenses or eyeglasses) for microscope viewing, leave them on and your adjustments will be minimal.

2. Bring the specimen into focus using the fine focus setting knob while looking through only one of the eyepieces. Cover your other eye.



i If you are using one focusable and one non-focusable eyepiece, look through the non-focusable eyepiece.

3. Now look with the other eye just through the other eyepiece (focusing eyepiece). Bring the specimen into focus using the focus function of the eyepiece.



When doing so, do not change the height of the specimen stage.

4. Grip the knurled ring on the focusing eyepiece with one hand and rotate the top of the eyepiece with the other hand until the specimen is in focus for this eye and this focusing eyepiece. This corrects for any vision differences between your right eye and left eye.

Viewing Tube Adjustment (cont.)

5. Now, switch to an objective with a high magnification level and bring the microscope into focus while looking through the eyepieces with both eyes.



The depth of field is lower for higher magnification levels. Thus, you will notice that if you switch to low magnification after bringing the microscope into focus with great magnification, a minor adjustment of the fine focus may be required.

- If your DM750 M is equipped with a Koehler configuration, continue with the next section entitled "Koehler Configuration" on [page 36](#).

Koehler Configuration



If your Leica DM750 M is equipped with a field diaphragm for Koehler illumination, center the condenser as described below.

1. Adapt the Koehler field diaphragm to the base of the microscope so that the illuminated field diaphragm is in the field of view when you look through the eyepieces.

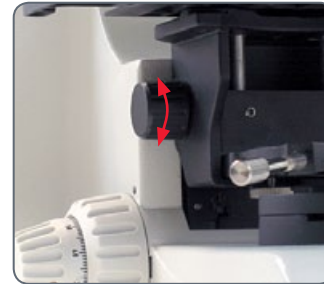


Close the Koehler field diaphragm

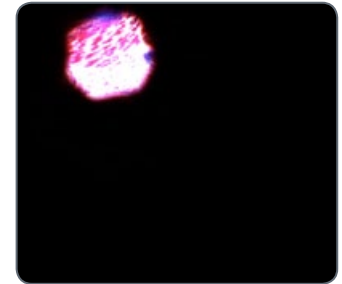


Closed Koehler field diaphragm

2. Focus the illuminated field diaphragm using the condenser focusing knob on the left side of the stage mount.



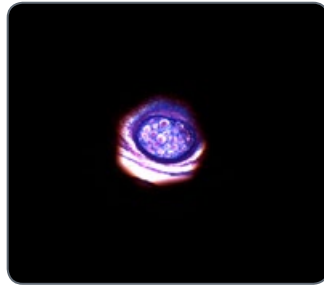
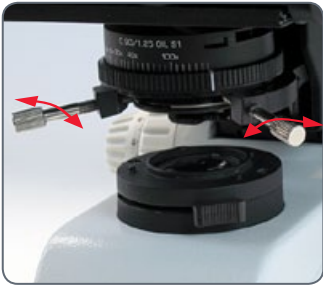
Condenser focusing knob



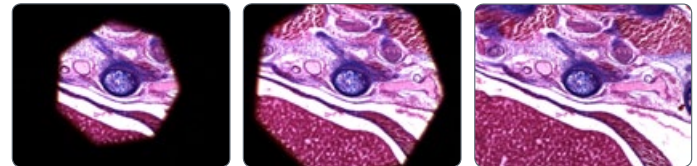
Illuminated field diaphragm is focused

Koehler Configuration (cont.)


3. Turn the condenser centering wingscrews simultaneously to center the image of the field diaphragm.




4. Open the field diaphragm until the diaphragm leaves are just outside of the field of view.




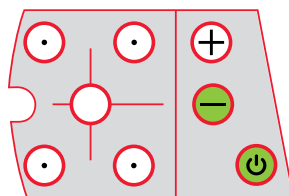
Automatic Shutoff of Illumination


 The illumination of the Leica DM750 M is shut off automatically if the user does not make any modifications for two hours. This setting can be changed.

 If the incident light illumination is disconnected from the power supply and then reconnected, automatic shutoff is always activated (factory setting).


Deactivating delayed shutoff

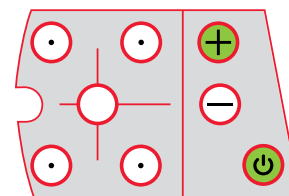
1. Switch the incident light axis off.
2. Hold the  button pressed while switching on the incident light axis.




 After the delayed shutoff is deactivated, the LED flashes three times slowly and then stays steady.

Activating delayed shutoff

1. Switch the incident light axis off.
2. Hold the  button pressed while switching on the incident light axis.



 After the delayed shutoff is activated, the LED flashes three times quickly and then stays steady.



Care and Repair Instructions

Care Instructions

General instructions

- Protect the Leica DM750 M from moisture, vapors, acids, alkalis, and corrosive substances. Do not store chemicals in the vicinity.
- Protect the Leica DM750 M from oil and grease. Never grease or oil mechanical parts or sliding surfaces.
- Follow the instructions of the disinfectant manufacturer.
- It is advisable to enter a service agreement with the Leica Service.

Cleaning coated parts and plastic parts

- Dust or dirt particles should be removed with a soft brush or a lint-free cotton cloth.
- Remove coarse debris with a moistened disposable cloth.
- Clinging dirt can be removed using petroleum ether or alcohol.
- Acetone, xylene or nitro-containing thinners must NOT be used.
- Never use chemicals to clean colored surfaces or accessories with rubberized parts. This could damage the surfaces, and specimens could be contaminated by abraded particles.

Cleaning glass surfaces

- Remove dust using a dry and grease-free brush made from hair, by blowing with bellows, or by using a vacuum.
- Remove dirt using a clean cloth that has been moistened with distilled water.
- Remove tough dirt using alcohol, chloroform or petroleum ether.

Accessories, Maintenance and Repair

Accessories

Only the following accessories may be used with the Leica DM750 M:

- The Leica Microsystems accessories described in this manual.
- Other accessories, provided that these have been expressly approved for use by Leica Microsystems with regard to safety technology.

Maintenance

- The Leica DM750 M 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.

- It is advisable to enter a service agreement with Leica Service.
- For maintenance and repair, only OEM spare parts may be used.

Service address

In case of problems, please contact us as follows:

*Leica Microsystems (Schweiz) AG
Industry Division
Max Schmidheiny Strasse 201
CH-9435 Heerbrugg (Switzerland)
Phone +41 71 726 33 28*



Specifications and Dimensions

Electrical Data and Ambient Conditions

Fuse Replacement



Unplug the instrument before changing any fuses. The Leica DM750 M includes two fuses that are located behind the power cable compartment.



Only use the following fuse types: 5×20 mm, 1 A/250V, fast-acting fuse (# 13RFAG30003)

Electrical data

Input: 100-240 V, 50/60 Hz, 5 W (3 W LED)

Environment

Temperature for use	+10 °C ... +40 °C
Storage temperature	-20 °C ... +52 °C +50 °F ... +104 °F
Manipulation shock	25 mm on 50 mm hard wood
Transport shock (unpacked)	100 g / 6 ms
Transport shock (packed)	800 mm free fall
Transport vibrations (unpacked)	5–200 Hz / 1.5 g
Air pressure during use and storage:	500–1060 mbar
Humidity during use and storage:	20–90%
Installation Category II (Overvoltage Category)	
Pollution degree 2	

Dimensions (in mm)

