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Transmitted- light Base TL BFDF (MDG 29)

User Manual

Leica
MICROSYSTEMS

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Dear User

Thank you very much for your trust in Leica Microsystems. We hope you will enjoy working with our high-quality, efficient products, and wish you much success.

In developing our instruments, we put much emphasis on a simple, self-explanatory operation. However, take your time to read the user manual, in order to familiarize yourself with your stereomicroscope for optimal use of all its benefits and options. Should you have any questions, please consult your local Leica representative. You will find the address of the closest local representative, as well as valuable information about products and services from Leica Microsystems on our homepage at www.leica-microsystems.com

We are gladly at your service. CUSTOMER SERVICE is a big thing with us. Not only before the sale, but afterwards as well.

The user manual

This user manual is available in 20 additional languages on our interactive CD-ROM.

User manuals and updates are also available for download on our homepage at www.leica-microsystems.com.

The user manual at hand describes safety instructions, assembly, and handling of the TL BFDF transmitted-light base.

Safety concept

1.1 The user manual

The TL BFDf transmitted-light base comes with an interactive CD-ROM containing all relevant instructions in 20 additional languages. Keep this CD-ROM in a safe place, where it is available to the user. User manuals and updates are also available for download and printout on our homepage at www.stereomicroscopy.com.

The TL BFDf transmitted-light base is a module in the Leica M stereomicroscope series. This user manual describes the special functions of the transmitted-light base and contains important instructions for operating safety, maintenance and the accessory parts.

The M2-105-0 user manual for the Leica M stereomicroscopes contains additional safety rules for the stereomicroscope, accessories and electrical accessories, as well as instructions for maintenance.



Before assembly, start up and use, please read the user manuals mentioned above. In particular, please observe 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.

1.1.1 Symbols used



Warning of danger

This symbol indicates information, which must be read and obeyed. Disregarding these instructions

- can cause personal harm!
- can lead to malfunction and damage to instruments.



Warning of dangerous electrical voltage

This symbol indicates information, which must be read and obeyed.

Disregarding these instructions

- can cause personal harm!
- can lead to malfunction and damage to instruments.



Warning - hot surface

This symbol warns against touching hot surfaces, e.g. those of light bulbs.



Important information

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

Action

- ▶ This symbol within the text indicates that certain actions must be carried out.

Explanatory notes

- This symbol indicates additional notes and explanations provided in the text.

Figures

(1.5) Numbers in brackets within the descriptions relate to the figures and the items within those figures. Example (1.3): Figure 1 is located, for example, on Page 8, and item 3 is the adjustment button for the light intensity.

1.2 Safety regulations

Description

The TL BFDF transmitted-light base fulfills the highest requirements for observation and documentation of the Leica M-series stereomicroscopes. It contains a path-folding mirror, a device for partial pupil illumination and relief contrast generation, a ground-glass screen, an additional condenser and Fresnel lenses. The complete stand consists of:

- TL BFDF transmitted-light base
- Column 300 mm or 500 mm long with focusing drive, manual coarse/fine or motorized focus
- Glass stage plate, clear, 220×170×4mm
- external cold light source of your choice

Accessories:

- Gliding stage
- Leica MATS Thermocontrol System with heating stage
- Polarization set and many more (see Expansion diagram)

Intended uses

The TL BFDF transmitted-light base is used for assembling Leica M series stereomicroscopes with column and microscope carrier.

Prohibited uses

Using the transmitted-light base TL BFDF, its components, and accessories in a way contrary to this user manual, can lead to bodily harm and damage to objects. Never:

- change, rebuild or take apart parts, if not specifically instructed to in this manual.
- allow non-authorized persons to open parts of the instrument.
- use the TL BFDF transmitted-light base for examination and surgery of the human eye.

Units or accessories described in the user manual have been checked for safety and possible dangers. For any changes to the instrument, modifications or combinations with non-Leica components that exceed the scope of this manual, consult the appropriate Leica office or the Leica headquarters in Wetzlar!

Unauthorized changes of the unit or improper use renders the warranty null and void.

Place of use

- Only use the TL BFDF transmitted-light base in closed, dust free rooms and between +10°C and +40°C. Make sure that the rooms are free of oil vapors or other chemical vapors, and extreme humidity.
- Set up the electrical components at least 10cm from walls and combustible objects.
- Avoid large deviations in temperature, direct sunlight and shocks. This can cause faulty measurements or microphotographs.
- In warm, or warm and humid climates, the TL BFDF transmitted-light base requires special care to prevent formation of fungus.

Operator responsibilities

Make sure that

- only authorized and trained personnel is allowed to operate, maintain and repair the TL BFDF transmitted-light base and its accessories.
- all operators have read, understood and observe this user manual, and particularly the safety instructions.

Repairs, Service

- Only Leica Microsystems trained service personnel or authorized technicians of your company should repair the equipment.
- Only use original Leica Microsystems parts.
- Before opening the devices, turn off the power and unplug the main power cables.



Avoid contact with powered electrical circuits which can lead to injury.

Transport

- Use the original packaging for shipping or transporting the TL BFDF transmitted-light base and the accessory components.
- To prevent damage by vibrations, remove and separately pack all the moving components which you have installed yourself (as outlined in the User Manual) and install the transport anchors.

Integration in third-party products

The following must be observed if Leica products are built into third-party products: The manufacturer of the complete system or the person putting it on the market is responsible for adhering to applicable safety regulations, laws and guidelines.

Disposal

The products described here must be disposed off in accordance with applicable local environmental laws and regulations.

Legal requirements

Adhere to general and local regulations relating to accident prevention and environmental protection.

EC declaration of conformity

The TL BFDF transmitted-light base and the accessories have been constructed according to the state of the art and issued with an EC declaration of conformity.

Controls



Fig. 1 Leica MZ16 with ErgoTube™, coarse/ fine drive, TL BDFD transmitted-light base, standard stage and 4xslides

- 1 Adapter plate for easy assembly of focusing drives
- 2 Standard stage 10 447 269
- 3 Button to toggle between bright field and dark field

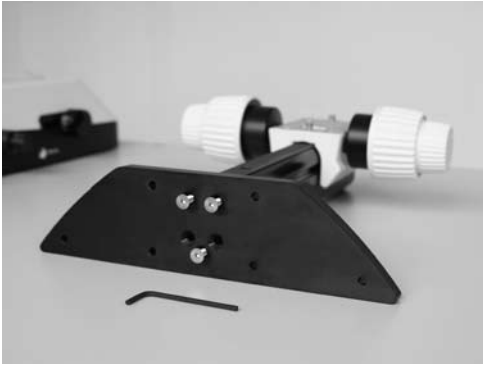


Fig. 2 TL BFDf transmitted-light base adapter plate



Fig. 3 Adapter at the focusing drive



Fig. 4 Button to toggle between bright field/ dark field (here: Button in dark field position)

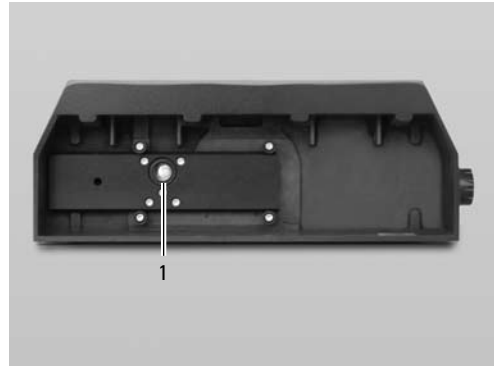


Fig. 5 Rear side of TL BFDf transmitted-light base
1 Connector for cold light sources (light conductor active $f = 10\text{mm}$, end tube $f = 13\text{mm}$)

Important information before first use



Unpacking the Leica BFDF transmitted-light base

- Unpack the base on an adequately sized, level and nonskid underlay.
- Read and understand the User Manual included with this transmitted-light base.





2

Removing the transport anchors

Before you can use the transmitted-light base for the first time, it is absolutely necessary to remove the two transport anchors as follows:

- from the rear side of the transmitted-light base - remove anchor of the switching slide
- from the top of the base - remove the anchor of the mirror





Before unpacking, make sure no persons can be injured by falling or tilting parts.

3.1 Unpacking the base

The base is delivered with the adapter plate attached. The selected stage (IsoPro™ cross-stage or standard stage 10 447 269), and the focusing drive will have to be mounted later. Make sure the devices are unpacked on a flat, sufficiently dimensioned, and non-slip surface.

3.2 Stage assembly

The TL BFDF transmitted-light base can be equipped with two different stages. The selected stage is mounted on the base before startup. The two stages can be easily exchanged at any time.

The following paragraph assumes the base without the stage mounted. Disassembly is performed in reverse order of the following steps.

3.2.1 Standard stage

- ▶ Take the glass plate from the rectangular gap in the standard stage.
- ▶ Position the stage on the transmitted-light base in such way that the four holes align over those in the base.
- ▶ Attach the stage to the base with the four supplied Allen screws.
- ▶ Re-insert the glass plate back into the standard stage.

3.2.2 IsoPro™ cross-stage

Before the IsoPro™ cross-stage is mounted to the base, the axis containing the control buttons is attached either on the left or the right side of the cross-stage.

If the controls shall be mounted on the left hand side, the gear rod on the bottom side of the cross-stage must be unscrewed and re-attached in reverse.

- ▶ Take the glass plate from the cross-stage.
- ▶ Turn the cross-stage around and place it onto a non-slip surface.
- ▶ Change the gear rod (6.2) from the left to the right hand side.
- ▶ Skip the next two steps to mount the controls.

Control assembly

- ▶ Take the glass plate from the cross-stage.
- ▶ Turn the cross-stage around and place it onto a non-slip surface.
- ▶ Attach the axis with the control buttons (6.1) to the desired side. The fastener snaps into the cross-stage magnetically.
- ▶ Attach the axis with the two supplied Allen screws.
- ▶ Attach the cover rail to the cross-stage.

Cross-stage assembly

- ▶ Place the cross-stage onto the base.
- ▶ Pull the upper part of the cross-stage carefully toward the user, fixing the lower part onto the transmitted-light base.
- ▶ Attach the cross-stage evenly to the three threaded holes.
- ▶ Push the cross-stage all the way back to the fence in direction of column.
- ▶ Re-insert the glass plate back into the standard stage.

3.3 Focusing drive > column

- ▶ Unscrew the adapter plate (1.1) from the base using the supplied Allen key.
- ▶ Attach your focusing drive column to the bottom with the three Allen screws (2).
- ▶ Re-attach the adapter plate to its original position with the three Allen screws.

3.4 Intermediate adapter assembly

The distance between focusing and optical axis is larger on the new TL BFDf transmitted-light base. To balance this, mount the supplied adapter between column and microscope carrier.

- ▶ Attach the adapter (3) to the focusing drive for the pins to lock in recess.
- ▶ Attach the adapter using the supplied Allen key.

3.5 Equipment assembly

Once the adapter is mounted to the focusing drive the microscope carrier, optics carrier and the entire equipment can be assembled as usual.

3.6 Connecting the cold light-source to the TL BFDf transmitted-light base

- ▶ Push the appropriate end of the cold light guide into the rear side of the base.
- ▶ For further information about the use of cold light sources refer to the instructions supplied separately.

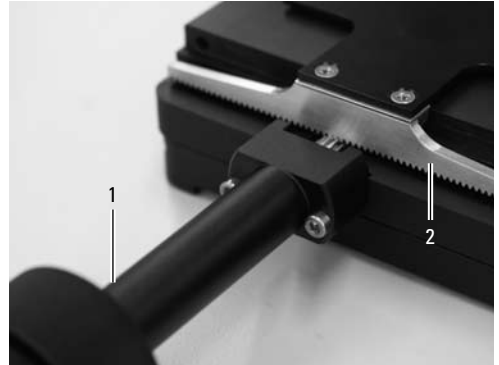


Fig 6 Rear side of IsoPro™ cross-stage

- 1 Axis with controls
- 2 Gear rack, mounted to cross-stage

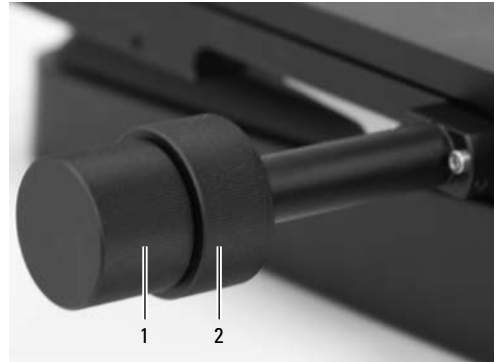


Fig. 7 Cross-stage controls

- 1 Control button for x-direction movement
- 2 Control button for y-direction movement

Operation

4.1 Light intensity control



Please observe the user manual and in particular the safety regulations of the manufacturers of the light guide and cold light source.

- ▶ Turn on the cold light source according to the manufacturer's user manual and connect, activate, and adjust the light intensity.

4.2 Transmitted-light control

The TL BFDF transmitted-light base has a potentiometer that switches the light from "bright field" to "dark field".

4.2.1 Bright field

Bright field is suited for transparent objects with structures that are rich in contrast. The object is illuminated directly from the bottom to appear pin sharp and in natural colors on a bright surface.

- ▶ Turn the control button to limit "BF" ("bright field").

4.2.2 Dark field

Ring illumination is used for dark field illumination, so that no direct light reaches the objective without an object. Only the structure of semi-transparent, opaque objects, like foraminifera or fish eggs, disperse the light, making the object visible against a dark surface.

- ▶ Turn the control button to limit "DF" ("dark field").

4.3 Operating the cross-stage IsoPro™

- ▶ To move the stage in X direction rotate the outer knob (7.1)
- ▶ To move the stage in Y direction rotate the inner control ring (7.2)

Care, maintenance

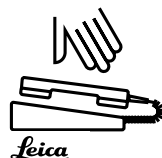
In this chapter we would like to explain and help you understand the careful handling of your valuable instrument, and provide you with some tips for proper maintenance and cleaning.

We guarantee quality You are using a precision instrument with many performance features.

As appropriate for such instruments we guarantee the quality of our products. This guarantee covers all manufacturing and material defects of the original equipment, but not any damages that are the result of inappropriate use or negligence.

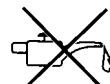
Please handle your valuable optical instrument with the appropriate care. If you do so you will be able to enjoy many decades of accurate service by this equipment without any deterioration. This is the reputation of our equipment.

Should your equipment, however, no longer provide accurate service, please contact your authorized service representative, your Leica distributor or directly Leica Microsystems (Switzerland) Ltd., CH-9435 Heerbrugg.

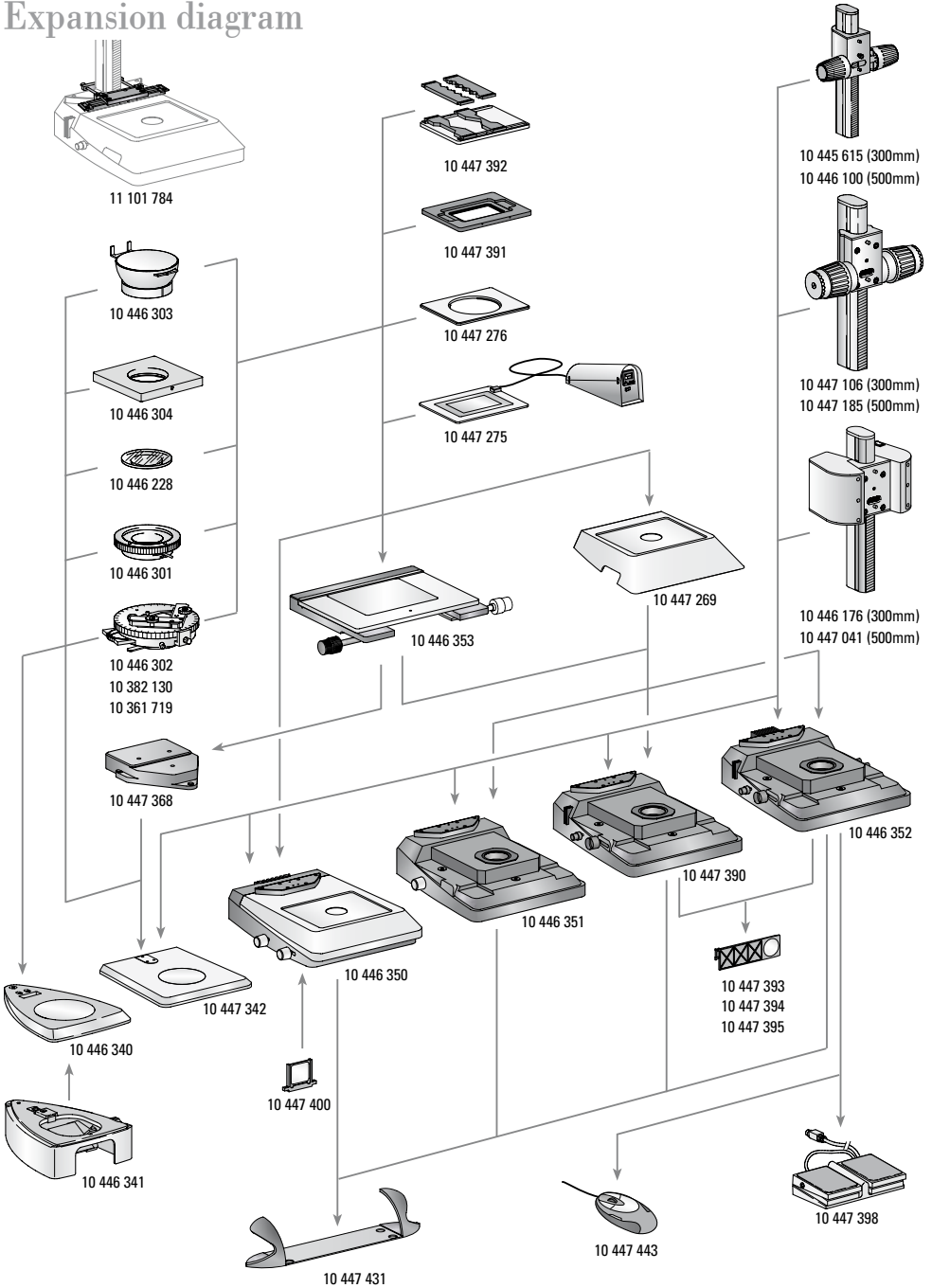


Protect your instruments

- Protect from moisture, fumes, acids, bases and corrosive materials. Do not store any chemicals in close proximity of the instrument.
- Protect from inappropriate use or handling. Never use off-brand electrical connectors or wires; never disassemble optical systems or mechanical components, if no particular reference is made to that purpose in the instructions.
- Protect from oil and grease. Slide surfaces and mechanical components shall never be lubricated.



Expansion diagram

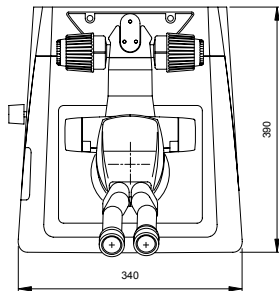
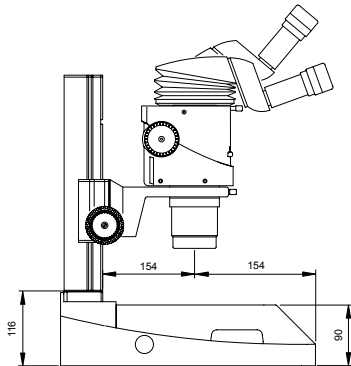
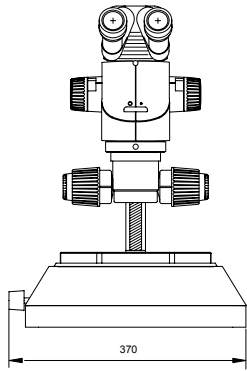


Scope of delivery

	Incident-light bases		
10 446 340	Incident-light base for S series	10 445 615	Focusing drive with profile 300mm column for incident and transmitted-light bases
10 446 341	Sub-base for transmitted-light for S series incident light base		
10 447 342	Incident-light base for M series	10 446 100	Focusing drive with profile 500mm column for incident and transmitted-light bases
10 446 350	TL ST transmitted-light base		
10 446 351	TL BDFD transmitted-light base	10 447 106	Focusing drive, coarse/fine, with 300mm profile column for incident and transmitted-light bases
10 447 390	TL RC™ transmitted-light base for external cold light sources	10 447 185	Focusing drive, coarse/fine, with 500mm profile column for incident and transmitted-light bases
10 446 352	TL RCI™ transmitted-light base with integrated halogen illumination		
	Stages		
10 447 269	Standard stage for TL BDFD, TL RC™ and TL RCI™ transmitted-light bases	10 446 176	Motorized focus drive with 300mm column and power supply for incident and transmitted-light bases
10 446 353	Cross-stage for TL BDFD, TL RC™, TL RCI™ transmitted-light bases and incident-light base (with adapter 10 447 368)	10 447 041	Motorized focus drive with 500mm column and power supply for incident and transmitted-light bases
10 447 368	Adapter between cross-stage and 10 447 342 incident light base		
			Filter
10 447 275	Thermo stage Leica MATS TL with controller	10 447 400	Day light filter for TL ST base
10 447 276	Adapter for stages with Ø120mm	10 447 394	Fluorescence filter BG38 for transmitted-light bases TL RC™/ RCI™ or PC
10 447 391	Stage for LifeOnStage accessory	10 447 395	UV filter for bases TL RC™/ RCI™
10 447 392	Universal carrier for Petri dish, slides (up to four pieces) etc.	10 447 393	Filter ND (gray filter) for bases TL RC™/ RCI™
			Illumination
11 101 784	Column adapter for micromanipulation	10 447 443	Leica USB mouse, five key mouse, freely assignable for connections to transmitted-light bases TL RCI™ or PC
10 446 301	Sliding stage, Ø120mm		
10 446 302	Polarization stage, Ø120mm	10 443 401	USB cable to connect TL RCI™ base to a PC
10 382 130	Object guide for polarization stage	10 447 398	Foot switch with CAN bus connector
10 361 719	Compensator Red I for Pol rotating stage		
10 446 303	Cup stage, Ø120mm		
10 446 304	Universal carrier, Ø120mm		
10 446 228	Glass insert with Pol, Ø120mm	10 447 431	

Dimensions transmitted-light base

Dimensions in mm



Technical data

	Leica TL BDF
Light source	external via cold light source
Illuminated area	40mm
Connections	Connection for cold light conductor, active f=10mm, end tube f=13mm
Weight	5.8 kg
Illumination types	
Bright field	yes
Dark field	yes
Oblique light	no
Relief Contrast System (RC™)	no
CCIC (Constant Color Intensity Control)	no
Internal shutter/Lamp control	yes*
Integrated filter holder	no
Coated optic to Raise of color temperature	no
Matching of high num. aperture	yes**
Remote control possibility	yes***
AntiShock™ Pads	yes
Size of the base (W×H×D, in mm)	340×390×90

*with cold light source Leica CLS150 LS **concave mirror *** with external light source

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Our expertise in microscopy is the basis for all our solutions for visualization, measurement and analysis of micro-structures in life sciences and industry. With confocal laser technology and image analysis systems, we provide three-dimensional viewing facilities and offer new solutions for cytogenetics, pathology and materials sciences.

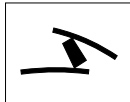
• Specimen Preparation

We provide comprehensive systems and services for clinical histo- and cytopathology applications, biomedical research and industrial quality assurance. Our product range includes instruments, systems and consumables for tissue infiltration and embedding, microtomes and cryostats as well as automated stainers and coverslippers.

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