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Transmitted- light Base TL ST (MDG 28)

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 placed great value on a simple and self-explanatory operation. However, take your time to read the user manual, in order to familiarize yourself with the optimal use of all the benefits and options of your stereomicroscope. 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.

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www.stereomicroscopy.com

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.stereomicroscopy.com.

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

Safety concept

1.1 The user manual

The TL ST 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 print-out on our homepage at www.stereomicroscopy.com.

The TL ST transmitted-light base is a module of 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 its accessories.

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



Before assembly, start up and use, please read the user manuals quoted 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 disfunction and damage to instruments.



Warning of dangerous electrical voltage

This symbol indicates especially important information which must be read and obeyed.

Disregarding these instructions

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



Warning - hot surface

This symbol warns you of tangible, hot points, such as 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 operations 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 ST 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 ST transmitted-light base
- Column 300mm or 500mm long with focusing drive, manual coarse/fine or motorized focus
- Glass stage plate, clear, 220×170×4mm
- 12V/20W halogen illumination

Accessories:

- Gliding stage
- Leica MATS Thermocontrol System with heating stage
- Polarization set

Intended uses

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

Prohibited uses

Using the TL ST transmitted-light base, its components, and the accessories in any way contrary to the 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 ST transmitted-light base for examination or surgery of the human eye.

The units or accessory components described in the user manual have been checked for safety and possible dangers. Always consult the responsible Leica office or Leica headquarters in Wetzlar any time you need to adjust the unit or add non-Leica components which go beyond the scope of this manual.

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

Place of use

- Only use the TL ST 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 fluctuations in temperature, direct sunlight and vibrations. This can cause faulty measurements or microphotographs.
- In warm, or warm and humid climates, the TL ST transmitted-light base requires particular 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 ST transmitted-light base and its accessories.
- operators have read, understood and follow the instructions in this user manual, particularly the safety instructions.

Repairs, service

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



Touching powered circuits can lead to personal injury.

Transport

- Use the original packaging for shipping or transporting the TL ST transmitted-light base and the accessory components.
- To prevent damage from shocks, remove and pack specially all the moving components, which you installed yourself, according to the user manual.

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 laws and regulations.

Legal requirements

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

EU declaration of conformity

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

Controls



Fig. 1 Leica MZ12s with ErgoTube™, coarse/fine drive, and TL ST transmitted-light base

- 1 Adapter plate for easy assembly of focusing drives
- 2 Attached stage with removable glass plate 160×110mm
- 3 Button for light intensity adjustment
- 4 Button for path-folding mirror adjustment

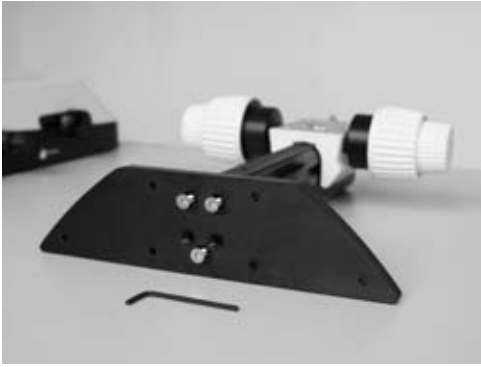


Fig. 2 TL ST transmitted-light base adapter plate



Fig. 3 Adapter between focusing drive and microscope carrier

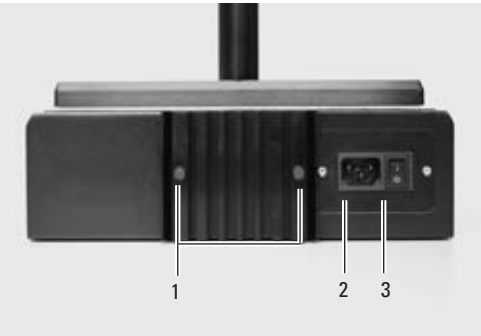


Fig. 4 Rear side of TL ST transmitted-light base
1 Screws for halogen lamp replacement
2 Power socket
3 Power switch

Assembly

3.1 Unpacking the base



The base is delivered with the adapter plate attached. Make sure the devices are unpacked on a flat, sufficiently dimensioned, and non-slip surface.

3.2 Focusing drive → column

- ▶ Unscrew the adapter plate (1.1) from base using supplied the 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.

3.3 Intermediate adapter assembly

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

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

3.4 Equipment assembly

- ▶ After mounting the adapter to the focusing drive, the microscope carrier, optics carrier, and the entire equipment can be assembled as usual.

3.5 Power cable connection

- ▶ Make sure the power switch (4.3) on the base is turned to „0“.
- ▶ Insert the power cable into the mains socket (4.2), and then connect it to a grounded outlet.

Operation

4.1 Light intensity control

The control switch (1.3) regulates the intensity of the integrated 12V/20W halogen light.

- ▶ Set the specimen onto the counter.
- ▶ Switch on the base light with the mains switch (2.3).
- ▶ Adjust the focus until the specimen appears focussed.
- ▶ Adjust the desired light intensity with the left hand control switch (1.3).

4.2 Transmitted-light control

The TL ST transmitted-light base has a slide control that tracks the path-folding mirror at the base automatically upon sliding. The mirror is kept in the correct position at all times, which allows continuous toggling between bright field, dark field, and oblique transmitted-light.

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.

- ▶ Slowly push the control towards the column, until the desired effect is accomplished.

4.2.2 Oblique transmitted-light

Transmitted-light that is eccentrically guided through the object, produces higher resolution and more information with semi-transparent, opaque objects, like foraminifers and fish eggs.

- ▶ Slowly push the control towards the user, until desired effect is accomplished.

4.3 Changing the halogen lamp



It is absolutely necessary that you unplug the power cord from the base before changing the lamp in order to prevent possible electrical shock!



The halogen lamp is getting very hot during operation. Keep the base turned off for about 10 minutes to allow for cooling and in order to prevent burns!

- ▶ Loosen the two bolts at the cooling element (11.1).
- ▶ Carefully pull out the entire cooling element, including the lamp.
- ▶ Remove the lamp holder (11.2) by pulling it from the guide rail.
- ▶ Carefully pull off the lamp including its socket from the holder.
- ▶ Remove the lamp (11.3) out of the socket.



Never touch the new halogen lamp with bare fingers since this will significantly reduce the life expectancy of the lamp!

- ▶ Push the new lamp into the socket.
- ▶ Perform all above identified steps in reverse order.

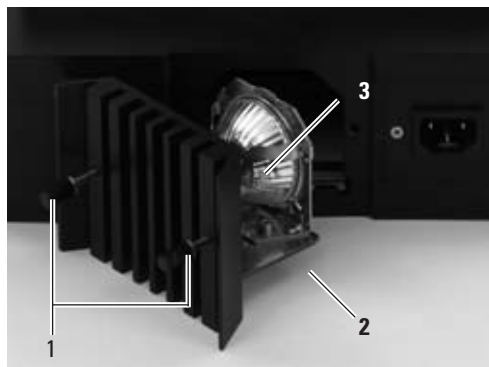


Fig. 11 transmitted-light base open lamp housing

- 1 Screws for loosening the cooling fins
- 2 Lamp holder
- 3 Halogen lamp 12V/20W

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 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.

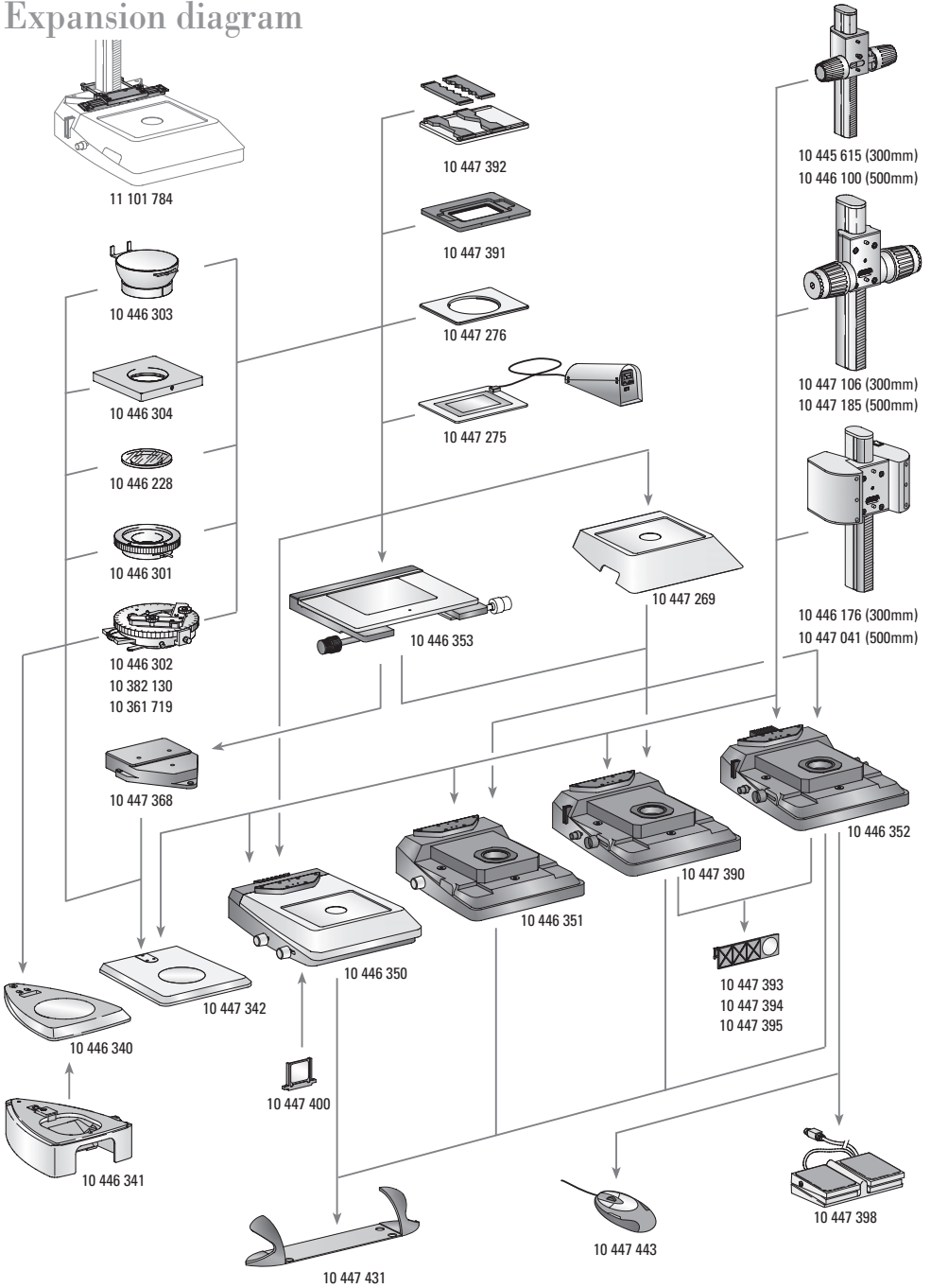


Protect your instruments

- 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.

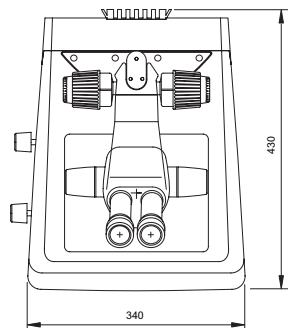
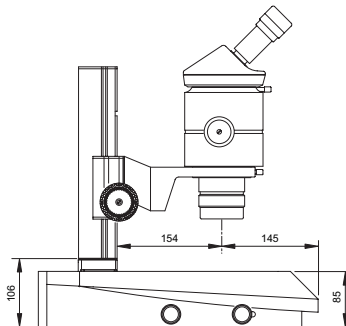
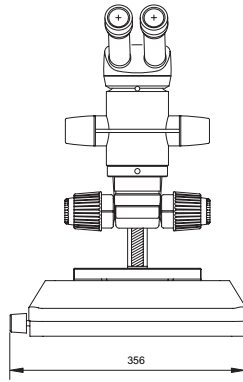


Expansion diagram



Transmitted-light base – dimensions

Dimensions in mm



Technical data

	Leica TL ST
Light source:	Halogen lamp 12V/20W
Fast exchange of illuminant	yes
Illuminated area	50mm
Mains adapter	Input voltage 100–240V~, frequency 50–60Hz Energy consumption 30W max. Ambient temperature 10–40 °C
Connections:	Mains plug, mains switch
Weight	7.4 kg
Illumination types	
Bright field	yes
Dark field	yes (one-sided)
Oblique light	no
Relief contrast system (RC™)	no
CCIC (Constant Color Intensity Control)	no
Internal shutter/Lamp control	no
Integrated filter holder	yes
Coated optic to raise color temperature	yes
Matching of high num. aperture	no
Remote control option	no
AntiShock™ Pads	yes
Base size (W×H×D, in mm)	340×430×85

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China:	Hong Kong	Tel. +8522 564 6699	Fax +8522 564 4163
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Singapore:		Tel. +65 6 77 97 823	Fax +65 6 77 30 628
Spain:	Barcelona	Tel. +34 93 494 9530	Fax +34 93 494 9532
Sweden:	Sollentuna	Tel. +46 8 625 45 45	Fax +46 8 625 45 10
Switzerland:	Glattbrugg	Tel. +41 44 809 34 34	Fax +41 44 809 34 44
United Kingdom:	Milton Keynes	Tel. +44 1908 246 246	Fax +44 1908 609 992
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Leica Microsystems (Switzerland) Ltd. Telephone +41 71 726 33 33
Stereo & Microscope Systems Fax +41 71 726 33 99
CH-9435 Heerbrugg www.leica-microsystems.com

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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.

• Medical Equipment

Innovative technologies in our surgical microscopes offer new therapeutic approaches in microsurgery.

• Semiconductor Equipment

Our automated, leading-edge measurement and inspection systems and our E-beam lithography systems make us the first choice supplier for semiconductor manufacturers all over the world.

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