

OPERATING INSTRUCTIONS

MEZZO

Welding microscope with LED-Lighting for use with PUK 3s precision welders



Dear Customer

This manual will explain the operating principles and correct maintenance of your “mezzo”.

The “mezzo” is a microscope that has been specially modified to suit the here described applications and uses. Lamperts’ stereo microscopes are precision instruments that undergo intensive testing prior to delivery, to ensure that they reach you in perfect condition. The design allows simple handling, needs only a minimum of maintenance and at the same time offers outstanding functionality.

Please read this manual carefully and clearly observe the guidelines it describes; this way malfunctions and operating errors can be avoided. Adhering to the guidelines will promote the working life of the machine and assure that it remains in constant operational readiness during this time; it will also ensure your personal safety.

This device may only be operated by qualified personnel, and then only for its designated use and in accordance with the guidelines here within. The manufacturer accepts no responsibility, and is in no way liable for damage caused by improper use or operation of the machine. Before first using your “mezzo”, please be sure to carefully read the manual sections “General Safety Requirements” and “Personal safety”.

Please retain these instructions for future reference.

A note on conformity marks

The equipment made by “Lampert Werktechnik GmbH”, fulfils the conformity requirements of CE certification and is manufactured according to VDE guidelines.

The LCD-shutters used for this microscope have been tested and authorised, and carry the DIN-CERTCO certification from the DIN authority for eye protection.

When overhauling or reconditioning our devices, we strongly advise only to use original parts. Our customer service team is at your disposal, and will gladly assist in any way they can.

The device may only be opened, or alterations carried out, by authorised customer service technicians. Non-compliance will result in all warranties and liability claims becoming void.

LAMPERT WERKTECHNIK GmbH

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A SAFETY NOTICES AND TERMINOLOGY USED



Warning!

“*Warning!*” Denotes a potentially dangerous situation. Failure to comply with these notices can result in serious injury or even death.



Caution!

“*Caution!*” These notices show a situation that can result in minor injury or damage to property if not complied with.



Please note!

“*Please note!*” Points out situations where ignoring the safety notice can negatively affect the result of work being carried out and damage the equipment.



Important!

“*Important!*” Notices are helpful hints and other particularly useful pieces of information. They do not indicate a potentially dangerous or harmful situation.

1 DESIGNATED USE

- The viewing or examining under the microscope of objects by looking through the eyeglass.
- The illuminating of the working area.

The MEZZO may only be used in conjunction with PUK – precision welders.



The MEZZO may only be used when it is correctly connected.

Any other application of the appliance other than the above stated, is prohibited.

It is prohibited to use this apparatus out of doors. Use only in dry surroundings!

2 INTRODUCTION

Arc welding without protective equipment is dangerous and can lead to a painful inflammation of the cornea. It can also lead to an irreversible clouding of the eye lenses (cataract).

The MEZZO with its integrated LCD glare protection filter offers a reliable safeguard against these dangers. It provides continuous protection against UV/IR-rays, as well as sparks and splashes, both in the filters clear setting (Luminescence DIN3) as well as in its dark setting (Obscurity DIN11).

The filter is constructed so that a dazzling from the glare of the electric arc is avoided. Shortly before an electric arc is fired, the electronic circuitry of the PUK 3s, switches the filter automatically from its clear setting (Luminescence DIN3) to its dark setting (Obscurity DIN11). The filter then returns to the clear setting again immediately after the electric arc is extinguished.

The MEZZO may only be used in conjunction with a PUK precision welding devices.

3 SAFETY INSTRUCTIONS



3-1 GENERAL SAFETY INSTRUCTIONS

The device may only be opened by a trained and qualified technician or electrician. Before opening the device remove the mains plug from the wall socket, and make sure that the machine is not receiving any electrical current. If you are unsure, or have any questions, always consult a trained and qualified technician or electrician.

Before exchanging the LED module, remove the power supply plug. Only use original replacement LED modules from Lampert.

Non-qualified persons are prohibited by law from tampering with any electrical devices that are connected to the mains power supply, or otherwise receiving current. Non-qualified persons may only operate the mains plug, power adapter or the main on/off switch.

When carrying out repair or servicing work, the machine must always be disconnected from the power supply. Throughout any work of longer duration, that requires the qualified person to leave (even if only briefly) the place where work is being carried out, the wall socket must also be securely closed off.

If it can be assumed that a safe operation of the device is no longer possible, then the machine must be shut down and removed from the power supply; it must also be secured against accidental re-operation or activation.

It is likely, and can be expected, that a safe operation of the device is no longer possible when:

- The machine will not operate.
- Malfunctions occur.
- The machine will operate, but shows visible signs of damage.



3-2 PERSONAL SAFETY AND POTENTIAL RISKS

EYE PROTECTION DURING WELDING

Do not look into the arc without adequate eye protection. Only use a welders' protective glare shield that contains a protective glass which conforms to regulations (protection class 11, minimum).

The electric arc radiates rays of heat and light that can cause the user to be burned or dazzled. In Addition to this, the arc also gives off UV-radiation. If the eyes are not adequately protected, these invisible ultraviolet rays can cause a very painful conjunctivitis, the effects of which are only noticeable several hours after exposure.

Those lingering or working in close proximity to the electric arc, must be made aware of the risks, and supplied with the appropriate protective equipment. Wherever necessary, a protective screen should be erected.

EYE PROTECTION WHILST OPERATING THE LED LAMP

Do not look into the LED Lamp, or into the reflection of the LED light, without eye protection. Always use a welders' protective glare shield with a minimum protection class of 3.

4 INSTALLATION

4-1 UNPACKING

All the parts of the MEZZO stereo-microscope have been carefully packed so that they reach you in perfect condition. We recommend that you retain the original packaging as this will be needed if ever the device needs to be sent in, if you intend to store the item for a longer period, or if it needs to be transported to a technical service centre for servicing or repair.

The packaging of the MEZZO comprises the following items:

Microscope head with mount and LCD glare protection filter (4.2 Fig.1 - 10)

Two eyepieces with eyepiece covers (4.2 Fig. 2 - 1)

Supporting arm (for holding the welding hand-piece), with integrated LED light (4.2 Fig.12)

Bearing rod (4.2 Fig.1 -11)

Base plate, for attaching the bearing rod (4.2 Fig.1 -13)

Protective cover

Tools for adjusting the focussing levels

Remove and handle all microscope components with great care.

Avoid touching the lenses and optical elements. Also avoid contact with dust, water or any other substances that could soil or damage the surface of the lenses and impair the quality of the image.

4-2 SETUP INSTRUCTIONS AND COMENCING WORK

All stages of the microscope assembly must be carried out with great care. The individual parts must not be put together using excessive force.

Mount the bearing rod (11) to the base plate (13), using the bolt that is included; tighten it with an open-ended spanner. Place upright, on a clean, flat, and stable surface.

Slide the supporting arm (12) over the bearing rod (11) and secure it slightly above the middle of the rod, tightening hand tight.

Slide the microscope head (8) and its mount with retaining screw (9) over the bearing rod (11), and secure it at about "3 fingers" width above the supporting arm for the hand-piece (12).

Insert the eyepieces (1) with eyepiece covers, and secure them with the locking screw (4).

Attach the "control lead for LCD glare protection filter (Shutter)" (15), to the back of the welding device. (Observe the guidelines in the instruction manual of the welding device).

Connect the LED light with the PUK 3s.

Insert the mains cable (16) into the connection socket marked "LED-Lamp 800 mA", on the back of the welding device.



Note!

Always test that the LCD glare protection filter (Shutter) (6) is working correctly before you start welding.

By pressing in the rotary knob "Power", of the "PUK U3" welding device, the shutter can be tested. During this process it will change from its clear setting to its dark setting, and back again.

If the LCD glare protection filter (Shutter) doesn't change from its clear to dark setting, then it must be exchanged straight away. No welding may be done unless the microscope has a fully functioning shutter.



PLEASE NOTE! WHEN USING THE MICROSCOPE WITH THE MODELS PUK111, PUK2 OR PUK3, THE LED LAMP MUST BE DISCONNECTED FROM THE WELDER.

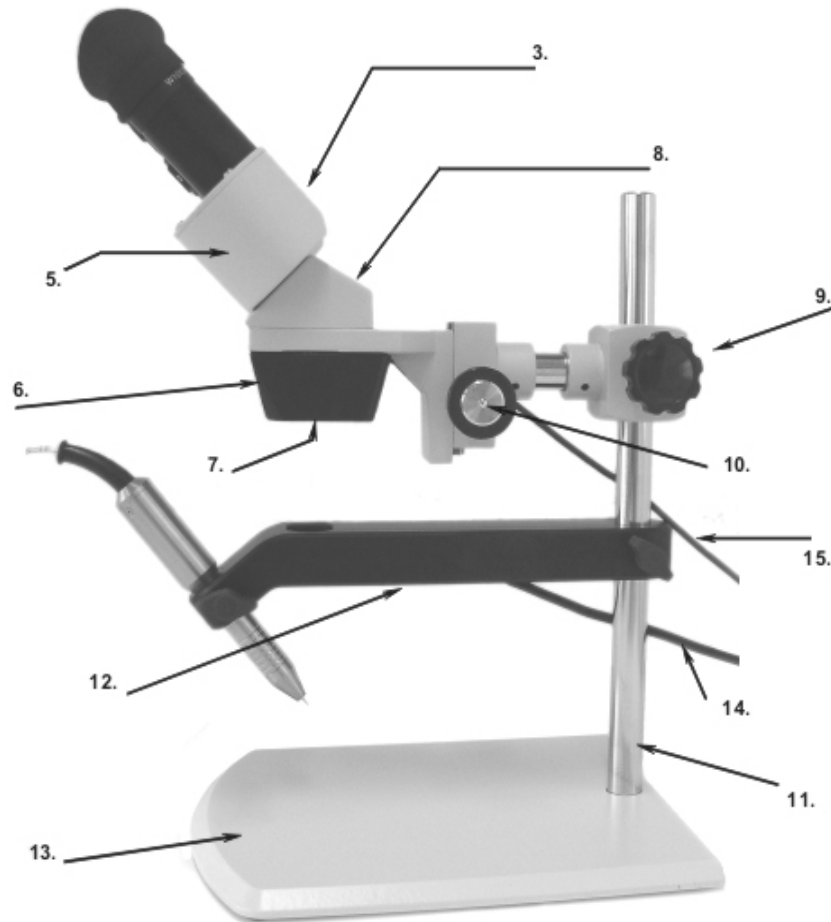
To power the LED lamp when using these models, it is necessary to **use** a transformer plug. This is available as an optional extra.

Plug in the transformer plug into a suitable mains socket.



WARNING: before connecting the stereo microscope to the power supply, check that the supply voltage is compatible with the voltage shown on the stereo microscope.

4-2 DESCRIPTION OF PARTS



(fig. 1)



(fig. 2)

- (1) Eyepiece
- (2) Dioptre adjustment
- (3) Eyepiece tubes
- (4) Locking screw
- (5) Prism casing
- (6) LCD glare protection filter (Shutter)
- (7) Protective glass
- (8) Microscope head
- (9) Retaining screw for microscope head mount
- (10) Rotary knob "Focus"
- (11) Bearing rod
- (12) Mounting for hand piece with integrated LED-lighting
- (13) Base plate
- (14) Mains cable with plug and switch
- (15) Control lead for LCD glare protection filter (Shutter)

5 INSTRUCTIONS FOR USE

5-1 FIRST STEPS

Adjust the height and position of the supporting arm (12) so that, when both hands are resting on the hand rests (14), the work piece can easily be guided to the tip of the electrode. Here remember to first correctly position the hand-piece in the supporting arm.

Switch the LED light on using the mains cable switch (16).

5-2 SETTING THE VIEWING DISTANCE

Look through the eye-pieces (1). By holding the prism casings (5), and moving them inwards or outwards, the eye-piece tubes (3) can be adjusted to the correct viewing distance for the user's eyes.

The viewing distance is correct when the complete visual field can be seen through both eyepieces and both views combine to produce the effect of a single field of vision.

The viewing distance should be individually set for each user.

5-3 FOCUSING

Mount the welding hand-piece in the supporting arm. Make sure that the hand-piece has an electrode inserted and is correctly positioned.

Turn the rotary knob “focus” (10) until a focus setting is achieved, which is midway between the min. and max. focus setting.

Adjusting the height of the microscope head mount:

Hold the microscope head (8) in one hand, (avoid touching the microscope lens). With the other hand loosen the retaining screw of the microscope head mount (9). The microscope head can now be freely adjusted in height.

Look through the eyepieces and slide the microscope head up or down on the bearing rod until the object is in focus.

Tighten the retaining screw of the microscope head mount again.

Ensure a sharp image by adjusting the rotary knob “focus” (10).

Mount the welding hand-piece in the supporting arm. Make sure that the hand-piece has an electrode inserted and is correctly positioned.

5-4 DIOPTRE SETTINGS

The ring for dioptr adjustment (2) is located on the left eye-piece tube (3). In the normal position, the lower part of the sleeve is aligned with the marking on the eye-piece tube.

When a user’s eyes have differing strengths of vision:

With only the right eye open, look through the right eye-piece (1) and set the focus using the rotary knob “focus” (10).

Now, with only the left eye open, look through the left eye-piece and adjust the focus by turning the dioptr adjustment (2) on the left eye-piece tube (3) until the viewed object is in focus.

6 CARE AND MAINTENANCE

Under normal working conditions, the stereo microscope MEZZO needs only a minimum of maintenance and care. However there are a few vital points, which when observed will ensure that the device gives lasting service in the years to come.

After finishing working with the MEZZO, always cover it with its dust protection cover.

Every so often please check all cables and plugs to make sure that they are not damaged.

Every now and then, clean the device with a soft cloth.

SHOULD ANY MAINTENANCE OR REPAIRS BE NECESSARY THAT ARE NOT DESCRIBED IN THIS MANUAL, PLEASE CONTACT YOUR LOCAL DEALER.

6-1 MAINTENANCE OF THE OPTICAL COMPONENTS

Do not try to dismantle the optical components. For repairs that are not described in this manual, please consult your local dealer or the Lampert Service Centre.

Before cleaning the lens surface, remove any dust particles with a special brush. The respective accessories can be found in every photo shop.

Cleaning the eye-pieces:

Do not remove the eye-pieces (1) from the eye-piece tubes (3).

Clean the outer surfaces and breathe on them while doing so.

Subsequently, dry the eye-piece lens using an appropriate paper or cloth. Dry the lens with circular movements, starting in the centre and working your way outwards. Avoid wiping a lens that is already dry, as it might easily be scratched.

Cleaning and replacing the protective glass of the LCD glare protection filter (Shutter):



Never dismount / detach, the LCD glare protection filter (Shutter)!

Clean only the surface. Use a soft cotton cloth dampened with window cleaning fluid. Next, dry the lens also using a soft cotton cloth.

If the protective glass (7) needs to be replaced, slide the old glass forwards out of its retaining fixture, and replace the glass in the same manner.

6-2 MAINTENANCE OF THE ELECTRICAL COMPONENTS



Warning! Danger of glare, never look directly into the LED light or its reflections!



Caution! Only operate the LED light when the LED module is mounted in the supporting arm of the hand-piece.

Changing the LED light module:

Switch the PUK off and remove the power cable of the mezzo from the PUK. Loosen the retaining screws that hold the LED module, and remove the module.

Only use replacement LED modules from Lampert Company.

Mount the new LED module in the supporting arm of the hand-piece. Remember that the module should fit flush with the underside of the supporting arm.

7 <u>TROUBLE SHOOTING</u>			
	PROBLEM	CAUSE	SOLUTION
7-1	<u>PROBLEMS WITH ELECTRICAL COMPONENTS</u>		
A	The LED light doesn't work	Cable is not attached	Switch on the cord switch Insert the mains cable (16) into the connection socket marked "LED-Lamp 800 mA", on the back of the welding device
		LED defective	Change the LED module (Chapter 6-2)
B	Shutter doesn't switch to its dark setting	Connecting cable from Mezzo, is not attached to the PUK (plugged it to the wall socket)	Attach the connecting cable for the Shutter (17) to the back of the welding device
		Shutter defective	Exchange the shutter
7-2	<u>IMAGE QUALITY</u>		
D	Poor resolution.	Eye-pieces soiled	Clean eye-pieces
E	Marks or dirt in the field of vision	Eye-pieces soiled	Clean eye-pieces
		Protective glass soiled	Clean or change protective glass
		* Note: Marks in the field of vision can also be caused by dust or dirt on the inside of the eye-pieces. We therefore recommend to always have the lenses cleaned by an authorised service technician	
7-3	<u>PROBLEMS WITH MECHANICAL COMPONENTS</u>		
F	Focus doesn't remain in the position it has been set to	The microscope head (8) slides down	Adjust the tension of the rotary knob "focus" (10)

7-4 REPAIR

Should the MEZZO need reconditioning, maintenance or repairs at any time, we recommend that it be sent, in its original packing, to the dealer where it was bought. Please include a detailed description of the fault or the reconditioning work that is required.

WARNING! The device may only be opened, or alterations carried out, by authorised customer service technicians!

7-5 TRANSPORT THE MICROSCOPE

If possible try to avoid moving the microscope.

When moving and handling the stereo microscope, carry it with both hands. Thereby holding the bearing rod (11) with one hand, and the base plate with the other (13).

Always hold the microscope upright.

8 TECHNICAL DATA

8-1 TECHNICAL INFORMATION - MICROSCOPE

- LCD glare protection filter and LED light module, for use only in conjunction with PUK precision welding devices
- Device suitable solely for welding in dry surroundings!
- Operating temperature +5°C to +40°C
- Mains Voltage for optionally available mains adapter plug ~230 V / 50-60 Hz +/-15%
- Bulb "LED-module" 2,5W / 800mA
- Protection category III
- Insulation class B
- Degree of protection IP 20
- Weight 3,7 Kg

8-2 OPTICAL INFORMATION - MICROSCOPE

- Lens 1,0
- Eye-piece lenses 10x
- Work distance 140 mm
- Degree of magnification 10x
- Size of "field of vision" in mm 20 mm

8-3 TECHNICAL INFORMATION - LCD SHUTTER

- Degree of luminescence DIN 3
- Degree of obscurity DIN 11
- Switching time <50ms
- UV protection >UV 15
- IR protection >IR 14



WARNING!

The device may only be opened by a trained and qualified technician!

Text, pictures and illustrations represent the technical stand at the time of printing; we reserve the right to make changes as necessary.

9 DISPOSAL INFORMATION:

Devices that are no longer in use (waste) can be made unserviceable by removing the mains power cable.

For EU countries only:

As specified in European directive 2002/96/ EG on waste electrical and electronic equipment, used electrical appliances must be collected and stored separately and introduced into an environmentally compatible disposal system.

10 EG-CONFORMITY DECLARATION

The Manufacturer,

Lampert Werktechnik GmbH

Ettlebener Str. 27, 97440 Werneck, Germany,

declares herewith that the following product:

Welding microscope with integrated LCD glare protection filter

MEZZO

Complies with the provisions of the above mentioned directive, including any amendments hereof, that were valid at the time of declaration.

Relevant EEC guidelines:

According to low voltage guidelines 2006/95/EG

According to EMV (electro-magnetic compatibility) guidelines 2004/108/EG

The following harmonised standards were used:

EN 60974-6

EN ISO 12100-1

EN ISO 12100-2

DIN EN 169

DIN EN 379

Person duly responsible for technical documentation: Hammer N.

Werneck, February 2010

Lampert Werktechnik GmbH

Andrea Bauer – Lampert (President and CEO)