

# OPERATING INSTRUCTIONS

## MEZZO

### Welding microscope with LED-Lighting

For using with PUK 3s welding devices



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 Tools USA, Inc.

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## A SYMBOL USAGE



### **Warning!**

“Warning!” indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. This signal word is not used for property damage hazards unless personal injury risk appropriate to this level is also involved.



### **Caution!**

“Caution!” indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices that may cause property damage.



### **Note!**

“Note!” indicates a situation which implies a risk of impaired welding result and damage to the equipment.



### **Important!**

“Important!” indicates practical hints and other useful special-information. It is no signal word for a harmful or dangerous situation.

## 1 GENERAL APPLICATION

The observation or microscoping of objects via the microscope eyepiece and work area illumination.

The MEZZO may only be used together with the „PUK“-Precision Welding Device.



**The MEZZO may only be used if set up according to the instructions.**

Any usage other than herein specified is prohibited.

Operation in outdoor areas is prohibited. Use in dry room areas only.

## 2 INTRODUCTION

Arc Welding without protective equipment is dangerous and may result in a painful inflammation of the cornea as well as irreversible cataracts. The MEZZO with integrated LCD eye-protecting filter offers reliable shield against these hazards and **permanently protects** the eyes from UV/IR-Rays, sparks and splashes in both its clear setting (Luminescence DIN3) to its dark setting (Obscurity DIN11). The protection level of the filter is constructed in such a way, that a dazzling from the glare of the electric arc is avoided. The MEZZO may only be used in conjunction with PUK welding devices. Shortly before ignition of the electric arc, the PUK's electronic control unit automatically activates the filter and switches from its clear setting (Luminescence DIN3) to its dark setting (Obscurity DIN11). The filter then lightens up again immediately after the electric arc ceases.

### 3 GENERAL SAFETY INSTRUCTIONS - READ BEFORE USING



#### 3-1 GENERAL SAFETY RULES

A professional may only open the device. Remove the power plug and make sure the device is not under live power. Always contact your professional if you are uncertain.

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

It is illegal for non-professional electricians to handle parts that are directly connected to the mains power supply, except in cases of pulling the mains plug and/or operating the main power switch.

The device must be disconnected from the mains as soon as repair or service works is needed. When leaving the place of work even for a short time, make sure that the electrical outlet is blocked clearly.

If you believe that operating the device is not possible without creating hazardous conditions, then shut off the device and secure it against unauthorised use.

It is clear that a hazardous conditions are present when:

- the device shows visible damage, or
- or when functional errors occur
- if it no longer functions properly.



#### 3-2 PERSONAL BODY PROTECTION AND DANGERS

##### EYE PROTECTION DURING WELDING

**Do not look into arc without protecting your eyes. Use only a welders' face protection shield with protecting glass that conforms to regulation (minimum protection level 11).**

The arc releases not only light and heat causing blindness or burning but also emits UV rays. If insufficient protection is used, the UV beams can cause very painful conjunctivital inflammation only noticeable after several hours.

Bystanders close to the arcs also should be made aware of possible dangerous conditions and should wear protective equipment. If necessary protective walls should be set up.

##### 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 welder's protective glare shield with a minimum protection class of 3.**

## 4 INSTALLATION

### 4-1 UNPACKING

All components of the stereo microscope are carefully packed, ensuring delivery in an immaculate condition. We recommend keeping the packaging material, as it is used for sending in the microscope or storing it for a longer period of time or transporting it to a technical service team.

The MEZZO packaging contains the following components:

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 and other polluting substances, as they soil or damage the lense surfaces and influence the quality of the view.

### ASSEMBLY AND START-UP

**Please perform all work stages involved with the assembly of the stereo microscope very carefully. The stereo microscope's individual parts and elements should not be assembled too forcefully.**

Mount the bearing rod (11) to the base plate (13) with the attachment screw and place it upright onto an even, safe and clean 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 5cm above the supporting arm for the hand-piece (12).

Insert eyepieces (1) and eyepiece covers and secure with locking screw (4)

Connect the control line (15) to the eye protection filter (shutter) (6) with the welding device (note welding device instructions!)

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.



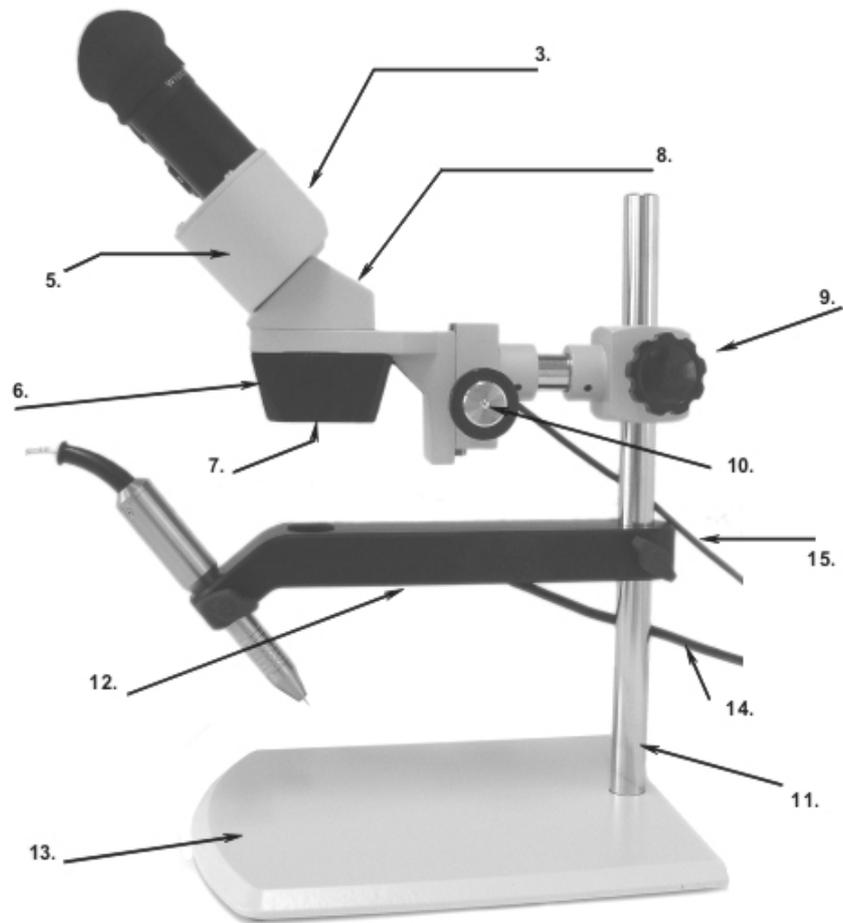
#### **Note!**

**Always test that the eye protection system (shutter) is in correct functioning order before you start welding.**

**Through a press on the power regulator of the welding device "PUK 3s", you switch the eye protection filter from bright to dark.**

**If the eye protection filter (Shutter) does not switch from bright to dark, it must immediately be replaced.**

4-2 DESCRIPTION OF THE OPERATING ELEMENTS



(fig. 1)



- (1) Eyepiece
- (2) Dioptre settings
- (3) Eyepiece tubes
- (4) Locking screw
- (5) Prism casing
- (6) Eye protection filter (shutter)
- (7) Protective glass
- (8) Head
- (9) Head mount screw
- (10) Focus knob
- (11) Bearing rod
- (12) Mounting for hand piece with integrated LED-lighting.
- (13) Base plate
- (14) Mains cable with plug
- (15) Shutter control line

## **5 INSTRUCTIONS**

### **FIRST STEPS**

Align the tool holder support in such a way that a work piece can easily, by hand, be lead to the tip of a mounted tool holder. Both hands or heels of the hand should be able to easily bear on the base plate.

### **SETTING THE VIEWING DISTANCE**

Look through the eyepieces (1) and move the eyepiece tubes (3) by holding the prism casing (5) and moving inwards or outwards.

The distance is correct once the field of view can be clearly seen through both eyepieces and both views combine into a single field of view.

The eye viewing distance should be set individually for each user.

## FOCUSSING

Mount a welding tool holder to the fixation arm with clamped electrode.

Turn the focus knob (10) to a medium enlargement setting.

Adjust the mounting height of the microscope head:

Hold the microscope head (8) with one hand without touching the lens and, with the other hand, loosen the screw (9) of the head mount. The head can now be moved.

Look through the eyepieces and move the head up and down until the object seems to be in focus.

Tighten the screw of the head mount again.

Adjust focus with the focus knob (10).

## DIOPTRE SETTINGS

The rings for dioptre setting (2) are located on the eyepiece tubes (3). In the normal position, the lower part of the sleeve is aligned with the marking on the eyepiece tube.

In case of eyesight deviations:

Only open the right eye, look through the right eyepiece (1) and set the focus using the focus knob (10).

Then look through the left eyepiece with your left eye and adjust the focus by turning the dioptre control (2) on the left tube (3) until the view is in focus.

## **6 CARE AND MAINTENANCE**

The mezzo needs, under ordinary working conditions, only minimal care and maintenance. Remembering a couple of points is crucial, though, to ensure proper functioning and a long life for your welding device.

After the work is complete, cover device with the dust cover.

Regularly check the power plug, power cable and connector plug for damage.

Clean the device occasionally with a soft cloth or compressed air

**CONTACT YOUR DEALER IF MAINTENANCE OR REPAIRS ARE NEEDED THAT ARE NOT DESCRIBED IN THIS MANUAL**

### **6-1 MAINTENANCE OF THE OPTICAL COMPONENTS**

Do not try to disassemble the optical components. Please turn to your local technical support centre for repairs not described in this manual.

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

Cleaning the eyepieces

Do not remove the eyepieces (1) from the eyepiece tubes (3).

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

Subsequently, dry the 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 switching the protective glass of the eye protection filter.

**Never dismantle the eye protection filter (shutter)!**

Only clean the surface. Use a soft cloth dampened with a glass cleaner.

If protective glass (7) needs to be replaced, push it forwards out of its support and insert the new protective glass in the same way.

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	<b>The LED light doesn't work</b>	Cable not attached.	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	<b>Shutter doesn't switch to its dark setting</b>	Control lead is not attached	Attach the control lead for the Shutter (17) to the back of the welding device
		Shutter defective	Exchange the shutter
7-2	<u>IMAGE QUALITY</u>		
D	<b>Poor resolution.</b>	Eyepieces soiled.	Clean eyepiece
E	<b>Marks or contamination in the visual field</b>	Eyepieces soiled.	Clean eyepiece
		Protecting glass soiled.	Clean or change protecting glass
		* Note: Marks in the visual field can also be caused by contamination inside the eyepieces. It is recommended to have the lenses cleaned by an authorized service technician.	

7-3	<u>PROBLEMS WITH MECHANICAL COMPONENTS</u>		
<b>F</b>	<b>Focus doesn't remain in the position it has been set to</b>	The microscope head (8) slides down	Adjust the tension of the rotary knob – focus (10)
7-4	<u>REPAIR</u> <p>If the stereomicroscope must be repaired or revised by technical personnel, we recommend sending it back in its original packaging to the dealer. Attach a description of the problem or the desired revision.</p> <p><b>WARNING! Authorized personnel may only open the device!</b></p>		
7-5	<u>TRANSPORT THE MICROSCOPE</u> <p>If possible avoid moving the stereomicroscope.</p> <p>Carry the stereomicroscope with both hands. With one hand hold on to the tripod rod (11) of the stereomicroscope, with the other hand hold on to the base plate (13).</p> <p>Keep the stereomicroscope always upright.</p>		

<b>8 <u>TECHNICAL DATA</u></b>		
8-1	<u>TECHNICAL DATA MICROSCOPE</u>	
■	Optical view protection and illumination unit (welding shield) only to be operated with the "PUK 3s"-precision welding device	
■	Use only in dry environments	
■	Operating temperature	+5°C bis +40°C
■	Main Voltage for optionally mains adapter plug	~115 V / 50-60 Hz +/-15%
■	Bulb "LED-module"	2,5W / 800mA
■	Protection class	III
■	Insulation class	B
■	Type of protection	IP 20
■	Weight	3,7 Kg
8-2	<u>OPTICAL DATA MICROSCOPE</u>	
■	Lens	1,0
■	Eyepiece	10x
■	Work distance	140 mm
■	Enlargement factor	10x
■	Field of view	20 mm
8-3	<u>TECHNICAL DATA LCD-SHUTTER</u>	
■	Brightness level	DIN 3
■	Darkness level	DIN 11
■	Circuit time	<50ms
■	UV Protection	>UV 15
■	IR Protection	>IR 14



**WARNING!**

**Authorized personnel may only open the device!**

Text and images correspond to the technical version during print of this manual. We reserve the right to change components.

**9 DISPOSAL REFERENCE**

Make retired devices useless by removing the mains cable.

Only for European Union countries:

In accordance with European guideline 2002/96/ EEC over electrical and electronics old devices, used up electrical appliances must be collected separately and supplied to a environmentalfair recycling.

**10 CONTACT**

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