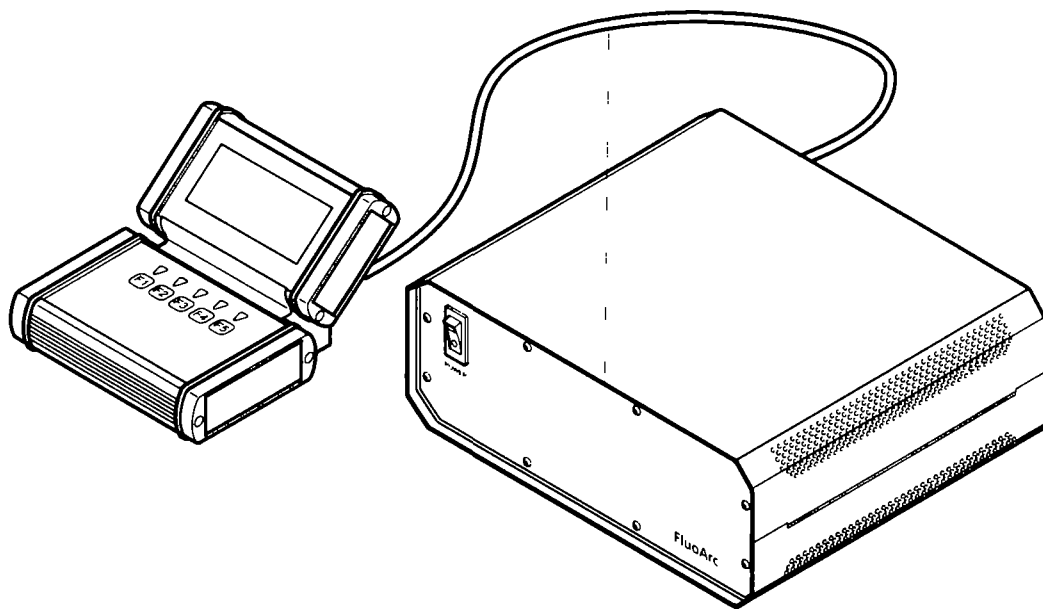


FluoArc

Vorschaltgerät für N HBO 103

Ballast for N HBO 103



Bedienungsanleitung

Operating Manual



Knowledge of this manual is required for the operation of the instrument. Would you therefore please make yourself familiar with the contents of this manual and pay special attention to hints concerning the safe operation of the instrument.

The specifications are subject to change; the manual is not covered by an update service.

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Die Kenntnis dieser Anleitung ist für die Bedienung des Gerätes erforderlich. Bitte machen Sie sich deshalb mit dem Inhalt vertraut und befolgen Sie besonders Hinweise, die den sicheren Umgang mit dem Gerät betreffen.

Änderungen im Interesse der technischen Weiterentwicklung bleiben vorbehalten; die Bedienungsanleitung unterliegt nicht dem Änderungsdienst.

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FluoArc

Carl Zeiss

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1 INSTRUMENT SAFETY

1.1 General

The FluoArc ballast was designed, produced and tested in compliance with DIN 61010-1 (IEC 1010-1) safety requirements for electrical measuring, control and laboratory instruments, and meets the requirements of Appendix I of directive 73/23/EC.

The instrument meets the requirements of the EC directive 89/336/EC and the EMC legislation of September 18, 1998. This operating manual includes information and warnings that must be observed by the user.

The following warning and information symbols are used in this manual:

**NOTE**

This symbol is a warning that you must observe under all circumstances.

**CAUTION**

This symbol is a warning that indicates a hazard to the instrument or instrument system.

**CAUTION**

This symbol is a warning that indicates a hazard to the user of the instrument.

**CAUTION**

Hot surface!

**CAUTION**

UV radiation is emitted!

**CAUTION**

Disconnect the instrument from the line before opening it!

1.2 Notes on instrument safety

The FluoArc ballast, including original accessories, may only be used for the microscope techniques described in this manual. The manufacturer cannot assume any liability for any other application, including that of individual modules or single parts. This also applies to all service or repair work that is not carried out by authorized service personnel. All warranty claims shall be forfeited.



If it is determined that protection measures are no longer effective, the instrument must be switched off and safeguarded against inadvertent operation. Please contact a Zeiss service agency or Carl Zeiss Microscopy Service to repair the instrument.



The FluoArc ballasts are designed for the 100 to 240 V, 50 / 60 Hz range. The instrument adapts automatically to the available line voltage. There is no need to change the voltage.



The power plug must be inserted in an outlet featuring a grounding (earth) contact. The grounding effect must not be made ineffective by an extension cable that does not have a protective ground wire.



Always disconnect the instrument from the power outlet before opening the instrument and before changing the fuses.



Make sure to use only fuses of the rated power required. The use of makeshift fuses and the short-circuiting of the fuse holders are not permitted.



For the use of the ballast in combination with the N HBO 103 microscope lamp, strictly observe and follow all relevant notes on safety and use (see separate User's Manual B 40-065 e "N HBO 103 and N XBO 75 Microscope Illuminating Systems").



While in use, the surface of the microscope lamp gets very hot so that there is the danger of getting burnt. Moreover, if the microscope lamp is not mounted to a microscope, there is the danger of eye and skin injury through emitted UV radiation.



The instrument may only be operated by trained personnel who must be aware of the possible dangers involved. When handled improperly, the instrument can be impaired in its performance or destroyed. Operation in explosion-risk rooms is not allowed.



1.3 Notes on warranty

The manufacturer guarantees that the instrument has no material and production defects when delivered. You must inform us of any defects immediately and minimize any damage. If the manufacturer is informed of such a defect, he is obligated to remove it; it is his decision whether he does this by repairing the instrument or by delivering an instrument free of any defect. No guarantee is provided for defects caused by natural wear (wearing parts and consumables in particular) and improper use.

The instrument manufacturer is not liable for damage caused by faulty operation, negligence or any other tampering with the instrument, particularly the removal or replacement of instrument components, or the use of accessories from other manufacturers. This forfeits all warranty claims.

With the exception of the work specified in this manual, no maintenance or repair of the FluoArc ballast may be undertaken. Repairs may only be performed by Zeiss service staff or specially authorized personnel. Should any defect occur with the instrument, please get in touch with your local Zeiss representative.

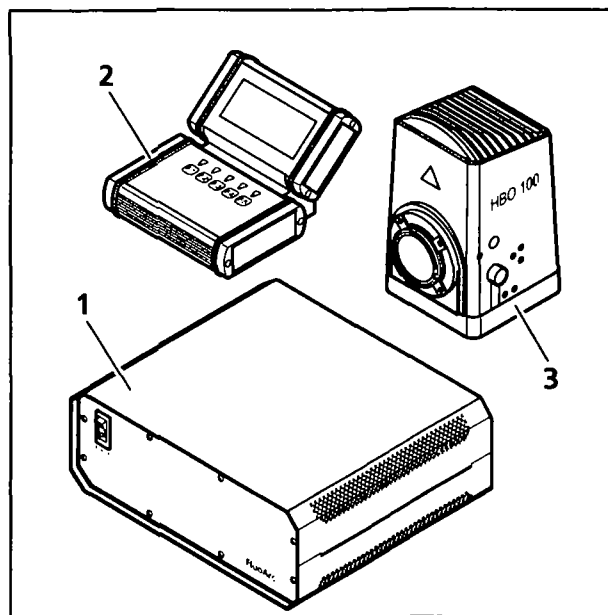


Fig. 1-1 FluoArc and N HBO 103

2 INSTRUMENT DESCRIPTION

2.1 Instrument System

The instrument system consists of the following components:

- Dimmable FluoArc ballast with control unit (1-1/1), control console (1-1/2), connection cable and heating coil for N HBO 103
- Lamp N HBO 103 (000000-1007-980) (1-1/3)
- Mercury-vapor short-arc lamp HBO 103 W/2 (380301-9350-000)
- Collector N HBO 103/XBO 75 (000000-1007-976) or achromatic collector (000000-1007-978)

2.2 Intended Use

The dimmable FluoArc ballast was exclusively designed for the use in combination with the N HBO 103 lamp.

The ballast permits the light intensity of the N HBO 103 lamp to be controlled (dimmed) in the range from 100 % to 20 % of the light output power via the connected control console.

For this purpose, first the heating coil must be mounted in the N HBO 103. This can be done by the user in compliance with the safety and installation notes given in this operating manual. If the instrument system is supplied completely, the heating coil is factory-mounted in the N HBO 103 lamp unit.

The control console permits the user to quickly switch between two separately adjustable light intensity levels. The adjusted intensities are available only temporarily and will be reset to the default values, when switching off the instrument.

The ballast may also be operated without control console. In this case, however, dimming is not possible.

2.3 Technical Data

Dimensions (Width x Height x Depth)

Control unit.....320 mm x 115 mm x 260 mm

Ambient conditions

Storage and transport (in packing)

Permissible ambient temperature -20 to +85 °C

Permissible relative humidity 10 % to 90 %

Operation

Permissible ambient temperature 0 to +40 °C

Permissible relative humidity 10 % to 90 %

Pollution degree 2

Functional data

Area of use Closed rooms

Altitude max. 2000 m

Protection Class I

Enclosure Protection IP 20

Noise suppression As per EN 55011 (Class B)

Noise Immunity as per EN 50082-2

and of the EMC legislation of Sept. 18, 1998.

Overvoltage category II

Line voltage, variable 100 VAC to 240 VAC (+-10%)

Line frequency 50 to 60 Hz

Fuse protection 2x T 2.5 A

Output power 100 W, with control console dimmable to 20 W

Ignition voltage 1000 V DC ±70 V

Ignition Automatic (integrated in ballast)

Power consumption 250 VA

Protection functions

Safety circuit If there is no N HBO 103 connected, no ignition voltage and no output voltage will be generated.
Voltage of safety circuit: 12 V DC (internal)
No protection low voltage

Overtemperature protection Automatic switch off and restart after cooling

Overcurrent protection Current, short-circuit-proof output

3 START-UP

3.1 Inserting heating coil in N HBO 103



Before inserting the heating coil in the N HBO 103, make sure the instrument is **not** connected to line voltage.



Do not insert the heating coil unless the N HBO 103 has cooled down. Allow for a cooling time of 30 ... 40 min, otherwise there is the **risk of burns and explosion!**



Wear a face shield and protective gloves when you remove the bulb (burner) of the N HBO 103 from its packing and insert it in or remove it from the microscope lamp.



All clamp connections must be performed carefully to ensure permanent good contact.

While in use, the surface of the microscope lamp gets very hot so that there is the danger of getting burnt. Moreover, if the microscope lamp is not mounted to a microscope, there is the danger of eye and skin injury through emitted UV radiation.

- Disconnect the connection cable of the lamp from the ballast.
- Move the collector of the N HBO 103 lamp into the extreme front position. Loosen the clamp screw and lift off the lamp housing. With the spring lever depressed, pull the burner out of its holder (refer to the supplied operating manual of the N HBO 103).
- Loosen both Allen screws SW 1.5 mm (3-1/5 and 8).
- Put the ends (3-1/3 and 6) of heating coil (3-1/2) as far as it will go each into the respective clamp mounts (3-1/4 and 7).
- Tighten both Allen screws (3-1/5 and 8).
- Align the heating coil by carefully bending it, if necessary. For the alignment, you may first use the plastic rod (3-1/1), which serves as transport lock for the heat sink of the N HBO 103. The heating coil should not exert force on the burner and be approximately coaxial with it without touching it.
- Then, put the burner into its holder as described in the operating instructions, reattach the lamp housing, and screw it down by means of the clamp screw.

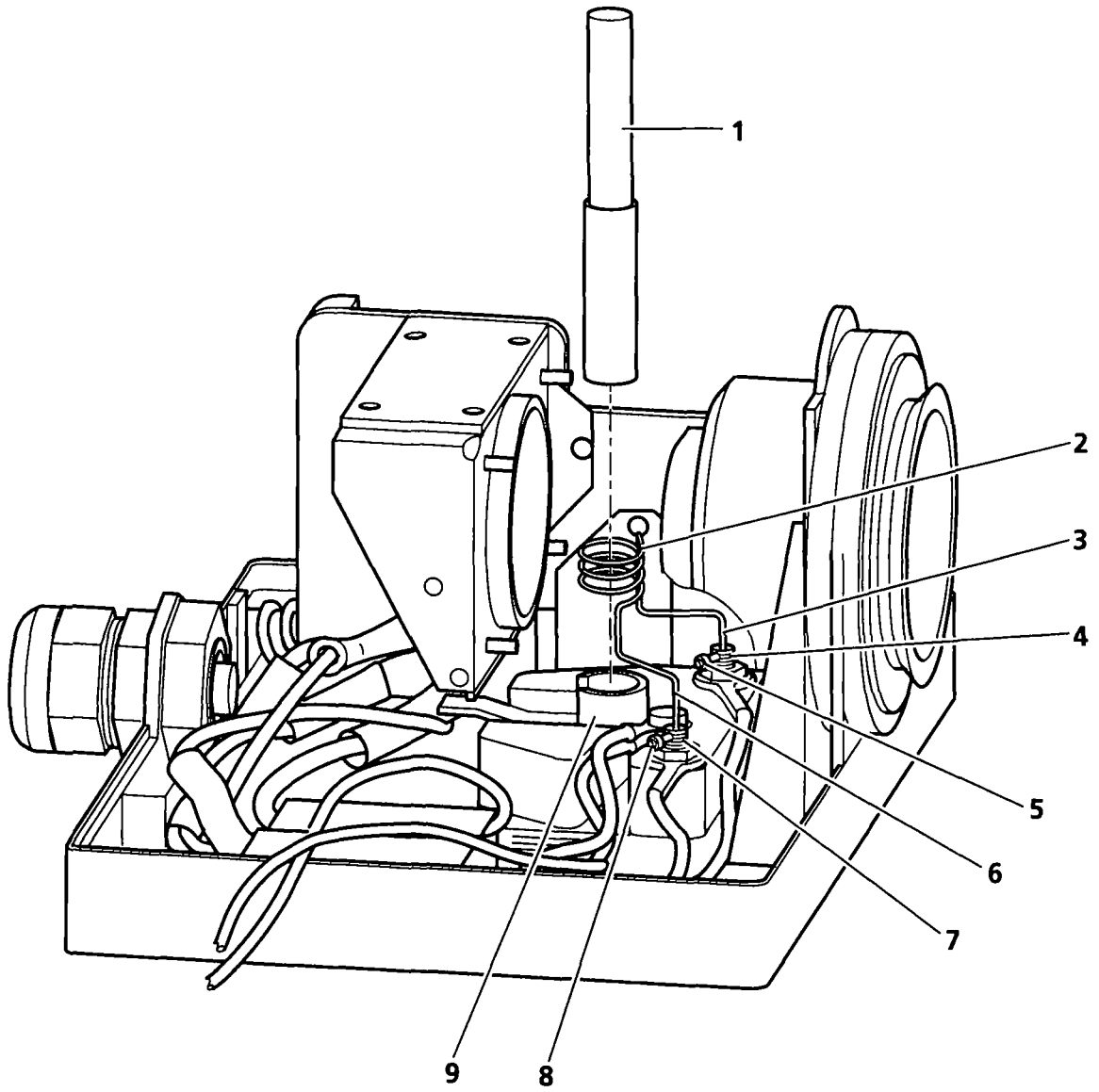


Fig. 3-1 Inserting the heating coil

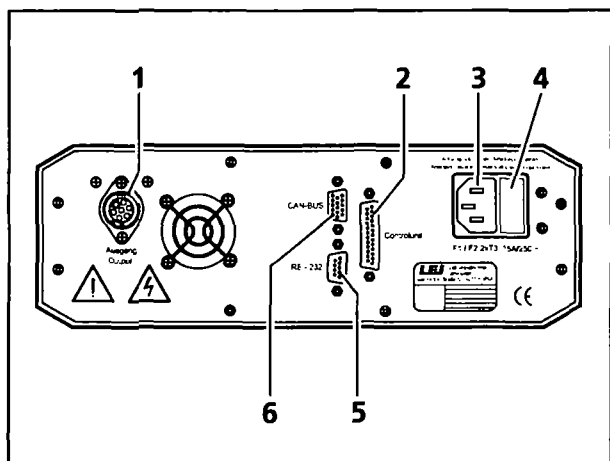


Fig. 3-2 Connecting N HBO 103 and control console to control unit

3.2 Connecting N HBO 103 and control console to control unit

- Plug connector of connection cable of N HBO 103 into **Ausgang/Output** connector (3-2/1) on rear panel of control unit and lock it by means of the coupling ring.
- Use the provided connection cable to connect **Control unit** connector (3-2/2) on control device with the connector on the rear of the control console.
- Use power cable to connect power connector (3-2/3) of ballast to a power outlet. The ballast automatically adjusts to the available local line voltage.

The power connector of the ballast contains a fuse compartment (3-2/4).

Connection of the ballast to a PC is possible through the **RS 232** (3-2/5) port.

The **CAN-BUS** (3-2/6) connector provides connection to another CAN-BUS interface (e.g. on the microscope).

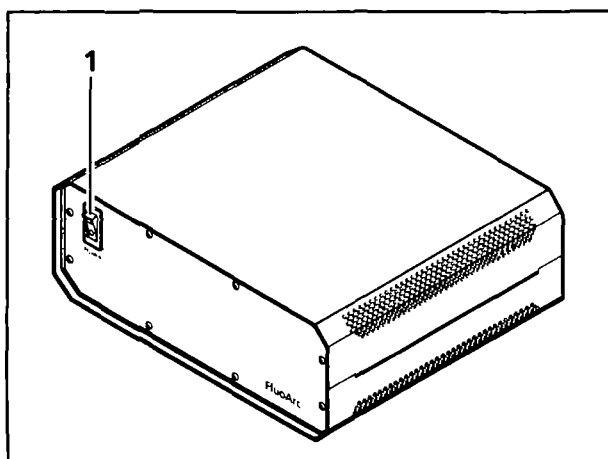



Fig. 3-3 Switching FluoArc ballast ON/OFF

3.3 Switching FluoArc ballast ON/OFF

- To switch the ballast ON/OFF, use the **Power** switch (3-3/1). If switched on (position I), the signal lamp in the switch lights up.

After switching on the ballast, the connected N HBO 103 lamp unit is struck automatically. The display of the control console is being activated showing the start-up, initialization and warm-up phase of the system. During the warm-up phase of 120 s all function keys of the control console are deactivated.

 After you switched off the N HBO 103, let it cool for at least 5 minutes before restarting. Without this cooling phase, the N HBO 103 cannot be ignited.

4 OPERATION

4.1 Control Console

The control console (4-1/1) is equipped with a display (4-1/3) and five function buttons F1 ... F5 (4-1/4).

The maximally four lines of the display show the respective control menus, user information or error messages. The bottom line of the display is subdivided into five columns displaying the assignment of function buttons 1 ... 5 for the currently active menu, or operating data.

The function buttons F1 ... F5 serve to control the light intensity of the NHBO 103 and switch between display and setting functions. The arrows (4-1/2) above the function buttons indicate the assignment of the function displayed in the bottom line to the respective button.

The control console allows quick switching between two separately adjustable light-intensity stages. The adjusted intensity values are only temporarily available and will be reset to defaults, when you switch off the instrument.

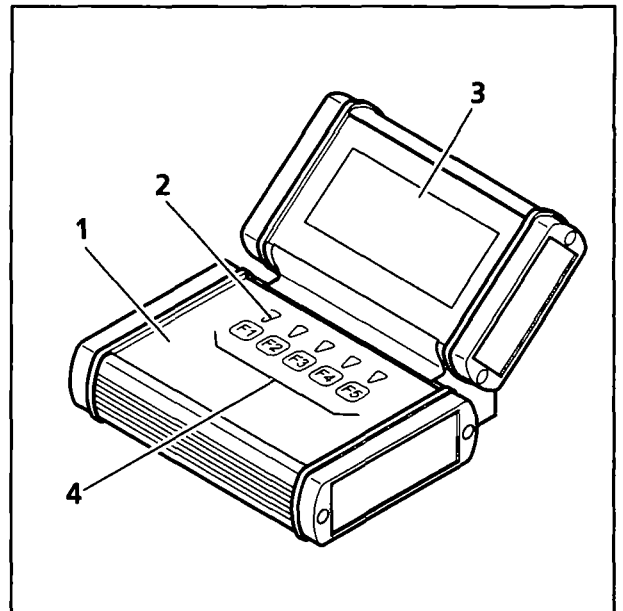


Fig. 4-1 Control Console

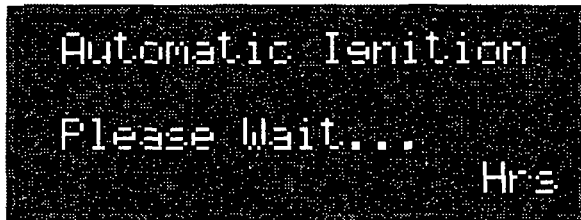
4.2 Menu control via function buttons and display

1



- **Welcome and system initialization**

2



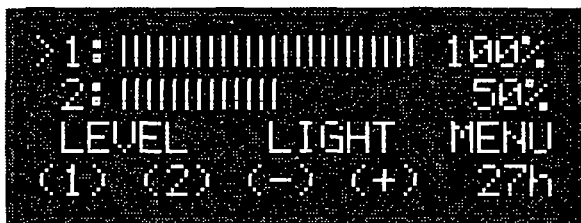
- **Ignition**
As long as the NHBO 103 has not been ignited yet, you can get a display of the operating hours (Display 5) by pressing F5 (Hrs).

3



- **Warm Up**
During Warm Up, all function buttons **F1 ... F5** are deactivated.

4



Main Menu

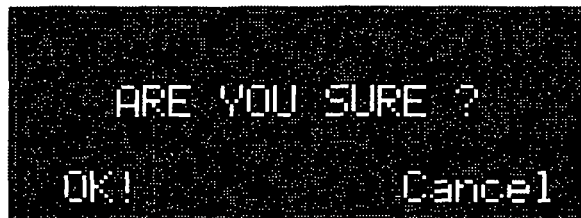
- Pressing **F1** or **F2** activates light intensity levels **1** or **2**. The currently selected level is marked by the symbol >.
- Pressing **F3** or **F4** reduces **(-)** or increases **(+)** the light intensity (**Light**) of the currently selected intensity level (**Level**). You are informed of the adjusted intensity by a bar graph and the displayed percentage.
- Pressing **F5** (**Menu**) switches to Display 5 (**Lamp Life**).
- The current lamp life appears below MENU.

5

Lamp Life: 27:35 hrs
Reset MAIN >>

Lamp Life

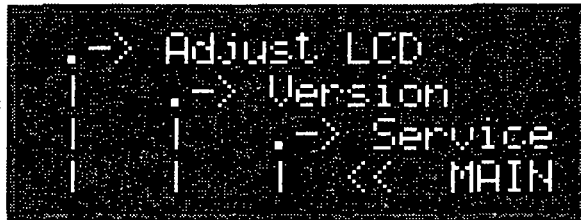
- Pressing **F1 (Reset)** activates Display **5a**, where you can reset the current lamp life display (**Lamp Life**) to **0**, e.g. after burner replacement.
- To switch to display function **4 (Main Menu)**, press **F4 (Main)**.
- By pressing **F5 (>>)**, you can switch to Display **6** (additional setting & display options).

5a

ARE YOU SURE ?
OK! Cancel

- Pressing **F1 (OK)** resets the lamp life counter to **0** and takes you back to Display **5**.
- Pressing **F5 (Cancel)** aborts the procedure and takes you back to Display **5**, too.

6

**Additional setting & display options**

- Pressing **F1** activates Display **6a** for the adjustment of LCD contrast (**Contr.**) and brightness (**Bright.**).
- Pressing **F2** activates Display **6b** with firmware information.
- Pressing **F3** activates Display **6c** with service data.
- Pressing **F4** activates Display **5**.
- Pressing **F5** activates Display **4**.

6a



- Pressing function buttons **F2**, **F3**, **F4** or **F5** reduces (-) or increases (+) the contrast or the brightness of the LCD display.
- To confirm and save the settings and return to Display **6** (additional setting & display options), press **F1 (OK)**.

6b



- To return to Display **6** (additional setting & display options), press **F5 (Back)**.

6c



- Lamp: ON/OFF (ON=Lamp is switched on)
- Temp: ERR (power supply is overheated)
- Secu: ERR (safety circuit is open)
- Ub/V: Burning voltage of lamp
- Pow., Heat: For service only
- Pressing **F5 (Back)** takes you back to Display **6**.

Warnings and error messages

7

Bulb is rather old.
Please replace soon!
OK!

After warm up, the system automatically checks the arc voltage. The opposite warning is displayed if the arc voltage has exceeded 33 V. In this case, you may continue working with this lamp, but should prepare to replace it soon.

- Press **F1 (OK)** to confirm this warning message and return to Display **4 (Main Menu)**.

8

Bulb is too old.
Please replace bulb!
Intensity Variation
is deactivated!

This message appears, if the arc voltage has exceeded 36 V. In this case, the dimming function is locked.

9

SECURITY FAULT!
- Turn off FluoArc.
- Check cabling.
- Lamphousing open?

This error message appears on various system errors, e.g.:

- Ballast was switched on without the N HBO 103 lamp being connected.
 - Lamphousing was opened while ballast is switched on.
 - Use of an N HBO 103 with defective cable
- On these errors, the system is halted instantly.

- Switch off the ballast and check the system state.



When an error occurs, first switch off the instrument and eliminate the fault. Then, you may switch it on again.

10



FluoArc OVERHEATED!
- Please stand by
until device has
cooled down...

Under normal use conditions, this error message does not appear.

It will appear only, if the FluoArc power supply is overheated. In this case, the N HBO 103 lamp unit will be switched off, until the temperature has dropped below a defined safety level.

After the unit has cooled down, the system is reinitialized/ignited and the 120-s warm-up phase initiated.



Overheating may occur if the fan has failed, the ambient temperature is too high, or the ventilation is insufficient.

5 CARE AND SERVICE

5.1 Instrument Care



For instrument care, always switch off the instrument.



Instrument care is limited to the works described below:

- Protect the instruments from dust and moisture by appropriate covers.
- Never expose the instruments for a longer period to inadmissible ambient conditions (increased humidity and temperature).
- Wipe off water-soluble contamination (coffee, cola, etc.) on control unit or control console with a dust-free cotton cloth or a moistened cloth. The water used may contain a dash of a mild detergent.
- Remove dust from the display of the control console with a natural-hair brush or by blowing it off with a rubber blower.

5.2 Requesting Service

All repairs on mechanical, optical and electronic components inside the ballast may be performed only by Carl Zeiss Service staff or specially **authorized** personnel.

For reordering or if your instrument needs servicing, please get in touch with your local Carl Zeiss representative.

For more information, contact

mikro@zeiss.de

or visit us on

<http://www.zeiss.de>

