



Jo/ke



***Operating manual
stereo microscope
SM-200***

Order no. 0 200 600 and 0 200 600-1

1

List of contents

1	List of contents	Page 02
2	Tips on using the manual	Page 02
3	Safety instructions	Page 03
4	Warranty / identification	Page 04
5	Device overview	Page 05
6	Technical data	Page 08
7	Operation/ use	Page 09
8	Care and maintenance	Page 12

2

Tips on using the manual

We congratulate you on purchasing this device.

This manual has been written for the device user to ensure a problem-free operation, care and maintenance. Important instructions and information concerning safety and operational reliability have been highlighted.

The symbols used in the manual have the following meanings:



Working and operating processes which must be observed to the letter to exclude any risk to persons.



Working and operating processes which must be observed to the letter to avoid any damage or destruction of the device.



Technical information to which the device operator must give special attention.

The illustrations and diagrams are numbered in sequence within each chapter. Some of these illustrations have keys. References to illustrations within the text e. g. (5.1/2) have the following meaning:

5.1	=	Figure 5.1
2	=	Position 2 in the key to the figure.

Please feel free to call our customer service department should you encounter technical problems which are not dealt with in this manual:

Telephone	+49 (0) 22 04 / 8 39 - 0
Telefax	+49 (0) 22 04 / 8 39 - 60
Internet	www.joke.de

Safety instructions

This device has been built according to the latest technical standards and generally accepted safety regulations. Nevertheless, it can constitute danger to life and limb for operator or third parties and a hazard to the device itself or other equipment during use.



1. **Only use the device if in perfect working order and for its intended purpose. You must always pay attention to the instruction manual and safety instructions therein and be aware of the risks! Repair any faults which could affect the device's safety immediately by yourself or have these repaired.**

The device is exclusively intended for visual inspection of surfaces or workpieces. Any other use will be deemed to be contrary to its intended purpose. The manufacturer cannot be held liable for any resulting damages. The risk is borne solely by the user.

Correct use also includes compliance with the instruction manual and an observation of the care and maintenance conditions.

2. Keep the instruction manual handy at the device's place of use.
3. Pay attention to and observe generally applicable statutory and otherwise binding regulations relating to accident prevention and environmental protection in addition to the information provided in the instruction manual!
4. **All personnel commissioned to work on or with the device must have read this instruction manual, and particularly the safety instructions section, before starting work. This applies especially for personnel who only work with the device occasionally.**
5. Do not carry out yourself or have carried out any modifications, additions or conversions to the device!



6. **Spare parts must meet the technical requirements specified by the manufacturer. This can only be guaranteed with original JOKE spare parts.**
7. Any work on/with the device may only be carried out by qualified, appropriately trained and authorised personnel. Pay attention to minimum statutory age limits!
8. Restrain from any type of work that could jeopardise your safety.



4

Warranty / identification

joke Technology GmbH warrants the correct manufacture of every joke product which is delivered in accordance with the terms of contract and delivery.

This warranty does not cover damages caused by normal wear and tear, incorrect handling, negligent use, the fitting of non-original spare parts, inadequate care and/or a failure to comply with this technical manual.



The device may only be used by appropriately trained and commissioned personnel. If it is not, all warranty claims will be forfeited according to the terms of delivery.

Device overview

Purpose

The stereo microscope optically magnifies workpieces or their surfaces for inspection and testing. Furthermore, operations performed directly on the workpiece, such as microweldings or polishing work, can be followed and tested in terms of quality.

The construction of the stereo microscope with two eyepieces and one lens allows three-dimensional representation of the viewed surface. Consequently, height differences in particular on the observation level are clearly perceptible.

The stereo microscope which is universally rotatable, pivotable and moveable on columns can be optimally erected above even large workpieces, without any need to align the workpiece accordingly.

The test area can be uniformly illuminated by means of a ring light applied to the lens.

The optimum magnification for the respective viewing mode can be composed by different-sized eyepieces and lenses.

Overview / scope of delivery

Stereo microscope SM-200 (art. no. 0 200 600)

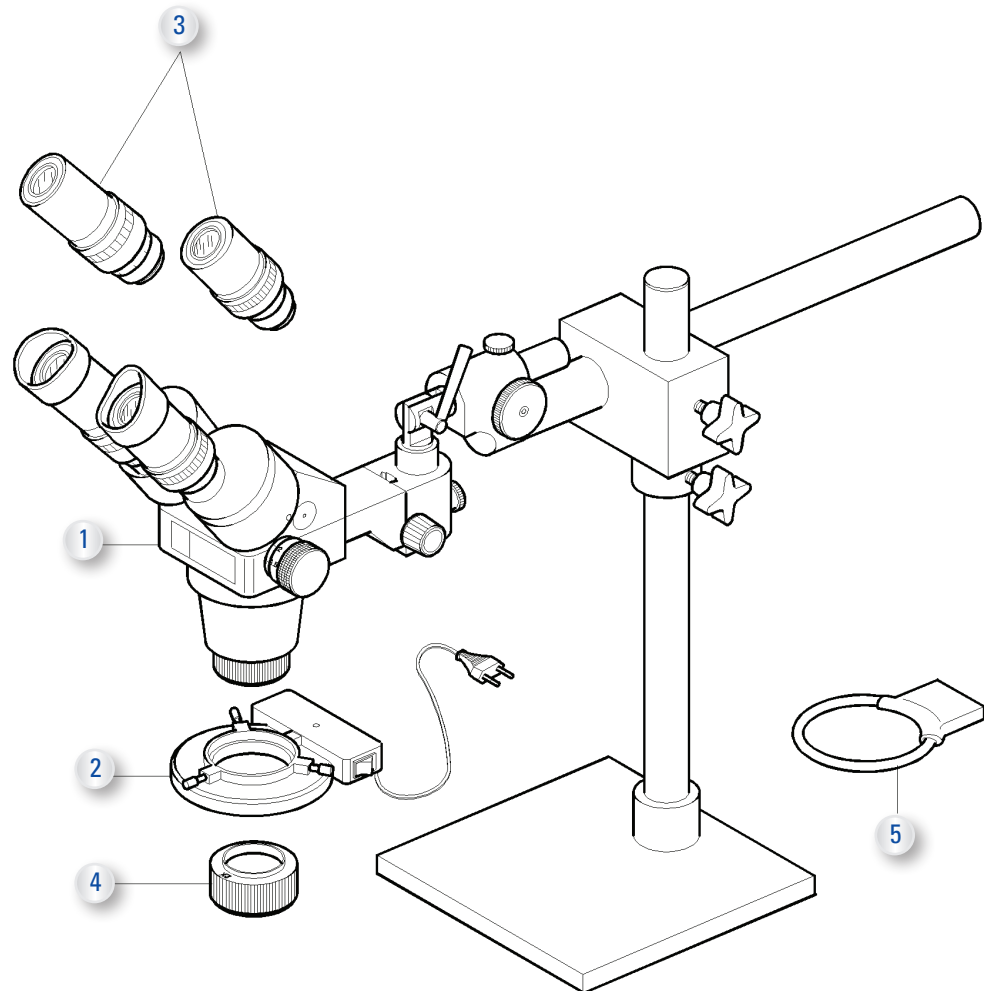


Fig. 5.1 Overview of stereo microscope

- 1 Stereo microscope with 10 x magnification eyepieces and 0 x magnification lens
- 2 Ring light
- 3 25 x magnification eyepieces (option)
- 4 Lens: 0.5 x magnification or 2 x magnification (option)
- 5 Ring lamp (spare part for ring light)

**Stereomicroscope SM-200 with camera tube without ring light
(art. no. 0 200 600-1)**

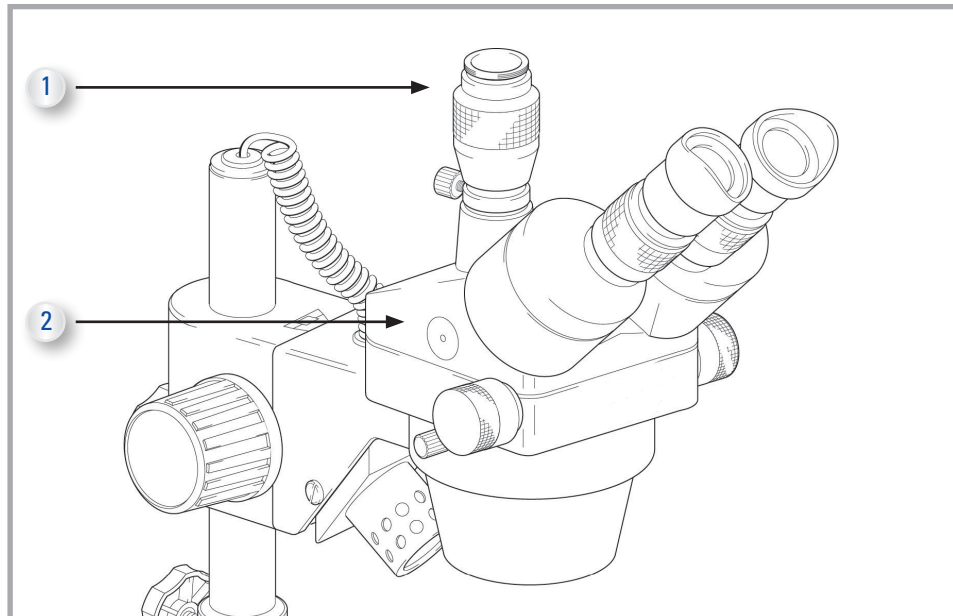


Fig. 5.1 Overview of stereo microscope with camera tube
(Similar illustration)

- 1 Photo tube/C-mount (trinocular models)
- 2 Photo/video switch (not visible)



Photo and video

The height of the tube „A“ can be adjusted in order to simultaneously obtain a sharp image in the photo tube and in the left eyepiece. If the stereo head is brought into the photo position using switch D, the image only remains visible in the left eyepiece (and in the photo tube).

The models are equipped with a C-mount adapter to which a CCD camera can be fitted in order to view images on a screen or a PC. Adjust the height of the tube as described above in order to simultaneously obtain a sharp image in the left eyepiece and on the screen.

The image is guided into the photo tube by operating the photo/video switch (D).

Technical data

Magnification ranges	
with 10 x eyepiece and 0 x lens	6.5 – 45 x
with 10 x eyepiece and 2 x lens	13 – 90 x
with 10 x eyepiece and 0.5 x lens	3.25 – 22.5 x
with 25 x eyepiece and 0 x lens	16.25 – 112.5 x
with 25 x eyepiece and 2 x lens	32.5 – 225 x

Optical data	
Dioptre range, eyepiece	-3 to +3 dpt
variable optical magnification of the microscope	0.65 – 4.5 x

Working ranges	
Distance between lens and test surface, variable for the respective lens	approx. 50 – 150 mm
Focal length adjustment range	approx. 50 mm
Visible test surface	max. Ø 95 mm

Dimensions and weight	
Vertical travel	430 mm
Vertical travel, fine adjustment	66 mm
Horizontal travel	420 mm
Horizontal travel, fine adjustment	57 mm
Footplate	253 x 253 mm
Weight	24.5 kg

Ring light	
Supply voltage	230 V AC, 50/60 Hz
Lamp	8 W / neon ring

Operation / use

The stereo microscope is supplied dismantled for space-saving reasons and must be assembled for commissioning.

If a new place to stand the microscope is selected, the device should be transported appropriately dismantled into its subassemblies.

1. Stand the vertical column (7.1/4) upright on the footplate (7.1/5) and screw firmly in place through the footplate from below using 3 enclosed cylindrical screws and top safety washers; Push on the adjustment ring (7.1/4A) and clamp in place using the clamping screw (7.1/4B).

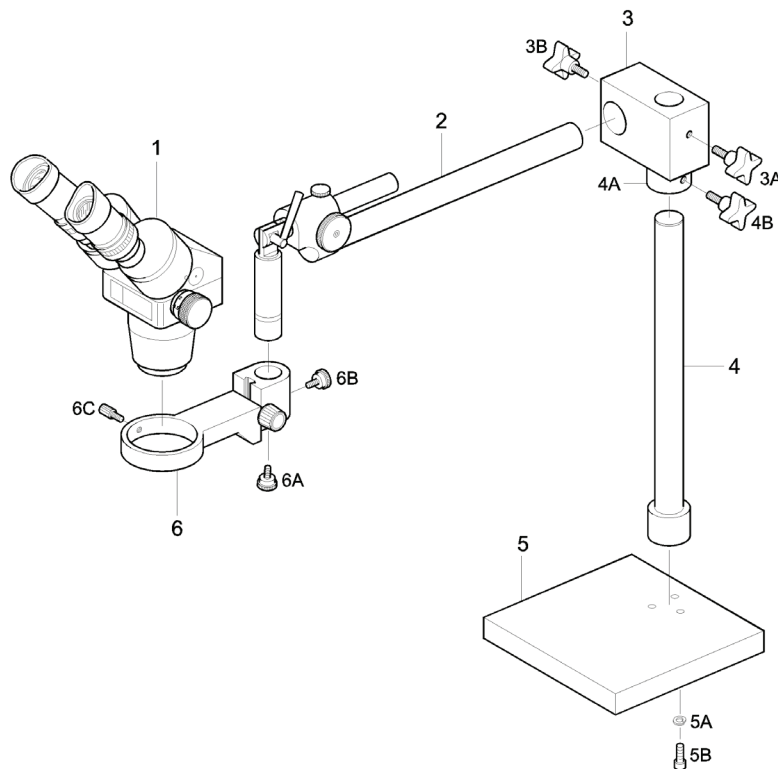


Fig. 7.1 Microscope subassemblies

- 1 Microscope
- 2 Horizontal column with pivoting device
- 3 Retaining block
- 4 Vertical column
- 5 Footplate
- 6 Microscope mounting with fine height adjustment

2. Push the retaining block (7.1/3) with its guide bush on to the vertical column and clamp in place with the clamping screw (7.1/3A).
3. Push the horizontal column (7.1/2) through the retaining block and clamp in place using the clamping screw (7.1/3B).
4. Push the microscope holder (7.1/6) on to the pivotable section of the horizontal column until the clamping screw (7.1/6A) can be screwed in from below. This renders the microscope holder pivotable and secures the latter against dropping out. The microscope holder can be fixed by tightening the screw (7.1/6B).
5. Insert the stereo microscope (7.1/1) into the microscope holder and secure against rotation with the clamping screw (7.1/6B).
6. Select a firm and safe place to stand the assembled stereo microscope. If the complete stereo microscope is moved, the microscope assembly should be transported removed from its mounting.

Adjusting free movement

Should the microscope body descend under its own weight, the free movement of the pinion should be adjusted. To do this, grasp both pinion knobs and rotate in contrary motion.

Adjusting the eyepieces in order to obtain a sharp image over the entire zoom range

- Adjust magnification to the highest value using the zoom knobs (R). Now focus on an ideally flat specimen (e.g. a text).
- Now set magnification to the lowest value.
- Now correct the focus of the left eye by closing the right eye and adjusting the dioptre correction (C). Proceed in the same manner with the right eye.

Once this procedure has been performed, the image should remain in focus over the entire zoom range. This procedure is however to be performed individually for each user.

Commissioning

1. Push the eyepieces (7.2/1) required for observation of the workpiece on to the stereo microscope (10 x standard eyepiece or 25 x accessory eyepiece).
2. Screw the necessary lens (7.2/4) into the microscope (0.5 x or 2 x lens).
3. Adjust the distance from the workpiece/test specimen:

Loosen the clamping screws (7.2/5) and roughly position the microscope horizontally and vertically over the workpiece/test specimen; retighten the clamping screws.

Adjust the microscope subassembly for a flush fit between the microscope mounting and column guide by means of the adjustment wheels (7.2/6).

Perform angle adjustments after loosening the clamping handle (7.2/7) and the clamping screw (7.2/8) in addition to (7.2/9).

The microscope can be axially rotated after loosening the lateral clamping screw (7.2/10) on the microscope mounting.

4. Set the dioptre adjustment ring on one eyepiece to „0“ and focus optical viewing with this setting using the adjustment wheels (7.2/6). The other eyepiece can subsequently be adjusted in the same manner at the dioptre adjustment ring.
5. Focusing is performed at the adjustment wheels (7.2/6). The set magnification can be additionally modified using the setting wheels (7.2/3).
6. Position the ring light over the lens if necessary such that the light shines downwards.

Tighten the light to hand tightness with three clamping screws.

Plug the connecting cable connector into a 230 V power socket. Switch it on and off using the switch on the ring light housing.

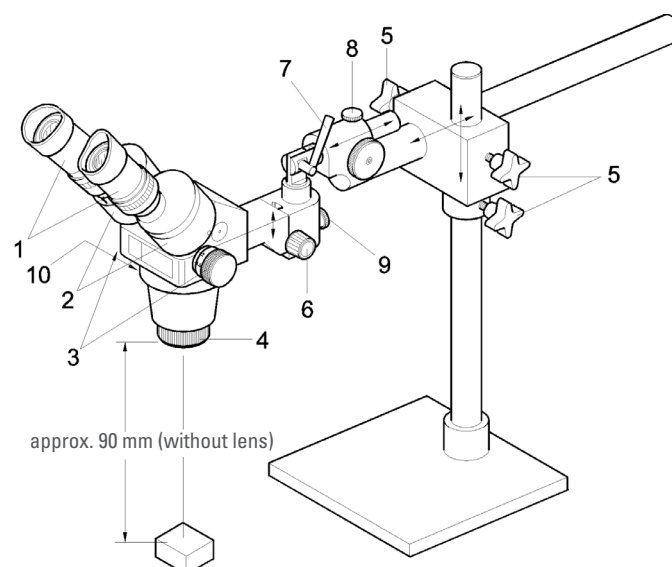


Fig. 7.2 Control elements

Care and maintenance

Cleaning

Only clean the stereo microscope with a soft dry cloth or dust brush. Rub the bare surfaces of the columns with a thin coat of Vaseline to protect against corrosion. Clean optical surfaces with a clean dust brush. Remove coarser soiling with a non-corrosive cleaning agent (e.g. glass cleaner) and a lint-free cleaning cloth.

Storage

Always cover the microscope when not in use. Store eyepieces and lenses not installed solely in their original packaging.

Storage should be performed in a cool dry place protected against external influences.



Brilliant solutions for perfect surfaces

joke Technology GmbH
Asselborner Weg 14 -16
D-51429 Bergisch Gladbach
Tel. +49 (0) 22 04 / 8 39-0
Fax +49 (0) 22 04 / 8 39-60
Email info@joke.de
Web www.joke.de