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HACKETTSTOWN REGIONAL MEDICAL CENTER

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OR
(Scope)

TITLE: **ZEISS OPERATION MICROSCOPE OPMI6SFC**

PURPOSE: To provide instructions for use of the ZEISS Operation Microscope (OPM16SFC)

CONTENT: **PROCEDURE**

A. Description **I. General**

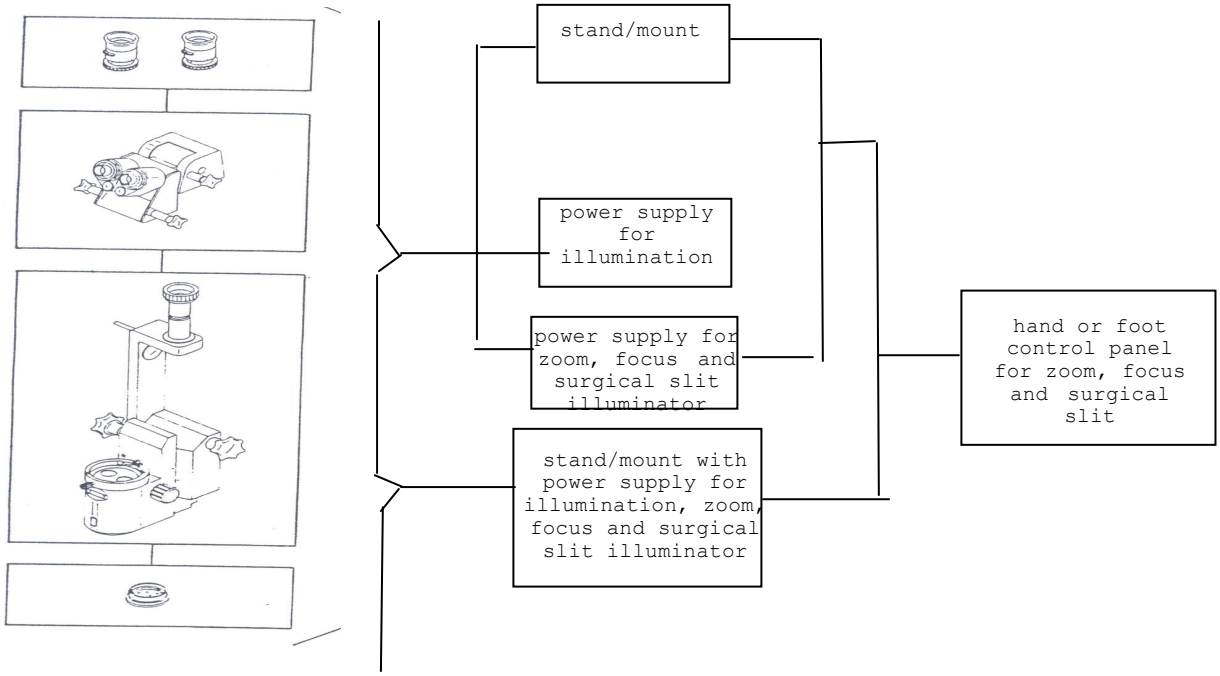
In the product for the OPMI 6 S FC operation microscope the modular principle has been applied, thus permitting various equipment combinations.

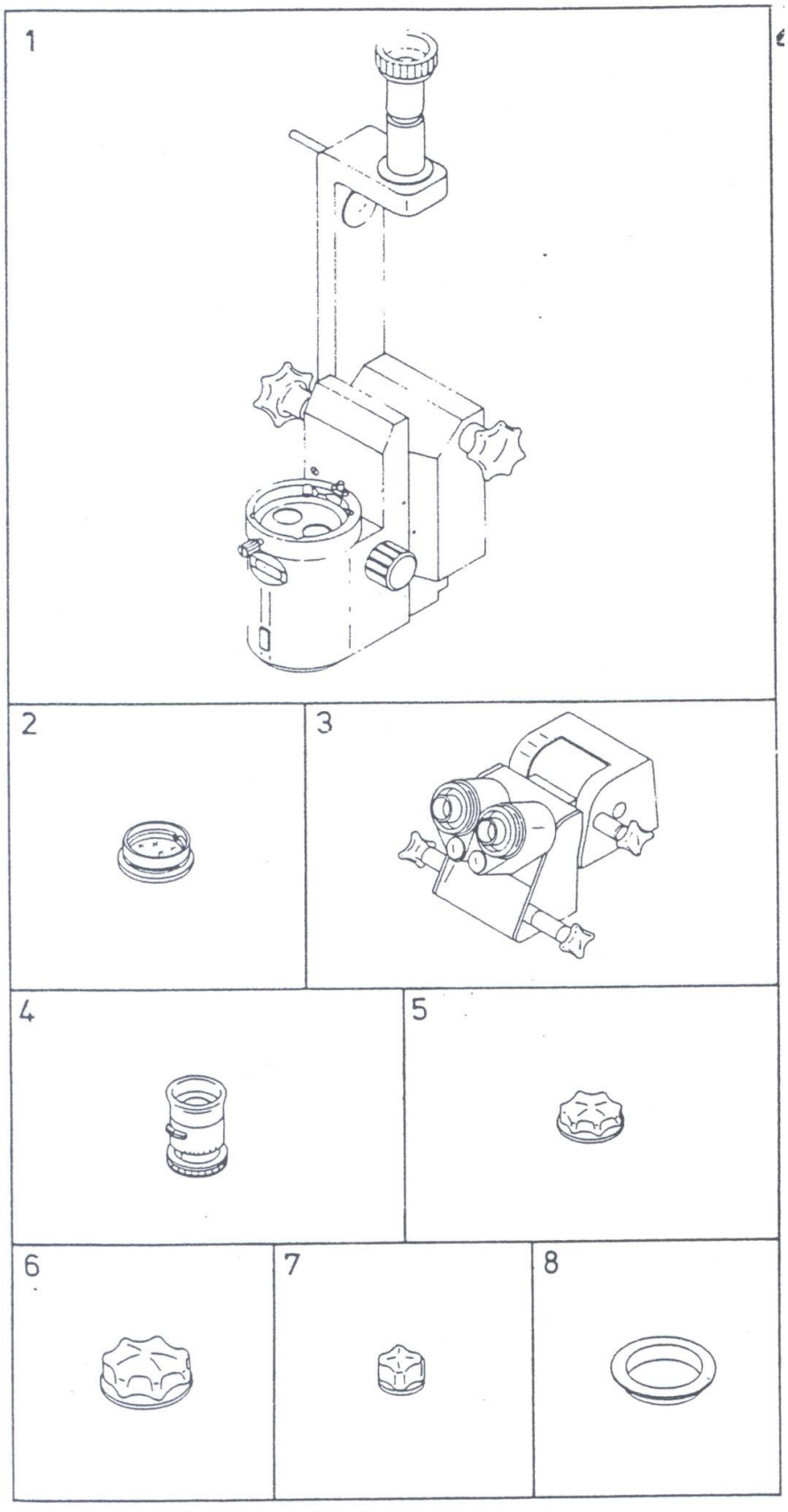
The modules shown in Fig. 1 are needed to obtain a functioning microscope.

Additional information on the total instrument line can be found in operating instructions G 30-1005 “Accessories for operation microscopes” which will be provided on request.

The operation microscope can be used with different stands/mounts (on which separate operating manuals are available. If the stand/mount is not equipped with a power supply for the illumination system and the microscope functions (zoom, focusing, surgical slit illuminator) separate power supplies are required.

Despite the different stand/mount versions, attaching the microscope is practically identical in each case. This manual describes how the OPMI 6 S FC is mounted on the Universal S3 stand.





II. **Basic Equipment**

1 .OPMI FC Operation microscope

2. Objective f = 200 mm (for objectives with other local lengths see page 9).

3. Tiltable binocular tube f=160 mm

4. Screw-on eyepieces 12.5 x (2pieces) (cover not shown)

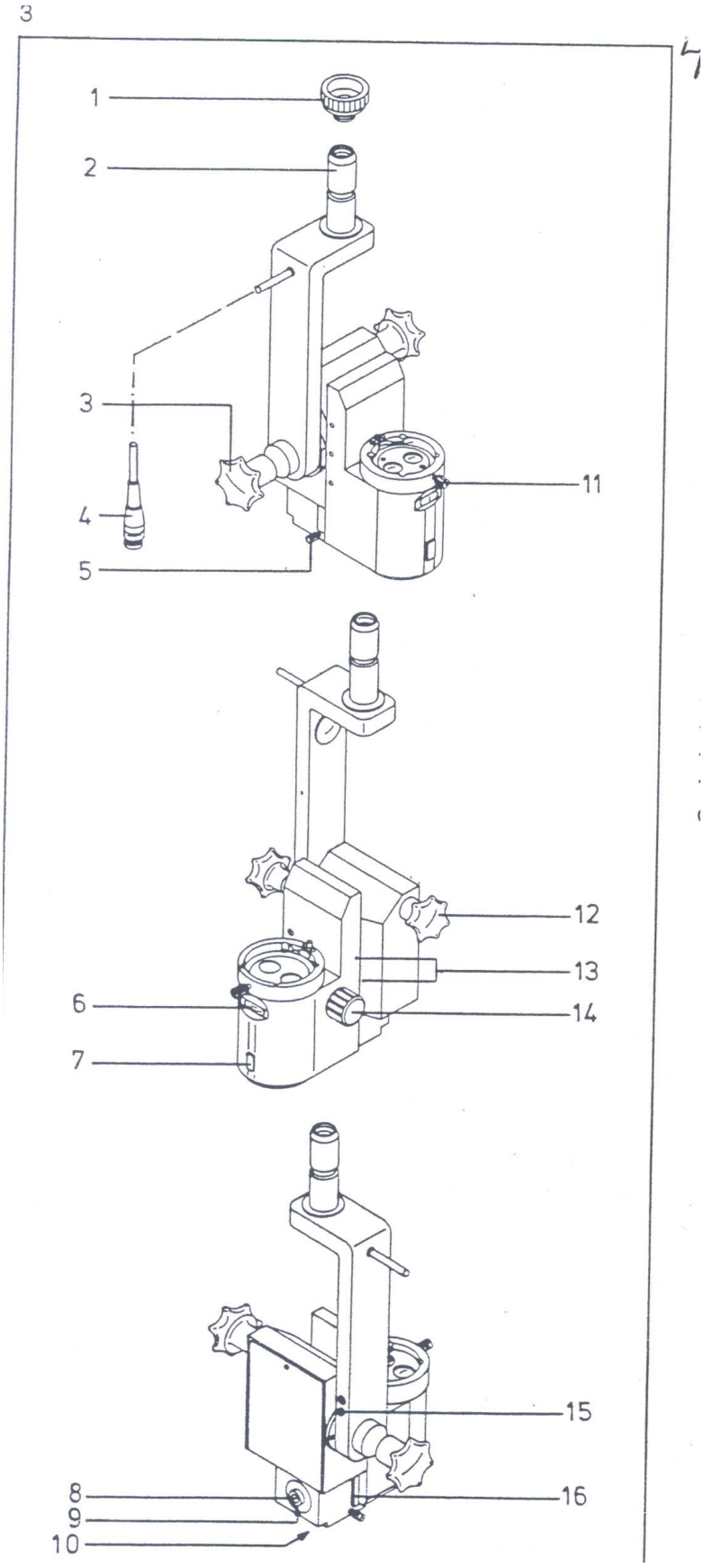
III. **Sterilization Equipment**

5. Rubber cap for magnification changer

6. Rubber cap for microscope knobs

7. Rubber cap for tiltable binocular tube

8. Rubber collar for objective



IV. **Controls**

1. Locking screw. This screw holds the microscope securely in the bore of the stand.
2. Microscope pivot. When introducing the pivot into the bore of the stand the holder pin of the stand must engage in the groove of the pivot.
3. Clamping knob. The microscope can be tilted around the axis of the knob. This knob also serves to set motion resistance.
4. Plug for motorized focusing and zoom action.
5. Screw for clamping modules (e.g. surgical slit illuminator or flash) which are inserted in dovetail (10).
6. Magnification readout.
7. Cap. After removal of this cap different modules can be attached such as OPMI handles or the universal carrier. This carrier accepts different modules, e.g. the assistant's microscope 19°.
8. Sleeve for fiber optic bundle
9. Screw for clamping sleeve (8).
10. Dovetail taking additional modules, e.g. surgical slit illuminator for flash.
11. Screw for clamping the binocular tube.
12. Knob for fine adjustment of microscope tilt.
13. Pin/dot marking the middle of the focusing range.
14. Manual zoom control
15. Protective earth screw for additional grounding.
16. Filter slot cap. After removal of this cap a variety of filters can be inserted.

B. **Putting Into Operation**

I. **Mounting**

- Release safety slider (10), bring suspension arm (12) to a convenient position and lock vertical motion of the arm with star knob (11). The star knob remains clamped until the microscope is adjusted to the surgical field (see page 8).
- Insert microscope pivot (7) into the coupling until you hear holder pin (5) engage the groove of the pivot. Grease pivot before insertion.
- Screw in locking screw (4) to keep OPMI in place.
- Feed fiberoptic cable through the locking screw and the microscope pivot.
- If necessary, reset ease of motion of the pivot with the round knob on star knob (6). Make power connection with plug (3) and clamp microscope pivot with star knob (6), if necessary.
- Screw objective (9) into microscope body.
- Place tiltable binocular tube (2) on microscope body, clamp with screw (8) and screw on eyepieces (1).
- Connect hand control panel with stand. (Instead of the hand panel a foot control or the operating chair can be used.)

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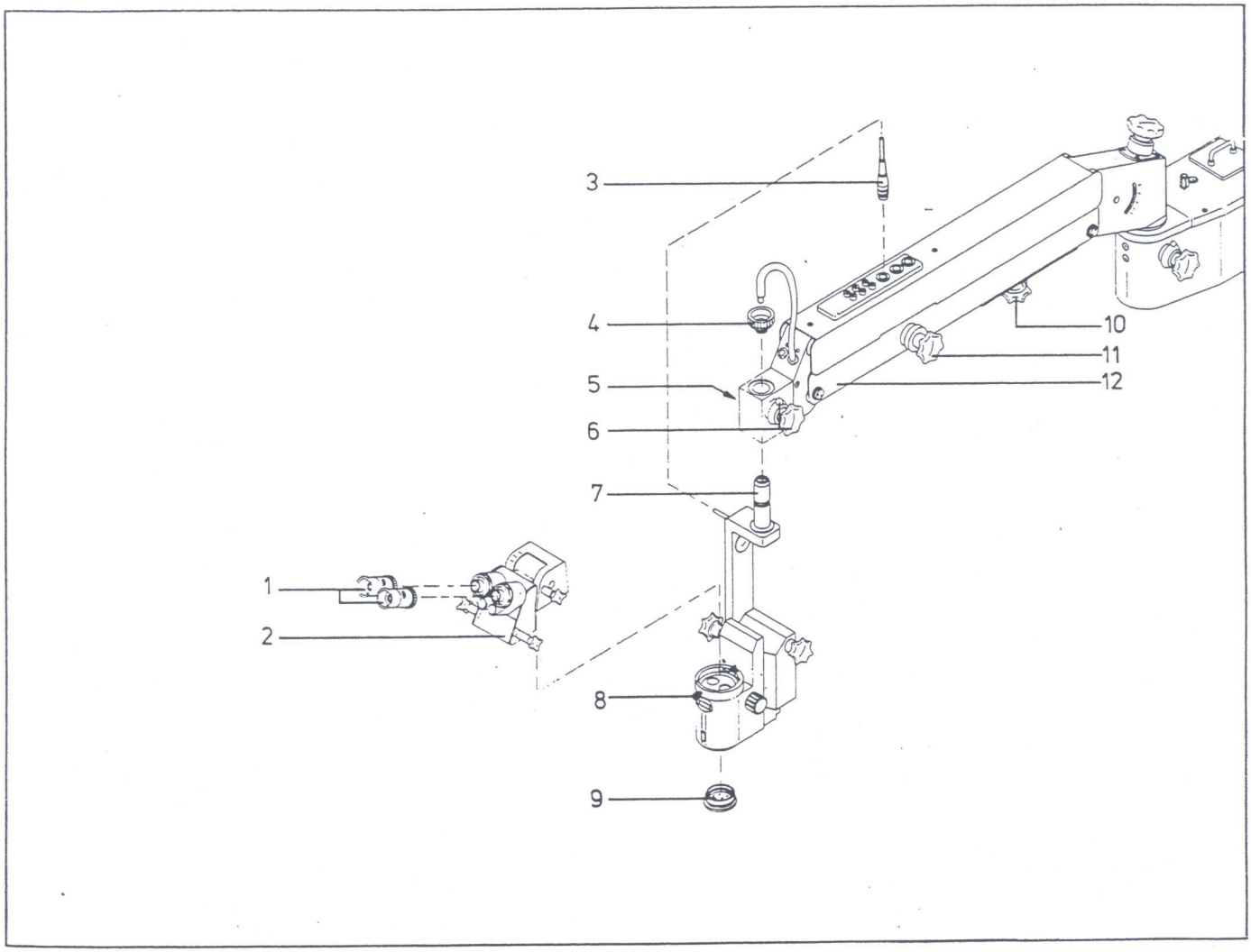
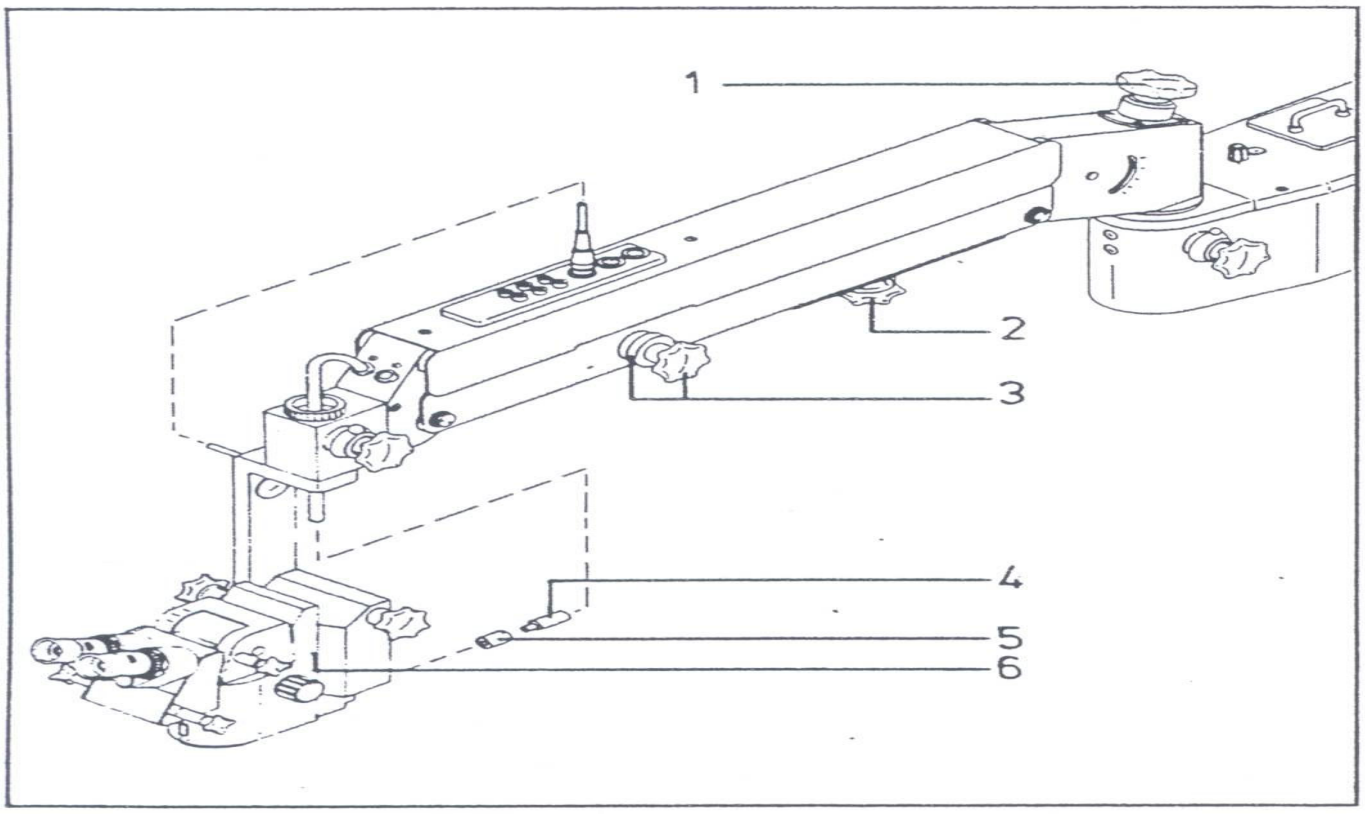


II. **Adjusting the microscope to the surgical field**

- Loosen star knob (3) and bring suspension arm into equilibrium with counterbalancing knob (1). The adjustment in the highest and lowest positions has to be performed with particular care. If the microscope equipment weighs more than 14 kg the highest and lowest positions cannot be fully counterbalanced. This can be remedied by turning the ring on star knob (3) (the ring is secured with a screw). However, this results in a slightly stiffer up/down motion of the arm.
- Set working distance with safety slider (2). **It is then impossible for the arm to drop lower than the point set.**
- If necessary, adjust ease of motion of the suspension arm and the carrier arm with the round knobs on the star knobs.
- Connect stand to mains with power cable. Set on/off switch on stand to "I" and push appropriate selector F-H to "F" for fiberoptic illumination.
- Remove sleeve (5) for fiberoptic bundle (4) from microscope. Push bundle as far as it will go into this sleeve and secure bundle with the grub screw of the sleeve.
- Push fiberoptic bundle (4) with sleeve into opening of the microscope.
- Adjust brightness of microscope illumination with the knob marked red or blue on the stand.
- Adjust illuminated field at the working distance set. For this, move sleeve in the micros open until the filed has the required diameter and homogeneity.
- Set diopter scale on eyepieces and adjust the interpupillary distance on the binocular tube. If you have to wear spectacles, fold rubber cups down and set diopter scale to "0".
- Set microscope with the hand panel (or foot panel or operating chair) to middle position (6) of the focusing range.
- Bring microscope into working position, set magnification 2.0X (can be read off from window (6), Fig. 3 on page 6) and focus object with motorized focusing drive. The magnification desired can now be set without changing sharpness.



C. **Annex**

1. **Magnifications/fields of view**

	Tube f=160 mm with eyepiece		
Objective Focal Length	**12.5X Magnification/field of view dia. mm**	**20 X Magnification/field of view dia. mm**	**CAT No of Objective**
f = 175 mm	5.7 - 22.9/35.1 - 8.8	9.1 - 36.6/22.0 - 5.5	30 57 20
f = 200 mm	5.0 - 20.0/40.0 - 10.0	8.0 - 32.0/25.0 - 6.3	30 51 32
f = 225 mm	4.4 - 17.8/45.5 - 11.2	7.1 - 28.4/28.2 - 7.0	30 57 04
f = 250 mm	4.0 - 16.0/50.0 - 12.5	6.4 - 25.6/31.3 - 7.8	30 57 05
f = 275 mm	3.6 - 14.5/55.6 - 13.8	5.8 - 23.3/34.5 - 8.6	30 57 08
f = 300 mm	3.3 - 13.3/60.6 - 15.0	5.3 - 21.3/37.7 - 9.4	30 51 37

2. **Care of the microscope**

Dirt in the optics results in a drastic loss in contrast owning to scattered light. For this reason the microscope should never be stored without objective, binocular tube and eyepieces when not in use. After use and cleaning, the microscope should be provided with a dust cover. Objectives, eyepieces and accessories not required should be stored in dust-free cases.

Normally only the outer surfaces of the objective and the eyepieces are cleaned. Dust on the objective should be removed with a rubber blower or a grease-free brush. For cleaning the brush we recommend washing in ether. Finger prints, smears etc. can be removed with a cotton wool wisp on a stick. If necessary, the cotton wool can be moistened with clean acetone.

The varnished surfaces should be cleaned with a cotton wool ball moistened with gasoline (inflammable!). Wipe off any residue with a mixture consisting of 50 percent spirit and 50 percent distilled water plus a dash of surface-active liquid detergent.

Note: DO NOT CLEAN anti-fogging eyepiece cover glasses; surfaces are not scratch-resistant. Clean only by blowing.

3. **Specifications**

Binocular tube Tiltable tube f = 160 mm, 0° - 60°, with screw-on high-eye point eyepieces 12.5 X or 20 X	**Magnification system** 1:4 ratio zoom system. Motorized magnification change, e.g. by foot panel, and manual. For fields of view see table on page 9.
Eyepieces All eyepieces can be fitted with reticles. Anti-fogging cover glasses for both eyepieces	**Focusing** Motorized 3 mm/s. Range 50 mm
Objectives Objectives with f = 50 mm to f = 400 mm are available in steps of 25 mm. The focal length is approx. equal to the working distance. For special applications, objectives with f = 500 mm, f = 800 mm, f = 1250 mm and f = 2000 mm can be supplied.	**Microscope tilt** Vertical 360° Horizontal 330° **Weight** 5 kg

Reference: Carl Zeiss Operation Microscope, OPMI 6SFC operating instructions, D-7082 Oberkochen, West Germany.