ZEISS

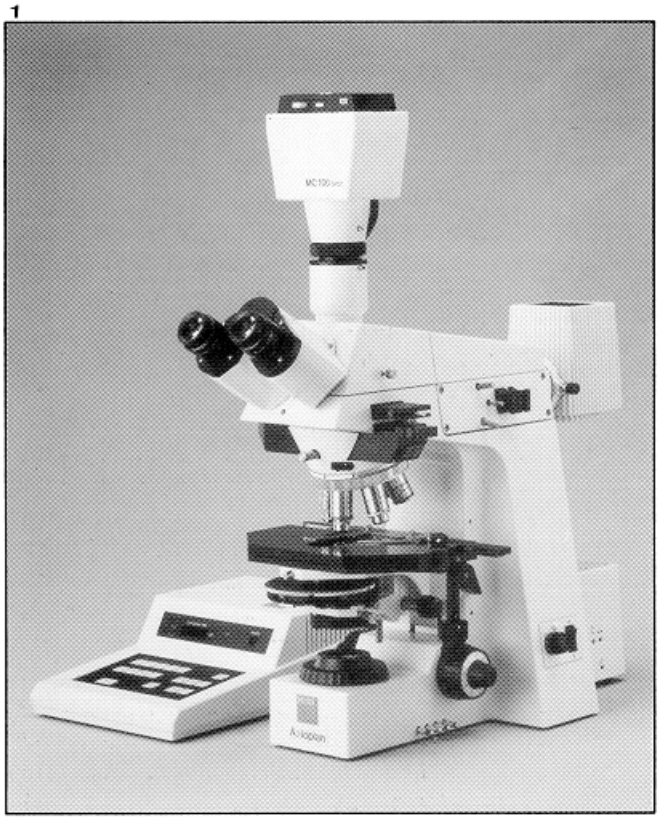
Germany

Carl Zeiss
Geschäftsbereich
Mikroskopie
7082 Oberkochen

Microscope Camera
MC 100 SPOT

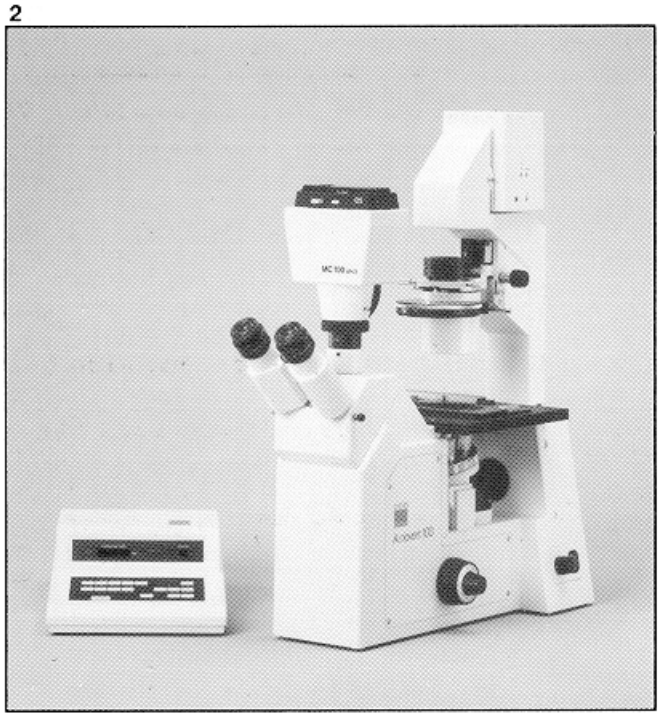
Operating Instructions

1



Axioplan universal transmitted-light microscope
with MC 100 SPOT microscope camera and
35 mm film cassette Mot

2



Axiovert 100 microscope
with MC 100 SPOT microscope camera and
35 mm film cassette Mot

Contents

Notes:

* The 6- to 10-digit numbers, e.g. 451949, are ordering numbers of instruments or instrument components.
* The instruments shall be changed and/or repaired only by the manufacturer or his authorized representative(s).
* Specifications subject to change.
* CAUTION: The instruments shall not be used in environments with explosion risks.

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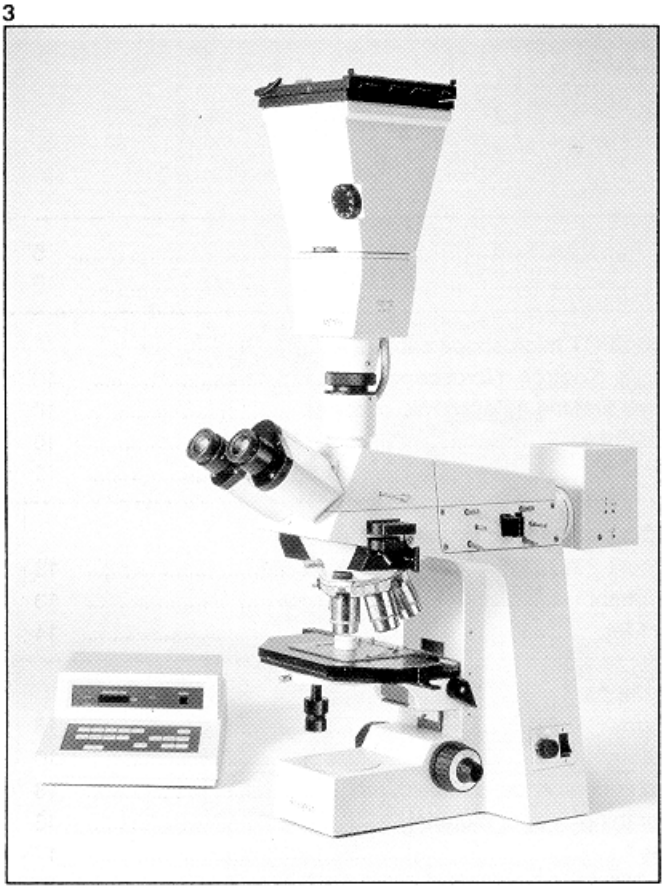

Axioplan universal reflected-light microscope
with MC 100 SPOT microscope camera and
4x5" camera attachment

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Axioskop, the more-than-routine transmitted-light microscope
with MC 100 SPOT microscope camera and
35 mm film cassette Mot

The MC 100 SPOT microscope camera consists of the basic body and the exposure control.

- The MC 100 SPOT can be mounted on the dia. 40mm phototubes of our microscopes.
- Available for use as large-format camera:
  4x5" camera attachment with international back
  CB 33 camera attachment for Polaroid auto film
  and as 35 mm camera:
  35 mm film cassette Mot
- Automatic film advance: 35 mm camera and CB 33 camera attachment;
automatic advance to the first picture of newly loaded film and motorized rewinding: 35 mm camera.
- Automatic exposure control for all 3 cameras
- Decimal display of exposure time, downcounting during exposure
- Automatic extension of exposure time when changing from 35mm to large format
- 9 reciprocity code numbers for automatic correction of reciprocity failure
- Shortest exposure time 0.01 s;
longest exposure time (lower limit of exposure measurement) with 100 ASA:
  4 min for 35 mm film
  1 hour for large format
- The automatically determined exposure time can be stored for reference exposures
- Multiple exposures
- Exposure adjustment within a range of 2 shorter or 2 longer exposure values
- Automatic exposure series with pre-selected exposure adjustment (calibration series, etc.) Automatic exposure series with pre-selected exposure adjustment (calibration series, etc.)
- Center-weighted averaging mode, covering approx. 50% of the image format
- Spot metering, with emphasis on central area, covering approx. 3% of the image format
- Data projection with data back (accessory)
- Flash mode

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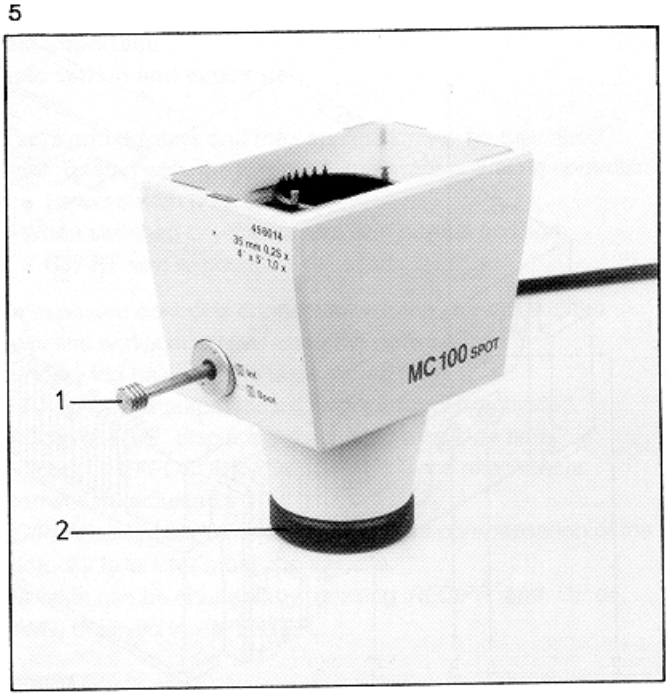

Basic body of the MC 100 SPOT (45 60 14)

1 Slider to activate either center-weighted averaging or spot metering (see page 17).
  pushed in: center-weighted averaging
  pulled out: spot metering

2 Clamping ring for attachment to the phototubes

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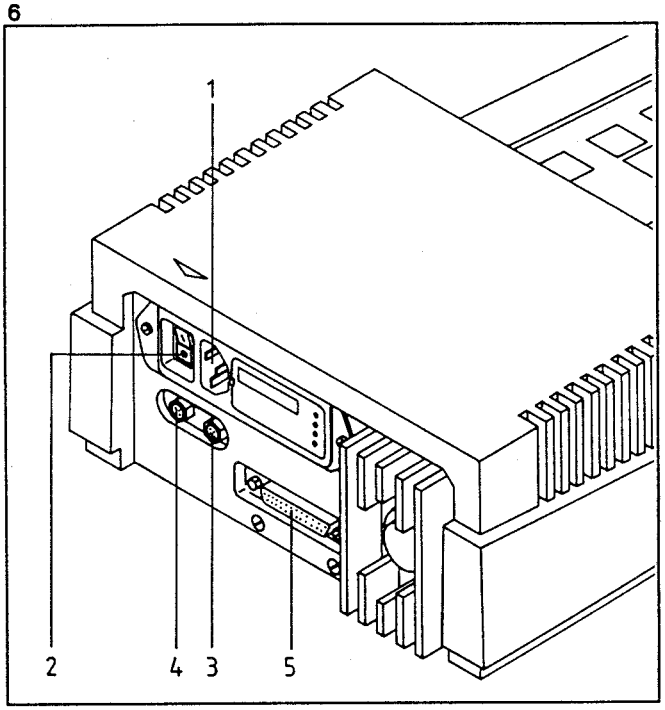

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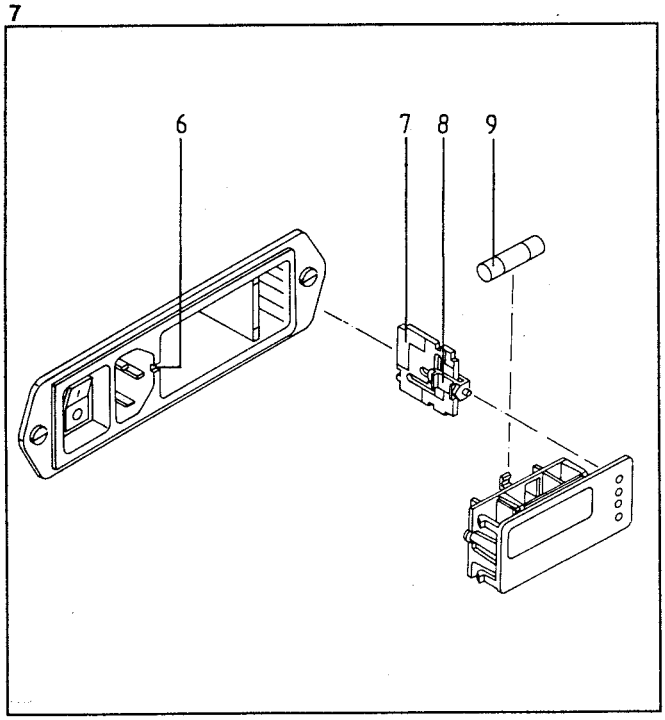


Exposure control

Connections

1 Power input
Power consumption: 20 VA
2 Power switch
3 4-pin socket for flash synchronization
4 2-pin socket for remote release
5 Socket for MC 100 SPOT microscope camera
The plug must be inserted into the socket and secured with screws.

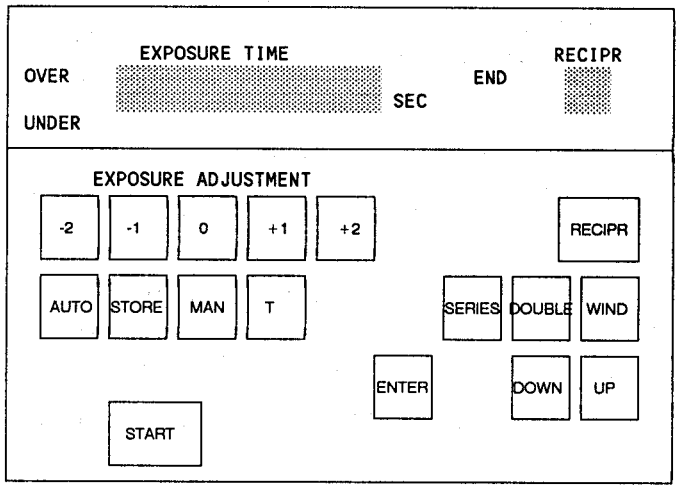
Caution: connect or pull plugs only when the instrument is switched off.

The exposure meter is connected to the line at (1); it is suitable for the line voltages 110V, 120V, 220V, 240V.
Please ensure that the adjusted voltage - white dot set to either of 4 voltages - complies with the local line voltage.
To change the voltage, proceed as follows:

- Disconnect power cable from socket (1).
- There is a recess (6) between cable socket and fuse plate. Use a screwdriver or similar tool to lift out the plate.
- You can now pull out a square plate (7) from the small compartment to the right; the adjusted voltage is indicated on this plate opposite the black plastic part (8). The other voltages are imprinted on the remaining three sides.
- Shift (8) until it engages the recess opposite the voltage you want to set. Slide the plate back into the compartment - legend to the left. When the fuse plate is put on again, the white index pin will indicate the correct voltage.

Caution: When changing the voltage, check whether the right fuse (9) is inserted:
for 100 . . . 120 V, T 0,63 A (38 01 27-0180)
for 220 . . . 240 V, T 0,315 A (38 01 27-0150)

Keys and displays



For better identification, the legends of the displays are italicized (e.g. *OVER*) and those of the **keys** capitalized (e.g. START).
If a display or key lights, a function is activated or a specific state of a function displayed. A flashing key or display is intended as a reminder of something, e.g. to make an input, to end it, etc.

Most important:
Basic setting and exposure

All keys and displays and their application will be described below. To start with, the two most important operating controls:

- Power switch (Fig. 5, 2):
  When switched on, the camera is in normal position
- START key: exposure is released

The exposure control is connected with the camera and the power line and is operative when the power is on.
The following basic setting is displayed:
AUTO lights: the automatic exposure control is activated.
EXPOSURE TIME displays the adjusted exposure time.
"0" lights in EXPOSURE ADJUSTMENT: the exposure is automatically adjusted to 0.
RECIPR displays code number 3: sufficient compensation of the reciprocity failure for most applications.
This value can be changed by pressing *RECIPR* and UP or DOWN, or keyed in via ENTER.

START release key for exposure of the film. With the 35 mm camera, this is followed by data projection and film advance, and with the CB 33 camera attachment by motorized film advance.
Time display in *EXPOSURE TIME*: downcounting to 0.
The release is blocked if:

- no cassette is attached or no film loaded;
- the end of the film is attained;
- the film is advanced or rewound;
- an input has been started;
- *OVER* lights;
- one of the keys flashes because an adjustment is not terminated (exception: release is possible if DOUBLE flashes

Press T and release with START: the shutter opens; it is closed when START is pressed again. With this kind of exposure, *EXPOSURE TIME* counts up.

EXPOSURE ADJUSTMENT

-2	-1	0	+1	+2

Exposure adjustment in whole steps. Automatic setting to 0 (normal position) when the instrument is switched on.
+1 exposure time extended by 1 exposure value, i.e. by factor 2,
+2 = factor 4
- 1 = factor 0.5
- 2 = factor 0.25
Example: + 1 means that the exposure time will be one value longer than displayed by the automatic exposure control (when the exposure time is doubled, negatives will be darker and positives and Polaroid images brighter).

Applications:
1. General rule for **exposure correction** with center-weighted averaging in the following contrasting techniques:

Brightfield:	**+2 . . . +1**
Phase contrast, DIC:	**0**
Fluorescence, darkfield:	**- 2 . . . -1**

2. If you are not certain whether specific critical object features are better represented by projection or by a picture, it is recommended to use longer or shorter exposure times in addition to the determined one. This is made easy by the SERIES mode (described below) which permits automatic exposure series.

3. An automatic exposure control converts the brightness of an object into mean brightness of the image. The exposure correction informs the instrument whether the object is very bright or very dark and prevents, for example, a bright object from becoming "gray" in the slide because of underexposure. An exceptionally bright object will be bright also in the image if the exposure time is doubled, i.e. if correction factor +1 is set.
For dark objects, minus values must be set accordingly.

AUTO

Automatic exposure metering is automatically activated when the instrument is switched on. Correction factor can be set.

STORE

The measured exposure time is stored. It remains stored even if T or MAN is used. AUTO cancels the stored value.

Applications:
1. Exposure series of extended specimen areas. If the exposure time were not stored, the exposure and the brightness of the background would be different depending on the surface coverage.
2. To represent different intensities of multiple exposures taken with DOUBLE.

MAN

Manual input of fixed exposure times and display of the selected time.
When the instrument is switched on, *1s* is displayed; the exposure time can be changed in steps with UP and DOWN and input via ENTER.

T

activates the time mode:
If START is pressed after T, the shutter opens and is closed when START is pressed again.

RECIPR

Compensation of reciprocity failure.
The sensitivity of all photographic emulsions decreases when the illumination intensity drops to values which require an exposure time of 1s or more (reciprocity failure). Without compensation, long exposure times will result in underexposures. The exposure control compensates the failure automatically. Automatic adjustment is made in 9 steps for adjustment to the varying decrease in sensitivity of photographic emulsions. For the reciprocity code number which applies to your specific film please see page 18.
The code displayed by RECIPR can be changed with UP or DOWN and input with ENTER.

SERIES

Automatic 35 mm exposure series with specific time periods. Press SERIES, select the specific time periods in the desired sequence with EXPOSURE ADJUSTMENT and key them in with ENTER. The exposure series begins when START is pressed. End of film, exchange of film cassette or WIND will terminate the series which must then be keyed in again.

DOUBLE

Key for double exposures.
Press DOUBLE before releasing with START to prevent automatic film advance after the last exposure. For multiple exposures, press DOUBLE after each exposure.

Applications:
1. Multiple exposures of the same specimen field using different illumination techniques, fluorescence filters, etc.
2. Multiple exposures to imprint scale bars, marks, grids, etc.
Caution: because the exposures overlap at least in part, the single exposures should be shortened, e.g. with correction -1.

WIND

This key is used for blank exposures and to interrupt exposures. Film advance in the 35 mm camera, frame advance in the CB 33 camera attachment.

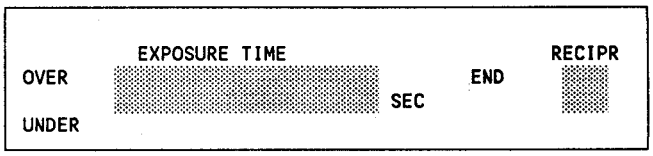
DOWN UP

These keys light if an input was started with MAN or RECIPR. UP increases each value by one step; the increase will be continuous if the key is held down.
DOWN reduces the value accordingly.

ENTER

Input key after MAN, RECIPR or SERIES.
If no input was started, the ASA number is displayed in *EXPOSURE TIME* for approx. 3 s if ENTER is pressed.

Display field



OVER lights if the exposure time will be shorter than 0.01 s; the zeroes in *exposure time* also light. This means that no exposure can be released with START unless a neutral-density filter is used.

UNDER lights if the lower limit of the measuring range (longer than 240 s with 100 ISO) has been exceeded or if the calculated exposure time will be longer than 9999 s. *EXPOSURE TIME* displays the approximated long exposure time or 9999.

EXPOSURE TIME displays the seconds from 0.01 to 9.99 in four digits, with decimal point, and in whole numbers from 10 s on.

END flashes if the end of the film has been reached or during rewinding, and lights continuously if no film has been loaded.

RECIPR displays the reciprocity code number (steps 1-9) keyed in via RECIPR, DOWN/UP and ENTER.

the microscopes **Axioplan**, **Axiotron** and **Axioskop**

- Insert the two focusing eyepieces (10) - one of which contains the photographic reticle for the camera - into the binocular phototube.
- Connect the fixture for the microscope camera (45 29 96) (8) with the phototube via the socket head cap screw SW3 (9) which engages the notch in the fixture.
- Plug eyepiece E-PI 10x/20 Br (44 23 31), photo eyepiece S-PI 10x/20 (44 40 39) or photo eyepiece S-PI 12.5x/16 (44 40 49) into fixture (8).
- Slide the MC 100 SPOT basic body (3) with the socket head cap screw SW 3 (4) in notch (7) on the fixture (8) as far as it will go and secure it by turning clamping ring (5) anticlockwise.
- Connect plug (18) to exposure control (17) (see page 6, item 5).

Note: We would recommend you to use the microscope base plate (45 14 93) for the Axioskop or (45 18 93) for the Axioplan and Axiotron in order to increase the stability, particularly if Polaroid cassettes are used.

the stereomicroscopes SV 6 and SV 11 or the microscope Axiovert

- The phototube S (13) or the TV/phototube S with two ports is fixed on the stereo body.
- The binocular tube (12) is mounted on the phototube and secured with clamping screw (14).
- A binocular phototube 70/30 or a binocular phototube with two ports is used for the Axiovert inverted microscopes. These tubes have a mount (15) for attachment of the microscope camera.
- Plug in the two focusing eyepieces. The right eyepiece contains the photo reticle which must be oriented and secured with clamping screw (11).
- Plug the mount for the microscope camera (45 60 06) (15) into the phototube or binocular phototube and secure with screw (16).
- Eyepiece E-PI 10x/20 Br (44 42 31), photo eyepiece S-PI 10x/20 (44 40 39) or photo eyepiece S-PI 12.5x/16 (44 40 49) are plugged into fixture (8).
- Loosen screw (4) and mount the basic body MC 100 SPOT, pointing forward, on the phototube as far as it will go and secure it by turning clamping ring (5) anticlockwise.
- Connect plug (18) to exposure control (17) (see page 6, item 5).

the Standard microscopes (not shown)

- Insert the mount for the microscope camera (45 60 02) into the binocular phototube S/45° with sliding prism and secure it.
- Insert a photo eyepiece from the Standard line, e.g. Kpl 10x, into the mount for the microscope camera.
- Mount the basic body MC 100 SPOT, pointing forward, on the phototube as far as it will go and secure it by turning clamping ring anticlockwise.
- Connect plug to exposure control (see page 6, item 5).

Mounting of camera attachments to the MC 100 SPOT basic body

Mounting of camera attachments is identical for all microscopes.

35 mm film cassette Mot

Mount the 35 mm film cassette Mot on the MC 100 SPOT basic body so that the contact pins firmly engage the sockets.

4x5" and CB 33 large-format attachments

Before mounting the 4x5" or CB 33 large-format attachments on the MC 100 SPOT basic body, turn knurled ring (1) or (2) - red index line to red index dot. Then mount the attachment (contact pins firmly engage the sockets) and secure it by turning the knurled ring anticlockwise.

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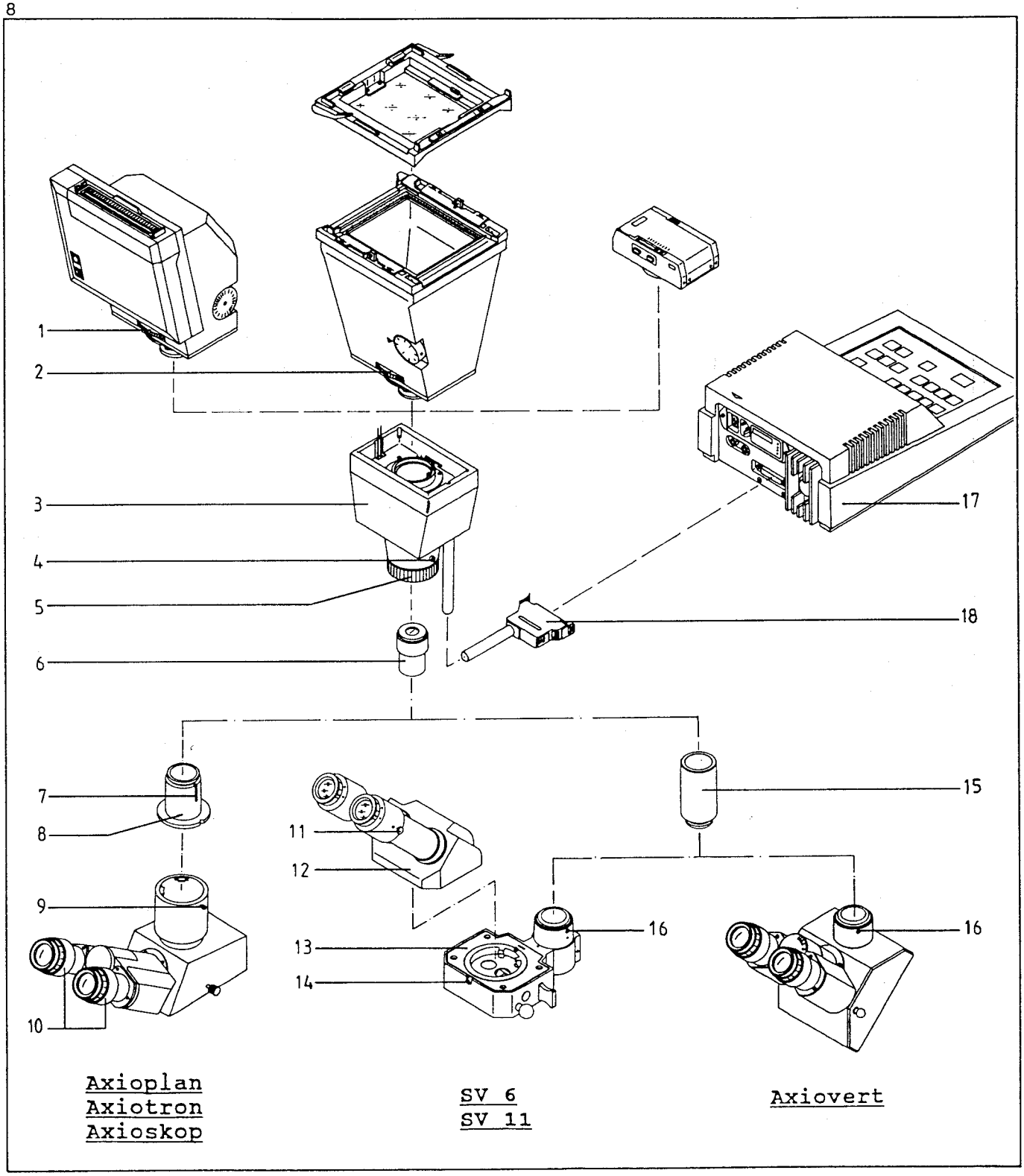
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Axioplan
Axiotron
Axioskop
SV 6
SV 11
Axiovert

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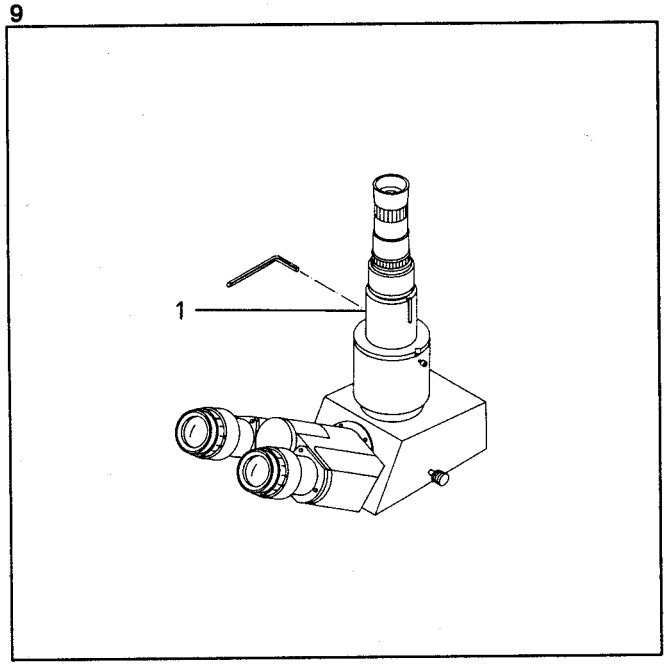

Checking the adjustment

The adapters of all microscopes to the microscope camera have already been exactly matched in the factory.
Readjustment is possible only with the adapter for microscope camera (45 29 96) (2), but required only in a few cases, e.g. if Axioplan, Axiotron or Axioskop microscopes are retrofitted with the MC 100 SPOT microscope camera or if the correct parfocalization of a microscope is doubtful.
Readjustment is made by focusing the microscope; the object must be in focus in both the observation tube and the phototube.
If adjustment is doubtful, checking and readjustment is possible with a 3x12 telescope.

- The photo eyepiece is in the adapter for microscope camera (2).
- The eyepiece with reticle is in the observation tube.
- Set 3x12 telescope to infinity.
- With the telescope on the focusing eyepiece with reticle, focus on the crosslines by turning the eyepiece.
- Focus the microscope with a high-contrast specimen and an objective of low magnification (e.g. 10x).
- Check and optimize the focus of the specimen image with the telescope on the photo eyepiece.
- If the image in the photo eyepiece is not in focus, the adapter (2) for the microscope camera must be readjusted as follows:
- Use screwdriver SW 1 to loosen clamping screw (1) and turn the tube until the specimen image is in focus.
- Secure tube by tightening clamping screw (1).
- Attach MC 100 SPOT microscope camera to the phototube.

4x5" Large-Format Attachment

consists of:

4x5" camera attachment (2)	45 60 56
4x optics for MC 100 SPOT (3)	45 60 55

The film speed is set with selector (6), and this ASA value is automatically transferred to the exposure control. When the 4x5" attachment is mounted on the basic body of the MC 100 SPOT, the exposure control automatically switches over to large format.
The large-format optics (3) can be removed for cleaning.

Large-format groundglass and cassette holder:
cassettes for the international camera back are slid behind the large-format groundglass which is lifted off before with lever (4).
The groundglass can be pulled out to the right by pressing lock (5); attachment is made accordingly. Most cassettes need not be held by the groundglass, but are secured by two clamps (1).
Accessories from the Sinar system (groundglasses, reflecting magnifier) fit in the groundglass frame.
It is recommended to stabilize the Axioskop microscope with a base plate (45 14 93) if the 4x5" camera attachment is mounted on this microscope. This base plate is screwed to the microscope base.

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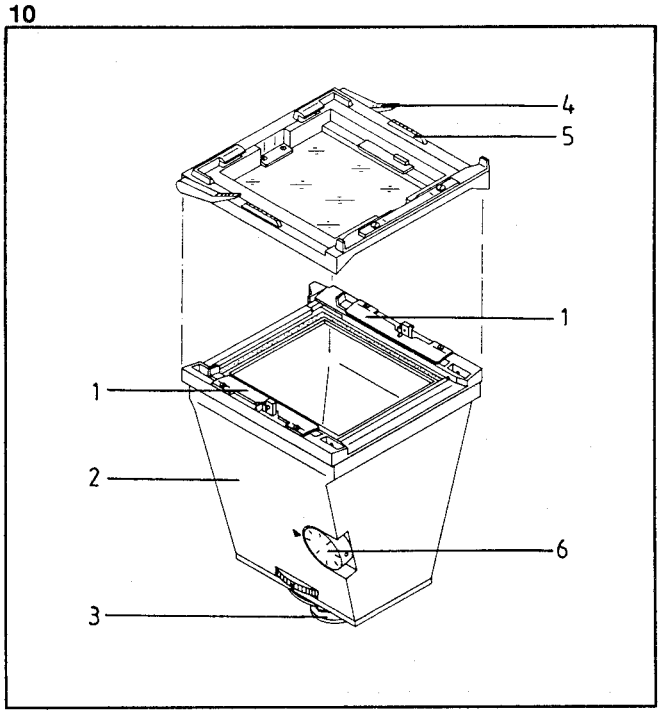

CB 33 Camera Attachment

The film speed is set with selector (12), and this ASA value is automatically transferred to the exposure control. When the CB 33 attachment is mounted on the basic body of the MC 100 SPOT, the exposure control automatically switches over to large format.
Loading a film pack:
Pull out lid (10) forward by holding the plastic piece (7) and slide in film pack from above so that its closed cover is in front and the eject opening on top.
If the lamp in window (11) lights, the wrapper is still in front of the film. If the green key (8) is pressed, the wrapper is ejected and the light goes out.
The number of frames (from 1-10) is shown in window (9). Each picture is ejected after exposure and the next one made ready for exposure.
The camera optics can be removed for cleaning.
Caution: when the CB 33 camera attachment is removed from the basic body of the MC 100 SPOT, the ready picture is exposed.

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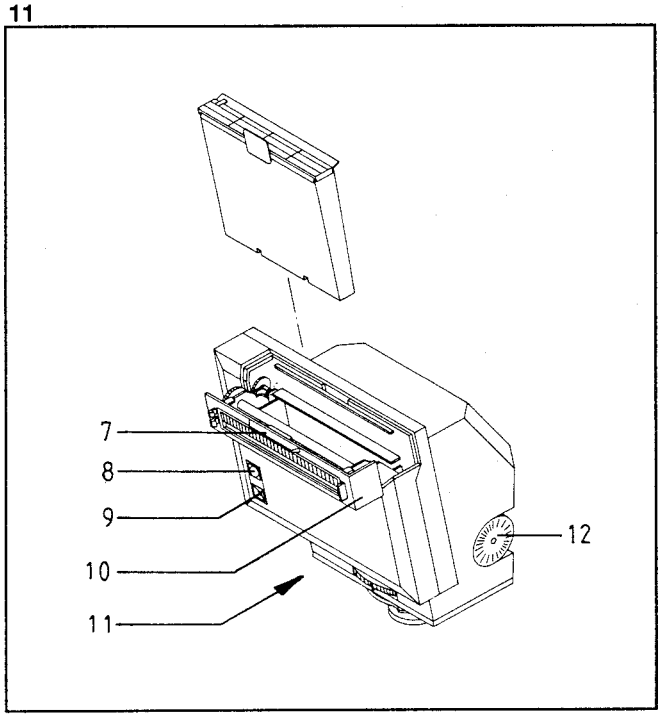

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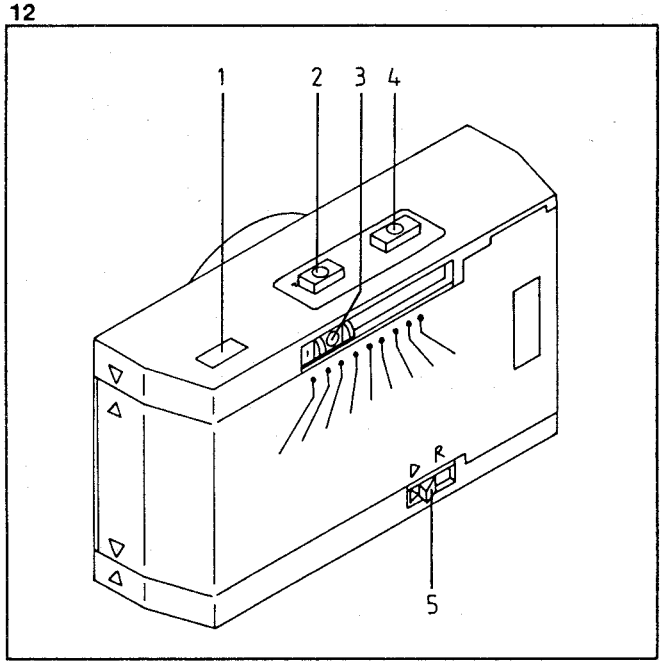

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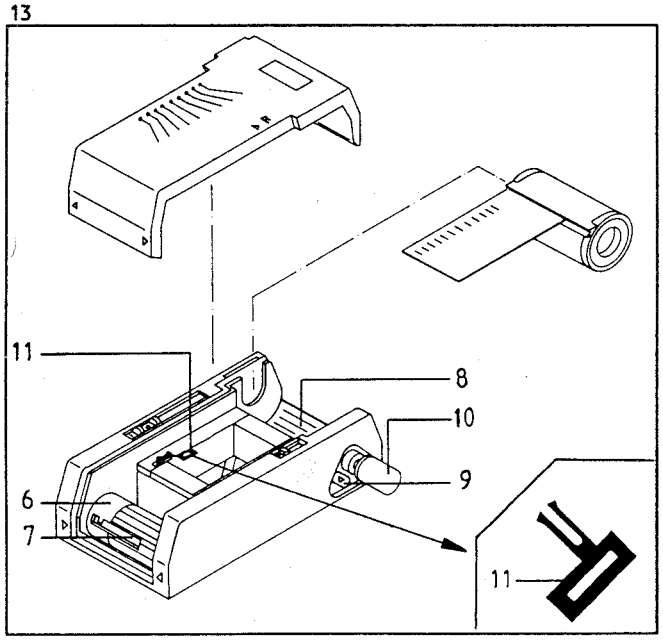

35 mm Film Cassette Mot

Taking the cassette off:
press "eject" key (4), marked red, and take the cassette off.

Setting the film speed: press key (2) and push slide (3) (both marked green) until it engages. The set ASA value is automatically transferred to the exposure control.

Loading the film: push lock (9) (bottom) in the direction of the arrow; the cartridige holder is ejected and the back can be taken off. Load cartridge in (8), push in holder (10) and insert leader in slot (7); the sprocket teeth must catch the perforation; tighten the spool by turning the take-up spool (6) outward (this can be done only if the rewind slider (5) is set to "R"); insert left side of camera back (arrows) and press on the right side. The EJECT key jumps out. The mechanical counter (1) is set to "S".

Attaching the cassette: Press the cassette on the contact pins of the basic body of the MC 100 SPOT so that the counter points to the front, in the direction of the user. If the control panel is switched on, the film advances automatically to the first picture and the counter is set to 0. During and 3 s after the automatic advance to the first picture the ASA number is shown on the digital exposure time display of the exposure control. The instrument then changes to the previously set operating mode.
After exposure (and data projection, if data back is used) the film is advanced and the frame number displayed by the counter (1) of the cassette.
When the end of the film is reached, the film advance switches off and the display END of the exposure control flashes.

Rewinding the film: operating slider "R" (5) automatically rewinds the film; the display END flashes.
Automatic reset when attaching the camera back. After unloading the film, the slider "R" is automatically set to normal film advance position when the camera back is attached.

Data back (45 60 74) for 35 mm film cassette Mot:
Attached like the normal camera back.
Year/month/day/hour/minute can be set.
For further details please see operating instructions G 42-402.

Mask for data projection
A mask with a reference bar (11) can be projected on the film when the 35 mm film cassette Mot is used. The data from the data back (45 60 74) (if available) is projected on a dark background directly above the bar.

Removal of the mask
The mask can be easily removed, if not required:
- open film cassette (back)
- pull out mask carefully in the direction of the arrow (Fig. 13).

Insertion of the mask
- open film cassette (back)
- insert mask carefully in the slot as far as it will go, with the longer side facing the film advance spool.

Reference scale
The mask contains a 5 mm long, bright window as a reference scale which is projected on the film together with the object. The reference length (M), with usual camera factor 2.5x (with eyepiece 10x), is obtained as follows:

$$M = \frac{2000}{V_{Obj} \times F_{Optovar}} [\mu m]$$

M_{Obj} is the magnification of the objective and

$F_{Optovar}$ the factor of the Optovar system.

Magnification on the film

is the product of:

- magnification of the objective
- zoom factor (if available).
- camera factor*)
- factor of the photo eyepiece

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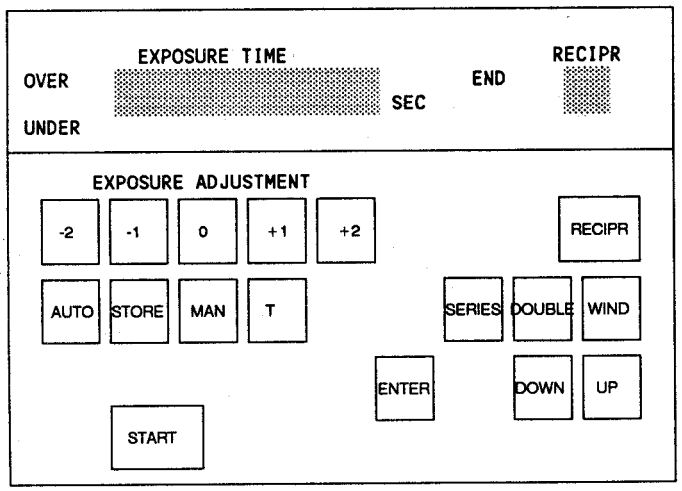
*)camera factor = 0.25x with 35 mm camera
1x with large-format attachment



B/W Photomicrography

The microscope is ready for observation. Crosslines and object are in focus. At low magnifications, use an auxiliary telescope for adjustment. Set the pushrod of the phototube to photography.
Load a film in the cassette (for the right film choice see page 18) and attach the cassette.
The exposure control is connected with camera and line.
Switch on the exposure control.
Displays:
OVER lights: reduce the brightness with neutral-density filters
UNDER lights: is the light path free?
The determined exposure time is displayed
RECIPR displays 3. If the loaded film requires another reciprocity code number (see table on page 18), key in this value with RECIPR, DOWN/UP and ENTER.
Release with START.
A green filter (see page 19) can be used for contrast enhancement.

Color Photomicrography

In addition to the above, observe the following for color photomicrography:
Color reversal film is available for daylight (5500 K) and artificial light (3200 K). High color fidelity is ensured if the color temperature values are correct to within approx. 100 K. For photomicrography we recommend artificial light reversal film (3200 K). If daylight film is used instead, the conversion filter is required, which increases the color temperature from 3200 K to 5500 K.
(Flashlight has daylight color temperature).

Important: the color temperatures of film and light source must coincide or be matched by filters and/or voltage adjustment.
Set the voltage for the light source to the value required for 3200 K. For 3200 K, the 12V 50W Hal illuminator of the Axioskop microscope must be set to 12V, the 12V 100W Hal illuminator of the Axioplan microscope to approx. 11V. Too much brightness can be attenuated by one or several neutral-density filters which have no influence on the color temperature.

Photomicrography in fluorescence, darkfield, etc.

Overexposures due to dark background (negative too dark, bright slide, Polaroid picture too bright) can be corrected with "- 2" EXPOSURE ADJUSTMENT. If, in extreme cases, "- 2" is insufficient, the range of correct exposure can be further extended by "Man", "Up", "Down".
If the brightness is exceptionally low, straylight may reach the film through the microscope eyepieces and be imaged. In that case, no light source should be used behind the user, the room illumination should be dimmed or an eyepiece shutter be used, if available.

Center-weighted averaging or spot metering

Center-weighted averaging
This metering technique should be used whenever the structures in the image cover the full area or large areas in the center of the image. The exposure meter will then determine the correct exposure time for exactly the structures which are of interest to you. If there is no object, but only white background in the center of the image - which is often the case with stained, not very homogeneous tissue sections - the exposure meter will select a very short exposure time and underexpose the important part of the image. Correction can then be made via the keys EXPOSURE ADJUSTMENT +1 or +2.
Another possibility is the use of the spot metering technique.

Spot metering

If the object coincides with the spot size (circle around the double crosslines in Fig. 15) or is larger, spot metering permits optimum exposures. The correct exposure time will be determined automatically especially for small objects before a dark backgound (often the case in fluorescence and darkfield) or before a white background (brightfield).

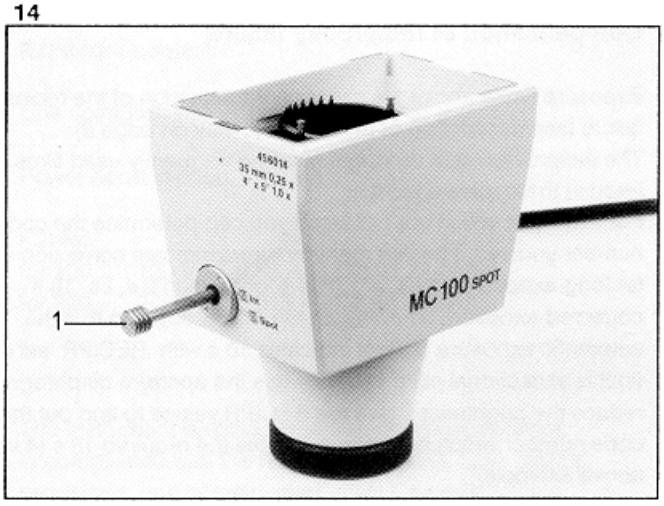
Spot metering is activated by pulling pushrod (1). View through the eyepiece with reticle and position the important part of the object below the double crosslines, i.e. into the measured area. The digital display shows the optimum exposure time which can be stored with the STORE key if you want to position the object elsewhere. Press the START key of the exposure control.

The photographic reticle

The image section covered by the 35 mm film cassette Mot is outlined on the photographic reticle. The adjustment can be checked with the double crosslines in the center: crosslines and object image must both be in focus. A focusing eyepiece which is contained in the delivery package is equipped in the factory with an oriented photographic reticle. This eyepiece with reticle is inserted in one of the binocular tubes, and the camera is aligned parallel with the photographic reticle.

The eyepiece with reticle is inserted in the Axioplan, Axiotron, Axioskop and Axiovert microscopes so that its guide pin engages the notch in the tube; in the stereomicroscopes it is aligned by turning and secured with the eyepiece clamping screw.

14



15

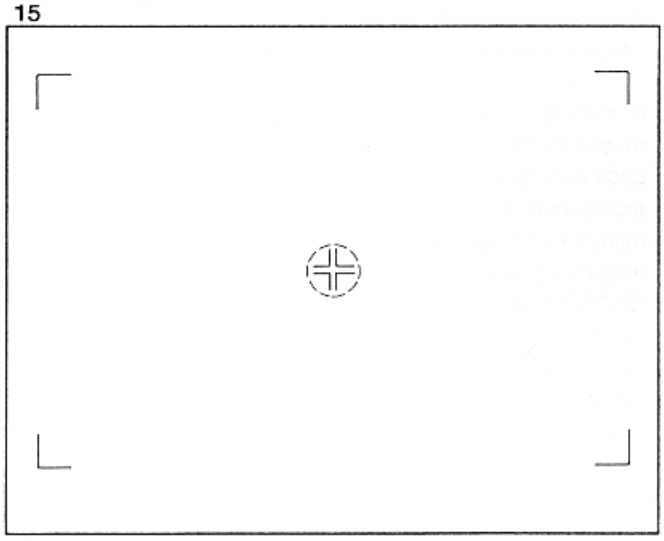


Figure 16

35 mm film cassette Mot

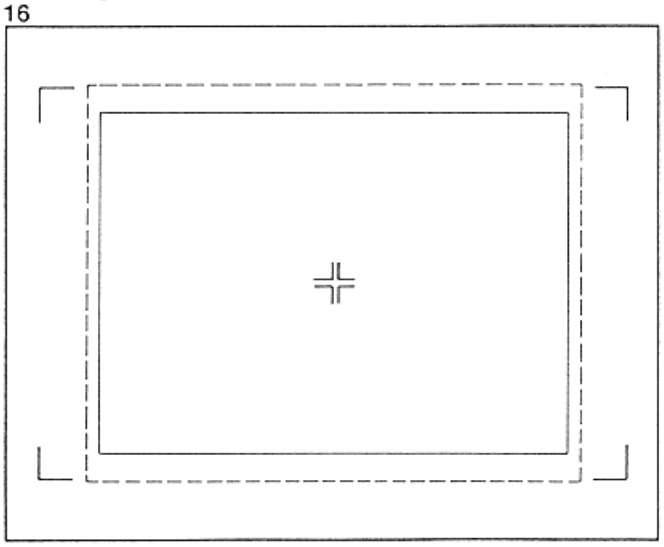
not marked on the reticle:

4x5" sheet film

9 x 12 cm sheet film

Measured area for spot metering

16



Compensation of reciprocity failure

Exposure times above 1 s call for compensation of the reciprocity failure (see description of the RECIPR key on page 9).
The reciprocity code numbers of some frequently used films are listed in the opposite table.
For film types which are not listed you can determine the code number yourself. The film manufacturers indicate correction values for long exposure times, e.g. 10s + correction 8 s, i.e. 18 s corrected exposure time. Adjust the microscope so that the automatic exposure control indicates 10 s with RECIPR set to 0 (in this exceptional case you may use the aperture diaphragm to reduce the brightness). Use the RECIPR values to find out the code number which best approximates the required 18 s (4 in the above example).

For color photomicrography remember the correction by filters which is recommended by film manufacturers.

If the manufacturer does not give corresponding information, you must make a number of test exposures with different reciprocity code numbers to find out the right one. First make a reference exposure with an exposure time clearly below 1 s. Then use as many neutral-density filters (filter set (48 78 40) or filters in the filter magazine) as are required to obtain an exposure time of 10 s. RECIPR must be set to 0!
Then make an exposure series with the RECIPR values 1 - 9.
After development you can compare the reference exposure (with the short exposure time) with the long-time exposures.
The exposure which best approximates the reference exposure indicates the correct reciprocity code number.

Reciprocity code numbers for some frequently used film types

Film		Code
Agfachrome	50 RS, 100 RS, 200 RS	5
Professional	1000 RS	4
Fujichrome	50 D (RFP), 100 D (RDP)	3
Professional	400 D (RHP)	1
	1600 D	4
	64 T (RTP), artificial light	2
Kodachrome Prof.	25 (PKM), 64 (PKR), 200 (PKL)	8
Kodak Ektachrome		
Professional	64 T (EPY), artificial light	1
	160 (EPT), artificial light	5
	64 (EPR), 100 (EPN),	6
	100 PLUS (EPP), 200 (EPD)	6
	400 (EL), P800/1600 (EES)	6
Konica Chrome	100	1
Polachrome	CS	9
Polaroid	58	7
Polaroid Prof.Chr.	4x5" 64 T, artificial light	2
Scotch Chrome	100	6
	400, 640 artificial light	5
	1000	4
	800/3200 P	0
Agfapan Prof.	100, 200, 400	8
Agfaortho Prof.	25	1
Ilford	Pan F (50), FP4 (125)	4
	HP5 (400)	6
Kodak	T-MAX 100 (TMX)	4
Professional	TMAX 400 (TMY), P 3200 (TMZ)	5
	Tri-X-Pan (TX)	9
Kodak	Technical Pan (TP)	3
Polaroid	52, 53, 55, 552, 553	1
	57	4

Filters for photomicrography	ø 32mm	ø18mm
Neutral-density 0.50 (50% transmis.)	46 78 40	
Neutral-density 0.12 (12% transmis.)	46 78 41	
Neutral-density 0.03 (3% transmis.)	46 78 42	
Neutral-density 0.25 (25% transmis.)		46 78 56
Neutral-density 0.06 (6% transmis.)		46 78 55
Conversion filter 3200-5500K	46 78 47	46 78 54
Blue filter CB 6	46 78 51	
Blue filter CB 3	46 78 52	
Green interference filter	46 78 03	46 78 59

Exposure control:

Line voltage: 100 V; 120 V; 220 V; 240 V

Power consumption: 20 VA

Fuses:
for 100 . . . 120 V; T 0,63 A (38 01 27-0180)
for 220 . . . 240 V; T 0,315 A (38 01 27-0150)

The instrument is radio-screened, short-circuit-proof, in compliance with the relevant VDE, IEC, CSA and UL provisions, and of instrument class I, type B.