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Magnification and reproduction ratio	Exposure factor at exit/ entrance pupil ratio 1.0	Depth of field in in			Object field in in
		f/8	f/11	f/16	
0.1 = 1:10	1.2 x	2.4	3.2	4.8	9.5 x 14
0.2 = 1:5	1.4 x	0.6	0.8	1.2	4.7 x 7
0.3 = 1:3.3	1.7 x	0.3	0.4	0.6	3.2 x 4.7
0.4 = 1:2.5	2 x	0.2	0.25	0.4	2.4 x 3.6
0.5 = 1:2	2.3 x	0.12	0.16	0.24	1.9 x 2.8
0.6 = 1:1.67	2.6 x	0.10	0.12	0.20	1.6 x 2.4
0.7 = 1:1.4	3 x	0.08	0.10	0.16	1.3 x 2
0.8 = 1:1.25	3 x	0.06	0.08	0.12	1.2 x 1.8
0.9 = 1:1.1	3.6 x	0.05	0.06	0.10	1.1 x 1.6
1 = 1:1	4 x	0.04	0.06	0.08	0.95 x 1.42
1.5 = 1.5:1	6 x	0.024	0.03	0.05	0.63 x 0.95
2 = 2:1	9 x	0.015	0.02	0.03	0.5 x 0.7
3 = 3:1	16 x	0.01	0.013	0.02	0.3 x 0.5

Round values

Design subject to alteration without notice.

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19909 - 160



## VISOFLEX III INSTRUCTIONS

160-2 b/Engl.

# ® VISOFLEX III

## Operation

## Possibilities

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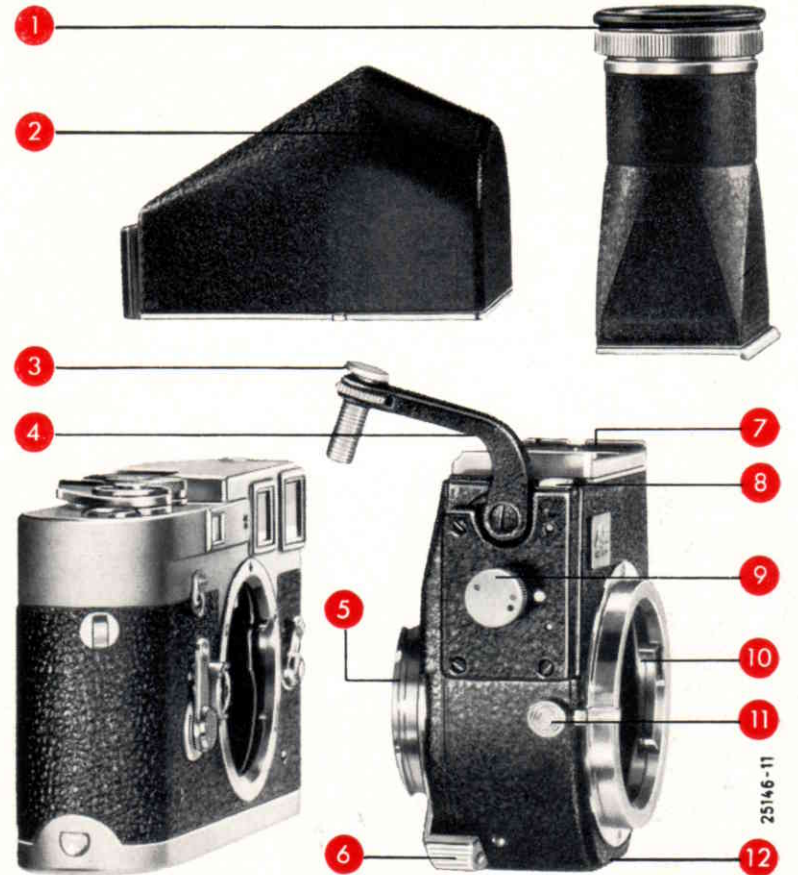


The VISOFLEX III mirror reflex attachment with quick-change bayonet mount can be used on any LEICA®-M body. It can be changed as a complete unit like any LEICA lens. It is simple and easy to operate. But since the VISOFLEX offers an unusual number of possibilities, we would suggest that you study these brief instructions at leisure. It will give you much good advice and thus further increase the pleasure of using your LEICA equipment.

® = Registered Trademark

## Description of the VISOFLEX III

- 1 Simple 5x magnifier (side-reversed image) 16 461 with focusing eyepiece for the compensation of visual defects within the range of + 1.75 to - 2.5 dioptries.
- 2 Right-way-round 4x observation magnifier, Code No. 16 499.
- 3 Release button, underneath screw for the adjustment of mirror movement and shutter action. For use on the LEICA M5 the bottom part of the release button must be unscrewed.
- 4 Release lever acts directly on the release button of the LEICA and controls the swinging out of the deflecting mirror in the VISOFLEX III.
- 5 Bayonet fitting for attachment to the LEICA body.
- 6 Bayonet lock.
- 7 Finegrain groundglass screen with central measuring field of the exposure meter of the LEICA M5 and etched line markings 10mm apart.
- 8 Conical thread for cable release for swinging out the mirror and for shutter release.
- 9 Setting knob for mirror movement.
- 10 Deflecting mirror.
- 11 Catch for locking and unlocking the lens or the adapters.
- 12  $\frac{1}{4}$  in tripod bush.



## Attaching the VISOFLEX to the LEICA

Set lever on the right of the underside of the mirror-reflex-attachment so that its red dot faces the red dot on the VISOFLEX housing and attach the mirror-reflex-attachment precisely vertically to the LEICA from the front. Ensure that the two bayonet fittings are correctly seated by turning the VISOFLEX slightly to the left and to the right and move the locking lever (6) upwards.



**You have a choice of 3 different mirror settings** depending on requirements and the problems to be solved.

- 1 Yellow dot: the mirror moves rapidly out of the beam immediately before shutter release.
- 2 Black dot: For particularly gentle shutter release the mirror is swung out slowly with the lever movement.

As soon as the release button (3) is freed, the release lever (4) automatically returns to its starting position.

- 3 Red dot: The mirror remains locked in the upper position, so that several exposures in succession are possible without mirror movement (macro-micro).



## Adjusting the release lever

The best adjustment of LEICA and VISOFLEX is obtained in the red-dot position:

For use on the LEICA M5 the bottom part of the release button (3) on the VISOFLEX III must be unscrewed.

The distance between adjustment screw and the camera release button should be about 1mm so that even at the highest shutter speed the mirror unblocks the optical path only just before the shutter is released. Turn the adjustment screw until the lever of the VISOFLEX is separated from the LEICA release button by a "light slit".



## Mounting and removing the magnifier

The magnifier is pushed across the groundglass screen from the rear as far as it will go. The button on the left engages in this position; it must be depressed for removal of the magnifier.

Visual defects can be compensated with correction lenses 14118. It is, however, mostly possible to view the entire viewfinder field even with spectacles, because the exit pupil is in a very favourable position.



## Inserting the lens

Screw the lens unit into the focusing bellows or the helical adapter used and lock this – red dot facing red dot – by slightly turning it to the right.



## Focusing

Focusing is most reliable at full lens aperture, because here the depth of field is shallowest. Transition from sharpness to unsharpness is thus most noticeable. For focusing turn the knurled ring on the focusing adapter.

## Exposure measurement with the LEICA M 5

The exposure meter of the LEICA M 5 measures selectively, i.e. only a part of the total subject. The measuring field is clearly defined on the groundglass screen (7) of the VISO-FLEX III. Its size does not change for the various focal lengths.

For exposure measurement the mirror (10) is swung out of the optical path via the release button (3). It is best to set the mirror adjustment at the black dot (see p. 7). At the same time the two pointers in the viewfinder of the camera are made to coincide.

The following rule of thumb can be adopted for hand-held exposures:

Choose at least a shutter speed of  $1/\text{focal length}$  in mm.

This means, e.g. focal length 65mm =  $1/60$  sec

focal length 90, 135mm =  $1/125$  sec

focal length 200mm =  $1/200$  sec.

For hand-held exposures use should be made of every opportunity to lean against or rest on some support or to prop up the camera equipment. The LEITZ table-top tripod is a very useful aid. With slow instantaneous and time exposures it is best always to use a tripod with ball-and-socket head and to operate the shutter with a cable release.



## Possibility of combination via a universal focusing mount

Technical data next to the illustrations of the lenses

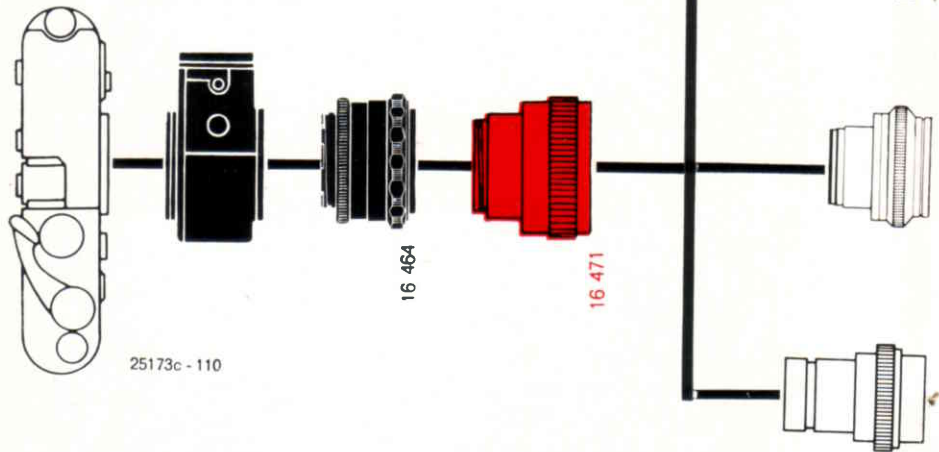
Focusing range  
(object-to-film plane)

Reproduction  
scale

always  
for the  
minimum  
distance

Exposure  
factor

Object size



Black: data and adapters for normal focusing range

Coloured: data and adapters required for the  
close-up and the macro range respectively

(All values are rounded off).

### 65mm ELMAR® f/3.5

$\infty$  = 33cm (13 in)/1:2.4  
5.9 x 8.8cm (2<sup>5</sup>/<sub>16</sub> x 3<sup>7</sup>/<sub>16</sub> in)  
exposure factor 1.7x

33 – 27cm (13 – 10<sup>5</sup>/<sub>8</sub> in)/1:1.2  
3.0 x 4.5cm (1<sup>1</sup>/<sub>8</sub> x 1<sup>11</sup>/<sub>16</sub> in)  
exposure factor 2.6x

### 90mm ELMARIT f/2.8

Lens unit  
 $\infty$  – 51cm (19<sup>11</sup>/<sub>16</sub> in)/1:3.3  
7.9 x 11.8cm (3<sup>1</sup>/<sub>8</sub> x 4<sup>3</sup>/<sub>4</sub> in)  
exposure factor 1.6x

52 – 39cm (9<sup>11</sup>/<sub>16</sub> – 15<sup>3</sup>/<sub>8</sub> in)/1:1.7  
4 x 6cm (1<sup>9</sup>/<sub>16</sub> x 2<sup>3</sup>/<sub>8</sub> in)  
exposure factor 2.4x

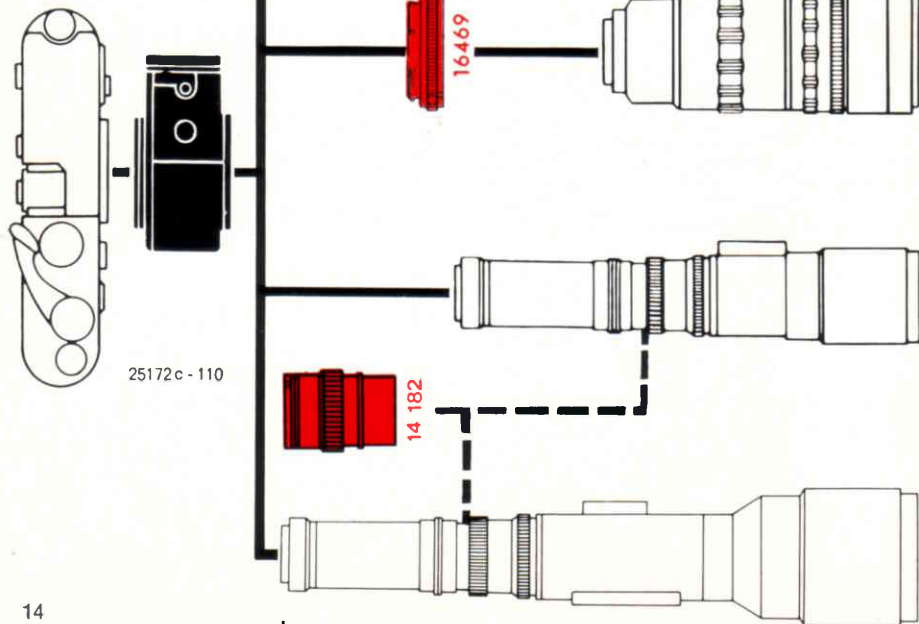
### 135mm TELE-ELMAR f/4

Lens unit  
 $\infty$  – 99cm (38<sup>1</sup>/<sub>2</sub> in)/1:4.9  
11.8 x 17.8cm (4<sup>5</sup>/<sub>8</sub> x 7<sup>1</sup>/<sub>8</sub> in)  
exposure factor 1.7x

101 – 68cm (40 – 27<sup>1</sup>/<sub>4</sub> in)/1:2.5  
6 x 9cm (2<sup>3</sup>/<sub>8</sub> x 3<sup>9</sup>/<sub>16</sub> in)  
exposure factor 2.6x



**Possibilities  
of combination  
with long-  
focal-length  
lenses**



**200mm TELYT f/4**

∞ – 300cm (10 ft)/1:12.8  
30.7 x 46.0cm (12 x 18 in)  
exposure factor 1.3x

303 – 174 cm (10 ft 1 in to  
5 ft 8 in)/1:6.4  
15.4 x 23.1 cm (6<sup>1</sup>/<sub>8</sub> x 9<sup>1</sup>/<sub>4</sub> in)  
exposure factor 1.6x

**280mm TELYT f/4.8**

∞ – 350cm (11 ft 8 in)/1:10.1  
24.2 x 36.3 cm (9<sup>3</sup>/<sub>4</sub> x 14<sup>1</sup>/<sub>2</sub> in)  
exposure factor 1.3x

858 – 276 cm (28 ft 2 in –  
10 ft 10 in)/1:7.4  
7.9 x 26.8cm (7<sup>1</sup>/<sub>4</sub> x 10<sup>5</sup>/<sub>8</sub> in)  
exposure factor 1.5x

**400mm TELYT f/6.8**

∞ – 353cm (11 ft 9 in)/1:6.7  
16 x 24cm (6<sup>3</sup>/<sub>8</sub> x 9<sup>7</sup>/<sub>8</sub> in)  
exposure factor 1.5x

353 – 226cm (11 ft 9 in –  
7 ft 5 in)/1:3.3  
8 x 12cm (3<sup>3</sup>/<sub>8</sub> x 4<sup>7</sup>/<sub>8</sub> in)  
exposure factor 2.1x

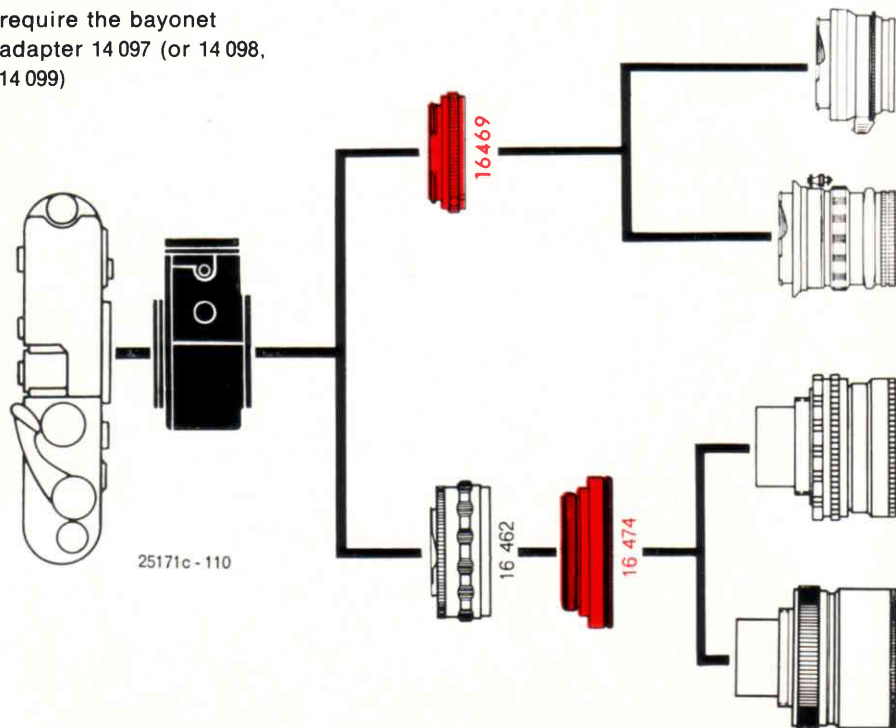
**560mm TELYT f/6.8**

∞ – 641cm (17 ft 9 in)/1:9.3  
22.4 x 33.6cm (9 x 13<sup>1</sup>/<sub>2</sub> in)  
exposure factor 1.5x

641 – 386cm (17 ft 9 in –  
12 ft 8 in)/1:4.7  
11.2 x 16.8cm (4<sup>1</sup>/<sub>2</sub> x 6<sup>5</sup>/<sub>8</sub> in)  
exposure factor 2.1x

**Possibilities of combination\*  
for 35 and 50mm lenses,  
90mm SUMMICRON and 135mm ELMARIT**

\* Lenses in screw mount  
require the bayonet  
adapter 14 097 (or 14 098,  
14 099)



**35mm lenses**

Focal length\*

13.9cm (5<sup>1</sup>/<sub>2</sub>in)/1.2:1

2.1 x 3.1cm (3/4 x 1<sup>1</sup>/<sub>8</sub> in)

exposure factor 4.8x

14.3cm (5<sup>5</sup>/<sub>8</sub> in)/1.5:1

1.7 x 2.5cm (5<sup>5</sup>/<sub>8</sub> x 1 in)

exposure factor 6.1x

**50mm lenses**

Focal length\*

20.3cm (8<sup>3</sup>/<sub>8</sub> in)/1:1.3

3.1 x 4.6cm (1<sup>1</sup>/<sub>4</sub> x 1<sup>7</sup>/<sub>8</sub> in)

exposure factor 3.1x

20cm (8 in)/1:1

2.4 x 3.6cm (1<sup>5</sup>/<sub>16</sub> x 1<sup>7</sup>/<sub>16</sub> in)

exposure factor 3.8x

**90mm SUMMICRON f/2**

In short mount

∞ x 72cm (28 ft 4 in)/1:6

14.4 x 21.6cm (5<sup>7</sup>/<sub>8</sub> x 8<sup>1</sup>/<sub>2</sub> in)

exposure factor 1.3x

74 – 47cm (29 – 18<sup>1</sup>/<sub>2</sub> in)/1:3.1

7.3 x 11.0cm (2<sup>7</sup>/<sub>8</sub> x 4<sup>3</sup>/<sub>8</sub> in)

exposure factor 1.7x

**135mm ELMARIT f/2.8**

In short mount

∞ – 153cm (64<sup>1</sup>/<sub>2</sub> in)/1:9.1

21.7 x 32.5cm (8<sup>1</sup>/<sub>2</sub> x 12<sup>7</sup>/<sub>8</sub> in)

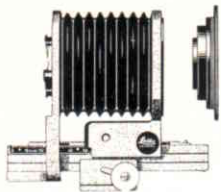
exposure factor 1.4x

157 – 94cm (66<sup>1</sup>/<sub>8</sub> – 37 in)/1:4.6

11.0 x 16.5cm (4<sup>3</sup>/<sub>8</sub> x 6<sup>5</sup>/<sub>8</sub> in)

exposure factor 1.8x

## Focusing bellows II



Focusing continuous from  $\infty$  to close-up work with the 65, 90, 135, 200, and 280mm LEICA lenses; for extreme close-up photography with 35 and 50mm. The Ideal VISOFLEX III accessory for macrophotography.

For further details see special leaflet No. 160-1



## Copying stand

For the attachment of the LEICA with VISOFLEX II/III with or without focusing bellows III and the LEICA-FLEX®.

## 560 and 400mm TELYT rapid-action lenses



27589 - 110

For reportage, sports and wild-life photography.

For further details see prospectus Nos. 111-69 and 120-44.

## Notes for close-up photography

- 1. Reproduction ratio** =  $\frac{\text{Negative size}}{\text{Object size}}$
- 2. The required extension** by means of helical focusing mount, bellows, or extension ring depends on the focal length used. It corresponds to the reproduction ratio.  
Example: At reproduction ratio  $1:5 = \frac{1}{5} = 0.2$  the extension also amounts to 0.2 of the focal length used, e.g. 18mm with a 90mm lens.
- 3. The exposure factor** depends on the reproduction ratio and the exit/entrance pupil ratio. Stop down the lens. With the aid of a scale measure first the exit pupil (rear) and then the entrance pupil (front). The exposure factor can be calculated according to the following formula: 
$$\text{E.F.} = \left( 1 + \frac{\text{Reproduction ratio}}{\text{Exit/entrance pupil ratio}} \right)^2$$
  
Examples:
  1. Reproduction ratio 1:1  
Exit/entrance pupil ratio 1.5  $\text{E.F.} = \left( 1 + \frac{1}{1.5} \right)^2 = 2.8$
  2. Reproduction ratio 1:1  
Exit/entrance pupil ratio 1.0  $\text{E.F.} = \left( 1 + \frac{1}{1} \right)^2 = 4$
  3. Reproduction ratio 1:1  
Exit/entrance pupil ratio 0.5  $\text{E.F.} = \left( 1 + \frac{1}{0.5} \right)^2 = 9$
- 4. The line markings** on the groundglass screen of the VISOFLEX III are 10mm apart. To determine the reproduction ratio place an mm-scale in the focusing plane.
- 5. The depth of field in the close-up range** extends about equally in front and behind the focusing plane, i.e. the plane on which the lens has been critically focused.
- 6. Depth of field and exposure factor** are independent of the focal length of the camera lens used at a given reproduction ratio and a given exit/entrance pupil ratio.
- 7. Recommended stopping down:** f/11 or f/16.