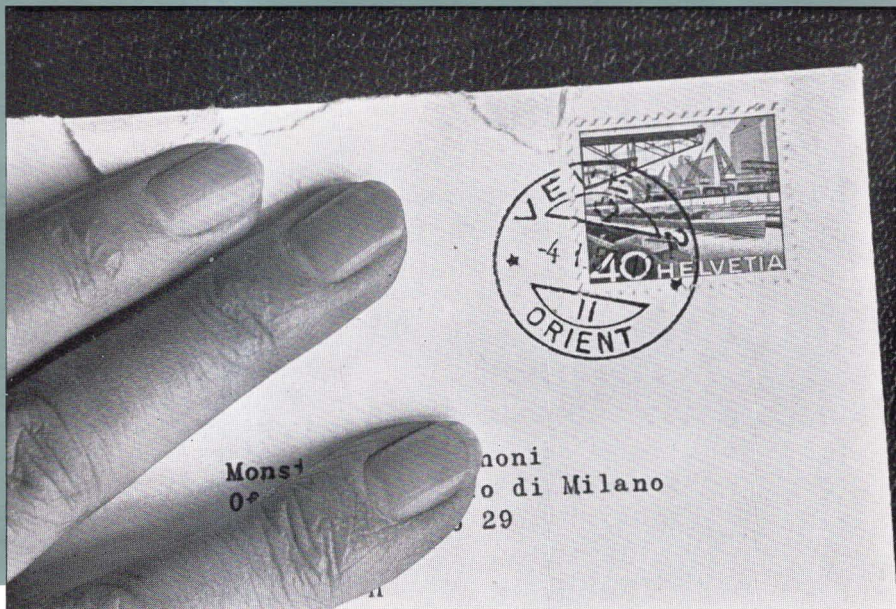


INSTRUCTIONS



7



GaMi 16 copying outfit

GaMi 16 copying outfit

The GaMi 16 Copying outfit is used to take pictures of documents, drawings, illustrations or small objects which must be accurately focused at short range.



The main features of GaMi subminiature camera stand forth particularly in copy work, reproduction and macrophotography: in fact the built-in exposure meter allows an accurate setting of the exposure without preliminary trials.

An exact framing of the object is obtained by the automatic parallax-corrector built-in the view-finder. Flash light may be used because of the incorporated flash X TYPE synchronization. The built-in spring motor provides the motion of the film and the cocking of shutter: each winding of the spring motor allows three single shots in sequence.

The copying outfit consists of a 18" x 18" plywood base and of a 26" metallic column with sliding arm to which the camera can be secured, lens downwards, by means of a screw which has, inside, an electric conductor connecting the GaMi incorporated synchronizer with a standard terminal for flash light.

The arm carries also a small horizontal telescope — (adjustable eye-piece for individual eye correction) — looking into the GaMi 16 viewer.

In this way the operator makes use of the camera's coupled range-finder, viewer and parallax-corrector, to frame and focus the subject.

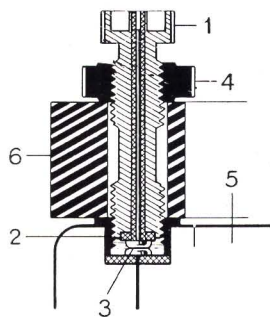


fig. 1

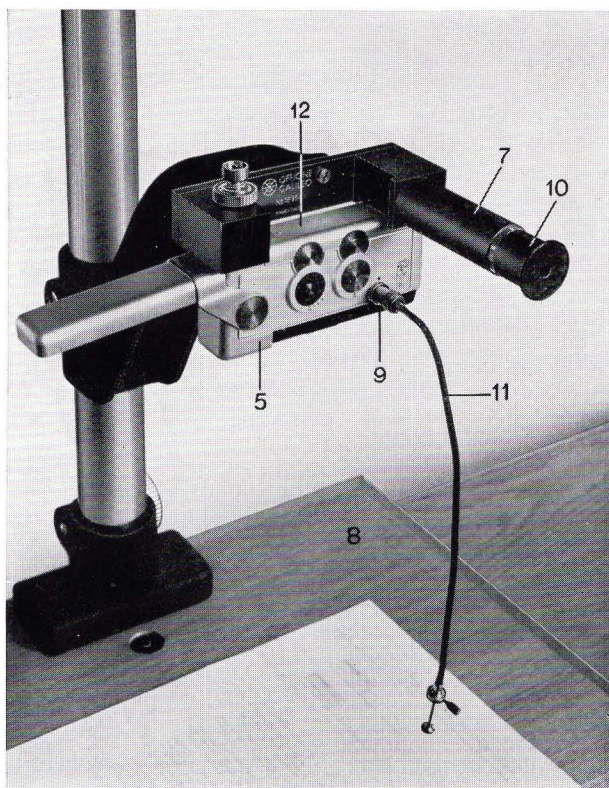


fig. 2

Instructions:

In order to secure GaMi 16 camera to the arm of the copying outfit, tighten screw (1) (fig. 1) into tripod socket (2) so that electric contact may be obtained in (3).

Lock nut (4) until camera (5) is firmly fastened to arm (6).

Base board (8), will be seen through telescope (7) (fig. 2) just as if it were viewed through GaMi 16 view-finder (9). The internal photometric numbers and symbols will be seen as well.

These symbols will be focused by sliding gently, to and fro, eye-piece (10).

Use of cable release is advisable. When subject is flat, well lighted and spread out

on surface (8), pictures can be taken in the usual way.

Loading and unloading of camera is easy also while the latter is secured to the copying outfit. In fact, the back cover is always free and may be opened whenever you like.

How to use it

Films: Proper attention should be given to the fact that, usually, the higher the film speed, the smaller the contrast and sharpness because of coarse grain.

When you have to reproduce documents, letters, black and white prints and, in general, flat objects for which detail and con-

trast are required, either low speed films ($6 \div 12$ ASA) or special high contrast ones for reproductions, should be used, as for instance Kodak Microfile and Gevaert duplicating.

When on the contrary you have to reproduce either black and white drawings or multicoloured ones with shadings and also solid objects with natural shadows, $25 \div 50$ ASA Films and colour films are suggested.

High speed films, as a rule, are not fit for reproductions and may be used when strictly, necessary, with exposure times carefully studied.

Processing the film:

Film Makers' instructions are to be followed. It is not advisable to modify negatives density by changing developer or development time.

Field:

The GaMi 16 camera can be set at the maximum distance of 75 cm (30") from the subject.

The maximum field covered on the base board is 30 x 40 cm (12" x 16").

Out of a negative shot from a 60 cm (24"), distance we may get, by means of the GaMi enlarger, an object-size copy. This may also be obtained, for smaller fields, by shooting from shorter distances.

When the size of the object to be reproduced is larger than 30 x 40 cm (12" x 16"), the arm carrying the camera may be rotated outside the enlarger base board in order to shoot the object set at a lower level, for instance on the floor.

The minimum distance between GaMi 16 and subject, is 20" (field covered: about 20 x 30 cm : 8" x 12").

For distances between 10" and 20" (25 to 50 cm) the GaMi camera must be equip-

ped with the close-up addition lens -PROX. In this case, at the minimum distance of 10", the field covered is of about 9 x 12 cm ($3 \frac{1}{2} \times 4 \frac{3}{4}$ ").

An object of the above mentioned size, shot with fine grain film, may give a GaMi negative enlargeable with perfect detail, up to a size of 13 x 18 cm ($5 \frac{1}{8} \times 7 \frac{1}{8}$ "): we have, thus, a **macrophotography** 1,5 x larger than the real object.

Focusing

The distance from the object and the corresponding field to be covered in the picture, are easily spotted by looking into GaMi viewer through small telescope (7). Parallax errors are automatically eliminated by the built-in parallax-corrector.

Focusing may be set in the usual way by means of the range-finder coupled to the lens. Same operation for distances shorter than 20", when the camera is equipped with close-up addition lens Prox. The Prox outfit, in fact, consists of a mount carrying two lenses: one of which combines with the camera lens and the other with the view-finder. The second lens acts on the range-finder and the parallax-corrector in such a way as to maintain the proper automatic coupling of range and parallax with the camera lens, within the range from 10" to 20".

Light and lighting

Diffuse day light may be used when flat objects like drawings, letters, prints, etc., are to be reproduced. A white, flat, reflecting surface should, if possible, be set opposite to the source of light. This is absolutely necessary when only one lamp's beams fall on non-flat objects.

It is however always advisable to use two

electric bulbs with reflectors and set them symmetrical to the object (fig. 3). One of the two bulbs may be placed farther in order to obtain shading effects.

When the object is not glossy and has not glazing parts, lamps may be placed almost at will. But when the object is glossy or slightly reflecting, like white paper or pencil-drawings, glare must be prevented from reaching the lens.

In this case lamps are to be set at such a distance from the vertical of the object, that the light beams of each one should strike the object with an angle of incidence

speed may be adjusted in the usual way by means of the built-in exposure-meter which will be seen through horizontal telescope (7) looking into view-finder.

Stop number

GaMi 16 excellent lens gives the finest detail of image with apertures F/4 or F/5,6. Smaller apertures may advantageously be used only to increase depth of field, when the object is not completely flat. In this case we suggest stop number F/8 or F/11.

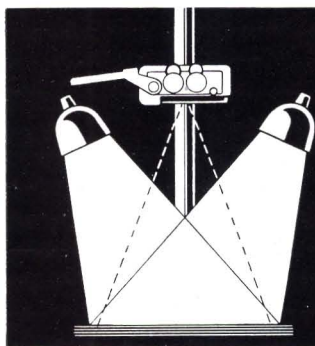


fig. 3

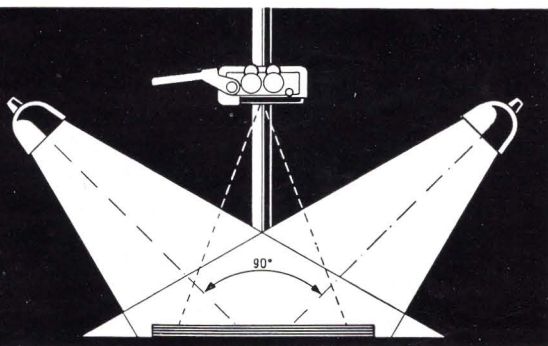


fig. 4

of at least $40^\circ \div 45^\circ$ (fig. 4). To attenuate shades and reflexes, a weak lamp might be carried about the object while the picture is being shot.

This, of course, may only be done when very long exposures, with minimum diaphragm opening and low speed films, have been previously set.

Stop number and exposure time

As soon as Gami 16 speed indicator dial reads the Asa number corresponding to the type of film used, stop number and shutter

For reproducing, with artificial light, documents stretched under a spotless, transparent glass, we may set the aperture at F/5,6 and adjust shutter-speed by acting on the dial control thumb-wheel until photometric symbol «1» (Interior) will appear exactly over the hardly visible «photometer number».

Examples:

1) Using Ilford Pan F (ASA 25) film and two 60 W normal type lamps, set at a distance of 18", we may have a 1/10 second exposure time, with aperture F/5,6.

2) Using Kodak Microfile (ASA 6) film with two 500 W photofloods, (distance: 20"), we may have the same 1/10 second exposure time, with aperture F/5,6.

Continual reproduction

Nothing is easier than reproduce many identical documents, like commercial letters, book and booklet pages: every three shots close and reopen GaMi 16 front cover, up to the 30th exposure.

Reload camera and start again.

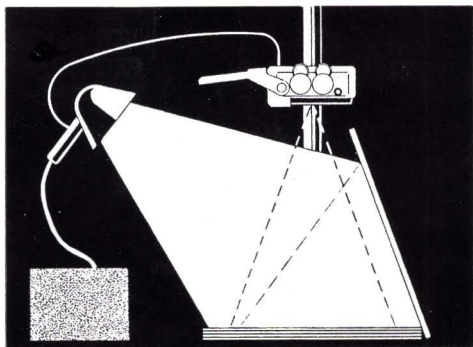


fig. 5

An average of 600 and more reproductions per hour may be easily reached.

Flash light

To employ flash bulbs or electronic flashes, a special attachment is needed which has to be screwed in the socket by means of which the GaMi 16 camera is secured to the arm of the copying outfit. The screw has on its top a standard concentric bipolar plug for the electric cord.

Once the flash has been properly set to

illuminate (together with an opposed white reflecting surface) the object on the base board of the outfit, (fig. 5) pictures can be taken by use of the GaMi incorporated synchronizer.

According to the flash features, 1/5000 or 1/10.000 second exposures and less, can freeze subjects, animals or mechanisms.

Stop number and exposure time with flash

To fix these two data, flash Makers' instructions should be followed.

Shutter is in general to be set on 1/250 or 1/100 for electronic flashes and on 1/25 for flash bulbs.

The right exposure time, normally, is not the one set by the shutter speed, but by the flash peak which is much faster. The shutter speed must only allow the flash to act with its highest efficiency.

The stop number is to be determined according to the film speed, and to the distance between flash and object. Consequently every flash Maker supplies instructions about the most convenient stop apertures to be used.

Flash may be moved away from object when recommended aperture turns out to be smaller than F/11 (the smallest of GaMi 16 apertures).

Proper attention should be called on the fact that **distance** to be considered in deciding the stop number to be used, is the one **between flash and subject**, and not the one between either flash and camera or between camera and subject.

Filters

Either filters inserted in the front of GaMi 16, or the built-in yellow filter, or filters inserted in the lamps, may advantageously be used.

When choosing the colour of filters don't forget that while they make brighter the object of their same colour they darken the ones with complementary colours.

For instance: to reproduce an old, yellowish letter, a yellow filter might be advisable which makes the paper clearer and brighter and deeper the handwriting contrast.

A yellow filter might be used, as well, to reproduce a bluish or violet-coloured handwriting.

A green filter might be suitable, in conjunction with a panchromatic film, for letters in red handwriting, which will, thus, appear darker and in deep contrast.

Copying and enlarging outfits

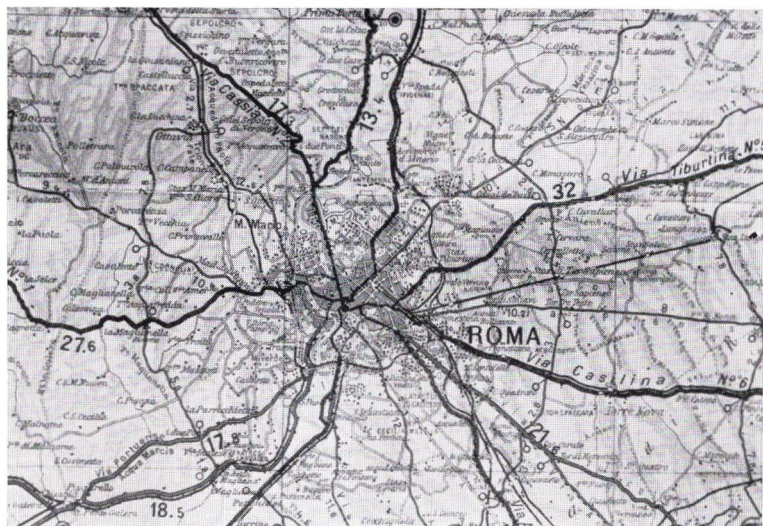
Once you already own a GaMi 16 enlarger, it will be fairly inexpensive to purchase the copying outfit. In fact, since the enlarger's base and column may be used, only the arm of the copying outfit and the small telescope are to be bought.

Copying outfit with baseboard, column, flash-attachment and small telescope.

Ref. n. **1671** *Garip*

Same outfit without baseboard and column.

Ref. n. **1672** *Gabra*



PRINTS FROM GaMi 16, SECURED TO THE COPYING OUTFIT



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